

P.83131



1908313100000

HENRYK DOMANSKI

ZBIGNIEW SAWIŃSKI KAZIMIERZ M. SŁOMCZYŃSKI

S
SOCIO
LOGICAL
TOOLS
MEASURING
OCCUPATIONS

New
Classification
and Scales

<http://rcin.org.pl/ifis>

IFIS PUBLISHERS

HENRYK DOMAŃSKI

Professor of Sociology,
the Institute of Philosophy and Sociology,
Polish Academy of Sciences, Warsaw,
Poland. His main fields of interest
are social stratification and mobility,
and methodology of social research.
He has authored and/or edited 25 books,
primarily on comparative social
stratification, gender inequality,
and class structure in Poland, including
Social Structure (2007) and *Social
Stratification in European Societies* (2009),
as well as many scholarly articles.
E-mail: hdomansk@ifispan.waw.pl.

ZBIGNIEW SAWIŃSKI

Associate Professor,
the Institute of Philosophy and Sociology,
Polish Academy of Sciences, Warsaw,
Poland. His current research
is on the validity of categorizations
in exploring social events and processes,
and educational inequalities
in comparative perspective.
He is author or co-author of many
publications on research techniques
and data processing. He also participates
in international projects, including
the *European Social Survey*.
E-mail: z.sawinski@lutayhc.pl.

KAZIMIERZ M. SŁOMCZYŃSKI

Professor of Sociology
at The Ohio State University (OSU)
and the Polish Academy of Sciences (PAS).
Promoting cooperation between OSU
and PAS he serves as Director
of *Cross-National Studies:
Interdisciplinary Research and Training
Program* (CONSIRT). His research focuses
on social stratification, political sociology
and methodology. He authored and/or
edited numerous books and articles,
some of them related to the Polish Panel
Survey POLPAN, 1988-2008, for which
he is principal investigator.
E-mail: slomczynski.1@osu.edu.

Authors' address:

Institute of Philosophy and Sociology
Polish Academy of Sciences
Nowy Świat 72, 00 330 Warszawa, Poland // rcin.org.pl/ifis
Fax/ phone: (+48 22) 826 71 81

**SOCIOLOGICAL
TOOLS
MEASURING
OCCUPATIONS**

HENRYK DOMAŃSKI
ZBIGNIEW SAWIŃSKI
KAZIMIERZ M. SŁOMCZYŃSKI

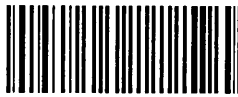
SOCIOLOGICAL TOOLS MEASURING OCCUPATIONS

New Classification
and Scales

Translated by
Jeryna Słomczyńska

IFIS PUBLISHERS
Warsaw 2009

P.83131



19083131000000

Institute of Philosophy and Sociology
Polish Academy of Sciences

This publication is based on a study supported by grants from the Ministry of Science and Higher Education and the Polish Academy of Sciences

All rights reserved. Except for the quotation of short passages for the purpose of criticism or review, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior permission of the publisher.

Sociological Tools Measuring Occupations: New Classification and Scales/ by Henryk Domański, Zbigniew Sawiński, and Kazimierz M. Słomczyński p.cm.
Includes bibliographical references, tables, appendix, and index.
Attached is a CD-ROM with computer application programs.
Occupational Classification and Scales Title

Copyright © by Authors and IFiS Publishers, 2009



Cover designed by Andrzej Łubniewski

ISBN 978-83-7388-177-8

Printed in Poland, 2009

IFiS Publishers
Nowy Świat 72 – Pałac Staszica
00-330 Warsaw, Poland
e-mail: publish@ifispan.waw.pl

<http://rcin.org.pl/ifis>

D.
27.07.09
A 73/09
PAN

Table of contents

List of Tables and Figures	9
Preface and Acknowledgements	13
Introduction	15
Chapter 1: Occupation as an Indication of Social Position	21
1.1. Classifications of occupations	26
1.2. Analytical uses of the occupational classifications	30
1.3. Occupational scales	36
1.4. Limitations and unsolved problems	42
Chapter 2: Studies on Occupational Classifications in Poland	45
2.1. Systematic classifications of occupations in Poland	45
2.2. Criteria used in social classifications of occupations	48
2.3. <i>Social Classification of Occupations</i>	50
2.4. Difficulties in using the <i>Social Classification of Occupations</i>	54
2.5. Work on modifying the <i>Social Classification of Occupations</i> <i>SCO-1978</i>	55
2.6. Work on adapting the <i>International Standard Classification</i> <i>of Occupations (ISCO)</i>	57
2.7. <i>Polish Sociological Classification of Occupations</i> <i>PSCO-94</i>	60
2.8. Conclusion	64
Chapter 3: <i>Social Classification of Occupations</i> in the Context of Respondents' Answers: Based on the Coding of Research Results	67
3.1. Analytical goals, methodology, and data sources	68
3.2. Analysis of the most frequently used coding categories	78
3.3. Cohesion analysis of major occupational groups	78
3.4. Conclusion	81
Chapter 4: <i>Social Classification of Occupations-2009</i>	85
4.1. Modification criteria	86
4.2. New principles of assigning occupations to Group 0, "Senior Officials and Managers"	87
4.2.1 New division of positions in public administration	95
4.2.2 Top officials of political parties and special-interest organizations	95

- 4.2.3 Top managers of large enterprises and other institutions 96
- 4.2.4 Middle managerial positions 97
- 4.2.5 Incorporating lower-level managerial positions into Group 0 100
- 4.2.6 Incorporating managerial positions in trade and services into Group 0 105
- 4.3. Group 1, "Specialists" 107
 - 4.3.1 Sociological interpretation of the composition of Group 1, "Specialists" 107
 - 4.3.2 Occupations and specialties involving marketing and management of human resources 108
- 4.4. Group 2, "Technicians and specialized office workers" 111
- 4.5. Group 3, "Other middle-level non-manual workers" 112
- 4.6. Group 4, "Sales and service workers" 114
- 4.7. Group 5, "Skilled manual workers" 116
 - 4.7.1 Subgroup of foremen 116
 - 4.7.2 Internal differentiation in the largest basic categories of manual workers' occupations 118
 - 4.7.3 Reducing the number of basic categories in Group 5 121
- 4.8. Group 6, "Semi-skilled and unskilled manual workers" 122
- 4.9. Group 7, "Farmers" 129
- 4.10. Group 8, "Owners of production and service firms" 130
- 4.11. Summary 134

Chapter 5: Occupational Scales According to Skill Requirements, Complexity of Work, Material Remuneration, and Prestige 137

- 5.1. The scale of skill requirements 138
- 5.2. The scale of the complexity of work 140
- 5.3. The scale of material remuneration 150
- 5.4. The scale of occupational prestige 152
- 5.5. Conclusion 156
- Appendix 5.1 Scales of Skill Requirements and Complexity of Work 157
- Appendix 5.2 1979 Scale of Socio-economic Status, 2009 Scale of Material Remuneration, 1979 Scale of Occupational Prestige, and 2009 Scale of Occupational Prestige 168

Chapter 6: Computer-Aided Coding and Scaling Occupations 181

- 6.1. Rules for coding occupations according to *SCO-2009* 182
- 6.2. Structure of the *SCO-2009* file in the computer format 185
 - 6.2.1 Category declarations 185
 - 6.2.2 Rules for distinguishing key words 188
 - 6.2.3 Category order 190

- 6.2.4 Classification header 190
- 6.2.5 Residual categories 190
- 6.2.6 Supplementing the classification with additional categories 192
- 6.3. Aiding the preparation of a new classification with the *sco2009index* application program 196
 - 6.3.1 Working with a classification file 196
 - 6.3.2 Starting the *sco2009index* application program 197
 - 6.3.3 Displaying key words 199
 - 6.3.4 Analysis of the context in which a given word appears 200
 - 6.3.5 Distinguishing key words 201
 - 6.3.6 Revoking key-word status of previously distinguished key words 205
 - 6.3.7 Navigation between fields 206
 - 6.3.8 Ending work with the application program 206
- 6.4. Content and format of data required for coding occupations 207
 - 6.4.1 Content of the data set concerning the coded occupation 207
 - 6.4.2 Presentation of data concerning occupation during the process of coding 209
 - 6.4.3 Preparation of parameters controlling the application program 210
 - 6.4.3.1 Command syntax 211
 - 6.4.3.2 Declaration of the record identifier 212
 - 6.4.3.3 Declarations of occupations coded 213
 - 6.4.3.3.1 Command of initialization for the coded occupation 213
 - 6.4.3.3.2 Filter command 214
 - 6.4.3.3.3 Group of commands defining available information about the coded occupations 215
 - 6.4.3.4 Commands generating occupational scales 221
 - 6.4.3.5 Creating a division into 14 socio-occupational groups 222
 - 6.4.4 Output-file format 223
 - 6.4.5 Rules for writing occupational codes in the updated working file 226
- 6.5. The coding process 227
 - 6.5.1 Start of the application program and checking for correctness of parameters 227
 - 6.5.2 Coding an occupation 228
 - 6.5.3 Navigation in the file of coded occupations 232
 - 6.5.4 Documentation of the coding process: Notepad and Report 235

6.6. Scope of utilization of the <i>sco2009coder</i> application program and users' rights	236
Chapter 7: Validity of the <i>Social Classification of Occupations-2009</i>	239
7.1. Schemes for aggregating occupations	239
7.2. Division into 14 socio-occupational groups	242
7.3. Delineation of borderlines between groups	250
7.4. Higher-level aggregation schemes	262
7.5. <i>SCO</i> application to marketing and public opinion research - <i>ESOMAR Social Grade</i>	265
7.6 Summary	267
Appendix 7.1 Input file for the Correspondence Analysis	269
Appendix 7.2 Input file: Recode of the <i>SCO-2009</i> elementary codes into 14 and 6 class categories	271
Appendix 7.3 Input file: Recode of the <i>SCO-2009</i> elementary codes into <i>ESOMAR Social Grade</i> scale	273
Appendix: <i>Social Classification of Occupations-2009</i>	275
References	313
Index	325

List of Tables and Figures

In Chapter 1. Occupation as an Indication of Social Position:

Table 1.1 Associations between occupation, education, income, and supervisory position with selected measures of attitudes

In Chapter 2. Studies on Occupational Classifications in Poland:

Table 2.1 Occupational categories of the highest level (major groups) in the CSO (Central Statistical Office) Classification for the 1970 National Census

Table 2.2 Occupational categories of the highest level (major groups) in the CSO classification for the 1978 National Census

Table 2.3 The highest level categories (major groups) in the 1974 *Social Classification of Occupations (SCO-1974)*

Table 2.4 The highest level categories (major groups) in the 1978 *Social Classification of Occupations (SCO-1978)*

In Chapter 3. *Social Classification of Occupations–2009* in the Context of Respondents' Answers: Based on the Coding of Research Results

Table 3.1 The most frequently used *SCO-1978* categories

Table 3.2 The most frequently used *ISCO* categories

Table 3.3 Coding characteristics of major occupational groups of *SCO-1978*

Table 3.4 Coding characteristics of major occupational groups of *ISCO-1988*

In Chapter 4. *Social Classification of Occupations–2009*:

Table 4.1 Percentages of occupations coded in *SCO-1978* to Group 0, "Senior Officials and Managers," grouped with respect to the type of organization

Table 4.2 Composition of Group 0, "Senior Officials and Managers" in *SCO-1978* and the new *SCO-2009*

Table 4.3 Basic categories of *SCO-1978* Group 2 involving elements of managing the work of others

- Table 4.4 Categories of managerial positions in *SCO-1978* Group 4
- Table 4.5 Percentages of the most frequently coded categories in *SCO-1978* Group 1, “Specialists”
- Table 4.6 Expanding *SCO-1978* subgroup 1140, “Sociologists, psychologists, and historians” to include occupations and specialties involving marketing and management of enterprise internal resources
- Table 4.7 Percentages of the most frequently coded categories in *SCO-1978* Group 2, “Technicians and specialized office workers”
- Table 4.8 Subgroups belonging in *SCO-1978* Group 3, “Other non-manual workers”
- Table 4.9 Percentages of occupations coded in categories of *SCO-1978* Group 4 involving sales workers
- Table 4.10 Basic categories of *ISCO-1988* corresponding to occupations coded to category 5132, “Foremen in assembly and construction work” of *SCO-1978*
- Table 4.11 Percentages of the most frequently coded categories of *SCO-1978* Group 5, “Skilled manual workers”
- Table 4.12 Basic categories of *ISCO-1988* corresponding to occupations coded to *SCO-1978* category 5274, ‘Car, truck, and bus drivers’
- Table 4.13 The least frequently chosen basic categories from *SCO-1978* Group 5, “Skilled manual workers”
- Table 4.14 Listing of semi-skilled workers and unskilled workers distinguished in the industrial workers’ section of *SCO-1978*
- Table 4.15 Percentages of the most frequently coded categories of *SCO-1978* Group 6, “Semi-skilled and unskilled manual workers”
- Table 4.16 Basic categories in subgroup 6400, “Elementary occupations” of the new *Social Classification of Occupations–2009*
- Table 4.17 Percentage of occupations coded in the *SCO-1978* Major Group 7, “Farmers”
- Table 4.18 Percentages of the most often coded categories in *SCO-1978* Major Group 8 “Owners of production and service firms”
- Table 4.19 Number of categories in the 1978 and 2009 versions of the *Social Classification of Occupations*

In Chapter 5. Occupational Scales According to Skill Requirements, Complexity of Work, Income, and Prestige:

Table 5.1 Factor loadings of the variables defining the complexity of work in the studies conducted in 1972–2003

Table 5.2 Arithmetic means of the index of general complexity of work in 2003 as compared with its mean values in 1972, in standardized units

Table 5.3 Selected occupations and mean earnings used for constructing the scale of material remuneration

Table 5.4 Average occupational prestige in 2004 compared with average occupational prestige in 1975, according to public opinion

In Chapter 6. Computer-Aided Coding and Scaling Occupations:

Figure 6.1 Interface of the application program *sco2009index* immediately after starting. Displayed is only the basic classification with no key words distinguished

Figure 6.2 Screen corresponding to the context analysis for occurrence of the word “access”

Figure 6.3 Context analyses for occurrence of the word “general”

Figure 6.4 Distinguishing the word “general” as a key word

Figure 6.5 Distinguishing the word “profession” as a key word in all categories of Major Group 1000, “PROFESSIONALS AND SPECIALISTS”

Table 6.1 Example of a set of questions pertaining to the respondent’s current occupation

Table 6.2 Numbers, sizes, and typical content of domains for display of information collected on occupation

Figure 6.6 Typical display of the content of information domains defined with commands presented in Window 6.9

Table 6.3 Available occupational scales and their notation

Figure 6.7 Example of the screen for coding an occupation (stage 1)

Figure 6.8 Example of the screen for coding an occupation (stage 2)

Figure 6.9 Example of the screen for coding an occupation (stage 3)

Figure 6.10 Example of an occupation coding screen in the situation of either incomplete information or an occupation in which the person cannot be considered a performer

Figure 6.11 Screen for selecting a coding option

Figure 6.12 Notepad view

In Chapter 7. Validity of the *Social Classification of Occupations-2009*:

Table 7.1 Location of occupational categories in the social structure according to social mobility patterns and marital patterns. Coordinate values from the correspondence analysis (CA) on the joint data set obtained in surveys carried out in 1992-1995, 1998, 2002, and 2004

Figure 7.1 Intergenerational mobility barriers among *SCO* categories. Two-dimensional CA map: coordinate values in the first two dimensions.

Figure 7.2 Barriers of marital selection among *SCO* categories. Two-dimensional CA map: coordinate values in the first two dimensions

PREFACE AND ACKNOWLEDGMENTS

This book is based on the Polish-language *Nowa klasyfikacja i skale zawodów: socjologiczne wskaźniki pozycji społecznej w Polsce* by Henryk Domański, Zbigniew Sawiński, and Kazimierz M. Słomczyński, published in 2007 in Warsaw by the Institute of Philosophy and Sociology, Polish Academy of Sciences. Since then, we thought about sharing our ideas, research results, and methodological tools with an international readership. In the process of preparing the English-language edition, we introduced substantial changes, both in the body of the book and its original classification of occupations (*Spoleczna Klasyfikacja Zawodów, SKZ-2007*), to make the publication useful for cross-national studies. As a result of extensive changes, the transformed book carries a new title, and presents, in English, the new version of the classification, *Social Classification of Occupations--2009*. In addition, other proposed measurement tools, such as occupational scales, have been modified and updated.

Although this book is a joint product of three authors, its particular segments were originally prepared as follows: Introduction and Chapter 1 by Henryk Domański, Chapters 2 and 3 by Zbigniew Sawiński, Chapter 4 by Zbigniew Sawiński, Kazimierz M. Słomczyński, and Henryk Domański, Chapter 5 by Kazimierz M. Słomczyński, Chapter 6 by Zbigniew Sawiński, and Chapter 7 by Henryk Domański. The final version of the *Social Classification of Occupations--2009* was prepared by Zbigniew Sawiński, Kazimierz M. Słomczyński, and Henryk Domański. The computer programs, attached to this book on the CD-ROM, were written by Zbigniew Sawiński, with consultations from the two co-authors of the project.

Research for this book was supported by grants from the (Polish) Ministry of Science and Higher Education and the Polish Academy of Sciences. For these grants Henryk Domański served as principal investigator, and Zbigniew Sawiński and Kazimierz M. Słomczyński were co-principal investigators. The Institute of Philosophy and Sociology at the Polish Academy of Sciences provided the needed facilities for the completion of the project. In addition, Kazimierz M. Słomczyński worked on a part of this project at the Department of Sociology at the Ohio State University. We acknowledge the help of the leadership of all these institutions.

We feel indebted to Włodzimierz Wesołowski and Michał Pohoński who initiated the work on sociological occupational classifications in Poland. Thanks are also due to Michał Bojanowski, Paweł Sztabiński, Franciszek Sztabiński, Dariusz Przybysz, Teresa Żmijewska-Jędrzejczak, Elżbieta Kucharska, Dorota Laskowska, and Maciej Kryszczuk for their assistance in research leading to this publication. Krystyna Janicka, Dorota Szaban, and Justyna Nyckowiak offered valuable comments on the Polish-language version of the book. Therese Malhame assisted Jerzyna Słomczyńska with editing of this book, helping the translator and the authors to clarify a number of issues, some of substantive nature.

Henryk Domański
Zbigniew Sawiński
Kazimierz M. Słomczyński

Warsaw, 25th of May, 2009

INTRODUCTION

This book deals with the measurement of social class, social standing, social status - generally speaking - of social position, considered as placement in the social stratification system. Social scientists are divided into those who favor categorical approaches to socio-economic classification and those who prefer continuous measures, which assume that differences between elementary units can be captured in one dimension that is represented by a single parameter (Ganzeboom, De Graaf, and Treiman 1992). We propose here a harmonized socio-occupational classification, referred to as the *Social Classification of Occupations (SCO)*, which may be suitable for analyzing sociologically derived class categories in East European countries. At the elementary level the *SCO* scheme consists of 260 detailed categories that can be aggregated into a smaller number of sociologically meaningful segments of social structure defined in terms of “social classes” or socio-occupational strata. We demonstrate the validity and reliability of this scheme, which could potentially serve as a general background variable in social statistics, as do other occupationally based measures.

Our second aim is to provide quantitative scales based on the *SCO* scheme. In line with a long-standing tradition in occupational scale building, we constructed prestige and socio-economic scales as well as scales of skill requirements and work complexity. To work out the prestige scale we conducted a special study on a selected group of “experts” - specialists in job market and occupational counseling with a considerable practice in these fields. Interviewers’ notes made during a national survey on social structure supplied the researchers with detailed descriptions of work tasks, performed in particular occupations. A secondary analysis of the described work tasks provided the basis for creating new scales of skill requirements and work complexity. We complemented these already functioning scales with a scale of material remuneration, which is based on the latest income data collected by the Central Statistical Office (GUS) in Poland. This scale can be used as a tool to identify individuals’ positions in the strictly economic dimension of social structure.

There is also a more mundane reason for our study. It is concerned with practical testing of our new tools on a number of different datasets

collected for various purposes. Intended as tools for international comparison and explanation, both *SCO* and occupational scales were designed to be applicable in a wide field of policy and academic research. Bearing this in mind we present a detailed description of these measures together with an algorithm that allows for their application to all datasets that contain information on occupations.

The first incentive for developing a measure that could become a relevant social background variable in East European countries stems from our assessment of the state of the art in stratification research. In recent decades the system of class categories developed by John Goldthorpe and his coworkers (*EGP*) has proved to be a powerful tool for analyses of social mobility and other phenomena (Erikson and Goldthorpe 1992; Goldthorpe 2000).¹ Researchers inspired by the Marxian theoretical framework used another class scheme developed by Erik Olin Wright (1997). In order to facilitate international comparisons of occupational statistics and to provide a conceptual framework for developing national occupational classifications, a number of countries have adopted the *International Standard Classification of Occupations (ISCO)* scheme, designed and promulgated by the International Labor Office. Continuous approaches to the measurement of social position are represented by the *Standard International Occupational Prestige Scale* (Treiman 1977) and the *International Socio-Economic Index- ISEI* (Ganzeboom et al. 1992).

Even acknowledging the advancement achieved by the derivation of these international occupational classifications and scales, one needs to remember that they are qualitatively different although partly overlapping. Those involved in stratification research generally prefer to have various tools for studying various aspects of the society. In this respect, it is particularly advantageous to have “regional” classification and scales, concurrent with more universal measures such as *EGP* or *ISEI*.

The collapse of the communist system and the ongoing formation of market structures gave birth to a new stratification in Eastern Europe that has revealed distinctive features in terms of the educational system, labor relations, employment, and occupational structures as compared with its counterparts in Western countries. Given this systemic difference, *EGP* and other standard measures of social position may be of lesser analytical validity here. We believe that the *SCO* and occupational scales based on our scheme can be a useful complement to the existing socio-economic standards. Rooted in historical and cultural context of the post-communist

¹ An internationally comparable class schema known as *EGP* was originally presented in work of Erikson, Goldthorpe, and Portocarero (1979, 1982).

societies in Eastern Europe they are designed to facilitate future analyses for students of social structure and stratification in this part of the continent using the *European Social Survey*, *International Social Survey Program*, and other international data sets.

The most immediate reason for our project was a need to construct new tools for measuring social position in today's Poland. The first *Social Classification of Occupations (SCO-1978)*, which appeared back in 1978, was for decades the most frequently used tool for analyzing social stratification in Poland (Pohoski and Słomczyński 1978). A year later it was supplemented by the corresponding occupational scales. Based on the results of a special study, each of the *SCO-1978* basic classification units was assigned a numerical value in basic dimensions of the social hierarchy: prestige, socio-economic position, and work complexity (Słomczyński and Kacprowicz 1979). The scale of skill requirements was added to these tools later.

While *SCO-1978* and the corresponding occupational scales were in use for almost thirty years, in recent times they have become increasingly obsolete as research tools. The reasons for their current inadequacy were not only the passage of time but also the considerable changes brought about by socio-economic transformation and the introduction of a market economy. On the one hand, the private sector of the economy experienced considerable growth, which appeared in many new fields of business activity (e.g., construction of houses and apartment buildings, developer's activity, personal safety, business, counseling). On the other hand, new occupations appeared that did not exist in the socialist economy (e.g., stock-brokers, marketing and public relations specialists). Many institutions underwent structural changes that often resulted in changes of occupational positions and titles (e.g., new ranks were introduced in the police and fire services). Some institutions ceased to exist (e.g., the Polish United Workers' Party - the commanding party of the former communist regime), causing a widespread structure of positions to disappear, while other institutions were created and developed (e.g., computer companies, TV and radio stations, multiple political parties, and the Senat - the upper chamber of the Polish parliament).

The three decades of using *SCO-1978* in Polish sociological research allowed for a considerable collection of practical assessments, reflections, and suggestions as to what should be changed to make it a better instrument. Applying *SCO* at the stage of coding occupations demonstrated that some occupations and positions, which often appeared in the empirical data collected in research interviews, were missing from the classification. These shortcomings exerted some influence on the scales of social positions. Since the empirical data used when they were constructed no



longer fit the new reality, the scales were also becoming less accurate, even though in general they were and are quite resistant to change.

Detailed interviewers' notes collected in the 2005 study – conducted by the Institute of Philosophy and Sociology, Polish Academy of Sciences – reflecting the difficulties of coding occupations provided the basis for construction of a new classification of occupations. We chose the original, detailed classification scheme of *SCO-1978* as a starting point for our analyses. The need to maintain continuity stemmed from both the theoretical premises and research practice. The results of recent research studies conducted in Poland demonstrated that the post-1989 systemic transformation did not cause changes in social stratification that were significant enough to necessitate working out a classification of occupations based on an entirely new scheme. Moreover, an important advantage of adopting the original scheme was that it maintained comparability of future research; that is, research applying the new *SCO* would be comparable with older research that used the original *Social Classification of Occupations* of 1978. For this reason, our analyses aimed at complementing the earlier classification with new occupations. These analyses resulted in the construction of a new classification, which we called the *Social Classification of Occupations-2009*. We firmly believed that in order to become a useful indicator of social position the classification had to meet the following four conditions:

The first requirement was to define with reasonable precision what we wanted to measure. If it were clear what aspects of social reality the new *SCO* should measure, then the measurement result could be considered adequate.

Our second requirement was that the new classification be reliable and valid. Reliability – a characteristic of the stability of social indices – points to the issue of standardization in coding occupations. Regardless of the type of research, our classification should provide the same results. Validity, in turn, refers to the extent to which the categories of *SCO-2009* identify the most important social divisions and social distances. We need an index of location in the social structure that is effective in analyzing inequality of access to various important goods and resources, differentiation of life chances, lifestyle, and attitudes. Commonly, sociological classifications of occupations are constructed to measure social inequality, yet the basic classification units are defined in terms of nominal variables, representing the “weakest” measurement level at which no hierarchical order is assumed. In this context, it should be noted we need to take notice that the Polish classification of occupations is by definition a nominal variable aimed at reflecting the most important social divisions. Of course, this does not preclude the possibility of interpreting its categories in hierarchical terms.

The third condition of the analytical utility of our new classification is that it be operationalized in terms of occupational roles. Respondents should be coded according to their location in the occupational division of work rather than according to their skills, education, or other criteria included in definitions of sociological variables that could be subject to analysis. Defining the basic classification units in terms of occupational roles eliminates the risk of encountering tautology in multivariate analyses.

The fourth requirement for the *SCO* is to constitute a user-friendly scheme in the sense of having categories that are easily translated into the language of collecting and coding information gathered in research studies. This calls for the application of clear principles in assigning code symbols to the respondents and using unambiguous procedures for grouping elementary categories into higher-order units at the analysis stage.

* * *

The book is divided into seven chapters. The first chapter discusses the role played by classification and occupational scales in the analysis of social structure. It also contains a historical outline of works aimed at improving indices of social position. The second chapter presents a brief history of works devoted to Polish classifications of occupations. The third chapter provides the results of analyses that used earlier versions of the *Social Classification of Occupations* in research practice. Its main focus is reflections stemming from actual occupation coding and the resulting implications concerning what should be modified in the new version of the *SCO*. The fourth chapter begins with a presentation of the premises for undertaking the work on the new classification and new occupational scales. It discusses the shortcomings and limitations of the tools used so far for this purpose and considers which of their elements require modification. Its main part is devoted to a thorough presentation of the new *Social Classification of Occupations*. The fifth chapter presents the new scales of occupations according to skill requirements, complexity of work, material remuneration and prestige. The sixth chapter contains detailed instructions on a computer program for coding *SCO-2009*, aggregating occupations into broader groups, and assigning them appropriate values from the occupational scales. The last, seventh, chapter discusses the use of classifications of occupations at the stage of analysis. It proposes schemes for grouping occupations into broader segments - known as classes, strata, and occupational categories - that identify basic social divisions and social distances. A separate section of the chapter contains the results of our analyses devoted to studying the validity of *SCO-2009*.

Chapter 1

OCCUPATION AS AN INDICATION OF SOCIAL POSITION

Occupation has an important bearing on life. We elaborate on this sketchy remark with a more detailed exposition of the theoretical, empirical, and operational premises of using occupation as a basic indication of the individual's location in the social structure.

Theoretical arguments are discussed in the context of the primary purpose of sociological analysis, which is to capture the pivotal factors affecting the behavior of individuals. Occupation surely belongs among them. Occupational hierarchies became prominent vehicles of the stratification system at the specific stage of development of social relations - with the establishment of the capitalist market. Occupational position evolved into the most important one because only in a capitalist market did the job, requiring specific occupational credentials, become the primary source of income, allowing for a specific level of consumption, and shaping the individual's personality and lifestyle. Although the seeds of the occupational division of labor had existed since time immemorial, it was only the market system that created occupational roles identified with the performance of specific tasks, which in turn required specific skills that determined the social position. This was attributed not only to persons in the workforce but also to those currently outside the job market who had an occupation in the past: retirees, the unemployed, and housewives. In contrast to the former estate or tribal societies, where the individual's social position depended mostly on social origin, occupation in a market society ensured a kind of position achieved through the individual's effort on the basis of his or her own abilities, training, experience, and knowledge (skills). Everyone who was willing and who had appropriate abilities and skills had a chance of entering a specific occupation. Elimination of formal blockades to such positions, prescribed, for example, by law, became a breakthrough

resulting in mass-scale mobility and the forming of new social hierarchies and kinds of inequality.

This systemic change, generally referred to as social modernization, was presented in many theories, beginning with the functional theory of social stratification (Davis and Moore 1945). It was subsequently reinterpreted and updated by analysts who provided empirical arguments supporting this approach (Blau and Duncan 1967; Siegel 1971; Treiman 1977; Featherman and Hauser 1978). The main premise of this theory viewed the structure of social inequality as a mechanism through which the most appropriate and best-qualified individuals were allocated to the functionally most important positions in the society. These positions have to be filled according to individuals' abilities and skills, and those who fill them must be respectively rewarded.

Three elements emphasize the functional importance of occupation. First, the function of these roles in the social system determines their importance. In individual biographies, occupational roles may be described as posts achieved by means of education and other resources based on skills that provide access to generally desired goods such as incomes, authority, prestige and other rewards. Occupation shapes values, orientations, self-assessment, political preferences and other components of lifestyle. Recalling a well-known metaphor of Duncan (1961a: 116-117), occupation is a variable mediating between two other basic stratification elements. On the one hand, these skills are required for entry into specific occupational roles, and on the other hand - the rewards received for performing occupational tasks. Since occupation is a link between the two, it is central to the individual's life cycle.

The universal character of these mechanisms is the second argument for the cornerstone role of occupational positions. Their universality was emphasized in theories of "industrial society" (Kerr, Dunlop, Harbison, and Myers 1960) and developed in empirical analyses by Blau and Duncan (1967) in *The American Occupational Structure*. In the last chapter of this classic volume, the authors claim that occupational roles have similar content and are organized according to similar rules, and that those who fill them are rewarded according to the functional importance of these roles. Results of ongoing cross-national research revealed substantial associations between education, occupational status, incomes, and other outcomes of occupational roles, which were regarded as empirical confirmation of the worldwide range of the mechanisms underlying them. They appear invariant with respect to economic development, type of political system, and dominant culture (Treiman and Roos 1983; Treiman and Yip 1989; Ganzeboom, Lujikx, and Treiman 1989; Erikson and Goldthorpe 1992; Müller and Gangl 2003; Breen 2004; Müller 2005).

Third, occupational roles not only act as functional links in the physiology of social systems. Using Weberian terminology, they also feed these systems by creating various types of closure through monopolistic control over valued resources; in Marxian terms, some occupational categories, especially manual workers, or owners of the means of production, can serve as the active, collective agents of historical development. In modern capitalist society the two main exclusionary devices by which occupational categories maintain themselves as privileged segments of social structure are academic and professional qualifications and credentials. For example, medical or judiciary associations undertake strategies to secure high salaries and market position (for their members) by establishing a set of legal arrangements such as requirements for specific diplomas or completion of specialty programs administered by appropriate institutions. The declared purpose of these actions is to secure a high level of skills among the professionals. Obviously, these strategies are not applicable to low level non-manual occupations or to manual workers. Trade unions of the working class categories, which replace professional corporations, use their own strategies; typical examples would include the routine struggle between organized labor and managers, typically involving bargaining, sit-ins, demonstrations, and strikes. Such collective efforts of occupational categories affect the life chances of their members. Categories using more effective strategies can restrict the access of representatives of the weaker ones to higher earnings, better work conditions, job security, and advancement. The weaker ones, in turn, try to compensate for their smaller market power by applying “usurpation” strategies, using a term from a theory of Parkin (1979).

The theoretical perspectives presented so far in this chapter emphasize various aspects of the effect of occupational divisions on social inequality and social distances. It therefore seems natural to refer to the category of occupation in almost any sociological analysis that requires a “structural explanation” of social processes and phenomena. Occupational position affects individuals’ personalities and attitudes, fills their lives, and plays an important role in forming durable social divisions and linkages. This last effect is easy to observe, considering that occupational interactions form patterns of friendship and marital choices (Goldthorpe 1980; Domański and Sawiński 1992; Domański and Przybysz 2007).

Turning to the empirical premises of an occupation’s validity, occupational assignment is a strong correlate of many characteristics of the individual’s social position. Except for the level of education, no other attribute of social position is significantly correlated with as many characteristics as the occupation. Let us document this using data from the Polish General Social Survey conducted in 2002 (Domański, Rychard, and Śpiewak 2005).

Table 1.1 presents associations between occupation, education, family income, and supervisory position, on the one side, and measures of several attitudes, on the other, with the latter taken as criteria of validity.¹ Everyone would probably agree that occupation's validity may be considered sufficiently proven if its discriminatory power is no less than that the other indices of placement in social structure.

Table 1.1 Associations between occupation, education, income, and supervisory position with selected measures of attitudes

Criterion variables:	Occupation	Education	Family income	Supervisory position
Acceptance of abortion	0.16	0.16**	0.13 **	0.002
Legitimization of the sociopolitical system	0.14	0.20**	0.11 **	0.002
Economic liberalism	0.25 **	0.28**	0.22 **	0.020 **
Traditionalism - modernity (assessments of homosexuality, marital infidelity, premarital sexual activity)	0.24 **	0.28**	0.11 **	0.006
Acceptance of socialism	0.19 **	0.26**	0.20 **	0.008 **
Happiness	0.12	0.18**	-0.16 **	0.007 **
Trustfulness	0.14 **	0.13**	0.09 *	0.008 **
Health self-assessment	0.19 **	0.29**	0.05	0.001
Financial satisfaction	0.24 **	0.26**	0.35 **	0.014 **
Self-assessment on the left-right scale	0.13	0.15*	-0.02	0.058
Scale of willingness to live	0.13 **	0.16**	0.09 *	0.080 **

** p < 0.01; * p < 0.05

¹ Occupational position is operationalized in terms of the 11 *EGP* categories (see Domański and Przybysz 2003). Education is a categorical variable consisting of 10 levels - from individuals without education to those who have completed tertiary education. Supervisory position is measured using a three-level scale: (i) supervisors whose subordinates are supervisors of the lower level, (ii) supervisors of the lower level, and (iii) subordinates. Family income is defined as a logarithm of total family income per capita. Dummy-coded variables were employed to measure attitudes: (iv) (a) approval of abortion at the woman's request (regardless of health conditions) and (b) trustfulness (positive answer to the question: "do you believe most people can be trusted, or rather that one can never be too cautious?"). "Economic liberalism" is a composite variable obtained by summing the answers to four questions, each defined using a four-level scale: (1) respondent's assessment of the range of income inequalities in Poland, (2) the extent to which the minimization of income inequality should be the government's duty, (3) the extent to which the government's duty should ensure that everyone who wants a job can get one, (4) the extent to which the government's duty should be to help children from poor families have access to education.

Taking into account that correlations between occupation and attitudinal variables rarely exceed 0.3-0.4, the values presented in Table 1.1 are considered to be within normal range. Average correlation of the occupational position with the eleven criterion variables was 0.18. While this is indeed low, only education had (on average) a stronger discriminatory power with respect to the attitudinal variables considered here.

Linked to the theoretical reasons and arguments concerning empirical validity are issues of analytical transparency and operationalization clarity. There are two basic issues. First, how easily available is the relevant information required in order to construct the indexes of occupational position? There are sound pragmatic reasons for having occupation-based measures. Occupational data that serve as the operational building blocks for indices are routinely and widely collected. In survey research interviewers gather it by asking respondents simple and intelligible questions. In general, people are eager to talk with the interviewers about their jobs. These questions in general do not concern sensitive issues and thus do not result in false answers or flat refusals to provide the requested information. Answers to questions regarding the respondent's education, income, material standard, or cultural activity (going to the theater, reading books) appear to be much less trustworthy.

The second issue concerns the way indicators of social position are used at the level of analysis. They are usually operationalized in terms of standard scales or classifications of occupations. This means that one can attach them to any data set containing information on the occupations of respondents, their fathers, spouses, and so on. Standardized measures are a substantial

"Legitimization of the political-economic system" is a sum of two five-point scales, the first referring to acceptance of democracy in Poland, and the second - to acceptance of the current way of economic development; "traditionalism - modernity" is a sum of three four-point scales concerning the acceptance of homosexuality, marital infidelity, and premarital sex; "health self-assessment" is measured using a five-point scale composed of answers to the question: "how satisfied are you with your state of health?" (from "very satisfied" to "very dissatisfied"); satisfaction with one's financial situation is measured using a four-point scale consisting of answers to a question about satisfaction with the family's financial situation; the scale of "happiness" is measured using a four-point scale, from 1 ("I feel very happy") to 4 ("I feel very unhappy"); the scale of willingness to live is a 10-point scale from 1 ("I don't want to live at all") to 10 ("I want to live very much"); self-assessment in the "left - right" dimension is measured using a ten-point scale, in which the respondents are asked to show their position, from 1 (extreme left) to 10 (extreme right); "acceptance of socialism" is measured using a five-point scale, from strong acceptance to strong opposition. Since occupation, education, and supervisory position are nominal variables the correlation ratios (etas) were used to establish their association with selected attitudes; to establish the association of these variables with family incomes I used Pearson correlation coefficients (the higher values reveal a positive association).

advantage to the researcher because they eliminate the necessity of constructing new indexes for each study. These are available in the form of a codebook or a computer program that allows the incorporation of standard indexes into the data set.

1.1 Classifications of Occupations

A classification of occupations is a set of discrete categories aimed at identifying basic segments of the social structure, but without predetermining the extent to which the divisions existing between these categories reflect any hierarchical dimension. Classifications differ from occupational scales in that the latter are continuous or hierarchical measures, which assume that differences between occupational groups can be captured in one dimension represented by a single parameter.

Basic data on occupations were already collected in early national censuses. A question about occupations was included in censuses from the end of the eighteenth century - first in the United States of America and Sweden. American and British researchers made the first attempts to classify populations in terms of both sociological and economic variables. William C. Hunt of the (U.S.) Bureau of the Census is credited with authorship of the first classification. In 1897, on the basis of U.S. census data, he distinguished four basic segments of the American working population: owners, non-manual workers, skilled manual workers, and unskilled manual workers (*laboring*) (Caplow 1954). Hunt's four-class scheme gave an impetus to ongoing analyses aimed at improving the classification of occupations.

Similar work was in progress in Great Britain. Their first classification, constructed in 1913, was known as the *UK Registrar-General's Class Scheme*, which was aimed at identifying the social position (*social standing*) defined by the authors as the level of culture and lifestyle - especially with reference to education and health (Stevenson 1928). They distinguished five occupational groups (called "classes") in a hierarchical order, starting with "Class I" - involving mainly specialists in non-manual occupations and managers - and ending with "Class V" - involving unskilled manual workers. In Britain, the *UK Registrar-General's Class Scheme* became the most popular classification of occupations, and was applied by statistical offices and in social research.

In the United States the work was ongoing. Alba Edwards (1917) constructed a detailed classification of "socio-economic groups" based on the criterion of skill level and the character of work, within the basic division "non-manual" vs. "manual" work. An extended version of this

scheme was employed in collecting the 1940 national census data. The Edwards socio-economic classification became the most commonly used approach in research on social stratification in the United States, and subsequent generations of researchers modified it according to their needs. Edwards distinguished the following categories:

1. Professionals
2. Owners, managers, state officials
 - (a) Farmers
 - (b) Salesmen
 - (c) Other owners, managers, state officials
3. Lower-level non-manual (clerical) workers
4. Foremen and skilled manual workers (craftsmen)
5. Semi-skilled manual workers
6. Unskilled workers
 - (a) Farm laborers
 - (b) Laborers outside agriculture
 - (c) Laborers in services (servant classes)

This scheme was supposed to identify basic categories of the social structure, which differed “economically, in lifestyle, intellectually, and socially,” that is, according to the most important aspects of individuals’ positions (Sixteenth Census of the United States 1943: 179). Authors of later classifications used similar criteria of occupational divisions. In the United States, Blau and Duncan’s classification, presented in *The American Occupational Structure*, became the most representative version of Edwards’s scheme in sociological analyses. In its most detailed version it consisted of 17 occupational categories identified with the basic segments of the American stratification system. In American sociology it was frequently used in analyses of social stratification and mobility (Featherman and Hauser 1978; Hout 1988).

There are two basic reasons for using a classification of occupations. First, classifications serve as tools for coding information collected in research surveys. Interviewers ask the respondents a question concerning occupation, which can be either “open” or “closed.” In a closed question, the classification is an integral element of the questionnaire – respondents are asked to specify their place in one of the categories presented on a show card, for example, starting with “professionals” and ending with agricultural laborers or farmers – farm owners.

The preferable way of collecting occupational data is by means of “open” questions, which allow researchers to obtain more precise information. The interviewer (in face-to-face surveys) begins by asking the title

of the occupation performed by the respondent and then requests a short description of occupational tasks, explores about the position held in the occupational structure, whether the respondent is an enterprise owner (one of the owners) or an employee, and finally, asking in what sector (or branch) of the economy the respondent works. All of these pieces of data are used at the stage of coding, that is, in the process of assigning the respondent to one specific occupational category. A classification is a kind of codebook involving a few dozen to a few hundred categories that identify the respondent's location in the detailed division of work. Classification permits a better standardization of information and a possibility of being flexible at the level of analysis because the detailed codes may be grouped in various ways, depending on the theoretical preferences and purpose of the study.

The second reason for using occupational classifications resides in their application to operationalizing social class, or social position, defined in terms of the categorical variables. In approaching analyses one needs to bring detailed occupational characteristics into more collapsed divisions. Classification of occupations addresses the issue of how to reflect basic social distances, cleavages, and barriers and to identify location of individuals in a social space. This tradition is one influenced by the various social class theories that see "classes" as a set of entities, so that while each of them is as different as possible from all other entities, each entity is as internally homogeneous as possible. Members of these "class" categories have similar access to important societal goods and resources, are similarly located in social networks, have similar life chances, and encounter similar barriers in their access to education and health care (Breen and Rotman 1995; Marshall 1997).

Various socio-economic classifications of occupations are in use. First, one can distinguish classifications constructed by statistical offices for the needs of occupational training and vocational guidance as well as for recording workforce resources and making forecasts. A drawback of these classifications is that they do not adequately reflect sociological dimensions, which substantially limits their utility in social stratification research.² Stratification students nevertheless employ "statistical" classifications, especially when using the data collected by statistical agencies.

The second approach to the derivation of occupational classification may be called "sociological" and "theoretical-empirical." There are national classifications designed to satisfy the needs of academic social research. *National Statistics Socio-economic Classification (NS-SEC)* is an example of

² Some statistical classifications, such as the aforementioned American classification of the Bureau of the Census and the British Registrar-General, are constructed, in part, from sociological variables.

such a classification in the United Kingdom, *PCS* – in France, and *Standard Occupational Classification (SOC)* – in the United States. In Poland the *Social Classification of Occupations* plays this role. As compared with statistical classifications, sociological classifications are more valid in measuring and securing accumulation of information gathered from various research studies, because the occupational data are coded according to the same scheme.

One can also distinguish ad hoc classifications constructed for the needs of a given study; they usually take the form of including in the questionnaire a “closed” question concerning occupation. Although ad hoc classifications can be a valid measure of social position, they do not provide cumulativity of information which limits their further application. Because of their ad hoc construction they do not guarantee comparability with the results of any other study.

The most widely applied classification in cross-national research is the *International Standard Classification of Occupations (ISCO)*. Its first version was prepared by the International Bureau of Labor in Geneva in 1958. Modified in 1968 and 1988, it currently functions in its fourth, revised version which is known as *ISCO 1988 (COM)*. The best known applications of *ISCO* in comparative research include the *International Social Survey Program (ISSP)*, the *European Social Survey (ESS)*, the *Programme for International Student Assessment (PISA)*, and studies on social stratification and poverty in post-communist countries (*Social Stratification in Eastern Europe after 1989* and *Poverty, Ethnicity and Gender in Transitional Societies*, carried out in 1993/1994 and 2000, respectively).

ISCO has a four-level hierarchical structure. The most detailed one involves 390 categories, which are collapsed into 116 categories of the second (higher) level. At the third level there are 28 categories, and at the fourth (most aggregated) level – 10. For illustration, we list below the categories of the fourth level and their code numbers:

- 0 Armed forces
- 1 Legislators, senior officials, and managers
- 2 Professionals
- 3 Technicians and associate professionals
- 4 Clerks
- 5 Service workers and shop and market sales workers
- 6 Skilled agricultural and fishery workers
- 7 Craft and related workers
- 8 Plant and machine operators and assemblers
- 9 Elementary occupations

Advantages stemming from the worldwide application of the *ISCO* should not obscure its shortcomings. Its basic limitation is that the *ISCO* is not a strict sociological classification. It was originally constructed for the needs of the economy and social policy studies. It means that, in terms of dimensions, the *ISCO* is based mainly on the content of occupational roles and their location in the technical division of labor rather than on ownership of the means of production, authority, and other sociological criteria. This limitation causes serious difficulties in using the *ISCO* to identify basic segments of the social structure. For example, it is almost impossible to differentiate between automobile mechanics who own firms and mechanics who are employed.

Because of these limitations, the *ISCO* is rarely employed as a single indicator of the individual's location in the social structure. To use it in this way, at least two additional pieces of information are necessary: the supervisory status and distinction between those who own the means of production and those who do not. The scheme known as *EGP*, which we discuss later in the chapter, is an example of using such a directive in research practice.

Aside from implementation of the *ISCO* in composite measures of social position there have been attempts to adapt it to the needs of social research although any such modifications cannot be far-reaching. One of the best-known modifications of this kind consisted of adding several new occupations and splitting the large group of "armed forces" occupations into a few smaller groups (senior officers, junior officers, noncommissioned officers, etc.) that were assigned to other groups, according to their location in the social hierarchy (Treiman and Ganzeboom 2003). At the same time, the International Labor Organization (ILO) initiated an analytical work aimed at preparing a new version of the *ISCO*. Up to 2009 (the year of writing of the present book), the ILO has organized a few conferences, to which national statistical offices have sent their representatives. Coordinating this work is an international team of experts entrusted with preparing the newest *ISCO* version up to 2009 (Elias 2000; Elias and Birch 2005).

1.2 Analytical uses of the occupational classifications

We now turn to the analysis required to aggregate detailed occupational codes into categories that validly represent the broader segments of the social structure. How many and which categories are to be distinguished is largely a matter of contingency, for example, depending upon what may be useful for the analysis of class structure, validity issues, and so on. In

today's Poland, and in typical post-communist society in general, the most valid representation of basic segments of the class structure should include managers and professionals (intelligentsia), lower non-manual workers, manual workers, business owners, and farmers. However, one may wish to test in the East European context the validity of a hierarchical class scheme, developed for the analysis of social stratification in the United States and consisting of the "upper class, middle class, and working class."

There are two basic ways of deriving such scheme depending on whether we have at our disposal a sociological or a non-sociological classification. In a sociological classification, the basic segments of the social structure may be directly derived by means of aggregation of the detailed categories since the sociological definition of "occupation" takes into account the most essential characteristics of the individual's location in the social structure. All of the information needed is contained in the most detailed level of classification, which provides a sufficient basis for making the valid distinctions. In Chapter 7, we recommend some ways of aggregating occupational codes of the *SCO-2009* into categories identified with classes, strata, and other basic segments of the social structure.

In the case of utilizing a non-sociological classification of occupations, a multidimensional approach is necessary. For example, a detailed occupational code in the *ISCO* is just one of a number of variables necessary to construct a valid sociological scheme. This means that the valid analytical measure should combine a wider range of factors into one index. An exemplary case of this multidimensional approach is the *EGP* class scheme, which seems to be the most widely used measure of location in the social structure in cross-national studies. One of the first versions of *EGP* - the acronym is composed of the initials of the authors' last names: Robert Erikson, John Goldthorpe, and Lucienne Portocarero - was applied in 1979 in comparative analyses on social mobility of the United Kingdom, France, and Sweden (see Erikson, Goldthorpe, and Portocarero 1979). Since then the *EGP* scheme has become a standard tool for comparative analysis on social structure.

The primary aim of the *EGP* is to capture class positions determined by the relational and distributive aspects of social inequality. Conceptually, the *EGP* scheme differentiates positions within labor markets and production units in terms of typical employment relations. Those who share similar resources, and thus similar structural positions, will share similar possibilities and constraints in terms of "life chances" (e.g., chances for educational attainment, health, material rewards and social mobility). Therefore they may also be expected to act in similar ways. Based first of all on the Weberian tradition, the authors made primary distinctions in employment relations between employers (who buy the labor of others and assume

some authority over them), self-employed (working on their own account, who neither buy labor nor sell theirs to employers), and employees (who sell their labor to employers. These basic class positions were further differentiated for the purposes of developing useful analytic distinctions (Erikson and Goldthorpe 1992).

The most detailed variant of the *EGP* embraces 11 classes. They are:

(i) Higher-grade professionals, administrators, and officials; managers in large industrial establishments; large proprietors - called *Service class I* and qualified as *Salariat* (top class) by the authors of the *EGP*.

(ii) Lower-grade professionals, administrators, and officials; higher-grade technicians; managers in small industrial establishments; supervisors of non-manual employees - called *Service class II* and qualified as *Salariat*.

(iii) Routine non-manual employees, higher grade - administration and commerce; called *Routine non-manual I* and qualified as Intermediate Class.

(iv) Routine non manual employees, lower grade - sales (e.g., salespersons) and services (e.g., receptionists, post-office workers); called *Routine non-manual II* and qualified as Intermediate Class.

(v) Small proprietors outside agriculture (small business owners), artisans (craftsmen), etc., with hired labor - called *Self-employed with employees* and qualified as Intermediate Class.

(vi) Small proprietors outside agriculture, artisans, etc., with no employees - called *Self-employed with no employees* and qualified as Intermediate Class.

(vii) Lower grade technicians; supervisors of manual workers - called *Manual supervisors/Lower grade technicians* and qualified as located at the bottom of the Intermediate Class (as part of it), although in the original *EGP* model sometimes merged together with the Working Class.

(viii) Skilled manual workers outside agriculture - called *Skilled workers* and qualified as Working Class.

(ix) Unskilled manual workers outside agriculture - called *Unskilled workers* and qualified as Working Class.

(x) Agricultural and other workers in primary production - called *Farm laborers* and qualified as Working Class.

(xi) Farmers (farm owners) and smallholders; other self-employed workers in primary production - called *Self-employed Farmers, etc.*, and qualified as Intermediate Class.

The authors of the *EGP* scheme did not present rules for derivation of this scheme in terms of variables. It was carried out by De Graaf, Ganzeboom, and Kalmijn (1989) followed by Ganzeboom and Treiman (1996). The most recent and updated operationalization of the *EGP*, based on European Social Survey data, was provided by Leuflersrud, Bison, and Jensberg (2005). There are three proxy variables involved in derivation of the *EGP* classes: (i) occupation coded according to the 1988 *International Standard Classification of Occupations*, (ii) supervisory position in organizational unit defined in terms of the number of subordinates, and (iii) distinction between employers and employees.

The first information - *ISCO* code - allows the identification of occupational roles defined in terms of technical division of labor. Basically, the *EGP* is an occupational coding scheme supplemented by two other dimensions of the market position. Using the second variable - concerning supervisory position - one can distinguish rank-and-file employees from those of a supervisory status that differentiates, in turn, lower supervisors from the mid-level and higher-level managers. This is a quantitative measure of organizational authority and market power. The supervisory position allows mapping of the borderline between the higher and the lower *service class*, or - from the other perspective - between the full and *semi-professionals* (e.g. nurses, computer operators, and elementary schoolteachers) whose professional status is of a more recent date and may be questioned. A limit of ten supervised employees is usually applied. Certainly the cutoff of ten employees may be shifted up or down depending on the problem and the specificity of information concerning the subordinates addressed in the questionnaire. For example, in a research study conducted within the context of the international project *Social Stratification in Eastern Europe after 1989*, the question concerning supervisory position distinguished three categories: rank-and-file employees, managers with up to ten subordinates, and managers with over ten subordinates (Domański 2000). Ganzeboom and Treiman (2003) in turn, distinguished four categories in their *EGP* module, adding "managers with a single subordinate" to the above-mentioned categories.

The *EGP* also uses information on the number of employees to divide business owners into those who employ hired labor and those working on their own account. Finally, this information helps to identify the lowest category of supervisory workers - lower-grade technicians and manual supervisors. In the *EGP* they are defined as a separate, borderline class located between the non-manual categories and manual workers. If, for example, a miner, locksmith, or cook has several subordinates, he or she is assigned to the supervisory class (vii).

The third core variable of the *EGP* - ownership of the means of production - allows a distinction between farmers who are farm owners and those

who are hired agricultural laborers, and also between business owners (employers) and categories of employees: non-manual and manual workers.

To sum up: *EGP* may be applied to any data set that includes adequate information on the respondent's occupation (coded according to *ISCO 1988*), supervisory position (measured by the number of subordinates), and ownership. Validity studies carried out on various data sets confirm the analytical usefulness of *EGP*. It performs well in that it significantly differentiates individuals' income, material assets, job security, voting preferences, and various attitudes. The *EGP* scheme also appeared to be a valid measure of social position in some East European societies undergoing transformation to market structures; in Poland, eleven- and nine-class divisions of the *EGP* identify basic intergenerational mobility barriers and patterns of marital choices as well as income hierarchies (Domański and Przybysz 2003; Domański and Sawiński 1995a).

The utility of *EGP* does not mean that the scheme is without shortcomings. In 2001, Eurostat initiated work on constructing a new classification for the integrated European system, thus satisfying the needs of national statistical offices as well as social research (Rose, Pevalin, Elias, and Martin 2001; Rose and Pevalin 2005). A team of British researchers from Warwick and Essex Universities was the general contractor for this project, financed by the Sixth Framework Programme (FP6) of the European Union. It constituted part of a broader undertaking known as the "harmonization" of statistical measures in the European Union. An agreement on common definitions of variables and classifications was planned as the first step (Ostby et al. 2000).

The work of the British team, directed by David Rose, resulted in preparation of a classification known as the *European Socio-economic Classification (ESeC)*. In essence, the *ESeC* followed the *EGP*. The researchers' aim was to construct a scheme that allowed the assignment of individuals to a detailed classification to be treated as a mapping of social divisions. The *ESeC* was in fact a condensed typology resulting from a combination of four variables: (i) occupations coded using *ISCO-88 (COM)*, (ii) relationship to the means of production specified by division into employers, self-employed, and employees, (iii) size of the workplace measured by the number of employees, and (iv) a dichotomous division into persons active and passive with respect to occupational work.

Traditionally, differences between business owners (employers) and the broad category of employees create the main division in *ESeC*, while in the group of employees the differentiation occurs with respect to the character of employment, with the main focus on employees working on the basis of a *labor contract*, or a *service relationship* between the employer and the employee, or some combination of the above. A labor contract is the most

common form of employment for manual workers. In general, their work is strictly supervised and the employer can easily assess their efficiency, which allows the specification of a detailed contract and remuneration paid in short-term (e.g., weekly) installments. A limited-term contract is consistent with manual work, for which it is usually easy to find replacements. A *service relationship*, in turn, is a typical arrangement for employing professionals. They perform work of high complexity that requires autonomy and does not allow for clear-cut supervisory criteria. Completion of work assignments requires engagement and investment on the part of both the employee and the employer. Since returns are received in the long-term perspective, "delegation of power" and a work relationship based on mutual trust and minimization of risk is in the mutual interest of the employer and the employee (Goldthorpe 2000). In this sense, it is more advantageous to place the employee in a privileged position that is reflected in a long-term work agreement.

In order to derive the *ESeC* for all eligible individuals, one needs: (i) occupation coded to the *ISCO-88* (COM) occupational unit group, (ii) employment status coded to the *International Classification of Status Employment-93*, (iii) number of persons in the local employment unit, (iv) supervisory responsibilities (for non-managers), and (v) indication whether or not the individual is the household reference person. The outline of the *ESeC* takes the form of a two-level nested hierarchy. At the top level it gives the following ten classes: (i) large employers, higher grade professional, administrative and managerial occupations (higher salariat - working on the basis of service relationship), (ii) lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations (lower salariat - modified service relationship), (iii) intermediate occupations (higher grade white collar workers - mixed, e.g. service and labor based relationship), (iv) small employer and self employed occupations outside agriculture (petit bourgeoisie or independents), (v) self employed occupations in agriculture (petit bourgeoisie or independents), (vi) lower supervisory and lower technician occupations (higher grade blue collar workers - mixed relationship), (vii) lower services, sales and clerical occupations (lower grade white collar workers - working on the basis of modified labor contract), (viii) lower technical occupations (skilled workers - modified labor contract), (ix) routine occupations (semi- and non-skilled workers - labor contract), (x) never worked and long-term unemployed (unemployed).

One can hardly consider *ESeC* a genuinely original measurement tool. Its scheme for grouping occupations is in essence very similar to the *EGP* while the *ISCO* constitutes its operational basis. As compared to the *EGP*, however, the *ESeC* constitutes an essential step forward. It was constructed

for the purpose of supplying a standard indicator of social position that could be used not only in academic research but also in statistical and commercial applications. Its authors start from well-defined notions, present unambiguous rules for transforming them into information collected in research, and point out possibilities for constructing *ESeC* in different variants depending on the practical limitations a researcher may encounter. A derivation matrix of how to arrive to *ESeC* combining either a four-digit code or a three-digit *ISCO* code with employment statuses, may serve as an example.

Some of the added value of *ESeC* is that, first, it responds to the need for an index of class position that takes into account the whole range of the population: it satisfies this need by distinguishing a separate category for the never employed, for example, housewives or full-time (not employed) students. Second, the *ESeC* may be applied in two versions – to classify either individuals or households (families) – a topic of much debate in sociology (Bakker and Jol 1997). Third, this scheme underwent various tests using data from the United Kingdom, the Netherlands, and Germany that demonstrated its validity and reliability as a satisfactory alternative to the *EGP* and other indices (Rose and Harrison 2005; Kunst, Roskam, and van Agt 2005).

1.3 Occupational scales

Quantitative occupational scales or indices are hierarchical or continuous measures of social position. These view individuals as occupying a common position in the social structure defined in terms of graded distinctions between occupational groups. Sociologists interested in ranking occupations have traditionally relied on prestige- or socio-economic-based measures (Duncan 1961a; Siegel 1971; Treiman 1977; Stevens and Featherman 1981). Recent interest has emerged in the non-prestige and non-socio-economic dimensions of occupational differentiation such as work authority (Wolf and Fligstein 1979), job skill (Spenner 1983), occupational complexity (Parcel and Benefo 1987), and job desirability (Jencks, Perman, and Rainwater 1988).³

In order to elucidate the two main approaches to constructing quantitative scales we review some points of discussion that have dealt with their usefulness and method of construction.

Occupational prestige appears to be one of the major dimensions underlying the social standing and differential associations of members of

³ For overview see Grusky and Rompaey (1992).

occupational groups. Although it is possible to rank occupations in a variety of ways, most sociological interest has focused on the hierarchical ordering of occupations with respect to prestige. A prestige criterion in the measurement of occupational status was first attempted in the United States. Counts (1925) was one of the first researchers to do so. He conducted a survey among 450 teachers and students (college and high school), in which respondents were asked to rank 45 occupational categories according to the criterion of prestige. In the next two decades, only studies based on the local samples were carried out (Deeg and Peterson 1947; Smith 1943). Then, in 1947, the National Opinion Research Center (*NORC*) conducted the first survey based on a representative national sample (North and Hatt 1947).

Prestige judgments were elicited in a variety of ways. They involve evaluative judgments, either by a sample of the population at large or by subsample of experts, that is, well-informed members of the society. Respondents are provided a list of selected occupations that constitute a representative spectrum of social stratification. The list contains one to a few dozen occupational titles beginning with a judge, medical doctor, or cabinet minister, through teacher, accountant, secretary, or driver, to janitor or masonry helper. Respondents are asked to evaluate each of these occupations according to its prestige. They do so by answering a question, for example, formulated as: "If you were to evaluate occupations on the list according to their prestige, would you say that (for example) a judge's prestige in (name of the country) is: very high, rather high, medium, rather low, low, or you don't know - it's difficult to say?" In the process of coding, these assessments are translated into numbers (e.g., from 1 to 5), which are then summed up for each occupation to calculate its mean value for prestige at the end of the process. In surveys conducted in English-speaking countries the word *prestige* is sometimes substituted by other terms, such as: *social standing*, *social status*, or *social position*. In Poland it became traditional to call this notion "*poważanie społeczne*" (social esteem) since to an average Pole this term sounds more familiar than "*prestiż*" (prestige), although it means almost the same thing (Wesołowski and Sarapata 1961). Fortunately, all of the available evidence suggests that alternative ways of conducting the task of rating make almost no difference in the results.

The recognition of occupational prestige scales as an indicator of social position points to processes of social judgment that generate the prestige phenomenon. Measurement of social standing in terms of these scales started being used in the United States in the late 1940s. At about the same time, perhaps not incidentally, the functional theories of Parsons (1951) and of Davis and Moore (1945) led to the establishment of theoretical premises for social stratification research. Influenced by the dominant functionalist

theory of the time, *prestige* was treated as one of the two main rewards, along with *income* determining the social position of the individual. Sometime later, after Weber's works had been translated to English, his theory became the second powerful source of inspiration. Weber's most insightful remarks were on *estate* divisions, which he regarded as one of the three basic dimensions of social stratification in feudal Europe. American researchers adapted these considerations to the American reality by equating the Weberian notion of *estate* (*Stände*) with *social status*. Weberian *honor* (*Ehre*), being an inseparable attribute of estate membership, became treated as an equivalent of *occupational prestige*, although Weber himself did not use this particular notion.

Findings of empirical research reinforced the use of these scales as an approximation of social standing by revealing that prestige scores correlate substantially with various characteristics of the individual's social position. In terms of empirical usefulness work by Kahl and Davis (1955) first demonstrated the utility of occupational prestige scales in predicting various attributes of social position. Their analyses were confirmed across different societal contexts and over time, in such countries as the United Kingdom, Australia, the Netherlands, and Poland (Hall and Jones 1950; Blaikie 1977; Domański 1981).

The apparent analytical utility of these scales led researchers to use them in operationalization of the social position. As indicators, they are valid, economical, and powerful insofar as they capture many detailed distinctions in one dimension, which means that they can be represented in statistical models by a single parameter. They are also particularly reliable. This last advantage is due to the very strong stability of occupational prestige in time - wherever prestige data are available for two or more periods, the prestige hierarchy appears to be virtually unchanged. Some universal ranking appears to underlie the observed evaluations of occupational roles, in which the highest grade is given to occupational positions requiring a university education and skills that are difficult to substitute (e.g., of a scientist or a medical doctor), in which income from occupational work is high (e.g., business manager, or big business representative), and which have a high utility for maintaining social order and socializing individuals (e.g., minister, teacher, or judge). For example, in the United States the correlation coefficient between prestige ratings of 29 occupations obtained in 1925 and in 1964 was 0.96 (Hodge, Siegel, and Rossi 1964). In Poland, the correlation between 1958 and 1987 prestige ratings was 0.94 (Domański and Sawiński 1991).

Two other striking features of occupational prestige systems is the lack of subgroup variation in prestige ratings and its cross-national "invariance." In almost all societies, rich and poor, women and men, young and old,

urban and rural dwellers, view the hierarchy of prestige in the same way. Regarding intersocietal similarity, high agreement in prestige evaluations has been widely observed between countries. In the first well-known study, Inkeles and Rossi (1956) found an impressive similarity among prestige hierarchies of countries as different as the United States, West Germany, the United Kingdom, the Soviet Union, New Zealand, and Japan. This marked consensus motivated Inkeles and Rossi to hypothesize on the existence of “basic similarities” among societies that differed in culture and economic development. The most comprehensive validation of this claim was provided by Donald Treiman in his analyses of prestige evaluations in 55 societies. The average correlation value between pairs of countries amounted to 0.81, which led him to conclude that the prestige hierarchy of each society reflects both the common dimension and idiosyncratic structural and cultural features that affect these evaluations (Treiman 1977: 97).

Evidence confirming the worldwide validity of occupational prestige led Treiman to develop the *Standard International Occupational Prestige Scale (SIOPS)*, which became a turning point for comparative studies on social stratification. Its construction was based on a data matrix consisting of 509 rows, each representing a separately identified occupation (coded in *ISCO* 1968), by 60 columns, each representing a separate society for which data exist. After converting national scores to a standard metric, a standard metric score was computed for each occupation. The unique feature of the scale is that it is a cross-culturally valid index that has been used as a standard against which to compare the idiosyncratic features of the prestige hierarchies of particular countries and as a standardized instrument for the comparative study of the relationship between occupational status and other variables. Up to now, Treiman’s *SIOPS* has basically not been updated. The only change was an adjustment of the old *SIOPS* scores to the categories of *ISCO 1988* (Ganzeboom and Treiman 2003).

Since the early 1960s, researchers have often ranked occupations using composite measures of socio-economic status (*SES*), the second most frequently used indicator of social standing (see Wegener [1992] for a review). The characteristic feature of such measures is that the rating of each occupational category combines information about education and income typical of those in the category, and other relevant characteristics of social position. The merits of composite indexes relative to occupational prestige are attributed to their multidimensionality, which should be reflected in the greater validity of such measures. Various procedures were used to construct them. Historically, the first ones were based on data concerning average education and incomes in detailed occupational categories (Blishen 1958; Nam and Powers 1983); the second procedure,

avored in social stratification research, consists of combining these variables with occupational prestige (Duncan 1961a).

Following the methodology developed within this first approach by Nam and Powers, measures of *SES* are obtained by arraying the detailed 1950 U.S. Census occupations for the labor force according to the median level of education and income of those in these occupations. Then, the number of individuals engaged in each occupation was used to determine the cumulative interval of those in each occupation for each of the two arrays, beginning with the lowest-ranked occupation. Finally, they averaged the midpoints of the two cumulative intervals of occupants and divided them by the total of persons in all occupations. The original scale of Nam and Powers (1983) has been updated a few times with information provided by consecutive censuses.

The second type of scales of socio-economic position was introduced - also for the United States - by Duncan (1961b). *Duncan's Socio-economic Index (SEI)* and its later versions are based on the relationships of occupational prestige, occupational education, and occupational earnings. Historically, Duncan developed his *SEI* measure in order to generalize the outcome of the 1947 NORC occupational prestige survey to all detailed occupational titles in the 1950 Census classification. In constructing *SEIs*, researchers - following Duncan - regress occupational prestige ratings on occupational education and earnings. The estimated parameters of the regression model for education and earnings are used to calculate predicted prestige scores for each occupational category. Thus, *SEI* scores are the weighted sum of the two occupational characteristics. Justifying the logic of this composite measure, Duncan (1961a: 116-117) points to a particular kind of relationship linking these three variables. On the one hand, educational attainments are the main channel of recruitment of individuals to occupations (identified on the scale of prestige); on the other hand, individuals receive appropriate financial rewards for performing occupational roles defined in terms of job earnings. Conceptually, *SEI* measures the attributes of occupation that convert a person's main resource (education) into a person's main reward (income).

In the United States Duncan's original *SEI* has been reestimated for the 1960, 1970, 1980, and 1990 census occupational classifications with relative weights being derived from more recent studies on occupational prestige. *SEI* scores were established for men and women separately using the occupational characteristics of both genders (Hauser and Warren 1997; Warren, Sheridan, and Hauser 1998). Third, *SEI* scores were also constructed for other countries such as Canada (Blishen and Carroll 1978) and Poland (Słomczyński and Kacprowicz 1979). Fourth, national versions of *SEI* were complemented with an *International Socio-Economic Index of Occu-*

ational Status (ISEI) coded on the *ISCO* occupational categories (Ganzeboom, De Graaf, and Treiman 1992), which became an equivalent of Treiman's international standard scale of prestige in the area of cross-national comparative research. The data used to estimate the scale were from a pooled sample of men extracted from 31 data sets from 16 countries. In its theoretical background, *ISEI* satisfies Duncan's definition of occupations as "the intervening variable" between education and incomes. Technically, it involves a weighting of the standardized education and standardized income of occupational categories, controlled for age effects by means of the statistical technique of optimal scaling. These analyses were repeated a few years later on the same data set, adjusting the *ISEI* values to the newer version of *ISCO* (Treiman and Ganzeboom 1996; Ganzeboom and Treiman 2003).

The issue of how to measure social position remains a focus of analytical research and new scales are being offered that identify various aspects of this position. It is worth mentioning that two proposals suggest this line of research, which seems promising. Both proposals have firm, unequivocally established theoretical status; their most straightforward interpretation refers to the relational aspects of social stratification.

The first proposal, known as the *Cambridge Scale*, measures the distance, defined in terms of patterns of association, between representatives of various occupational groups. Drawing (among others) on Weber's notion of "commensality," it is based on the choice of friends, on the assumption that people choose as friends those whose status they perceive as equal to their own. The data were collected on a rather restricted sample, namely, male white-collar workers who live in close proximity to Cambridge. The authors of the scale - Stewart, Prandy, and Blackburn (1980) - calculated, first, a measure of dissimilarity between each pair of occupations by summing the positive percentage differences between the friendship choices for that pair. In the second step, they applied a multi-dimensional scaling technique designed to account for patterns in the dissimilarities on as few dimensions as possible. It provided scale scores for occupations on the dominant dimension (in fact, only one dimension emerged) that the authors interpreted as scores of the social standing scale.

The second scale was developed by Steve Rytina (1992). Theoretically, his *Symmetric Scaling of Intergenerational Continuity (SSIC)* index is located within the tradition of social mobility studies. Rytina used a pooled data set, consisting of 7,965 persons, from the 1972-1986 *General Social Survey*, to construct father's by respondent's cross-classification for 308 occupational categories. The *SSIC* values for these categories were obtained by means of the canonical technique applied to the resulting contingency table. The validity tests of the *SSIC* revealed its strong similarity to *SEI* and

occupational prestige. The *SSIC* scores extracted from mobility data correlated 0.819 with Duncan's *SEI* and 0.702 with the Siegel's (1971) prestige scores (Rytina 1992: 1669).

1.4 Limitations and unsolved problems

Notwithstanding the obvious merits of occupation as a measure of social position, one cannot overlook its drawbacks. One unresolved question concerns the identification of those individuals who are not in the active labor force. Not all respondents were actively performing occupational roles at the time of the research. This limits the representativeness of results, thus supporting those who are skeptical about using occupation as an indicator of social position (Duke and Edgell 1987). Based on own occupation, current employment-based classifications and scales exclude: retirees, pensioners, unemployed, students, children, housewives, and never employed. The social position of these individuals cannot be identified in terms of current occupation; however, for most of them it is possible to allocate them into occupational roles in a variety of ways, depending partly on analytic purpose and partly on the group concerned.

The most frequent approach is to do so by using information on the past occupational roles. Indeed, people who were out of work during the research fall into two categories. The first category involves those who never had a job - these cases are lost since there is no basis to allocate them to any occupational unit and therefore to include them in the analysis (unless those who have never worked are identified by the occupational position of a working spouse or parent - a possibility signaled by analysts of the functional theory of stratification but actually not utilized in research practice). The second category involves respondents who currently do not hold jobs but worked in the past. Their location in the social structure can be captured by their former occupation - hence, there is no need to eliminate them from the analysis.

In most research individuals not currently in paid employment are classified by their last main job. All of the currently unemployed who have had paid work in the past are asked about their occupational title while performing this job, their supervisory position, their relationship to the means of production, sector of the economy, and so on. This information is regarded as equivalent to that established for active persons and is used in constructing occupationally based measures. The strategy of including the information of non-working individuals is designed to create flexibility for analysts. It allows improved population coverage of the occupational classifications since those who are not currently in formal employment are allocated to the category of their last main job. Second, it increases the

power of statistical tests since non-working cases (individuals) need not be eliminated from the analysis.

However, the benefits of this strategy have to be weighed against its possible disadvantages, which are related to the validity of occupational measures based on information derived from both active and nonactive individuals. It is reasonable to assume that these categories may differ in a substantial way with respect to key determinants of their social position such as financial situation and lifestyle, as well as with respect to views on the role of the family, patterns of voting, and other values. This would result in internal differentiation of the classification units that led to decreased discriminatory power of the measure. This argues against classifying respondents according to their last job and in favor of restricting the analysis to working cases.

This issue has been tackled in methodological studies. The question of whether allocation of nonactive respondents into occupational roles on the basis of their last job affects the validity of occupational classifications was analyzed by Marshall, Roberts, and Burgoyne (1996), using data from the United States and the United Kingdom. Respondents were asked to indicate the political parties with which they sympathized, the social classes they identified with, and how they would vote in the next elections; they were also asked about "fatalism"/"resignation," measured by agreement with the statements "the rich owe their wealth to the political system they live in," and "state authorities don't care at all about what such people like us want." Marshall, Roberts, and Burgoyne used these as dependent variables in regression models designed to determine whether there were significant differences between respondents of the same occupational categories who currently had or did not have a paid job (active versus nonactive). Coefficients of regression for the dichotomous variable "active-nonactive" turned out to be insignificant. There were also no significant differences between distributions of the criterion variables across the division into active and nonactive within the same occupational categories.

One cannot universally recommend for using the last occupation of nonactive persons to define their social position. In the case of Poland, differences between categories of occupationally active and nonactive members of the same occupational groups were significant. Following the analytical scheme of Marshall et al. (1996), the effect of division into active and nonactive respondents was tested with respect to several objective and psychological variables such as income, religiousness, support for egalitarianism, life satisfaction, class self-identification, and others. This analysis revealed that the "active-nonactive" variable significantly differentiated criterion variables in 21 out of 23 regression models (Domański 1997).

* * *

A number of the themes introduced here are discussed in more detail in the following chapters. Finally, we mention that for analytical purposes, which involve comparisons over time, it is highly desirable that the framework of comparison be kept constant, so that changes in the real world are not confounded with changes in the frame through which this world is viewed. However, this principle must not be carried too far. The development of occupational indicators inevitably requires compromise between, on the one hand, the need for classification that adequately and usefully reflects the current structure of occupations, and on the other hand, the need for a reasonable degree of continuity in the classification used as a basis for comparison over time. Few would want occupational coding used in research conducted in twenty-first century to be based on the classification used by coders in surveys carried out thirty years earlier.

The conclusion drawn here, which was applied in constructing the *Social Classification of Occupations* presented in this book, is that every revision of the existing classification of occupations requires a balance between the need to be up to date, on the one hand, and the need to preserve continuity with what has gone before, on the other. In pursuing this goal, a strong effort has to be made to take account of changes in the structure of occupations. A particular problem with new jobs is that job-title terminology, on which occupational classification depends, may not have settled into a consistent pattern. Other changes, such as the convergence of existing occupational groups through technological development and “de-skilling,” are much harder to identify unambiguously. The *SCO* is designed to satisfy, as far as practicable, all of the above demands in the context of East European societies.

Chapter 2

STUDIES ON OCCUPATIONAL CLASSIFICATIONS IN POLAND

This chapter focuses on studies of occupational classifications conducted in Poland after World War II. It starts with a brief account of “systematic” classifications developed for use in state statistics. Next, we present the main assumptions underlying social classifications aimed at identifying basic segments of the social division of labor. We focus mainly on the *Social Classification of Occupations SCO-1978*, which constitutes the most frequently used tool for coding occupations in academic research. Also presented is the *International Standard Classification of Occupations (ISCO)*, adapted to fit the Polish job market and extensively used in academic and commercial research beginning with the 1990s.¹ The final part of the chapter elaborates on the *Polish Sociological Classification of Occupations PSCO-94*, which (before the construction of *Social Classification of Occupations–2009*) constituted the only attempt to modify the original scheme of *SCO-1978*. Although this classification did not catch on, many of its findings helped to formulate suggestions presented later in this book.

2.1 Systematic classifications of occupations in Poland

The problem of systematizing occupational data appears in many contexts. Perhaps, the most important example is the National General Census, which involves more information and more diversified data on

¹ To be more specific, this is – as we already mentioned in Chapter 1 – *ISCO-88 (COM)*, which constitutes the last version of *ISCO*. It was introduced for the Eurostat research project and from the start it became the most common tool for classifying information on occupational structure in the countries of the European Union (Elias and Birch 2005).

people's occupations than any other research. The first postwar classification prepared to provide a coding tool for census data, *Systematyczny słownik zawodów dla potrzeb Narodowego Spisu Powszechnego 1970 r.* (Systematic Dictionary of Occupations for the 1970 National Census), was created by the Polish Central Statistical Office (GUS 1970a). This classification had a four-level structure. At the highest level were 9 major groups of occupations split into 47 second-level groups, 165 third-level groups, and 368 elementary categories (Table 2.1 presents the major groups). This classification was modeled after the *International Standard Classification of Occupations* prepared by the International Labor Office in Geneva (ISCO-1968 version).

Table 2.1 Occupational categories of the highest level (major groups) in the CSO (Central Statistical Office) Classification for the 1970 National Census

0	Senior state and local administration officials, workers of political and social organizations, directors and senior managers of enterprises and their organizational units
1/2	Professionals in technology, science, and social sciences, artists
3	Administrative workers, office workers, and employees in communications
4	Transportation workers
5	Farmers, workers in plant and animal production, breeders, and foresters
6	Coal, peat, ore, and gas miners
7/8	Workers in agriculture and food processing
9	Workers in trade, gastronomy, and related services
10	Workers in elementary occupations and others

At the moment of its creation, the 1970 classification of the Central Statistical Office was a tool much ahead of those used at the time in Poland, which consisted of simple occupational or stratification divisions, for example, "manual workers - non-manual workers - others." Its valuable contribution was the introduction of a detailed list of elementary categories and the preparation of a separate dictionary of occupations and positions (GUS 1970a). However, its clustering of elementary categories into broader groups can be criticized. For example, in the category of "specialists in non-technical occupations," besides "director of a clinic," "professor," or "bishop," there are such occupations as "dental assistant," "oarsman," or "recreation room attendant" (see Sawiński and Domański 1987).

For the needs of the 1978 National Census, the Central Statistical Office (CSO) prepared a new version of their classification (GUS 1978a). Compared to the old one it used significantly different rules for clustering

elementary categories. It introduced 5 major occupational groups (Table 2.2) split into 94 second-level subgroups and 288 basic classification units.

In the 1978 classification the basic classification units were delineated in a slightly different way than in the earlier version – lower-level managers were separated from top-level ones. In addition, the number of elementary classification units was reduced by more than 100. In effect, the 1978 classification is comparable with the one of 1970 only to a limited extent. These are, in fact, separate classifications that should be selected depending on the purpose.

Table 2.2 Occupational categories of the highest level (major groups) in the CSO classification for the 1978 National Census

I	Managerial positions
II	Independent and executive positions (specialists)
III	Technical contractor positions
IV	Manual worker positions
V	Clergy

It is worth mentioning that in working out the results of the 1978 National Census, only the elementary categories were used and not all of those prepared. The grouping of occupations into broader categories was accomplished using a completely different criterion based on the division of employees into those working in the state economy and those working in other sectors (GUS 1978b). In effect, researchers obtained highly heterogeneous categories. For example, a lawyer with a private practice and a farmer were grouped in the same category.

Priority given to non-substantive over substantive criteria is also present in other classifications of that time, for example, *Klasyfikacja Zatrudnionych w Gospodarce Uspołecznionej* (Classification of Employees in the State Economy) (GUS 1984). Detailed categories of this classification were developed by combining four criteria, based on division into employees in *manual worker* positions and those in *non-manual* positions. Other criteria pertain to a person's position, skills, and type of work activity – related or unrelated to the production of goods.

Another classification worth mentioning besides those prepared by the CSO is *Klasyfikacja zawodów i specjalności* (Classification of Occupations and Specialties) of the Institute of Work and Social Affairs (IPiSS 1983). Its aim was to unify the terminology and names of occupations used in the educational system, administration, skill scales, and other documents. This classification had a three-level structure. It contained 56 broad occupational

groups divided into 404 basic groups of 2,610 occupations and specialties. An important asset of this classification was its taking into account in all three groups the skill level required for working in these occupations. There was no reference to position in the organization or ownership of the workplace (for example, store owners were coded in the same category as salespeople).

A brief review of systematic classifications of occupations in Poland demonstrates that they could be used to some extent in coding the results of social surveys. In particular, they match the proposed basic classification units, which in the majority of classifications are meticulously described by providing titles of occupations that belong to each category or, as in the CSO classification for the 1970 National Census, by a short description of the nature and character of work performed in occupations belonging to each category.

At the same time, the proposed ways of aggregating the basic classification units into broader groups are of little use. In most classifications, aggregations are based on administrative or even political criteria, which do not identify the social divisions involved in performing various occupations.

It is likely that the lack of clear aggregation rules is the reason why researchers show little interest in systematic classifications.² They tend to select, in the first place, a tool that by means of occupation reflects the existing social divisions. In general, occupation measurement serves as a way to achieve the goal rather than as the goal itself. For this reason, there is an ongoing need for the development of social classifications of occupations that provide rules of correspondence between occupational differentiation and the social division of labor.

2.2 Criteria used in social classifications of occupations

It is worth noting - and not only in Poland - that the great majority of social classifications of occupations arose from systematic classifications in which only the lowest-level units were considered useful. Those were clustered into the higher-level groups according to criteria that reflected important dimensions of social stratification (see Burgess 1985). Polish sociology followed this pattern.

² This statement concerns Poland directly but it may also suggest the generally limited possibilities of using systematic classifications in sociology. Among the Eastern European countries Hungary has been the only exception: From the very beginning Hungarian sociologists used the occupational classifications prepared by their Central Statistical Office (Andorka and Kolosi 1984).

Classifications of occupations created with the aim of identifying the main divisions of social stratification are based on criteria of the social division of labor. Occupation is defined as a coherent and distinct set of procedures aimed at creating some particular goods or services, which requires a well-defined pool of knowledge, skills, and experience, and which grants the performer certain stratification assets, such as income and prestige. In delineating occupational categories, the following dimensions of the social division of labor are usually taken into account (see Chapter 1 for theoretical justification and empirical arguments of the validity of these dimensions for the structuralization of social relationships).

1. Character of work. The degree to which actions performed require contact with data and things is the main determinant. The basic division relies on the distinction between manual work, in which the majority of actions involve contact with things, and non-manual work, in which the majority of actions involve contact with data. Intermediate occupational categories involve a considerable share of both kinds of contacts.

2. Complexity of work. This is a crucial characteristic for more detailed divisions, such as that between workers performing complex operations and those performing simple tasks. The measure of work complexity is a product of the number and diversity of links within and among the structures of mental and motor action systems.

3. Position in the formal organization of work. Supervising other persons or directing their work is the most important determinant. Managerial positions appear in a hierarchical order.

4. Type of economic activity. This is the way in which resources such as equipment, labor, and products are combined, leading to the creation of specific goods and services. Agriculture, manufacturing, construction, and trade are examples of economic activities distinguished at the most general level.

5. Ownership of the workplace. This is an important dimension shaping relationships within the division of labor. Traditionally important is the division into owners of the means of production (employers) and hired labor (employees).

6. Sector of the economy. This dimension specifies the type of ownership of the workplace. In the People's Republic of Poland there was a traditional division into the state sector, cooperative sector, and private sector of which the first was the largest. The emergence of a market economy after 1989 created some new employment sectors, such as jointly owned companies and international corporations.

7. Principles of work organization. This dimension describes the level of leeway in organizing and performing work. Considered here are elements such as the organizational and technological regime, closeness of supervision, and task routinization. Work at a workstation vs. work on an assembly line is an example.

8. Skills required. A specific pool of knowledge, abilities, and experience allows for appropriate occupational performance. Generally, a suitable type of diploma is also required.

The criteria listed above are not mutually exclusive - they often interact with each other. This fact is the foundation upon which to construct social classifications. Groups of permanently delineated occupational roles form the starting point for defining basic classification categories, which in turn are aggregated into higher order groups, still taking into account the presented criteria.

It is worth observing that most of these criteria conflict with limitations resulting from the logical structure of the social classification of occupations. In the logical sense, a classification is an exhaustive and mutually exclusive system of units. The second characteristic means that a given occupation can be found in one and only one classification category. The decision about where to place it may be difficult because of the complexity of relationships among the criteria of the social division of labor. A social classification of occupations is always a kind of compromise. It reflects a certain vision of social structure that is proposed by the authors.

2.3 Social Classification of Occupations

In the mid-1960s a team, under the direction of Włodzimierz Wesółowski, engaged in research on populations of some selected cities (Wesółowski 1970; Słomczyński and Wesółowski 1973) undertook the first attempt in Poland to create a classification of occupations for sociological needs. This classification was developed and used in the so-called Łódź studies (Słomczyński 1972; Janicka 1987; Słomczyński, Janicka, and Wesółowski 1994). The guiding theoretical idea of these studies was that the division of people into occupational categories was supposed to form a foundation for social stratification. In the design of the Łódź studies, researchers decided to classify the respondents fairly precisely with respect to their position in the occupational division of labor by defining 42 narrow occupational categories. Their schema is presented in detail in many publications (Wesółowski 1970; Słomczyński 1972; Słomczyński, Janicka, and Wesółowski 1994).

By creating narrow occupational categories, the foundation of the classification of occupations aimed at:

1. introducing a fairly simple record for a rich range of occupations that were characteristic for an urban population;
2. avoiding errors that could be introduced by directly assigning respondents to wide socio-occupational categories;
3. allowing for different ways of clustering occupations into wider entities dependent on research needs (Słomczyński, Janicka, and Wesołowski 1994: 26).

In reference to this research tradition, Michał Pohoski and Kazimierz M. Słomczyński worked out a classification called the *Social Classification of Occupations*. Its first version appeared in 1974 as the second volume of a monograph devoted to standardization of the basic sociodemographic characteristics in sociological research (Pohoski, Słomczyński, and Milczarek 1974). As the authors wrote in the introduction:

... in Poland - as well as in many other countries - there is a long lasting need of an *exhaustive* and *mutually exclusive* classification of occupations that would contain *narrow and relatively homogeneous categories*, useful in social research. ... In particular, basic classification units, internally coherent with respect to important criteria of the social division of labor, have not been distinguished yet. This limitation negatively affected the accuracy of the research conducted and the accumulation of sociological knowledge. (Pohoski, Słomczyński, and Milczarek 1974: I)

The first version of the *Social Classification of Occupations* drew directly on the already mentioned publications of the Central Statistical Office prepared for the 1970 National Census (GUS 1970a, 1970b). However, the method of clustering elementary categories differed significantly from that introduced by the CSO. The *Social Classification of Occupations* proposed socio-occupational clustering that was theoretically justified and also took into account the results of empirical studies of the existing social stratification.

The authors of the *Social Classification of Occupations* set a new standard for collecting data on respondents' occupations. In their commentary, they stress that the correct application of the *Social Classification of Occupations* requires not only knowing the respondent's occupational title but also collecting information on the kind of occupational activity, the size of the workplace, its type of ownership, and a fairly precise description of

the respondent's job tasks (Pohoski, Słomczyński, and Milczarek 1974: IX). The psychological consequences of the work situation and its location in the system of social roles and relationships constitute the essence of classification whereas the formal attributes of the worker's occupation, such as occupational title or position held, are of secondary importance.

The 1974 classification contains 367 narrow occupational categories (basic classification units), which form 75 low-level, 29 medium-level, and 10 major occupational groups. Table 2.3 presents the highest level categories (major groups).

Table 2.3 The highest level categories (major groups) in the 1974 *Social Classification of Occupations (SCO-1974)*

0	Senior state and local administration officials, directors, chief executives, and senior managers of enterprises and institutions
1	Production and operations managers, supervisors, and managers of administrative units
2	Technical skill professionals
3	Other skill professionals
4	Office workers
5	Skilled service workers
6	Industrial workers in state sector
7	Agents and self-employed craftsmen
8	Farmers and farm workers in private farming
9	Others

The proposed classification had a four-level structure. To denote its basic units the authors used four-digit symbols, of which the consecutive digits indicated the consecutive division levels (i.e., to the extent possible insofar as no higher-level category consisted of more than ten lower-level categories). This system was very convenient in practice for it allowed the use of all four division levels – including the highest one, consisting of ten groups, which is the most useful in the majority of analyses – without additional operations on the coding symbols. The method of constructing the classification symbols was important since at that time a significant part of the computation required was processed using card sorters.

The 1974 *Social Classification of Occupations*, undoubtedly, constituted a breakthrough in the handling of occupation as a variable in social research. Practice in using this classification led to many discussions among social researchers about its effectiveness, which in turn convinced the authors that some modifications were necessary in the grouping of elementary categories.

In 1978 appeared a modified version of *Social Classification of Occupations* (Pohoski and Slomczyński 1978). Modifications did not alter the essence of classification as a tool for coding social divisions in sociological research. The changes came down to a different grouping of classification categories at the two highest levels. The authors aggregated categories on the higher echelons of the stratification ladder while they de-aggregated those on the lower echelons. In particular, the category of medium-level managers was allocated to lower-level categories corresponding to the occupational groups of their supervisees supplied by the group of managers as a separate unit of the same level. Categories of manual workers were further divided with respect to their skill level (skilled, semi-skilled, unskilled). The criterion of skills was also applied to non-manual workers with low and medium skills. Meanwhile, the two categories of professionals were combined. As a result of these changes, the ten categories of the highest level differed slightly from those in the previous rendition. They are presented in Table 2.4.

Table 2.4 The highest level categories (major groups) in the 1978 *Social Classification of Occupations (SCO-1978)*

0	Senior state and elective officials and managers
1	Professionals
2	Technicians, supervisors, and skilled clerks
3	Other non-manual workers
4	Service workers
5	Skilled manual workers
6	Semi-skilled and unskilled workers
7	Farmers
8	Owners of [small] production and service enterprises
9	Others

A year later, a powerful new tool supplemented the *Social Classification of Occupations*. Slomczyński and Kacprowicz (1979) published a monograph containing the scales of occupations. In selected dimensions of social stratification they assigned numerical values to each of the basic classification categories. A specially designed empirical study provided the data for scale construction. The scales were prepared for the following dimensions of social stratification:

- (i) general complexity of work,
- (ii) complexity of work with people,
- (iii) complexity of work with data,
- (iv) complexity of work with things,

- (v) prestige - Polish scale,
- (vi) prestige - international scale,
- (vii) socio-economic index *SEI* (two scale versions).

The 1978 *Social Classification of Occupations*, together with its corresponding scales, made a powerful and comprehensive research tool. So far, it has been applied in many empirical projects in Poland, including the most significant academic research ventures.

2.4 Difficulties in using the *Social Classification of Occupations*

In spite of its merits, the *Social Classification of Occupations* did not become as popular as expected in the sociological research community for a number of reasons. An analysis of these reasons helps in grasping how the task of classifying occupations looks from the point of view of a classification user - a useful insight for a classification designer.

The most serious limitation in using the *Social Classification of Occupations* is its abundance of detail. The 1978 rendition contained almost 400 elementary categories with the content of each described by several code words (being mainly occupations or positions). Although occupations were arranged according to a transparent coding system based on the social division of labor, thus fairly precisely reflecting popular concepts or stereotypes, coders have encountered problems in finding adequate coding categories.

There were two causes for the problems. The first one was the non-uniform setting of the criteria under consideration for the social division of labor in the actual existing rules of organization of work. There were some easily identifiable divisions, such as the supervisor-supervisee relationship, which was reflected in the terminology of occupations and tasks the respondents used. However, certain others did not have direct empirical equivalents, for example, the division of manual workers into skilled, semi-skilled, and unskilled workers. In the case of some workers' occupations (particularly in industry) it was difficult during the coding of survey results to decide to which of these categories the respondent's occupation should be assigned. In such situations the coders used certain additional criteria, for example, educational level, which might not always be justified and acceptable.

The second problem concerned the fact that the occupational title was the most informative element of the occupation's description (e.g., farmer,

physician, or teacher). An account of the tasks performed at work was treated as secondary information in coding practice. In using the classification, in effect, the coder first tried to find the occupational title in its literal or approximate formulation. To be able to follow such practice efficiently the coder needed to be fluent in the content of the whole classification. To overcome this, many coders prepared for their own use a “simplified” classification containing the most frequently encountered occupational titles (e.g., farmer, locksmith, shop attendant) and their classification codes. This, however, may have led to some oversimplifications since it evoked a tendency to stereotype actual occupational roles and force them into a simplified classification scheme.

To avoid these shortcomings, some research centers established permanent groups of coders who were charged with coding occupations. The practice started bringing good results since it gave these coders an opportunity to learn the classification thoroughly and to discuss the most objectionable cases with the coding supervisors or researchers. However, researchers conducting research projects only from time to time were not able to follow such practice.

Another problem with using the *Social Classification of Occupations* stems from the fact that it is difficult to transfer from this classification to one that is different from the authors’ original method of aggregating basic occupational categories into higher order groups. Because the classification is based on a decimal system, it is natural and convenient to switch to a system of ten large occupational groups. However, if users want to apply a different scheme that intersects the original one, they need to analyze in detail a large segment of the 400 basic classification categories. Doing so requires extensive knowledge of social stratification and this particular classification, thus leading to potential mistakes. In this situation many researchers do not even consider using *SCO* if they plan to use differently delineated major socio-occupational groups in their analyses.

2.5 Work on modifying the *Social Classification of Occupations SCO-1978*

Considering the changes that occurred in Poland after 1989, the need to modify the 1978 *Social Classification of Occupations* became ever more pressing. The question arose, however, of how far the modification should go. On one hand, it seemed that the deep system changes were leading to such substantial changes in relations resulting from the social division of labor that an entirely new classification, based on different principles, would be needed to cover the new reality. On the other hand, an argument

was raised that the accuracy of assessing the new reality is a function of many factors including the possibility of comparing the current situation with the results of earlier research involving previous versions of the *Social Classification of Occupations*. For this reason, the work should focus on supplementing this classification with new occupations rather than on preparing an entirely different classification scheme.

There were more arguments in favor of retaining the *Social Classification of Occupations* in its most recent framework. Many studies contained data not only on current occupations but also on past ones (e.g., respondent's first job, parents' occupations). Since in such cases, occupational history goes back to the time of the socialist economy, the 1978 *Social Classification of Occupations* is a more adequate tool than any newly prepared classification could be.

At the start of the 1990s, work began on updating the 1978 *Social Classification of Occupations*. The aim was to modify the classification while preserving its structure. The existing classification categories were to remain while both new occupational titles and those omitted earlier were to be added wherever necessary.

The most significant changes were introduced in the category of owners. Keeping this category required extending the category of persons involved in business activities that had become more diversified and involved a larger portion of society. Private companies of large and medium size, employing a few dozen or more workers emerged anew. The segment of the classification devoted to owners expanded considerably.

The updated and modified classification was tested in three large national studies (Cichomski and Sawiński 1993; Domański, Sztabiński, and Sztabiński 1993; Słomczyński et al. 1996). It was tested with respect to completeness of the updates and clarity of the structurally modified sections. The conclusions of these tests helped in preparing a modified version of the *Social Classification of Occupations*.³ This version, however, was never published in book form, and only existed as a mimeo. It also functioned as a computer application to help coding occupations in subsequent studies.

³ The work on creating a modified version of *Social Classification of Occupations* was carried out by a team involving Kazimierz M. Słomczyński, Henryk Domański, Elżbieta Kucharska, and Zbigniew Sawiński.

2.6 Work on adapting the *International Standard Classification of Occupations (ISCO)*

The participation of Polish researchers in cross-country comparative studies enhanced interest in classifications of occupations that could constitute a common identification framework for socio-occupational divisions in various countries. The majority of these projects used the *International Standard Classification of Occupations (ISCO)*. It was already elaborated in the 1950s in the International Labor Office in Geneva with the aim of unifying the ways occupations were classified in statistics and reporting. The *ISCO* was translated for use in many countries where it became an official tool. The Central Statistical Office (GUS) adapted it for use in Poland.

The *ISCO* was used in social research for constructing various scales of prestige and socio-economic status (see Treiman 1977; de Graaf, Ganzeboom, and Kalmijn 1989; Ganzeboom, De Graaf, and Treiman 1992). It has also been used in cross-country comparative projects such as the International Social Survey Programme (Davis and Smith 1991), the European Social Survey (Sztabiński 2004; Sztabiński and Sztabiński 2006), and the Polish General Social Survey (Cichomski and Sawiński 1993).

The *ISCO* belongs to a category of systematic classifications that considers the description of work performed on the job when defining basic classification categories. In the most commonly used 1994 version, known as *ISCO-88 (COM)*,⁴ there are four levels of occupation aggregation. At the highest level are 10 major groups (see Chapter 1). They divide into 28 second-level groups (sub-major groups), 116 third-level groups (minor groups), and finally, 390 basic classification categories (unit groups). In addition to the titles and four-digit symbols, all categories have fairly detailed descriptions of the work tasks involved in particular occupations (see Elias and Birch 1994.) For this reason, the printed version of the *ISCO-88* is a large book.

What accounts for the *ISCO*'s popularity is its considerable universality. It covers the full spectrum of occupational differentiation including occupations characteristic of both developed and developing countries. Although not strictly social, some of its classification criteria are naturally involved in the framework of the social division of labor. For this reason, both ways of defining basic classification units and ways of aggregating them into higher order groups resemble procedures applied in social classifications.

⁴ Hereafter in the book, we use *ISCO-88* to refer to *ISCO-88 (COM)* in the version completed in 1994 (Elias and Birch 1994.)

Still, one needs to remember that, by definition, *ISCO-88 (COM)* is not a social classification. A Polish researcher may initially be surprised by the way *ISCO* treats three dimensions considered basic in social stratification studies that involve occupational classification. They are:

1. Position in the formal organization of work. Besides the category of “managers” included in group 1 (in part comprising persons involved in planning and decision making but not necessarily in supervising the work of others), no other category refers to the supervision of subordinates although this task may constitute the essence of work in certain positions (e.g., foreman). On the contrary, in the introduction the authors emphasize that this criterion should not be considered in classifying occupations. In some parts of the classification this approach results in highly heterogeneous categories. “Armed forces” is a good example since it clusters all possible military ranks and functions in one category.

2. Ownership of the workplace. This criterion is totally neglected in the *ISCO*. Owners and employees are classified identically, according to the type of work performed. For example, store owners are supposed to be in the category “shop and market sales workers,” factory owners - in the category of “managers of enterprises and organizations,” and so on.

3. Skill requirements. Although in the introduction the authors mention that major occupational groups correspond to specific skill levels, they do not elaborate on this issue (ILO 1990: 7). Only in the case of teachers (categories 2331 and 3310) are there separate classification categories depending on whether or not the person has tertiary education.

The remaining criteria used in social classifications of occupations, which were already mentioned, are taken into consideration in *ISCO-88*. These are criteria such as the type of economic activities, employment sector, principles of work organization, character of work (non-manual vs. manual), and work complexity.

As follows from previous deliberations, *ISCO-88* cannot be entirely treated as a substitute for social classification of occupations. However, since researchers cannot agree on using just one specific social classification in their research, more and more of them opt to use *ISCO-88* in cross-country comparative research and analyses - a tool that is highly universal and commonly applied in increasing numbers of countries as a standard, at least in official statistics. Since information contained in *ISCO-88* is not sufficient for the analysis of social differentiation generated by

the division of labor, it is usually supplemented by data concerning the omitted dimensions, such as level in the hierarchy of work organization, ownership of the workplace, and skill requirements. Only after these data are included can the *ISCO-88* categories serve as a basis for distinguishing major social groups and categories.

The universality of *ISCO* applications in international projects persuaded Polish researchers to adapt it so it would be suitable for classifying information collected in Polish sociological research. This work started in 1991 in connection with the project "Polish General Social Survey" (see Cichomski and Sawiński 1993) and had several connections with similar projects undertaken at that time in other countries.

It was evident from the start that the usefulness of *ISCO-88* for analyses of class structure in Poland would be limited. It was therefore assumed that it would function as a supplementary tool - used in cross-country comparative analysis - in addition to a selected social classification. The *Polish Sociological Classification of Occupations PSCO-94*, which was being prepared about the same time, became this main tool. It is discussed in the next section of this chapter.

The key task of the whole endeavor was to adjust the classifications to each other so that they would be based on the same set of key words and entries describing the classified occupations. It was assumed that such a system would allow for parallel coding of the same occupations in both classifications using a computer program and a descriptive basis the two would have in common. This is why rather than faithful translations of the descriptive content of each of the *ISCO-88* classification categories, new descriptions were prepared based on terminology and wording adequate for occupational differentiation in Poland. However, the skeleton of *ISCO-88* was dutifully preserved, including the original classification symbols, category titles, their general sense, and mutual links within the four-level structure.

In the next stage, the prepared tool underwent thorough testing by coding two large national studies for which information was collected not only on the respondent's occupation but also on those of his or her spouse and parents (Cichomski and Sawiński 1993; Domański, Sztabiński, and Sztabiński 1993). During this work, special attention was focused on identifying all situations in which description of the work tasks in the questionnaire led to difficulty in selecting an adequate classification category of *ISCO-88*. Whenever this occurred, the classification was modified or supplemented by a suitable entry. The test was conducted using the aforementioned computer program.

The Polish version of *ISCO-88* has been applied not only in academic studies. Since the mid-1990s, it has been also used in commercial research.

For instance, it has been used to code occupations in a syndicated study of press readership associated with the Target Group Index consumer research (a study carried out by Millward Brown SMG/KRC). By both number of respondents (36,000 persons per year) and number of data users (over 200 business clients), this is the largest consumer study in Poland.

2.7 *Polish Sociological Classification of Occupations PSCO-94*

The *Polish Sociological Classification of Occupations PSCO-94* is an example of a social classification prepared for the specific purpose of analyzing social stratification in Polish society in the first half of the 1990s. Its starting point was not an existing systematic classification as was the case with other social classifications, for instance, the 1978 *Social Classification of Occupations (SCO-1978)* or *EGP*.

The starting point for *PSCO-94* was an analysis of the usage of selected classifications of occupations in the sociological research of the time. The purpose of this analysis was, on one hand, the collection of data on the main problems arising in the coding of occupations based on interviewers' records, and on the other hand, a completion of terms appearing in the descriptions of occupational roles.

The first case selected for analysis was a 1992-93 study carried out by the Sociological Research Center (Ośrodek Realizacji Badań Socjologicznych - ORBS) at the Institute of Philosophy and Sociology, Polish Academy of Sciences. In almost all studies carried out by this center it was obligatory to use the *Social Classification of Occupations* (Pohoski and Słomczyński 1978) as a tool for coding occupational data. Additionally, in some of these studies researchers used the *ISCO-88* as a supplementary classification. It is worth noting that in many studies devoted to analyzing the social structure, the coding involved not only the respondent's occupational situation but also that of his or her spouse and parents. In total, the analysis involved almost 30,000 descriptions of occupational situations.

Parallel to this work a similar effort was carried out at the Institute for Social Studies, University of Warsaw (ISS UW). It involved research material collected in the Polish General Social Survey (Cichomski and Sawiński 1994), of which the first two editions were carried out in 1992-93. In this project, the *Social Classification of Occupations* was used as one of the tools for coding data on the occupational situations of respondents, their spouses, and parents. The other classification used in the project was *ISCO-88*. The analytical work in ISS UW involved over 12,000 descriptions of occupational situations in all.

In both studies, the analysis was facilitated by a supporting computer program for coding occupations. Researchers recorded all of the difficulties in finding occupations, whether because adequate wording was missing in the computer search system or because of description ambiguity or an overlap of different categories. Depending on the character of a problem, corrections were either made as they arose or the issue was left to be resolved in the new classification.

These analyses provided an extensive pool of information about the usefulness and applicability of the classifications considered for coding the results of survey studies. New insights and realizations were related to both the informative content of typical descriptions of occupational roles obtained in the interaction of the respondent and the interviewer as well as the adequacy of tested classifications for coding the data collected in the process. The conclusions drawn provided a starting point for further work on modification of the classifications of occupations and on preparation of the *Polish Sociological Classification of Occupations*.

The main work on the tool that would fit the currently conducted sociological research concentrated on a specially designed national study of occupations and positions. It was conducted in 1992–93 by the Sociological Research Center of the Institute of Philosophy and Sociology, Polish Academy of Sciences.

The starting point of this study was novel – first, assumptions were formulated about the foundation of knowledge on social stratification and then, the concepts thus introduced were strictly followed. This knowledge resulted first from detailed descriptions of occupational roles systematically collected in many studies. However, also considered important was how individual roles functioned in given institutional structures – enterprises, branches, workplaces.

The main goal was thus to obtain detailed descriptions of occupations and positions in organizational hierarchies of various types of workplaces. The preselected sample involved sixty workplaces and enterprises differentiated with respect to branch and sector (state-owned – cooperative – private), size, and geographical location. Included in the sample were both large industrial enterprises (e.g., foundries, mines, textile factories), health care, educational, and cultural institutions, offices and bureaus, as well as private businesses differentiated with respect to size and work activity.

In each workplace included in the sample, trained interviewers prepared listings of workstations taking into account the organizational hierarchy of the institution. In small and medium-size institutions they listed all workstations, and in the large ones – up to 150 workstations. The study aimed at obtaining descriptions of tasks and actions performed at individual workstations taking into account vertical and horizontal

relations. The fieldwork resulted in the collection of descriptions concerning 3,665 workstations.

The results obtained were transferred in text format onto a computer disk and processed through a special computer program. It was written as an interactive database, allowing for efficient browsing, searching, and classifying of all of the material collected, and providing direct access to workplace characteristics. The program was able to execute virtual linking and ordering of any elementary descriptions of workstations, to introduce the user's own definitions and descriptions of groups, and to produce any possible reclassification, addition, or deletion of earlier-defined groups and categories.

The program made possible a number of research experiments aimed at verifying the accuracy of solutions of various classification problems. The first experiment consisted of an independent coding of research material using the technique of virtual classification. Six selected coders, with diversified levels of education as well as earlier access to the study, were asked to group elementary descriptions into categories forming a classification they would consider best-fitted to the given set of descriptions. They received no instructions on how to do so (in the form of a code frame or any other). They succeeded in coding all of the research material and prepared "their own" classifications in the process.

The experiment resulted in two conclusions. First, the perception of differences among occupations was more a function of the actual occupational differentiation than of the coder's individual characteristics. Without an a priori requested number of final groups, the coders divided their data into about three hundred categories (from 276 to 374, specifically). The second conclusion was that the criteria for classifying occupations were dependent on the coder's level of competence. Those who had earlier contact with the study more often grouped occupations according to substantive criteria (similarity in the range of actions and duties) while those with less contact based their decisions on formal criteria (mainly the occupational titles).

Research materials ordered by the coders helped to identify the areas of occupational differentiation characterized by weaker identity and coherence. Occupations located high (e.g., directors or professionals) or low in the social space (e.g., unskilled workers) as well as stereotypical occupations (e.g., teachers, miners, or drivers) belong to areas characterized by considerable classification clarity, allowing for coherent isolation of detailed occupational groups and categories. In such cases, the coders distinguished the basic classification categories in similar or even identical ways. Most of the discrepancies in their assessments occurred with occupations performed by medium-level non-manual workers such as

technicians, specialists, and clerks, as well as by those in an intermediary area between highly skilled manual workers and unskilled workers charged with simple jobs.

A thorough analysis of the fieldwork, particularly of the difficulties encountered in coding occupations, as well as the analysis of data collected in the study of occupational roles and positions, created a basis for preparing a new classification of occupations. It was assumed that the classification offered should meet the following four criteria.

1. Theoretical relevance. The highest-level divisions should be consistent with the concepts of social structure that were dominant in sociological thought on the society and its transformations.

2. Empirical validity. Divisions offered should identify social differences and barriers found in empirical research on the differentiation and stratification of the Polish society.

3. Conceptual clarity. The structure of classification should be based on clear and easily identifiable rules of linking and grouping elementary categories into those of a higher order.

4. User-friendliness. Classification categories should be easy to translate into the language of collecting and coding information by techniques used in survey studies.

The starting point for this classification, the *Polish Sociological Classification of Occupations*, was the *Occupational Coding Frame* worked out in the mid-1980s for the Center for Public Opinion Research (Centrum Badań Opinii Społecznej - CBOS) (Sawiński 1995: 63-64, 70-73). The coding frame contained 94 elementary categories grouped into 14 large occupational groups. Other classifications were also considered, including the *Social Classification of Occupations* (Pohoski and Słomczyński 1978). The aforementioned coding frame was selected for two reasons. First, this tool was thoroughly tested and worked very well during the coding process. In terms of the number of studies conducted in the second half of the 1980s and the first half of the 1990s, CBOS was among the leading research centers in Poland. The second reason was that this code was based on 14 large socio-occupational groups that accurately reflected the main barriers and distances in Polish society (arguments for the accuracy of this schema are provided in Chapter 7).

Work on the new classification came down to modifying the original CBOS Occupational Coding Frame in two ways. On one hand, some lower-level divisions were merged in case the research results revealed insufficient distinctions. On the other hand, an additional level was introduced that did not exist in the original schema. This level consisted of basic

classification units - used directly for coding - that were distinguished in a much more detailed way than in the original code of 94 categories.

The empirical basis for these modifications consisted of data gathered in the study of occupations and positions mentioned earlier. The analysis was a qualitative study of the detailed descriptions of occupational roles that also involved elements of verification of specific hypotheses regarding the scope and frequency of appearance of occupational roles measured by quantitative indicators. This work was completed with the help of the computer program for classifying occupations mentioned earlier in this section. The results of the 1992-93 Polish General Social Survey (Cichomski and Sawiński 1994) were also used for a current control of empirical distributions of affiliation to the classification categories in the process of creation.

2.8 Conclusion

There is no doubt that the earlier work on classifications of occupations in Poland aimed at addressing thoroughly and meticulously the problem of how to translate actual social divisions into a system of classification categories. It drew on both theoretical premises and practical experience in using classifications, in particular, in coding the results of empirical studies.

In spite of considerable effort and various noteworthy propositions, to date no generally accepted classification schema has appeared. Actually, this situation is not unique to Poland, for many reasons. One reason is the low level of researchers' knowledge about the validity of social classifications and their efficiency in addressing a wide spectrum of problems of interest. A lack of confidence in these classifications may also result from a tendency to globalize the research and use tools suitable to cross-country comparisons. The validity of social classifications is more or less related to the particulars of social inequality in specific countries. No wonder this kind of classification has never been offered at an international level.

An important factor limiting applications of social classifications is the fact that today the majority of empirical studies are conducted by commercial rather than academic or public institutions. Because of their short production cycle and general use of auxiliary computer procedures, commercial institutions tend to simplify their coding schemas, which originally required more time and effort. For this reason they tend to apply systematic classifications based on occupational titles rather than on the person's position in the social division of labor.

In the next chapter we present the changes and modifications that were introduced to the *Social Classification of Occupations* - a tool used in

Poland since 1978 mainly, or almost exclusively, in academic research. However, this classification has unquestionable merit - its continuous use over almost three decades of research. For this reason, it may become a unique tool for studying the transformation of the stratification system in Poland during a time of fundamental social and systemic change.

Chapter 3

SOCIAL CLASSIFICATION OF OCCUPATIONS IN THE CONTEXT OF RESPONDENTS' ANSWERS: BASED ON THE CODING OF RESEARCH RESULTS

Coding respondents' answers to a question concerning occupation is one of the main areas of application for a classification of occupations in sociological survey research. For this reason, a social classification of occupations should take into account the ways respondents think about their own occupational roles as well as those of other people. In this context there are certain issues to consider.

The first issue concerns the level of generality at which respondents distinguish occupational roles. Do they talk about them in general categories - say in the language of social classes - or do they identify occupational roles with particular positions in the workplace? The second issue pertains to stereotypical thinking about occupations. Do respondents limit their answers to providing mere occupational titles (e.g., "baker," "teacher"), which they consider sufficient descriptions of their occupational activity, or do they perceive as significant the details differentiating their work from the work of others engaged in the same occupation? The third question is whether the respondents' criteria for distinguishing occupational roles are consistent with the researcher's chosen scheme for classifying occupations. Do respondents' descriptions of occupational roles fit into single classification categories or, just the opposite, do they contain elements of different categories? Finally, the fourth issue concerns the frequency of using individual classification categories. Information on occupations is collected in surveys conducted on samples of between

several hundred to several thousand respondents. A practical question arises concerning whether all of the basic classification categories are equally applicable or, perhaps, some are of negligible use because of the slim chance of finding in the sample either a respondent with a fitting occupation or a respondent providing a verbal description of his or her occupational role in terms fitting the category in question.

To reconstruct the semantic rules implied in the ways respondents described their occupations we performed a secondary analysis of the exact content of the respondents' answers provided in surveys using questionnaire interviews. Our analysis involved 14,600 occupational descriptions collected in Poland in surveys conducted in 2002–2004. In this chapter we discuss the method of analyzing the respondents' descriptions and follow this discussion with the most important conclusions. In the next chapter we return to those conclusions as well as to the empirical data. This will help us to assess the coherence of the ways we distinguished occupational groups in the new *Social Classification of Occupations–2009* to the ways respondents thought about their own occupational roles and the roles of others.

3.1 Analytical goals, methodology, and data sources

By classification validity we understand the extent to which classification categories correspond to occupational divisions that function at the level of social relations. In gathering knowledge on social relations through empirical surveys, the issue of classification validity should be considered taking into account the problems and difficulties that appear when coding the data collected in the study. A theoretically valid classification may still fail to work in the context of the specific information obtained in the survey. Coming from the respondents' statements, this information is subjective in character and thus does not always encompass elements that allow for clear-cut decisions concerning which category a given occupation should be assigned to. The most troublesome may be the uneven precision level or superficiality of the respondents' statements. The main reason for these difficulties is not the interview process itself, but the diversified ways in which respondents perceive their occupations.

Moreover, data collected in a typical survey include information not only on the respondent's current occupation but also on the occupations of others (e.g. spouses, parents, siblings, or children) as perceived by the respondent. But the respondent's knowledge about occupations performed by others may be superficial, thus resulting in very brief or stereotypical descriptions. A similar situation can occur when the inter-

viewer asks the respondent about a past occupation, for example, the first job. With the passage of time, the details tend to fade from memory, making information on a person's first job less reliable than that on the current occupation.

In preparing the first draft of the new *Social Classification of Occupations*, we were aware of these problems from the beginning. Therefore, we decided to analyze the respondents' original statements concerning their current occupations, their past occupational careers, and their spouses' and parents' occupations, with the aim of identifying the basic obstacles that would be encountered in transforming respondent statements into classification categories.

To fulfill the goals set for the secondary data analysis we studied the way occupations were coded in surveys conducted in Poland between 2002 and 2004.¹ We selected studies that met two requirements. The first was the availability of respondents' statements exactly as the interviewers had written them down during interviews. The second requirement was coding of the occupations using the two most frequently used classifications in Poland – the old version of *Social Classification of Occupations* described in Chapter 2 (Pohoski and Słomczyński 1978) and the *International Standard Classification of Occupations (ISCO)*. Code accessibility for two classifications based on different assumptions (a sociological classification vs. a systematic classification) allows the differentiation of effects that are classification-specific from those that may be common for different classifications. Information in the studies selected for our analysis concerned the respondent's current and earlier occupations as well as occupations of others such as spouses or parents. For all of these occupations, respondents

¹ The following surveys provided the basis for our analyses: (1) *European Social Survey 2002*. In this survey, data were coded on the respondent's and spouse's occupations. A total of 2,506 occupations were coded. (2) *POLPAN 2003*. This was the fourth wave of a panel study conducted on the same sample of respondents every five years beginning in 1988. Each respondent was asked about his or her current occupation, occupation in a supplementary job, occupations performed in jobs held between 1998 and 2003, the current occupation of the spouse, the father's occupation when the respondent was age fourteen, and the father's occupation when the father was the respondent's current age. Information collected concerned 5,449 occupations in total. (3) *Warsaw dwellers 2003*. The survey was conducted on a sample of Warsaw residents. Information was collected on the respondent's occupation in the current job or the last one held. Data on occupation in a supplementary job were also collected. Descriptions of 1,900 occupations were obtained in total. (4) *European Social Survey 2004*. Information was gathered concerning the respondent's current occupation, the spouse's occupation, the father's occupation when the respondent was age fourteen, and the mother's occupation when the respondent was age fourteen. Descriptions of 4,744 occupations were collected in total.

were asked to provide occupational titles, descriptions of the most common work tasks, and information concerning the job and the workplace, including questions about size of the workplace, whether the person in question supervised the work of others, and the person's relation to the ownership of the workplace. Interviewers recorded all data in the questionnaires as they conducted the interviews. These questionnaires were used in the coding process.

The relatively large number of occupations considered makes it possible to identify the most incoherent areas and categories of the classification within which the coded occupations are particularly diverse in character and specifics. This may create a basis for more detailed divisions within the classification. The large number of occupations in the analysis is also helpful in the inclusion of classification areas with exceedingly detailed divisions that would very rarely or never be used.

3.2 Analysis of the most frequently used coding categories

Degree of concentration is one of the formal characteristics of occupational classification. From this point of view, an ideal classification is one with low concentration, that is, in which all detailed or basic classification categories are used to a similar degree, as demonstrated by a similar percentage of coded occupations for each basic category. And on the contrary, the least desirable situation occurs when a very small number of categories is used in coding, for example, e.g., a few or a dozen. In this case, in spite of all the arguments in favor of listing them in the classification, in practice these occupational categories were unidentifiable.

Table 3.1 presents a ranking of 30 basic categories of *SCO-1978* ordered according to the frequency of their usage by the coders. These 30 detailed categories combined accounted for as much as 50 percent of the occupations coded. To code the remaining 50 percent, up to 400 categories were required. In addition, it is worth noting that 111 basic categories of *SCO-1978* were never used in the coding of 14,629 occupations involved in the analyzed research studies.

The most frequently used category in the coding process was individual farmer (code 7111): 16.1 percent of all occupations coded. Such a degree of concentration for a single basic category surely deserves consideration, first, in terms of its utility with respect to internal homogeneity, and second, with respect to the discriminatory power of the whole classification.

The surveys we analyzed had been conducted on representative samples of men and women older than age fifteen, both urban and rural residents. With respect to the latter, we assume that even if they earned their

living by farming their relations to farm ownership as well as their functions on the farm were diversified. In Poland the roles of a farmer couple are traditionally different. A male farmer usually inherits the farm from his parents and maintains the leading role in the crop growing business; he decides about the farm profile and takes care of work in the fields. A female farmer usually joins the farm by marriage; she is involved in housework, raising children, and also in stockbreeding. Children help in running the farm from a young age, doing such things as tending cattle or selling farm products at the roadside. They usually make no decisions with respect to the farming business, even after they come of age.

People who work together on the farm therefore play quite different roles. However, the coders demonstrated a tendency to stereotype a farmer's role and used the same occupation code for everybody engaged in farm work. They did so, even though *SCO-1978* provided different codes corresponding to different kinds of farm work and the different roles of those engaged in it. For example, one adequate alternative option would have been to use category 7131, which involves "Farm-helping family members," but coders used this category only in 0.1 percent of cases, and similarly, category 7121, "Gardeners, plant-growers, beekeepers, breeders, fishermen." Categories 7132 "Private garden-helping family members, etc." and 7211 "Members of farm cooperatives" were used even less (less than 0.05 percent). As a result, a high concentration of individual farmers appeared in the leading category 7111, "Farmers - farm owners." To sum up, the division of work on the farm (farmer vs. helpers) and farm orientation as either mixed (crop growing and animal breeding) or specialized (e.g., gardening, fruit farming, pig farming, milk or poultry production) were practically unused.

One reason why a broader scope of basic categories was not used was the frequent brevity of respondents' answers to the question of occupation, which was often limited to the stereotypical term - "farmer." When the interviewers probed for a more specific description, respondents still replied in general terms. More often than not they included known elements of the farmer's occupational role (e.g., "crop cultivation," "cattle breeding") rather than descriptions of respondents' specific tasks. What is even more interesting, many farmers seemed to be irritated by probing questions - more than a few of them responded with statements such as, "So you don't know what a farmer's job's about?"

The observations led to the clear conclusion that the *Social Classification of Occupations* cannot function as a tool for identifying occupational divisions among family members working on the land. During the collection of data by the interviewers and the subsequent coding process, detailed information on the nature of this work was neglected and only

one symbol applied for all farm-related occupational work. In this situation, the social classification – without losing its operational value – could list just one term – “farmer” – for all nuances of the occupational situations.

Table 3.1 The most frequently used *SCO-1978* categories

SCO-1978 code	Name of the category	Frequency percent	Cumulative percent
7111	Farmers – farm owners	16.1	16.1
5274	Car, truck, and bus drivers	3.2	19.3
5232	Brick masons, concreters, plasterers, assemblers of building constructions	2.4	21.7
2323	Bookkeepers and accountants	1.8	23.5
1135	Teachers and tutors in primary and vocational schools	1.7	25.2
4121	Sales workers in grocery stores	1.6	26.8
8115	Store and restaurant owners	1.5	28.3
5234	Carpenters and upholsterers	1.5	29.8
6234	Cleaners	1.4	31.2
4411	Storage workers	1.3	32.5
5262	Tailors, furriers, hatters, glovers, and embroiderers	1.2	33.8
6231	Night and day watchmen, janitors, and doorkeepers	1.2	35.0
5249	Toolmakers, tool repairers, and precision-mechanical-instrument makers	1.2	36.2
5212	Miners	1.2	37.3
3213	Clerks in business administration	1.0	38.3
1143	Other specialists in social sciences and humanities	0.9	39.2
5221	Skilled workers in metal production: smelters, rolling mill workers, blacksmiths, foundry workers, and related	0.9	40.2
6311	Semiskilled and unskilled workers in agriculture	0.9	41.1
3122	Nurses, midwives, paramedics	0.9	42.0
5253	Millers, bakers, confectioners, butchers, sausage makers, and cold-meat preparers	0.8	42.8
4123	Sales workers in technical and industrial stores	0.8	43.6
8113	Owners of construction firms	0.8	44.4
5247	Automobile and truck mechanics	0.8	45.2
1134	Teachers and tutors in secondary schools	0.7	45.9
5223	Electricians, electric fitters, repairers of electromechanical equipment	0.7	46.7
4111	Chief managers in department stores and managers of sales	0.7	47.4
5235	Operators of wood-processing machines: milling machine operators and turners	0.7	48.0
5132	Foremen in assembly and construction work	0.7	48.7
3231	Secretaries	0.6	49.4
4321	Cooks, confectioners, and café attendants	0.6	50.0

Analysis of the data presented in Table 3.1 leads to the conclusion that the "farmer" occupation - as a single category - is used much more frequently than any other basic occupational category. The next one in order, "Car, truck, and bus drivers" (code 5274) was used five times less often. In additional categories the frequency differences turned out to be less outstanding, making it harder to assess the clear point of division between categories used more often and those appearing relatively seldom.

Basic classification categories in the upper part of the list seem to confirm the thesis that in non-agricultural occupations as well there are bundles of occupational roles and titles for which the classification does not provide sufficient discriminatory power. The second category on the list - "car, truck, and bus drivers," code 5274 - contains occupations that are similar in essence and scope (all involve driving motor vehicles) but differ in context of the work situation. Bus drivers are employed in service firms handling passenger transportation: municipal, local, long-distance, and international traffic carriers. For all of these situations the key elements of the driver's role include constant contact with people (passengers) involving information, control of the passenger compliance with rules on board, and - in some situations - collection of bus fares. The driver's job involves a time and space schedule imposed by the carrier's timetables and routes.

In this respect, the work of a truck driver is very different. Its characteristics include: a lack of constant contact with people, variable cargo tasks and travel itineraries, and some freedom in methods of task completion (concerning travel time and itinerary). A truck driver's tasks sometimes include physical participation in loading and unloading cargo. Another possible task is accounting for product deliveries, which may involve elements of negotiation with buyers regarding the price and quantity of the product.

A car driver's work is also different. He or she could be a taxicab driver, an ambulance driver, or a company-car chauffeur. Each of these three work profiles is quite different, which makes somewhat dubious the validity of using the same basic classification category for these as well as others.

The analysis of interviewers' records concerning occupations assigned to category 5274, "Car, truck, and bus drivers," is instructive in another sense as well. Respondents' answers are sometimes very brief, limited to providing just the general occupational title of "driver." This situation happened more often in the case of "father's occupation" than "respondent's occupation," which may suggest that the respondent's knowledge of occupations of others (father, mother, spouse) was often limited to their occupational title, with no details referring to the character of their jobs. From the point of view of the situation under consideration, the information level in the name of category 5274 is sufficiently specific, since in many

cases the interviewer's record provided no details of the occupation, including the type of motor vehicle driven.

Similar comments pertain to the next category in Table 3.1: "Brick masons, concreters, plasterers, assemblers of building constructions" (code 5232). Assigned to this category were many occupational descriptions provided by respondents, which were limited to a mere occupational title. "Bricklayer" or "brick mason" were the most common descriptors (Sawiński 2005: Appendix A-2). Sometimes additional descriptions in interviewers' notes did not provide any further information since they just repeated the name of the occupation in the form of general job tasks (e.g., "he lays bricks") or indicated that the job is in the construction sector, for example:

Brick mason/he built various structures;
Brick mason/brick mason in construction company;
Construction worker/bricklayer/job on construction site.

There were, however, descriptions demonstrating that one job in building construction and finishing involving quite differing specialty tasks may be addressed by the same worker, for example:

Bricklayer/construction work, laying bricks, plastering, spackling, wall painting, concrete reinforcement;
Construction worker/brick mason, carpenter, painter – work on construction sites abroad;
Electrician, concreter/manual worker/all building tasks on large construction sites;
Bricklayer and painter/I lay bricks, spackle walls, paint – I do construction and renovation tasks.

While the above descriptions pertain to a wide range of specialties for a single worker, other descriptions indicate narrow specializations in terms of tasks and/or worksite, for example:

Painter, spackler in construction/painting and spackling of staircase walls in apartment buildings;
Construction worker/bolting pipes;
Wallpaperer/wallpapering rooms in private houses;
Concreter/manual worker/servicing cement mixer.

Occupational descriptions obtained for occupations assigned to the category "Brick masons, concreters, plasterers, assemblers of building constructions" provide an apt illustration of a paradox that emerges in attempting to fit diversified occupational roles and the ways respondents tend to describe them to the categories of *Social Classification of Occupations*. On the one hand, distinguishing narrow specialties in the

classification may correspond well to the respondents' brief statements. These statements often provide only a specific occupational title, such as "brick mason," "painter," "roofer," "carpenter," "stove-fitter," and the like. However, on the other hand, more detailed and lengthy statements demonstrate that the occupational roles actually performed often combine tasks that fit different narrow occupational specialties, thus requiring the coder to use more general categories for them. Therefore, it seems paradoxical that the briefly worded descriptions could lead to detailed and narrow categories while the more precise and descriptive statements led instead to general categories. This could be considered counterintuitive.

Table 3.2 The most frequently used *ISCO* categories

<i>ISCO</i> code	Name of the category	Frequency percent	Cumulative percent
6130	Crop and animal producers	16.3	16.3
5220	Shop, stall and market salespersons and demonstrators	4.5	20.8
3433	Bookkeepers	2.1	23.0
8324	Heavy truck and lorry drivers	2.1	25.1
9132	Helpers and cleaners in offices, hotels and other establishments	1.9	27.0
7122	Bricklayers and stonemasons	1.5	28.5
4131	Stock clerks	1.5	30.0
7222	Tool-makers and related workers	1.4	31.5
7124	Carpenters and joiners	1.3	32.8
2331	Primary education teaching professionals	1.3	34.0
7111	Miners and quarry workers	1.2	35.3
9211	Farm-hands and labourers	1.2	36.5
9152	Doorkeepers, watchpersons and related workers	1.1	37.6
7241	Electrical mechanics fitters and services	1.1	38.6
5169	Protective services workers not elsewhere classified	1.0	39.7
7231	Motor vehicle mechanics and fitters	1.0	40.7
3231	Nursing associate professionals	1.0	41.7
4122	Statistical and finance clerks	1.0	42.7
1210	Directors and chief executives	0.9	43.6
1319	Managers of small enterprises not elsewhere classified	0.9	44.4
7129	Building frame and related trades workers	0.8	45.3
0100	Armed forces	0.8	46.1
7433	Tailors, dressmakers and hatters	0.8	46.8
7136	Plumbers and pipe fitters	0.7	47.6
8312	Railway brakemen, signallers and shunters	0.7	48.3
9320	Manufacturing labourers	0.7	49.0
7212	Welders and flame cutters	0.7	49.7
5122	Cooks	0.7	50.4

The problem of heterogeneity of some classification categories is not limited to *Social Classification of Occupations*. Table 3.2 combines the *ISCO* categories used most often by the coders. Also in this classification, a category involving farmers running their own farms appears in the first position. “Shop, stall, and market salespersons and demonstrators” (*ISCO* code 5220) is the second category in the *ISCO* table.²

An analysis of the interviewers’ records providing the respondents’ descriptions of occupations and positions assigned to this category (Sawiński 2005: Appendix A-3) reveals considerable heterogeneity in at least a few dimensions. One of them is relation to the ownership of the means of production. In addition to salespersons belonging to the category of hired personnel, the *ISCO* category also includes owners of stores and wholesale companies, for example:

Co-owner (with husband) of a florist shop/florist shop co-owner, selling flowers, bouquets, accounting, merchandise;
Owner of wholesale dairy products company/wholesale of dairy products;
Co-owner of trade company/managing a supermarket – its co-owner;
Store co-owner/with husband managing two grocery stores – supplies, supervision, sales;
Own business – selling fuel/supervision over business.

An extensive range of duties may be involved in a salesperson’s role, which can include tasks usually considered as separate occupational roles, for example:

Salesperson in grocery store (bread)/salesperson – agent/service of cash registers, stock collection from warehouse, bread sales, price negotiation, personnel supervision, contact with public health agency, salary payment, accounting daily takings;
Salesperson in grocery store/taking in merchandise, calculating of prices, sales, cleaning;
Salesperson-merchant/salesperson, supplies officer/sales and merchandise collection from warehouse;

² Category 7111 of *SCO-1978* and category 6130 of *ISCO* are usually considered equivalent on the basis of a convention assumed in the coding. As a rule, coders are advised to use one specific *ISCO* code as an equivalent of “farmer” because the rules underlying the construction of *ISCO* do not lead to choosing the most suitable of the possible basic classification categories in this case. The coders’ justification for selecting *ISCO* category 6130 is therefore the same as for selecting *SCO-1978* classification category 7111 (discussed in the main text in detail).

Store owner – salesperson/merchandise orders and collection, sales, sales-tax accounting;
Salesperson in optometry store/fitting frames for glasses, cutting optical glass, framing.

The work setting may also be diversified with respect to size and placement thus affecting the range of tasks on the job. The following descriptions may serve as examples:

Salesperson/sells products in school shop, disburses sweets, stationery, and so on;
Salesperson/salesperson at clothing stand/setting up the stand, sales, closing the stand, putting away merchandise and the stand;
He run food and beer kiosk/he sold product;
Kiosk salesperson/sales of newspapers, gadgets, food;
Salesperson at gas station/foreman/disbursing fuel and selling items in station convenience store;
Supermarket salesperson/shelving merchandise.

Concluding this discussion of *ISCO* category 5220, “Shop, stall, and market salespersons and demonstrators,” it is in order to point out its substantial diversification on dimensions fundamental for distinguishing the categories in a classification of occupations.

Further *ISCO* categories on the frequency list are not as highly differentiated, which is consistent with their lower selection frequencies. The third category in the *ISCO* ranking – “Bookkeepers” (code 3433) – is used two times less often than the preceding category of salespersons. Frequencies for further categories decrease gradually without sudden fluctuations up or down.

Although *ISCO* and *SCO-1978* classifications are based on different assumptions they are similar with respect to the concentration level of basic categories used in the coding process. In both cases the category of farmers opens the ranking. In *SCO-1978*, the 30 most frequently used categories involved 50 percent of all coding cases. In *ISCO*, a similar cumulative percentage is related to the 28 most frequently used codes. In both classifications most of the basic categories were used either sporadically or not at all. One has to accept the fact that when classifications of occupations are applied to the coding and analysis of survey data a considerable portion of basic classification categories have no equivalents in respondents' descriptions of occupations.

3.3 Cohesion analysis of major occupational groups

Most studies of social stratification utilizing classifications of occupations are limited to applying just the major occupational groups proposed by these classifications. Both *ISCO* and *SCO-1978* classifications use the decimal system to denote the more detailed classification groups. In effect, both classifications have ten major classification groups marked by integral numbers from 0 to 9. The same number of major groups allows for a direct comparison of characteristics of both classifications. The data discussed earlier, concerning the applications of both classifications to coding occupations, provide a point of reference for this comparison.

Table 3.3. Coding characteristics of major occupational groups of *SCO-1978*

Code	Major occupational groups	Frequency percent	Number of basic classification categories	Percent of cases falling into the most frequent category	Gini index
0	Senior state and elective officials and managers	2.0	58	16.6	0.722
1	Professionals	9.6	83	17.4	0.725
2	Technicians, supervisors, and skilled clerks	8.4	62	21.5	0.674
3	Other non-manual workers	8.1	56	12.0	0.686
4	Service workers	8.7	48	18.5	0.763
5	Skilled manual workers	26.4	94	12.2	0.705
6	Semi-skilled and unskilled workers	11.6	68	12.4	0.651
7	Farmers	16.3	14	98.5	0.995
8	Owners of [small] production and service enterprises	6.9	35	21.6	0.729
9	Others	2.0	21	17.6	0.706
	Total (sum or median)	100.0	539	17.5	0.714

Table 3.3 presents selected characteristics of *SCO-1978* based on data concerning the coding of occupations (Table 3.4 lists similar characteristics for *ISCO*). Among 14,624 occupations, the coders most frequently used the basic categories belonging to major occupational group 5, "Skilled manual workers," coding 26.4 percent of all occupations in this group. At the other extreme are the two least frequently used major groups: "Others and non-classified" (group 9 - 2.0 percent) and "Senior officials and managers" (group 0 - 2.0 percent). One can interpret these findings as a confirmation that the *Social Classification of Occupations 1978*, in practical terms, distinguishes eight rather than ten major occupational

groups since groups smaller than 2 percent are not sufficiently represented. Since a typical survey is conducted on a sample of about 1,000 people, the small sizes of both groups in question do not justify group characterizations.

The last two columns of Table 3.3 present internal cohesion measures within groups. The percentage of occupations coded in the most frequently used category within a group (modal probability) is the simplest concentration indicator of coder selections. It achieves its maximal value (98.5 percent) in the case of the Major Group 7, "Farmers" - a fact already discussed in section 3.2. In the remaining groups these proportions are between 12 percent and 21 percent, reflecting a similar level of group internal cohesion. Confirming this conclusion are similar (for most of the groups) values of the Gini index for categorical variables (Dorfman 1979), which take into account the complete frequency distribution of all basic classification categories occurring within the group.

Table 3.4. Coding characteristics of major occupational groups of *ISCO-1988*

Code	Major occupational groups	Frequency percent	Number of basic classification categories	Percent of cases falling into the most frequent category	Gini index
0	Armed forces	0.8	1	100.0	1.000
1	Legislators, senior officials and managers	7.5	38	12.4	0.567
2	Professionals	9.1	72	14.0	0.674
3	Technicians and associate professionals	12.7	87	16.9	0.650
4	Clerks	6.3	31	23.6	0.724
5	Service workers and shop and market sales workers	8.3	27	54.3	0.861
6	Skilled agricultural and fishery workers	17.2	17	95.0	0.988
7	Craft and related trades workers	19.3	89	8.0	0.722
8	Plant and machine operators and assemblers	10.7	89	19.7	0.736
9	Elementary occupations	8.2	32	23.7	0.747
	Total (sum or median)	100.0	483	18.3	0.730

Similar results occur in the case of *ISCO* (Table 3.4), where Group 0, "Armed forces," is a residual category involving only 0.8 percent of occupations. That low a percentage indicates that at the stage of data analysis this category - because of the small number of occupations coded - has to be either skipped or included in another group. Major Group 6, "Skilled agricultural and fishery workers" - an equivalent of the *SCO-1978* group

of “Farmers” - has a high level of internal cohesion. The remaining major *ISCO* groups are internally stable to a somewhat similar extent, except for Major Group 5, “Service workers and shop and market sales workers,” which in the majority of cases (54.3 percent) is reduced to a single occupation (“Salespersons” - *ISCO* code 5220 - discussed in section 3.2).

It is worth noting that in the case of *ISCO-1988* none of the major groups had a selection concentration as high as *SCO-1978* Major Group 5, “Skilled manual workers,” which involved 26 percent of all occupations coded. The highest for *ISCO* - 19 percent - was the concentration of Major Group 7, “Craft and related trade workers.” In some sense, this group was internally consistent. The most frequently used category in this group had 8 percent of selections while in *SCO-1978* group 5 the equivalent figure amounted to 12 percent. In part, this discrepancy resulted from the fact that in *SCO-1978* the manual worker occupations were coded in two major groups (groups 5 and 6), while in *ISCO-1988* they were coded in three (groups 7, 8, and 9). However, some occupations coded in *ISCO* as manual worker occupations were listed in *SCO-1978* within the major group of “Owners.” With respect to the segment of manual workers the mutual relationship of the two classifications appeared to be rather complex because of different assumptions used in their construction.

Differences between the two classifications also occur in the segment of non-manual workers. Both classifications divide this segment into four major groups. In *SCO-1978* these are: group 0, “Senior state and elective officials and managers;” group 1, “Professionals;” group 2, “Technicians, supervisors, and skilled clerks;” group 3, “Other non-manual workers.” In *ISCO* the non-manual worker groups comprise: group 1, “Legislators, senior officials, and managers;” group 2, “Professionals;” group 3, “Technicians and associate professionals;” and group 4, “Clerks.” As expected, in both classifications the groups of “professionals” involve similar proportions of occupations coded, which attests to similar principles of distinguishing professional groups based on the criterion of skills at the level of tertiary education. There are some differences in the case of lower level non-manual workers, which in both classifications are divided into two groups. In *SCO-1978* these groups are more balanced both with respect to the share of occupations coded as well as the number of categories classified at the lowest level. However, *ISCO* shows a clear imbalance toward the upper group of “Technicians and associate professionals.” With regard to the classification’s general resolution the arrangement used in *SCO-1978* has to be considered superior.

Still, the largest difference between the two classifications occurs in the case of the top group of the segment of non-manual workers. In *SCO-1978* this is Major Group 0, “Senior state and elective officials and managers,” while in *ISCO-1988* it is Major Group 1, “Legislators, senior officials and

managers.” In *SCO-1978* this group involves 58 basic classification categories containing only 2.0 percent of occupations coded. In *ISCO-1988* it involves 38 basic classification categories containing 7.5 percent of all occupations coded. However, this result demonstrates that the number of distinct categories in a particular major group may not indicate this group’s corresponding utility at the stage of analysis because the total share of occupations coded in this group could be too low for it to be considered justifiably distinguished. In addition, a low value of the concentration for *ISCO* Major Group 1 (the lowest of all of its groups) may attest to its considerable heterogeneity. This raises the question of whether this result is consistent with the generic outlook on social structure assuming its pyramid shape. The top categories should therefore be less populated and more cohesive and the bottom categories – more populated and more heterogeneous.

The findings presented above demonstrate that the principles for distinguishing the top groups in the classification of occupations may require the making of informed decisions to avoid analytical artifacts. We will return to this issue in Chapter 4 when formulating new propositions concerning divisions within the top group of the new *Social Classification of Occupations*.

3.4. Conclusion

This chapter discussed the practice of applying the *Social Classification of Occupations* as well as *ISCO* (built as a systematic classification) to code respondents’ statements concerning occupations they performed both at the time of the study and in the past and, in addition, occupations performed by other people such as their spouses and parents.

Our analysis of the method of occupation coding allows the formulation of conclusions that may be useful in constructing a new classification. First of all, in different segments of the classification it seems acceptable to use different schemes for distinguishing the basic occupational categories. In the case of farmers, just one basic category seems sufficient because the respondents perceive this occupation stereotypically and they avoid providing details characterizing the placement of the person in question in the division of labor on the farm. The situation with manual workers is just the opposite: respondents’ statements reveal a quite detailed specialization that justifies the introduction of narrowly defined basic categories in this segment of the classification.

Our analysis also revealed that with respect to a number of formal characteristics the *Social Classification of Occupations* does not differ from

ISCO. Specifically, this concerns the layout of the classification, its internal balance, and the homogeneity of basic classification categories. This probably stems from the fact that, logically, both tools constitute classifications that have a similar four-level structure. Therefore, the construction of a new classification of occupations will probably be unable to overcome limitations stemming from the characteristics of the classification as a tool for quantifying the social space.

Limitations arising in the use of the classification of occupations to code the results of questionnaire surveys are particularly important. Respondents define their occupations in a language of terms, notions, and rules that are not homomorphous with the principles for distinguishing the basic classification categories. In some areas of occupational stratification respondents invoke stereotypes (as demonstrated in the discussion of the occupation of farmer), while in others they refer to occupational titles, work tasks, or the work setting - these differing elements may create complications in analysis using disjunctive classification categories.³ Neither *SCO-1978* nor *ISCO* can be considered a tool fully reflecting the ways that respondents perceived their occupational roles. It remains dubious whether there is a classification capable of reflecting respondents' perceptions of occupational stratification in a truly adequate way.

This is why we believe that researchers should base the construction of a classification of occupations on theoretical concepts and analytical requirements that, in the first place, consider the classification's utility for analyzing occupational differentiation, whereas they should treat the validity of coding respondents' occupational descriptions to basic classification categories as an operational characteristic of the classification.

Constructing a classification should be oriented toward maximizing this validity although the character and detail of the collected data on occupations should not dictate the method of distinguishing the classification categories - especially since even in the case of the same occupation there

³ A solution to this problem could be to construct a so-called fuzzy classification, which would allow for coding the respondent's description of an occupation to more than one category, each with a determined probability (Berthold 2007). This would take care of the problem of classifying occupational descriptions containing a tangle of differing occupational elementary roles of the kind presented in the quoted example "electrician, concreter/manual worker/all building tasks on large construction sites." Since the construction of a fuzzy classification can be completed based on any classification, this proposal does not seem to be limited by our not having explicitly proposed such a tool at the moment. At this point, the main obstacle to introducing a fuzzy classification is a lack of commonly used computer applications that would allow the incorporation of fuzzy classification in sociological data analysis.

may be differences in the way it is described, depending on whether it is the respondent's occupation or someone else's. A description of the respondent's current occupation may also differ from the description of a past occupation.

The utility of data collected for valid occupation coding also depends on the range of questions asked in the questionnaire. The key issue here is whether in addition to providing an occupational title or the name of a position in the organizational hierarchy of work, the respondent is asked to describe the work tasks on the job, or to say whether he or she supervises the work of others, or to reveal his or her relation to the ownership of the workplace. We will return to this issue in Chapter 6 when presenting a system of questions helpful in securing a valid coding of a given occupational description to a proper basic category of the social classification of occupations.

Chapter 4

SOCIAL CLASSIFICATION OF OCCUPATIONS-2009

This chapter presents a new classification of occupations. This is a substantially modified and updated version of the 1978 *Social Classification of Occupations* (Pohoski and Slomczynski 1978). The new version of *SCO* seems to be a valid and reliable measure of social position not only for Poland but also for other East European societies.

The 1978 version was the first one in Poland and one of the first in the world considered to be a sociological classification of occupations. Changes in the job market and social structure in Poland, resulting from the regime change initiated in 1989, created the need to construct a new instrument. Below we present a proposal worked out following many years of experience in using the classification both for coding results of empirical research and for analyzing data. This experience has determined the main directions of modifications that we have currently introduced. We were careful to keep the modified version compatible with all previous classifications beginning with the original 1978 classification and going through its consecutive modifications, particularly the one worked out in 1993, which was already presented in Chapter 2. The basic changes in classification structure focused, in the first place, on distinguishing managerial positions as one group containing all managers. In addition, we introduced a number of smaller changes such as a different way of arranging classification categories, removing some categories that we found to be useless or inadequate, and adding new categories mainly due to changes in the technological and organizational division of work. In many cases we modified, or even totally altered, the old occupational titles so that they would better match the names of occupations and positions commonly used today.

In modifications of the 1978 *Social Classification of Occupations* we refer to the coding analysis of empirical material discussed in Chapter 3. In

many instances we needed to collate the new categories with those that had been used in coding occupations so far. At the same time, some old categories had to be dropped from the classification because they were not being used in practice.

We begin with presentation of the criteria used for modifying the original scheme of *SCO-1978*. Then we discuss and exemplify them for the consecutive major occupational groups. Appendix 1 contains the full version of *SCO-2009*.

4.1 Modification criteria

In modifying the 1978 *Social Classification of Occupations* we applied three groups of criteria: theoretical, analytical, and semantic. Theoretical principles for constructing a social classification of occupations were presented in Chapter 1. At this point, we need only mention that through a detailed analysis of the structure of *SCO-1978* we tried to identify all of its fragments that were contestable from the standpoint of its theoretical assumptions. The transformation of the job market and social structure that has occurred since 1978 is responsible for the present lack of adequacy of *SCO-1978*. Occurring during this time period were major changes of the regime, the political and economic system, and many crucial industrial changes due to the dynamic development of new technologies and production domains. This had a substantial effect on the location of some occupational roles in the social division of labor; it also prompted the appearance of new occupations.

The group of analytical criteria pertains to classification aspects involved in explaining and describing social processes in statistical models when analyzing data. It proved that some of the original categories were no longer useful because their share in the totality of occupational differentiation became marginal. Therefore without doing any harm we were able to eliminate these categories in order to simplify the classification and make it more transparent. In the case of other elementary categories it turned out that they grouped heterogeneous occupational roles. For this reason we divided them into more detailed categories that were also more consistent.

The third group, semantic criteria, refers to information concerning the characteristics of occupational roles that is collected in research surveys through interviewing techniques. The exact wording of these characteristics depended on how the respondents perceived occupational differentiation. What mattered was not only their own perception of the situation of work shaped through personal job experience and

work habits but also certain categorization of occupational roles based on the system of stereotypes and meanings. Some occupations are sufficiently defined by their occupational title, some others require information about the kind of tasks performed on the job, and still others are identified by the position in the formal organization of work, or by certified work credentials. Many occupational roles require different methods of distinguishing them while the respondents often refer only to those criteria that they find the most relevant or important. Moreover, respondents' knowledge is quite diverse with respect to questions they could be asked concerning other persons' occupational roles (e.g., a spouse or a father). Finally, survey studies sometimes include questions on respondents' occupational roles performed in the past. Since human memory is naturally selective, respondents may presently emphasize some elements of these roles while - partially or even completely - forgetting about others.

The analysis in Chapter 3 of respondents' statements regarding their own occupational roles as well as those performed by other persons is very helpful in identifying analytical and semantic criteria. We refer to these statements later to illustrate the inadequacy of a specific arrangement used in the previous version of the classification and to introduce its modification. We also use this material to analyze the distributions of coded occupations in each major group in order to identify the core of the group based on of the most commonly used classification categories and to determine the least common occupations that should be considered peripheral. Finally, we examine whether the group contains one or more distinguishable bundles of occupations and whether the group could be seen as internally coherent with respect to this criterion. Results of this analysis justify many modifications to the newest *Social Classification of Occupations*.

4.2 New principles of assigning occupations to Group 0, "Senior Officials and Managers"

In the previous version of the *Social Classification of Occupations*, Major Group 0, "Senior Officials and Managers" was divided into two subgroups: 01, "Top Governmental Administrators on Central and Regional Level and Political Officials" and 02 "Top Managers of Large Enterprises and Other Institutions." In practice, the latter was used much more frequently. In the ranking of the most detailed categories, ordered according to frequency of use in coding (Sawiński 2005: Table B-0), in the first two positions were top managers of companies with up to 500 employees - in *SCO-1978*

divided into two categories only because of a difference in the branch of business. Top managers of various business organizations were coded in other categories as well, for example, “Presidents and managers of cooperatives” (code 0222), “Presidents and managers of banks” (0234), or “Top managers of central trade offices” (0212). In addition to the top managers, also coded in this group were their deputies, but only in companies of more than 500 employees.

Dominance of Group 0 by the top managers of business organizations is most visible when we sum up all elementary categories and compare the result with other segments belonging in this group. Table 4.1 presents the outcome of this comparison after coding the research data presented in Chapter 3. In addition to the Top Managers of Business Organizations, also distinguished are Top Governmental Administrators on Central and Regional Level, Top Political Officials, and Top Management in Science, Culture, Education, Healthcare, and Related.

Table 4.1 Percentages of occupations coded in *SCO-1978* to Group 0, “Senior Officials and Managers,” grouped with respect to the type of organization

Group of elementary coding categories in <i>SCO-1978</i>	Number of coded occupations	Percent
Top Managers of Business Organizations	219	74.2
Top Governmental Administrators on Central and Regional Level	36	12.2
Top Political Officials	20	6.8
Top Management in Science, Culture, Education, Healthcare, and Related	20	6.8
Total	295	100.0

Our analysis revealed that almost 75 percent of this narrow occupational group belongs to Top Managers of Business Organizations (i.e., 3 out of 4 people). Half of the others are Top Governmental Administrators. Top Political Officials, as well as Top Management in Science, Culture, Education, Healthcare, and Related, make up only a small percentage in this group.

This result was one of the reasons for modifying Group 0. From the distribution of answers it followed that some of the categories could be merged without compromising the precision of the whole classification. For this reason, in the new edition of *SCO* we introduced a new composition of this group, which is shown in Table 4.2. We discuss other modifications later in the chapter.

Table 4.2 Composition of Group 0, "Senior Officials and Managers" in *SCO-1978* and the new *SCO-2009*

Categories of <i>SCO-2009</i>	Code in <i>SCO- -2009</i>	Code in <i>SCO- -1978</i>	Categories of <i>SCO-1978</i>
SENIOR OFFICIALS AND MANAGERS	0000	0000	SENIOR OFFICIALS AND MANAGERS
TOP GOVERNMENTAL ADMINISTRATORS AND POLITICAL OFFICIALS	0100	0100	TOP GOVERNMENTAL ADMINISTRATORS AND POLITICAL OFFICIALS
Legislators and top governmental administrators	0110	0110	Legislators and top governmental administrators
Legislators, top administrators on central and regional level, including self-governing bodies	0111	0111	Legislators, top administrators on central level, and top diplomatic personnel
		0112	Departmental managers of central administration
Top administrators on local level (of cities and districts), including self-governing bodies	0112	0120	Top administrators on local level and managers in justice and law enforcement
		0121	Top administrators on regional level
		0122	Top managers of regional units of central administration and their deputies
		0123	Top administrators on local level (of cities and districts)
		0124	Managers in justice and law enforcement on regional level
		0125	Managers of justice and law enforcement on local level (of cities and districts)
Top officials of political parties and special-interest organizations	0170	0130	Political officials of party apparatus (former Polish United Workers Party)
		0140	Employees of party apparatus at PUWP and other political organizations
		0150	Employees in trade unions, welfare, and other social organizations
		0160	Employees in youth organizations

continued

Categories of <i>SCO-2009</i>	Code in <i>SCO- -2009</i>	Code in <i>SCO- -1978</i>	Categories of <i>SCO-1978</i>
Top officials of political parties and special-interest organizations on central and regional level	0171	0131	Managers of party apparatus on central and regional level
		0141	Top officials in PUPW and other political organizations on central and regional level
		0151	Top officials in professional organizations on central and regional level
		0152	Top officials in social organizations on central and regional level
		0161	Top officials of youth organizations on central and regional level
Top officials of political parties and special-interest organizations on local level (of cities and districts)	0172	0132	Managers of party apparatus on local level (of cities and districts)
		0133	Managers of internal units of party apparatus on local level (of cities and districts)
		0142	Top officials of socio-political organizations on local level (of cities and districts)
		0153	Directors, presidents, and secretaries of trade unions and social organizations on local level (of cities and districts)
		0162	Top officials of youth organizations on local level (of cities and districts)
Top ranks of armed forces and police	0180	9111	Top ranks of armed forces - major and higher
		9121	Top ranks of police and functionaries of internal affairs - major and higher
TOP MANAGERS OF LARGE ENTERPRISES AND OTHER INSTITUTIONS	0200	0200	TOP MANAGERS OF ENTERPRISES AND OTHER INSTITUTIONS
Top management	0290	0210	Top management of industrial branch federations and large enterprises

continued

Categories of <i>SCO-2009</i>	Code in <i>SCO- -2009</i>	Code in <i>SCO- -1978</i>	Categories of <i>SCO-1978</i>		
Top management of production and service enterprises – directors, presidents, board members, and trustees of businesses	0291	0211	Chief directors of industrial branch federations and industrial conglomerates		
		0212	Chief directors of central trade offices		
		0213	Chief directors and their deputies in enterprises with 500 and more employees		
		0220	Top management in enterprises with less than 500 employees		
		0221	Chief directors and their deputies in enterprises with less than 500 employees		
		0222	Presidents and managers in cooperatives		
		0223	Managers of department stores		
		0224	Managers of other enterprises with less than 500 employees		
		0234	Directors and presidents of banks		
		0271	Chief directors of agricultural, animal husbandry, horticultural, and forestry conglomerates		
		0272	Directors of state farms in agriculture, animal husbandry, and horticulture; managers of dairy cooperatives; forest district managers		
		Top management of central and of special importance institutions in science, culture, education, healthcare, and related	0292	0240	Top management of special importance institutions in science and educational institutions of secondary level
				0241	Top management of institutions in science and in education on tertiary level
0242	Directors of secondary and post-secondary schools				
0250	Top management of cultural institutions				
0251	Directors of libraries, archives, and museums				
0252	Directors of theaters, opera houses, operettas, symphonies, and show-business				
0253	Chief editors				

continued

Categories of <i>SCO-2009</i>	Code in <i>SCO- -2009</i>	Code in <i>SCO- -1978</i>	Categories of <i>SCO-1978</i>
		0260	Top management in healthcare and welfare institutions
		0261	Top management in healthcare
		0262	Top management in welfare institutions
		1111	Artistic managers
Top management of local institutions in culture, education, healthcare, and related	0293	1131	Principals of elementary schools, vocational schools, and correction centers
		1132	Principals of kindergartens, day-care centers, orphanages, boarding houses, day-care rooms, and leisure centers
		1171	Managers of medical clinics, head doctors
		1172	Managers of medical and prosthodontic laboratories
		1182	Managers of animal hospitals
		1183	Managers of animal clinics
Top management in business administration on central, regional, and local level	0294	0230	Top management of finance and business administration
		0231	Top financial, accounting, and business managers on central level and in large enterprises
		0232	Managers of business administration, transportation, and storage in central administration and large enterprises
		0233	Chief accountants in central administration and large enterprises with 500 or more employees
		0235	Other managers in organization units of central administration and large enterprises
Chief engineers and technical managers in production and service enterprises	0295	1210	Chief engineers and technical managers
		1211	Chief engineers, chief technologists, and production managers
		1213	Managers of production and technical departments

continued

Categories of <i>SCO-2009</i>	Code in <i>SCO- -2009</i>	Code in <i>SCO- -1978</i>	Categories of <i>SCO-1978</i>
		1214	Managers of enterprise internal units for research, development, and design
Central management in other institutions	0296	0270	Management of state farms in agriculture, animal husbandry, horticulture, and forestry
		0280	Management in other institutions
		0281	Captains of ports and oceanic sailing
		0282	Management of rail and wheel traffic
PRODUCTION, OPERATIONS, AND ADMINISTRATIVE MANAGERS	0300		
Production and operations managers	0310		
Production and operations managers in production enterprises	0311	1215	Other production and operations managers
		2110	Production and operations managers on technician positions or equivalent
		2114	Production and operations managers not classified elsewhere
		2200	PRODUCTION AND OPERATIONS SUPERVISORS
		2210	Chief production and operations supervisors in industry
		2211	Chief production and operations supervisors in mining
		2220	Other production and operations supervisors
		2221	Production and operations supervisors and foremen
Production and operations managers in construction enterprises	0312	1212	Management of construction sites and equipment bases
Production and operations managers in transportation	0313	0283	Aircraft captains and crew managers
		2112	Train and bus dispatchers, and air-traffic controllers
		2113	Train and mail-coach managers

continued

Categories of <i>SCO-2009</i>	Code in <i>SCO- -2009</i>	Code in <i>SCO- -1978</i>	Categories of <i>SCO-1978</i>
		2141	Captains of sailing, inshore sailing, and river navigation
		2142	Skippers of fishing cutters and boats
Administrative managers	0320		
Department managers in state and local administration, including self-governing bodies	0321	1151	Chief judges in courts and chief notaries in public notary's offices
		2318	Other department managers in state administration
Financial and economic managers in offices and enterprises	0322	2311	Chief accountants in enterprises with fewer than 500 employees
		2312	Managers of finance, accounting, and trade in industrial, construction, and transportation enterprises
		2313	Managers of storage, transportation, and economic administration in industrial, construction, and transportation enterprises
		2314	Managers of economy, trade and finance-accounting in state administration, trade, and services
		2315	Managers of storage, transportation, and economic administration in state administration, trade, and services
		2317	Managers of warehouses and dispatching
		3141	Managers of research orchards and farms in agriculture, and auxiliary farms and workshops
Managers of trade and service institutions	0323	2111	Managers of post-offices and telephone exchanges
		3111	Managers of school libraries, and museum studios
		4110	Managers in stores and repair shops
		4111	Chief managers in department stores and managers of sales

continued

Categories of SCO-2009	Code in SCO- 2009	Code in SCO- 1978	Categories of SCO-1978
		4112	Managers of restaurants and cafés
		4113	Managers of bars and school or company canteens
		4114	Managers of collection points
		4115	Managers of repair shops
Department managers in business administration	0340	2310	Department managers in offices
		2316	Managers of front offices and reception halls

4.2.1 New division of positions in public administration

In the case of management of public administration the new *SCO-2009* allows a division into only two levels: central (0111) and local (0112). Presently included with the central level positions are those of the regional level while positions in administration of cities and districts are part of the local level. Regional administration is incorporated in the central level because the new regions constitute organizational units of higher rank than the (smaller and more numerous) regions introduced in Poland by the previous administrative reform of 1973. Another modification consists of including the formerly separate categories of high officials of justice and law enforcement (*SCO-1978* codes 0124 and 0125) with other high positions in public administration. In addition to some substantial reasons, this decision was made because none of these categories was ever used in coding the results of the aforementioned research survey. The new version of *SCO* still has category 0110, "Legislators and top governmental administrators" but now it is divided into only two elementary categories instead of the former seven.

4.2.2 Top officials of political parties and special-interest organizations

In the new classification we decided to include a new category "Top officials of political parties and special-interest organizations" under code 0170, which was not used in *SCO-1978* (Table 4.2). This decision resulted from the substantial difference of the current system of political parties and special-interest organizations from the system in place when *SCO-1978* was first prepared. The original version distinguished separate classification

categories for officials and employees of party apparatus, trade unions, welfare, and youth organizations in addition to categories for persons holding positions in other organizations of central, regional, and local levels. In the new version, *SCO-2009*, we maintained the divisions of central level (0171) and local level (0172) but abandoned the use of separate codes for different parties and special-interest organizations. Since the new categories do not match the old ones, they are listed under codes that were not used in *SCO-1978*.

4.2.3 Top managers of large enterprises and other institutions

In this category we introduced an entirely new classification arrangement. To the “Top management” category we assigned a new, previously unused code, 0290, while its corresponding higher order category “Top managers of large enterprises and other institutions” was coded 0200.

The first subcategory in Group 0290 is “Top management of production and service enterprises – directors, presidents, board members, and trustees of businesses,” under code 0291. In this case we abandoned the previously applied criterion of workplace size. In *SCO-1978* there was separate coding for management in enterprises with more than and fewer than 500 employees. However, in organizations with a complex structure – with multiple branches or agencies – sometimes at the coding phase it was difficult to assess the size and potential of the whole structure. This happened, in general, because respondents provided information only about the size of a unit they managed directly (e.g., a central office employing a few dozen people and being in control of an organization of many thousands of employees). Moreover, the results of our coding analysis demonstrated that the categories of managerial occupations in workplaces of more than 500 employees have been rarely used.¹

The next modification concerned a new take on occupations involving managing institutions in the public sector. We placed them in separate categories because such institutions do not directly follow market economy goals. The managerial credentials and competence of people hired to run these institutions are less important than their substantive competence in the primary field of the institution’s professional activity (e.g., hospital directors are usually physicians by training while professors rather than trained bureaucrats are at the helm of colleges and universities). The roles

¹ For instance, category 0213 “Chief directors and their deputies in enterprises with 500 and more employees” constituted only 3.4 percent of all directors coded in Major Group 0; category 0233, “Chief accountants in central administration and large enterprises with 500 or more employees” was not chosen even once (Sawiński 2005: Table B-0).

of people managing public sector institutions include an important component shared by another major occupational group, professionals and specialists. For this reason it was appropriate to make it a separate segment that differed in many respects from managers of business enterprises.

The complex situation of people managing public sector institutions created dilemmas at the coding stage, for instance, in whether to assign a given person to the category reflecting his or her profession or to the category of managers. Authors of *SCO-1978* also confronted these dilemmas when they assigned some occupations involving the management of public sector institutions to Group 1, "Specialists." For instance, consider category 1131, "Principals of elementary and vocational schools," coded in the analyzed data 44 times - more than twice as often as all other occupations involving management of public sector institutions that were coded at the level of Major Group 0 (20 cases).

In the new *SCO-2009* we distinguished the top management in public sector institutions as category 0292, "Top management of central and special importance institutions in science, culture, education, healthcare, and related" and category 0293, "Top management of local institutions in culture, education, healthcare, and related."

In subgroup 0290 "Top management," we included without modification the *SCO-1978* category listed as "top management of economic and finance administration" (0230). This category included top management in business administration on central, regional, and local levels, who were also involved in managing storage and transportation. In *SCO-2009* we listed it under code 0294.

4.2.4 Middle managerial positions

In *SCO-1978*, Major Group 0 included only top managerial positions of the highest level, mostly in large organizations. Positions at lower levels of management as well as top managerial positions in smaller organizations fell into occupational groups at lower levels. Although conceptually clear, this distinction created some problems in applying *SCO-1978* in practice. Most of these problems pertained to managerial positions coded in Major Group 1, "Specialists," according to mixed criteria: one referring to management, the other to specialized professional knowledge and competence.

One can gain insight into such interpretive problems by analyzing the way occupations were classified into one of the basic categories of *SCO-1978*, "Managers of production and technological departments" (under code 1213). In *SCO-1978* this category was included in Group 1, "Specialists." A question arises whether the fact of holding a managerial position - which was not essential for Group 1 - qualified this person's occupation

for classification in a category equivalent to the one labeled in English as “Professionals?”

Listed below are some examples of occupations coded in this category. In many cases, on the basis of the interviewer’s notes, it was difficult to assess the management level, the size of the team working under this manager, or the particulars of job tasks. For instance:

Bakery manager/managed a bakery, supervised the work;
Construction foreman/managed construction;
Manager/supervision of workers-electricians on the job;
Construction manager/managing roadwork construction.

Judging from these descriptions one cannot exclude the possibility that the supervisory work was performed by a technician or even an experienced skilled worker (foreman). One can therefore assume that in classifying any of the aforementioned occupations to category 1213 of SCO-1978, the coder was guided by the fact that a respondent had a tertiary education, which was easy to establish on the basis of answers to other questions on the questionnaire. However, another conjecture was also possible: being unable to find an adequate managerial category of a lower level, the coder decided to use category 1213 “Managers of production and technological departments,” taking the sole fact of managing as an equivalent of having skills granted by tertiary education.

Coding for some occupations raised doubts. These are:

Distillery manager/supervision of alcohol production and staff supervision;
Manager/director of beverage distributing enterprise/managing business activities;
Mechanical engineer/president/managing plastics production and printing enterprise.

In the cases listed above a code from Group 0 would seem more adequate because the persons in these positions managed independent enterprises. Coding these occupations in Category 1213 could suggest that the criteria of coding occupations to Group 1 vs. coding them to Group 0 were not sufficiently clear.

Yet another problem is illustrated by the following example:

Mechanical engineer/manager of technological implementations program in Cessna company/ staff supervision, program coordination.

This is a typical description of the tasks of a research and development director. As it further follows from the description, at the director's disposal was a "staff" whose work he or she supervised. However, the fact of supervising or managing was not an essential element of this occupational role but rather its functional element. Therefore using the symbol of the category under discussion seemed dubious in this case. This could be an indication of the coders' inclination to look for easily identifiable elements in occupational descriptions, particularly in the case - as in the example provided - where no classification category closely fitted the description.

Because of doubts associated with coding managerial positions in Group 1, we moved these occupations to Group 0. This is a solution applied in *ISCO (International Social Classification of Occupations)*. In their description of ways to classify occupations to Category ISCO 1200, "Corporate managers," the authors of the codebook to *ISCO-88 COM* wrote:

In some cases where specific professional, technical or operational skills and knowledge may be required of workers at managerial level, it may be difficult to decide whether a particular job belongs in this [i.e. "corporate managers"] or another sub-major group. In such cases, additional information on the main tasks of the job in question is essential. If the main tasks require the operational application of specific professional knowledge or a particular technical skill, then the job belongs in a different sub-major group. If, however, professional knowledge or technical skill serve only as a basis for managerial tasks, then the job belongs in this sub-major group. For example, if the main tasks of a job consist of diagnosing and treating illnesses, the job belongs in Major Group 2, Professionals. However, if one of the main tasks is to allocate research and development funds for various projects within an enterprise or organization on the basis of medical knowledge, then the job belongs in this sub-major group (ISCO-88 COM: 10)

The decision to transfer managerial occupations and positions from Group 1 to Group 0 was not easy because it led to a change of classification structure at the level of major groups; as a consequence the classification lost its essential asset of ensuring the comparability of current research studies with those conducted and coded in the past. However, resisting the change also had drawbacks, the most important of which was an artificial classification of managerial positions to the group of "Specialists" only on the basis of the manager's tertiary education. Classification users should consider education only as an attribute of the person's occupational role.

Category 1213, “Managers of production and technological departments,” has been just one example of basic categories included in Major Group 1, “Specialists,” whose members held managerial positions. There are more such categories (see Table 4.2). To them belong all basic categories of Group 1210, “Chief engineers and technical managers,” as well as basic categories involving managerial positions within occupational domains and specialties. For instance, among teachers, two categories of managerial positions were distinguished: 1131, “Principals of elementary schools, vocational schools, and correction centers” and 1132, “Principals of kindergartens, day-care centers, orphanages, boarding houses, day-care rooms, and leisure centers.” Similarly, among specialists in medicine, the two distinguished managerial categories were 1171 and 1172, and among specialists in veterinary science – 1181 and 1182. Category 1151, “Chief judges in courts and chief notaries in public notary’s offices” was such a category among lawyers.

The transfer of managerial positions from Group 1 to Group 0 required introducing in this group new subgroups corresponding to institutions and organizational levels not accounted for in *SCO-1978*. For this reason we provided two new basic categories:

- 0293 Top management of local institutions in culture, education, healthcare, and related
- 0295 Chief engineers and technical managers in production and service enterprises

Category 0293 involves occupations of directors and managers of public sector institutions formerly not included in Group 0 because of functioning of their institutions at the local level. Principals of elementary schools (listed in *SCO-1978* under code 1131) may be a fitting example here. Category 0295 is to include occupations formerly contained in subgroup 1210, “Technical specialists managing enterprise departments.”

Detailed ways of assigning former classification categories of Group 1 to the new categories of Group 0 are presented in Table 4.2.

4.2.5 Incorporating lower-level managerial positions into Group 0

In *SCO-1978* Major Group 2, “Technicians, foremen, and specialized office workers,” a mix of managerial positions appeared, which resulted in many coding problems. The *SCO-1978* basic category “Foremen” is an example. On the basis of the interviewers’ notes (Sawiński 2005: Table A-6) the coded occupations were divided into two groups. The first one included occupations involved in managing the enterprise departments or

work shifts. Such occupations should instead be coded in the previous subgroup, 1210, “Chief engineers and technical managers,” or in the basic category discussed earlier, 1213, “Managers of production and technical departments” (Table 4.2). These are, for instance:

Clothing production manager/supervision over production;
Foreman, foundry specialist in steel production/supervising preparation of liquid steel for casting;
Foundry foreman/managing production;
Foreman, shift manager/supervised shift work.

The second group incorporated occupations that were mainly and essentially involved in direct supervision of workers’ tasks, and included the possibility of doing some physical labor such as preparing material for work or repairing equipment, which is basically a foreman’s task. These were, for instance:

Manager of freight forwarding hallway for construction materials/assigned work tasks to general construction technician/foreman on building sites;
Weaving foreman/repair of weaving machines/supervision of weavers;
Foreman of central heating quarter/supervision of central heating stokers;
Dye works foreman/selected yarn for dying/supervised dyers.

In many cases it was actually difficult to assess what level of management was involved. Faced with this dilemma, coders tended to select Group 2, probably guided by the person’s education or certification as “technician.” As a result, this category included occupations the essence of which was supervising workers or performing physical work. This fact did not seem to fit the intended profile of this group, which should instead incorporate “middle-level specialists” (*semi-professionals*). It also did not fit the empirical data, revealing that the core of Group 2 was formed by occupations involving office work; “accountant” was the most common occupation in this group (more than 25 percent).

For these reasons we decided to remove from Group 2 all occupations previously coded to the category of “managers.” As a result, such occupations were split into three categories:

- (i) middle-level managers, transferred to Group 0;
- (ii) foremen (classified in *SCO-1978* as a separate category);
- (iii) workers coded according to occupations and specialties.

For instance, an occupation described by the interviewer as “electrician/foreman” would be coded to the category “electricians, electric fitters, and repairers” since it does not follow from its description that the dominant element of this job is supervising the work of others.

Table 4.3 presents all basic categories of *SCO-1978* Group 2 that involved managing the work of others either directly or indirectly. These occupations made up 36.7 percent of all occupations in Group 2. It was therefore worthwhile to assess the consequences of eliminating these categories and transferring occupations coded in them so far to other categories and groups.

The largest portion involves occupations coded to subgroup 2310, “Managers of departments and sections in offices” and to its basic categories 2311 to 2318. Taken together, these occupations make up 23.5 percent of all occupations coded in Group 2. In subgroup 2310, in turn, the largest is basic category 2314, “Economics managers in trade, services, and administration” (Table 4.3). An analysis of interviewers’ notes (Sawiński 2005: Table A-7) shows that quite often it does not follow from the description of these occupations that supervising workers is an essential element of a given occupational role. Here are some examples:

Leasing assistant/negotiations with customers leading to leasing and credit contracts;
Economist;
Personnel manager/starting and terminating employment contracts, preparing rules,
supervising employees, organization of schooling, preparing materials for general meetings;
Psychologist/director of human affairs/responsible for carrying out personnel policies,
administering and developing personnel, hygiene, and safety of work;
Clerk in real estate and public utility department/public contracts, organizing auctions;
Medical secretary in sanatorium/typing, preparing prescriptions, transporting medications.

Coders placed these occupations in category 2314, “Economics managers in trade, services, and administration” probably because in another questionnaire reply they found information about the person’s managing the work of others. However, if managing employees were an essential element of the person’s occupational role, this fact should also have been provided in his or her occupation description. If it were not, there would be no basis for deciding that the discussed position was “managerial.”

Table 4.3 Basic categories of *SCO-1978* Group 2 involving elements of managing the work of others

Code in <i>SCO-1978</i>	Category title in <i>SCO-1978</i>	Percent of coded occupations	Category code in <i>SCO-2009</i>
2110	Production and operations managers	0.4	0311
2111	Managers of telephone exchanges and post-offices	1.6	0323
2112	Train and bus dispatchers, and air-traffic controllers	1.5	0313
2113	Managers of trains and mail-coaches	0.4	0313
2114	Other production and operations managers	3.0	0311
2141	Captains of sailing, inshore sailing, and river navigation	0.0	0313
2142	Skippers of fishing cutters and boats	0.0	0313
2200	Production and operations supervisors	0.0	0311
2210	Chief production and operations supervisors in industry	0.0	0311
2211	Chief production and operations supervisors in mining	1.3	0311
2220	Other production and operations supervisors	0.0	0311
2221	Production and operations supervisors and foremen	5.0	0311
2310	Managers of departments and sections in offices	1.9	0340
2311	Chief accountants in enterprises with less than 500 employees	4.8	0322
2312	Economics managers in industry, construction, and transportation	2.4	0322
2313	Managers in storage and transportation	2.9	0322
2314	Economics managers in trade, services, and administration	6.5	0322
2315	Administrative managers in trade, services, and administration	2.2	0322
2316	Managers of front offices and reception halls	0.8	0340
2317	Managers of warehouses and dispatching	0.7	0322
2318	Other managers in state administration	1.3	0321

In addition, it should be noted that the sole fact of having an occupational title of “manager” or “director” in a contemporary organization does not imply that one supervises or directs employees. Sometimes, such titles result from a tradition that may have roots in the culture of the corporation that may be common to the organizations agencies worldwide. For instance, it is common practice to grant the title of “director” to a senior employee charged with conducting business and trade negotiations with representatives of other organizations. Delegating a “director” to such talks is considered a token of appreciation for the partner; it elevates the rank

of negotiations and, ultimately, it helps achieve a favorable agreement.

Aside from occupations for which managing and supervising employees is not essential, category 2314 contains some occupations that are intrinsically linked with management. These should have been coded at a different level. Here are some examples (Sawiński 2005: Table A-7):

Economist/managerial position Director of the Institute of Textiles [father's profession];

Branch manager in clothing enterprise/branch operations managing;

Bakery manager/baking bread, preparing flour, weighing, kneading dough, etc.;

Economist/department manager in bank/coordinating team work;

Manager of enterprise making carbonated beverages/organization of work, documenting, repairing machines.

Presented above are either top positions in business organizations, or middle-level positions in large business organizations, or positions assumed by owners of small businesses – even though the title of “manager” was not used in the description. We can presume that when deciding to place these occupations in category 2314 the coders were guided by the secondary education of these position holders. One can similarly analyze any of the remaining categories of managerial positions listed in Table 4.3. Still, we do not intend to suggest that eliminating these categories from Group 2 altogether would be the best way of solving all problems. Indeed, to the contrary – many of them should remain in their original location.

There were also problems with classifying positions when the occupational description was short and the only information provided was the title of “manager” and that the person had secondary education, for example: “manager/managerial,” or “administration manager/ organized work of administrative team.” Using categories of subgroup 2310 was a convenient way of dealing with these problems, but – as a matter of fact – this revealed little about the specifics of any given occupation. Therefore, it was worth asking the extent to which using these categories would properly reflect the social positions of persons performing those occupational roles. An additional argument for eliminating managerial positions from Group 2 was that the more or less equivalent Category 3 of *ISCO-1988*, “Technicians and associate professionals,” did not distinguish such positions. In spite of that, coders using *ISCO-1988* in coding research results did not report this as a particular difficulty.

Taking into account these arguments, in *SCO-2009* we introduced subgroup 0300, which contained middle-level managerial positions

(Appendix). This subgroup consists of managerial positions so far classified in basic categories of Group 2, “Technicians and specialized office workers.” Let us reemphasize that only occupational roles in which managing the work of subordinates is an essential element are listed there. Occupational roles for which the substantial elements of the job tasks are essential, should be classified in an adequate occupational category depending on the work content. When occupational roles involve direct supervision of manual workers and therefore combine elements of work management and work performance they should be classified in the category of foremen.

Division of the new subgroup 0300 - listed as “Production, operations and administrative managers” - was presented in Table 4.2. This subgroup consists mainly of the basic categories of *SCO-1978* Group 2, “Technicians and specialized office workers,” which contained managerial positions of the middle level (Table 4.3). However, in subgroup 0300 we also included some basic categories belonging to Group 0 or Group 1 in the original *SCO-1978*. These are, for instance, “Aircraft captains and crew managers” (0283) or “Management of construction sites and equipment bases” (1212). We did this because we concluded that in spite of some independence, the holders of these positions constituted only parts of larger business organizations and should thus be classified to categories of middle-level managers.

4.2.6 Incorporating managerial positions in trade and services into Group 0

In *SCO-1978* Group 4, “Sales and service workers” doubts also occurred as to what extent it was justified to distinguish managerial positions in it. Table 4.5 lists the occupations in this group that involved managerial positions.

Table 4.4 Categories of managerial positions in *SCO-1978* Group 4

Code in <i>SCO-1978</i>	Category title in <i>SCO-1978</i>	Percent of coded occupations
4100	Managers and employees in stores and repair shops	0.2
4110	Managers in stores and repair shops	0.1
4111	Chief managers in department stores and managers of sales	8.1
4112	Managers of restaurants and cafés	0.9
4113	Managers of bars and school or company canteens	1.2
4114	Managers of collection points	0.2
4115	Managers of repair shops	2.7

Managerial occupations in Group 4 were most often classified in category 4111, “Chief managers in department stores and managers of sales.” As the coding analysis revealed, some people classified in this category performed managerial tasks and supervised the work of their subordinates in a way characteristic for managerial positions. For instance:

Manager of “Lidl” store-chain/supervision and division of work among sales personnel, sending supplies to stores;
Salesman/manager of grocery store/supervising personnel, accounting for income, protecting goods;
Manager (salesman)/division manager in sport store/supervision of sales, hiring staff, filling out documents.

However, a substantial part of coded occupations corresponded to descriptions characteristic of the roles of salesmen who were merely granted a title of “manager,” for example:

Manager of sport store/taking in deliveries, displaying goods, managing sales;
Store assistant manager/sales of groceries;
Saleswoman and shift manager/attending customers, handling returns, complaints.

Sometimes descriptions were so brief that decisions about where to classify an occupation were very difficult, for example:

Saleswoman/store manager;
Store manager;
Director/managing meat store.

In the case of Group 4, *SCO-1978* modification consisted of accepting that no categories corresponded to managerial positions in this group (as in Groups 1 and 2). This meant excluding the categories marked up to now by codes 4100–4115 (Table 4.4) from Group 4 of the new classification. We transferred these occupations to new category 0323, “Managers of trade and service institutions” created in *SCO-2009* within Group 0 (Table 4.2).

4.3 Group 1, “Specialists”

4.3.1 Sociological interpretation of the composition of Group 1, “Specialists”

Among the researchers and users of the *Social Classification of Occupations* the Group “Specialists” is most often associated with representatives of traditional intelligentsia and professions such as physician, lawyer, writer, actor, and the like. What may surprise many researchers, however, is that the core of the group of “Specialists” is made of teachers. This is demonstrated by the data presented in Table 4.5, which shows six basic occupational categories consisting of a total of half of the whole group of specialists.²

Table 4.5 Percentages of the most frequently coded categories in *SCO-1978* Group 1, “Specialists”

Code in <i>SCO-1978</i>	Name of category in <i>SCO-1978</i>	Percent of all occupations	Cumulative percent
1135	Teachers and tutors in primary and vocational schools	17.4	17.4
1143	Other specialists in social sciences and humanities	9.9	27.3
1134	Teachers and tutors in secondary schools	7.6	34.9
1173	Physicians (medical doctors)	5.1	39.9
1213	Managers of production and technical departments	5.1	45.0
1122	Other faculty in colleges and universities, researchers	4.9	49.9

The two categories of teachers (1134 and 1135) together make up 25 percent of the total of all specialists. Moreover, if we add categories 1131, “Principals of elementary schools, vocational schools, and correction centers” (3.1 percent), 1132, “Principals of kindergartens, day-care centers, orphanages, boarding houses, day-care rooms, and leisure centers” (1.3 percent), and 1130, “Teachers” (without information on the school level) (1.6 percent), then the share of teachers in the group of specialists rises to 31 percent. Moreover, broadening the definition of education to include the tertiary level adds more categories: 1121, “Professors in colleges and universities and research institutions” (1.1 percent) and 1122, “Other faculty in colleges and universities, researchers” (4.9 percent). Therefore, it turns out that 39 percent of the intelligentsia category is employed in education.

² For a listing of all occupational categories, see Sawiński 2005: Table B-1.

These remarks are not to suggest that teachers should be distinguished as a separate major group. Arrangements accepted in the *Social Classification of Occupations* are sufficient to identify the categories of “teachers” and distinguish them when needed for analytical reasons. In making these remarks we wanted to stress again the significance of routine interpretations connected with using the classification of occupations.

4.3.2 Occupations and specialties involving marketing and management of human resources

The second most frequently used category (with an almost 10 percent share) required a new arrangement. This was *SCO-1978* category 1143, “Other specialists in social sciences and humanities.” This category was originally planned as auxiliary - to use for coding occupations that did not fit other basic categories of subgroup 1140, “Sociologists, psychologists, and historians.” The authors of the classification had in mind the less frequently appearing specialties, like archaeologist, anthropologist, ethnographer, demographer, and so on. Category 1143 was also used to code some new occupations that did not exist at the time of *SCO-1978*’s creation.

Changes in the job market originated by the regime change resulted in the considerable growth of specialties connected to marketing and the management of contemporary corporations, which are based on skills learned mainly in schools of economics. Since *SCO-1978* did not distinguish an occupational category that would fit this group of people the coders used category 1143. Detailed descriptions of occupations coded in this category demonstrate this fact (Sawiński 2005: Table A-4).

The new *Social Classification of Occupations* surely required expansion to make proper room for the new categories; this concerned occupations involved in marketing, which included the sales of goods and services in which the enterprise specialized as well as promotions and advertising, and human resources management. In *SCO-2009* we included these expansions in old category 1140, “Sociologists, psychologists, and historians,” which was renamed: “Specialists in economics and social sciences.” Table 4.6 presents these changes.

Former category 1143, which grouped mainly occupations that did not exist in Poland in 1978, was replaced by a few new basic categories. The first is 1144, “Economists, and specialists in banking and finances.” It not only allows the correct classification of occupations concerned with banking and finances, such as stock market analyst, investment adviser, or auditor. It also allows correct coding when the occupational description is limited to the field of study or specialty and gives no information on specific job tasks. To illustrate this situation, below we present a few

examples of the occupational descriptions of occupations coded so far in *SCO-1978* category 1143 (Sawiński 2005: Table A-4):

Economist/preparing estimates of expenditures;
Economist/I don't remember;
Economist/work in bank.

Table 4.6 Expanding *SCO-1978* subgroup 1140, “Sociologists, psychologists, and historians” to include occupations and specialties involving marketing and management of enterprise internal resources

Categories in <i>SCO-1978</i>	Code in <i>SCO-1978</i>	Code in <i>SCO-2009</i>	Categories in <i>SCO-2009</i>
Sociologists, psychologists, and historians	1140	1140	Specialists in economics and social sciences
Sociologists	1141	1141	Sociologists and political scientists
Psychologists	1142	1142	Psychologists
Other specialists in social sciences and humanities	1143	1144	Economists, and specialists in banking and finances
		1145	Specialists in management of human resources and development strategies
		1146	Specialists in marketing, promotion, and PR (public relations)
		1147	Specialists in welfare services and social work
		1149	Other specialists in social sciences and humanities

We transferred the former residual category 1143 at the end of subgroup 1140 and assigned it code 1149. This category is needed because the broad field of social sciences and humanities contains a number of narrow occupations and specialties, such as anthropologist, ethnographer, or demographer.

An important element of modifying subgroup 1140 consisted of expanding it with three new basic categories under codes 1145, 1146, and 1147. Category 1145, “Specialists in management of human resources and development strategies” involves occupations in which the work is essentially strategic consulting, formulating new market strategies, market data analysis, new product development, simulation analysis, and forecasting. The work activities of individuals in this category are generally concen-

trated within the enterprise. Employees belonging to this category are charged with recruiting new staff, making sure they have appropriate skills, building motivational systems, creating an enterprise image among employees (internal PR), and conducting internal evaluation studies. The following list of occupations could be classified in this category (Sawiński 2005: Table A-4):

Non-manual worker/specialist in crisis handling/working documents (involving crisis management);
M.A. in banking/specialist/managing projects;
Senior economist/management;
Economist/specialist in economical analysis/analysis and budgeting expenditures;
Manager/estimating insurance risks;
Internal inspector/control and reporting;
Specialist in staff training/organization of training.

The next new category, 1146, “Specialists in marketing, promotion, and PR (public relations),” involves occupations with activities aiming outside the enterprise. They deal with market recognition: the competition, consumer needs, formulating communication strategies in the form of promotions, advertising, and PR. Occupational descriptions corresponding to occupations belonging in this category are, for instance (Sawiński 2005: Table A-4):

Specialist in exports/handling export orders, recruiting customers, logistics, advertising;
Specialist in marketing/manager of marketing division/contacts with media and press, hotel advertising, long range strategies, representing the hotel outside;
Specialist in promotions and advertising/preparing business advertising materials, dealing with printers;
Computer specialist/marketing specialist/dealing with foreign customers;
Specialist in marketing/deals with advertising and promotion for the city of Białystok;
Specialist in marketing/recruiting customers for businesses.

The third new category, under code 1147, is “Specialists in welfare services and social work.” These occupations generally require tertiary education and therefore belong to the group of specialists. In *SCO-1978* there was no separate category for this occupational group, relegating these

occupations to be coded according to the learned specialty (e.g., psychologist, sociologist, physician), or, in the absence of the appropriate specialty (e.g., M.A. in psychological rehabilitation), to residual category 1143.

4.4 Group 2, “Technicians and specialized office workers”

The main changes introduced in this group concern eliminating from it all management positions and transferring them to new *SCO-2009* Group 0. We have already discussed (in section 4.2.5) the justification for this change together with the listing of transferred occupations (Table 4.3). This has made *SCO-2009* Group 2 more homogeneous.

In the new version of the classification we decided to maintain the traditional title of this group since in our opinion it was popular among the classification users. However, one has to keep in mind that it differs from the classification commonly called “semi-professionals” in English-language sociological terminology. In contemporary societies this group is dominated by occupations involving financial operations, such as accountants. Analysis of the coding results (Table 4.7) also demonstrated this fact. After removing the managerial occupations reclassified to Group 0 it turned out that the largest category in *SCO-1978* Group 2 was 2323, “Bookkeepers and accountants.” The classical technicians of industrial specialties by no means dominated this group.

Table 4.7 Percentages of the most frequently coded categories in *SCO-1978* Group 2, “Technicians and specialized office workers”

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations	Cumulative percent
2323	Bookkeepers and accountants	21.5	21.5
2314	Managers of economy, trade and finance-accounting in state administration, trade, and services	6.5	28.0
2221	Production and operations supervisors and foremen	5.0	33.0
2324	Record-keepers, inspectors in employment and wages	4.9	37.9
2311	Chief accountants in enterprises with less than 500 employees	4.8	42.6
2123	Electrical, electronics, and power-industry technicians	4.7	47.4
2328	Inspectors and instructors of administration	4.3	51.7

4.5 Group 3, “Other middle-level non-manual workers”

SCO-1978 Group 3 generated the most serious doubts about the way it was distinguished and about its occupational composition. Its name (“Other non-manual workers”) informed only that it contained non-manual workers not included in the remaining groups of *SCO*. From the general order of the classification one might also assume that this group was located “below” the already discussed categories of non-manual workers. In the process of coding, the occupations belonging to Group 3 did not create problems because most of their categories were described by unique and unambiguous names. The doubts concerned only the composition of the group of “other non-manual workers.”

Table 4.8 Subgroups belonging in *SCO-1978* Group 3, “Other non-manual workers”

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations
3100	Middle-level specialists and semi-professionals	
3110	Middle-level specialists in education and culture	13.7
3120	Nurses and middle-level medical personnel	18.7
3130	Product determination middle-level specialists	0.8
3140	Middle-level specialists in agronomy and animal rearing	1.7
3150	Middle-level specialists in finance, insurance, travel, and trade	14.4
3160		
3200	Routine office workers	
3210	Clerks	26.7
3220	Cashiers	5.1
3230	Secretaries and typists	17.1
3240	Others	0.5

A number of diversified subgroups are in the composition of *SCO-1978* Group 3. They are listed in Table 4.8. Subgroup 3110 consists of specialists in education and culture. These are occupations such as librarians, occupational trainers, and kindergarten teachers. In subgroup 3120 nurses constitute the dominant occupation. In *ISCO-1988* both these groups are classified one or two levels higher, depending on whether the persons working in these occupations have tertiary education or not.

The situation is similar in subgroup 3140, “Middle-level specialists in agronomy and animal rearing,” which involves occupations in agriculture. In *ISCO* these occupations are classified one level higher, on a par with tech-

nicians of other specialties. The last category linking subgroups 3150 and 3160 - "Middle-level specialists in finance, insurance, travel, and trade" - involves specialties that were also classified one level higher in *ISCO*. These occupations did not appear in the original *SCO-1978* and were added only during subsequent modifications.

The second block of occupations in Group 2 roughly corresponds to *ISCO-1988* Group 4, "Clerks." During the process of coding with *Social Classification of Occupations* these occupations were identified by specific terms such as like "clerk," "secretary," "typist," "cashier," or "receptionist." As a result of identifying this category with a limited number of specific occupations fewer occupations were coded in it than in the "Clerks" category in *ISCO*. In the coded material of our research the coders used symbols 3200-3249 of *SCO-1978* in the case of 589 occupations while in Group 4 of *ISCO* 918 occupations were coded. The main reason for this discrepancy is that the coders using *SCO-1978* were inclined to code some occupations in Group 2, "Technicians," and some in Group 4, "Sales and service workers," rather than in Group 3 in situations when the occupational descriptions provided no occupational titles characteristic for Group 3.

It is difficult to suggest corrections to *SCO-1978* Group 3 that would be free of reservations. From a factual standpoint the easiest way would be to transfer occupations of subgroups 3110-3160 ("Middle level specialists and semi-professionals") to Group 2. However, this transfer would substantially disrupt the classification structure and make it difficult to compare new data with data collected earlier. For this reason we decided to leave these occupations in Group 3.

However, we supplemented Group 3 with two categories:

- 3300 Police, armed forces, and national security functionaries
- 3400 Entertainment and sports associate professionals

To the first of these categories we transferred occupations from Group 9 of *SCO-1978*, "Others and unclassified," which had been eliminated and had included the armed forces and police functionaries. We transferred the category of "Entertainment and sports associate professionals" from *SCO-1978* Group 4 to category 3400. This was done because the prestige and social positions of individuals assuming these occupational roles differ from most of the occupations belonging to Group 4, "Sales and service workers." Furthermore, both of these modifications are consistent with the arrangement in *ISCO-1988*.

4.6 Group 4, “Sales and service workers”

SCO-1978 Major Group 4 “Sales and service workers,” corresponds to *ISCO-1988* Group 5, “Service workers and shop and market sales workers.” As was presented in Chapter 3, in *ISCO-88* this group is dominated by one category of “Shop and market sales workers” (under code 5220). *SCO-1978* contains no such accumulation of occupations in one category because sales workers are divided into five subcategories according to the type of store they work in. Furthermore, two separate categories are distinguished in *SCO-1978*: 4127, “Store cashiers,” and 4111, “Store managers” (Table 4.9). Summing up all categories of sales workers in Group 4 they amount to 51.3 percent of all coded occupations in this group – a result close to the share of category 5220, “Shop and market sales workers,” constituting 54.3 percent of all occupational roles in *ISCO-88* Group 5. The shares of sales workers among all analyzed occupations are similar (4.4 percent in *SCO-1978* and 4.5 percent in *ISCO-1988*). It should be noted that in *ISCO-88* store and shop owners who perform sales in their stores are coded in the category of sales workers. However, in our *Social Classification of Occupations* they are coded in the group of “Owners.”

Table 4.9 Percentages of occupations coded in categories of *SCO-1978* Group 4 involving sales workers

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations
4100	Managers and workers in stores and repair shops	0.2
4110	Managers in stores and repair shops	0.1
4111	Chief managers in department stores and managers of sales	8.1
4120	Sales workers	4.1
4121	Sales workers in grocery stores	18.5
4122	Sales workers in clothing and shoe stores	3.9
4123	Sales workers in technical and industrial stores	9.2
4124	Other sales workers	0.9
4125	Newsstand and kiosk agents; stallholders	1.6
4127	Cashiers in stores and repair shops	4.7

To what extent was the division of sales workers into basic categories in *SCO-1978* justified? Formally, it divided a rather large category into a number of subgroups. In practice, however, it caused problems in coding because the divisions applied were not disjunctive. In particular, it was not possible to code a sales worker in a general store selling both groceries

and household goods and chemicals. An equally difficult situation arose when a sales worker was also a store manager or cashier. In small stores combining all of these functions was the norm.

At the same time, the division of sales workers according to the substance of products sold, which was assumed in *SCO-1978*, did not consider the store differentiation according to a crucial criterion in terms of contemporary consumer behavior – the division of retail business into traditional and modern trade practices. In traditional retail the salesperson provides the goods to the consumer over a counter; in modern retail practice, the consumer shops in a supermarket. Particularly important in modern retailing is a shopping mall a.k.a. hypermarket. The salesperson's role in a shopping mall is different from that in a traditional store. His or her work tasks are usually limited to stocking products and displaying them on the shelves. Direct contact with the customer – the most important element of traditional trade – is almost missing.

For these reasons we decided to introduce two new categories in *SCO-2009* corresponding to both trade practices. These are:

- 4131 Salespersons in shopping malls, supermarkets, and department stores
- 4132 Salespersons in traditional stores

We supplemented these categories with “Salespersons in (open) markets” (4133) and “Cashiers in stores and service shops” (4135). With the residual category “Other salespersons” (4134) these categories form the new subgroup 4130, “Store salespersons and cashiers,” replacing the old subgroup of “Salespersons” (listed in *SCO-1978* under code 4120).

The second modification concerned the addition of a new basic category “Property and personal security guards” listed under code 4510 (Appendix 1). This category corresponds to the *ISCO-1988* category “Protective service workers not elsewhere classified” (under code 5169), which was the second most frequently applied category by the coders (Sawiński 2005: Table A-8). In the 1978 version of *SCO* there was no category that could be considered equivalent to the one in *ISCO*. The one closest in character was *SCO-1978* category “Janitors, night watchmen, doorkeepers” listed in the group of unskilled service workers. However, this did not seem to be an appropriate assignment. More and more often security companies hire individuals schooled in various martial arts and use of weapons, and well-versed in modern methods of communication and working in teams. Moreover, the security business is not only limited to private homes and closed enclaves but also involves public facilities, banks, offices, and foreign company agencies. The old stereotype of a night

watchman guarding building materials on a construction site no longer applies.

Finally, managerial occupations and positions formerly classified in *SCO-1978* Group 4 have been transferred to Group 0 (see 4.3.6).

4.7 Group 5, “Skilled manual workers”

With respect to the number of basic categories distinguished as well as the number of coded occupations, Group 5 is the largest of the major groups of *SCO-1978*. It contains 94 basic categories that encompass 26.4 percent of all occupations coded. Every fourth occupation was classified in this group.

As compared to *SCO-1978* two kinds of modifications were made in Group 5. First, we restructured the subgroup of “foremen.” Second, we abandoned some of the basic categories that had no practical use and could thus be eliminated.

4.7.1 Subgroup of foremen

In *SCO-1978* Group 5, “Skilled manual workers,” foremen constituted a large separate segment – 26 basic categories of the Group 5 total of 94 were allocated to it. These categories were very heterogeneous, as is apparent from looking at the *ISCO* codes corresponding to the basic occupations coded in *SCO-1978*. Table 4.10 presents the list of occupations (with their corresponding *ISCO-1988* codes) coded using *SCO-1978* in the category, “Foremen in assembly and construction work” (5132). In *SCO-1978* this was the largest category of foremen encompassing 100 occupations. In *ISCO-1988* they were coded in 27 different categories belonging to 5 major occupational groups (see Table 4.10). This again demonstrated that classifying positions linking management with substantial work created problems in practice.

The degree of heterogeneity for the category of foremen may be expressed by the Gini index. Its average value is 0.419 (if as a criterion we assume the concentration of the same occupations coded to *ISCO* categories). This value is lower than that obtained for any major occupational group (see Table 3.4), and also lower than that for *SCO-1978* Group 5 as a whole, which includes all categories of skilled workers (0.727).

In spite of such a significant differentiation of foremen we decided, also in *SCO-2009*, to distinguish this category as a whole. From the beginning the foremen constituted an integral element of the *Social Classification of Occupations* resulting from the assumptions of this scheme.

Table 4.10 Basic categories of ISCO-1988 corresponding to occupations coded to category 5132, "Foremen in assembly and construction work" of SCO-1978

Code in <i>ISCO-1988</i>	Category title in <i>ISCO-1988</i>	Number of coded occupations
0100	Armed forces	2
1223	Production and operations managers in construction	3
1313	Managers of small enterprises in construction	2
1316	Managers of small enterprises in transport, storage and communications	2
1319	Managers of small enterprises not elsewhere classified	1
3112	Civil engineering technicians	3
3115	Mechanical engineering technicians	2
3123	Industrial robot controllers	1
7122	Bricklayers and stonemasons	10
7123	Concrete placers, concrete finishers and related workers	6
7124	Carpenters and joiners	5
7129	Building frame and related trades workers not elsewhere classified	19
7131	Roofers	2
7132	Floor layers and tile setters	3
7136	Plumbers and pipe fitters	8
7137	Building and related electricians	1
7139	Building finishers and related trade workers not elsewhere classified	2
7141	Painters and related workers	5
7213	Sheet-metal workers	1
7214	Structural-metal preparers and erectors	1
7222	Tool-makers and related workers	5
7233	Agricultural- or industrial-machinery mechanics and fitters	3
7242	Electronics mechanics, fitters and servicers	1
7400	Other craft and related trades workers	2
9153	Vending-machine money collectors, meter readers and related workers	1
9312	Construction and maintenance laborers: roads, dams and similar constructions	8
9313	Building construction laborers	1

In *SCO-2009* we reduced the number of foremen categories from 26 to just 5. These categories correspond to the key branches of the economy. They are:

- 5161 Foremen and other first line supervisors in mining and production of metal objects
- 5162 Foremen and other first line supervisors in textile, chemical, and food-processing industries
- 5163 Foremen and other first line supervisors in construction
- 5164 Foremen and other first line supervisors in transportation and storage
- 5165 Foremen and other first line supervisors in agriculture and forestry

4.7.2 Internal differentiation in the largest basic categories of manual workers' occupations

The most frequently coded category in *SCO-1978* Group 5 was 5274, "Car, truck, and bus drivers" (see Table 4.11). In Chapter 3 we pointed out that such a large category (second after farmers) can group occupational roles that differ in specifics and in the positions of those performing them. The heterogeneity of this category can be seen if one compares the *ISCO* codes assigned to occupational roles of respondents categorized in *SCO-1978* as drivers (Table 4.12). More than half of all drivers are truck drivers. However, the second largest category is made up of drivers of unspecified kinds of motor vehicles (17.6 percent). This means that in over one-sixth of all cases, based on the notes provided in questionnaires, it was not possible to determine what kind of vehicle the respondent was actually driving on the job, and thus to assign the appropriate code.

The case of "car, truck, and bus drivers" illustrates the limited nature of the possibility of splitting categories that group large percentages of occupations. Another example in *SCO-1978* is the category of "Miners" (5121), which involves 4.4 percent of Major Group 5. In this case as well, it is difficult to suggest additional criteria that could be used to divide this category into smaller parts. Analyzing interviewers' notes corresponding to this category (Sawiński 2005: Table A-12) suggests at least three reasons why splitting the category of miners into subcategories would be difficult or even unjustified. First, most of the notes are limited to providing the occupational title of "miner" with the possible addition of the branch (e.g., "coal extraction"). More detailed characteristics of work activities rarely appear. Second, in only 6 of the 112 notes did the specified mining activity concern a branch of mining other than black mineral coal (mining of salt, brown coal, or construction aggregate). However, this small documented share does not mean that black coal mining has to dominate the whole category. Most descriptions are too brief to allow for an assessment. Third, over 80

percent of occupations coded in this group concern the respondent's father - the potential share of the "miner" occupation on the job market is systematically shrinking.

Table 4.11 Percentages of the most frequently coded categories of *SCO-1978* Group 5, "Skilled manual workers"

Code in <i>SCO-1978</i>	Category title in <i>SCO-1978</i>	Percent of Occupations	Cumulative percent
5274	Car, truck, and bus drivers	12.2	12.2
5232	Brick masons, concreters, plasterers, assemblers of building constructions	9.3	21.5
5234	Carpenters and upholsterers	5.6	27.1
5262	Tailors, furriers, hatters, glovers, and embroiders	4.7	31.7
5249	Toolmakers, tool repairers, and precision-mechanical-instrument makers	4.5	36.2
5212	Miners	4.4	40.6
5221	Skilled workers in metal production: smelters, rolling mill workers, blacksmiths, foundry workers, and related	3.6	44.2
5253	Millers, bakers, confectioners, butchers, sausage makers, and cold-meat preparers	3.1	47.3
5247	Automobile-and-truck mechanics	3.0	50.2

Table 4.12 Basic categories of *ISCO-1988* corresponding to occupations coded to *SCO-1978* category 5274, "Car, truck, and bus drivers"

Code in <i>ISCO-1988</i>	Category name in <i>ISCO-1988</i>	Percent of coded occupations
8324	Heavy truck and lorry drivers	57.0
8320	Motor vehicle drivers	17.6
8322	Car, taxi and van drivers	12.5
8323	Bus and tram drivers	12.3
8333	Crane, hoist and related plant operators	0.4
7231	Motor vehicle mechanics and fitters	0.2

A different problem occurs in the case of a relatively large *SCO-1978* category, "Brick masons, concreters, plasterers, assemblers of building constructions." The respective interviewers' notes (Sawiński 2005: Table A-13) show that the work done by performers of these occupational roles

often involved activities of more than one occupation, thus linking the tasks of “brick mason,” “steel fixer,” “painter,” “carpenter,” or “roofer,” as demonstrated in the following examples of these notes:

Construction worker/brick mason, carpenter, painter – work at construction sites abroad;

Construction worker/simple (manual) worker/apartment renovation, painting, tiling, bricklaying;

Bricklayer and painter/bricklaying, smoothing down walls, painting, house renovating;

Brick mason/construction work, bricklaying, plastering, smoothing down walls, painting, steel fixing.

Occasionally, an occupational description is so general that determining a basic occupational title is not possible. For instance:

Construction worker/construction work;

Finishing construction work;

Construction worker;

Manual worker/construction work.

Although in *ISCO* this category is split into a number of detailed categories, in practice it is difficult to use such fine divisions. For example, *ISCO-1988* distinguishes “Bricklayers and stonemasons” (7122) and “Plasterers” (7133) as two separate categories. But many descriptions indicate that these two occupational roles were often performed by the same people. For instance:

Bricklayer plasterer in state enterprise/manual working;

Bricklayer/house construction, plastering;

Bricklayer/bricklaying, plastering apartment houses;

Construction worker/bricklaying-plastering;

Bricklayer/wall building, plastering, flooring, construction work.

To sum up, a further division of the most frequently used occupational categories of *SCO-1978* Group 5 is often impossible or lacking substantive justification. Therefore, in the case of skilled manual workers, this level of aggregation seems appropriate.

4.7.3 Reducing the number of basic categories in Group 5

Now we turn to a discussion of the third problem - how justified would it be to merge some basic categories belonging to *SCO-1978* Group 5 into wider categories, or to totally eliminate those used very rarely or not at all. Table 4.13 presents a list of the least frequently used categories in Group 5. The list contains only the categories of the lowest (basic) level; those with codes ending in 0 have been skipped.

Table 4.13 The least frequently chosen basic categories from *SCO-1978* Group 5, "Skilled manual workers"

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations
5281	Sailors, mechanics, and radiomechanics	0.2
5143	Foremen in trans-shipment	0.2
5276	Light motor-vehicle operators and tractor drivers	0.2
5225	Operators of generating and transferring electric and thermal energy equipment	0.1
5263	Leather processing workers: tanners and dyers	0.1
5293	Samplers and sorters	0.1
5211	Operators of mining machinery	0.1
5213	Skilled workers in oil and gas mining	0.1
5283	Deck sailors	0.1
5285	Inland fishermen	0.1
5144	Foremen in warehouses and works transport	0.1
5152	Foremen in forestry	0.1
5284	Sea fishermen on fishing boats and cutters	0.1
5145	Foremen in quality control and packing rooms	0.0
5273	Steam-engine stokers	0.0
5282	Stokers on boats	0.0

Among the *SCO-1978* categories of skilled manual workers the least frequent today are those that probably became obsolete because of technological progress in the organization of work. For example, because the categories "Steam-engine stokers" (5273) and "Stokers on boats" (5282) did not appear even once in the coded material, we decided to eliminate them from the level of basic categories.

Occupations from the subgroup “Sailors and fishermen” (5289) were also relatively rare. Besides the aforementioned “Stokers on boats” (5282), four more basic categories were listed:

- 5281 Sailors, mechanics, and radiomechanics
- 5283 Deck sailors
- 5284 Sea fishermen on fishing boats and cutters
- 5285 Inland fishermen

These occupations appear rarely because those holding such jobs are less available for surveys in that they spend considerable time outside their places of residence. However, the analyzed data also include occupations of the spouse and father of the respondent. Small percentages of selections of occupations in this category indicate that they belong to a marginal fragment of today’s social structure in Poland.³ Nevertheless, there is not enough reason either to eliminate them or group them differently.

The third group of rarely used basic categories consists of certain categories of foremen, foremen outside production: in transport, transshipment, quality control, packing rooms, warehouses, and so on. These occupations may occur rarely because work outside production is organized differently and foremen positions are not seen as often as they are in production. As a result of restructuring the category of foremen (discussed in section 4.7.1) the rarely occurring categories of foremen were included in wider categories.

4.8 Group 6, “Semi-skilled and unskilled manual workers”

The most problematic division involves semi-skilled and unskilled workers. Although the *SCO-1978* codebook assigned most of these occupations to one or the other subgroup on the basis of their occupational titles, a considerable share of the occupations required that an assignment decision be made at the coding stage. This concerned workers employed outside services, mainly in industry. Table 4.14 provides lists of occupations corresponding to the “semi-skilled” and “unskilled” parts of this segment.

³ Occupations involving work performed at sea were rarely indicated in other groups. For instance, categories 2141 “Captains of sailing, inshore sailing, and river navigation,” 2142 “Skippers of fishing cutters and boats,” 2145 “Mechanic assistants and navigator assistants of oceanic sailing,” and 8111 “Skippers, owners of fishing cutters or boats” were not chosen even once.

A careful analysis of occupational titles in both groups reveals that sometimes they involved segments that differed with respect to branch and often even this criterion was not helpful in making a differentiation. For instance, construction workers in *SCO-1978* were considered unskilled (code 6214), but workers in production of construction materials were considered semi-skilled (code 6123). Workers employed in the textile industry could be semi-skilled (6125 and 6126) or unskilled (6217). Workers in the food industry could be only unskilled (6219).

Table 4.14 Listing of semi-skilled workers and unskilled workers distinguished in the industrial workers' section of *SCO-1978*

Semi-skilled workers		
Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations
6120	Semi-skilled industrial workers	0.2
6121	Workers charged with preparatory and auxiliary tasks at metal production - ore mixers, charge stackers, foundry furnace loaders	0.1
6122	Workers charged with preparatory and auxiliary tasks at production and repair of devices, machines, and tools	1.2
6123	Dispensers, shapers, firers of construction material products, stoneworkers	1.7
6124	Equipment greasers and cleaners, ash-pan and grate cleaners, chimney sweeps	0.2
6125	Simple-task workers in clothing production and repair - cutters, buttonholers, pressers, seamstresses	1.0
6126	Simple preparatory and auxiliary task workers in production of items from natural and artificial fiber - raw material cleaners, carders, thread tiers, yarn spinners	0.5
6127	Preparatory and auxiliary task workers at chemical processes and glass and stoneware production	2.2
6128	Auxiliary task workers in printing in production of paper products and textiles	0.7
6129	Manual workers in industrial laboratories	0.1

continued

Unskilled workers

Code in SCO-1978	Category title in SCO-1978	Percent of coded occupationsoccu pations
6210	Unspecialized industrial workers and trainees	0.8
6211	Simple-task workers in metal production	0.4
6212	Simple-task workers at generation and distribution of electrical and thermal energy	0.4
6213	Simple-task workers in production and repair of devices and machines	1.9
6214	Simple-task workers in construction and production of construction materials	4.4
6215	Simple-task workers in wood processing	1.1
6216	Simple-task workers at chemical processes and production of glass and stoneware	0.4
6217	Simple-task workers in production from natural and artificial fiber	0.2
6218	Simple-task workers in production and repair of shoes and accessories	0.4
6219	Simple-task workers in food industry	4.4

The coders experienced considerable difficulties in differentiating between the semi-skilled and unskilled workers. Both categories consist of occupations described in a very brief way, which suggests that the job performer has low skills. For instance:

*Manual worker/I don't remember [father's occupation;]
I don't know my father's occupation except that he did something with cars.*

In cases of many occupations doubts arise as to whether they should be coded to categories of skilled manual workers or to semi-skilled and unskilled workers. For example, coded among semi-skilled workers were:

*Machine operating/watching and operating knitting machines;
Tailor-seamstress/sewing men's shirts on a production line;
Seamstress/I sew;
Presser/ironing.*

Meanwhile, coded in the category of skilled workers were such occupations as:

Textile weaver/she operated looms;
Manual worker/spinner/working on spinning machine;
Factory worker/spinner/she span yarn in factory;
Mangle operator/pressing machine operator/mangle operating in knitting factory.

The problem of dividing workers into semi-skilled and unskilled is affected by certain convention that was set differently in the 1978 *Social Classification of Occupations* than in the *ISCO*. At the time of creating the *SCO*, the segment that was referred to as “heavy-industry working class” in the mass media of communist countries used to be coded “Skilled workers”; in *ISCO* it has been coded to “Operatives” rather than to “Crafts.” In effect, in *ISCO*, a tailor skilled in all phases of making clothes would be coded in the category of “Tailors, dressmakers, and hatters” (code 7433) in Major Group “Crafts” while in *SCO-1978* he or she would not have to be coded with skilled manual workers. If the occupation was performed in an outwork system then the appropriate *SCO-1978* category would be “Outwork machinists in production of clothes and shoes” belonging with the semi-skilled and unskilled workers. Whereas a weaver operating looms in textile mill would be coded in *SCO-1978* to the category “Spinners, weavers, knitters, and dyers of textile and clothing,” that is, to skilled workers, in *ISCO* the weaver would be coded “Weaving- and knitting-machine operators” (code 8262).

However, some inconsistency and practical problems in dividing workers into skilled and unskilled in the process of coding should not lead to the merging of two worker categories into one. Such a decision would go against the tradition of usage of the *Social Classification of Occupations* as well as against the fact that the workers division into segments is both theoretically and empirically justified. What requires more precision is the set of criteria used to decide whether a given occupational category should be ascribed to skilled workers or to unskilled workers.

In the new version of the *Social Classification of Occupations* we recommend using the following criteria to divide workers into skilled and unskilled groups.

1. If the occupational description indicates that the performer’s job tasks are auxiliary to the main production process, then the one performing this occupation should be coded with unskilled workers. For instance:

*Manual worker/carpenter's assistant;
Bricklayer's assistant/preparing material for the bricklayer, bringing
it to the bricklayer's workstation;
Construction apprentice/handling bricks, hewing, drilling.*

2. If the occupational description indicates that the performer does not have complete skills for performing the given occupation, then he or she should be coded as an unskilled worker. For instance:

*No occupation/unskilled construction worker;
Tailor/journeyman/sewing clothes;
No occupation-learning the job/cook in primary school/cooking and
serving meals;
Worker-apprentice/ filling containers with dye.*

3. If the occupational description indicates that the work result is mainly a function of physical effort and the work tasks require only simple tools, then the job performer should be coded as an unskilled worker. For instance:

*Construction worker/carrying cement, digging;
He helps farmers with crop and hay carting, manure disposal, collects
cane at swamps;
Manual worker-carrier/physical work carrying furniture.*

4. If none of criteria 1–3 are satisfied, the occupation should be coded with skilled workers.

We suggest applying criterion 4 in situations where the occupational description is brief but nothing in it implies that any of the first three criteria are met (e.g., occupation given is “railway man”). This will help to prevent miscoding the person on the job when an occupational description is less precise or too brief, which happens more often when the respondent describes another person’s job rather than his or her own. In particular, it helps to prevent situations when the respondent’s father is assumed to have had a lower occupational status than he actually did only because the respondent provided less precise or less detailed information about his job. A systematic error of this kind can lead to an artifact of the respondent’s superficial intergenerational advancement in status.

While differentiating skilled and unskilled workers should be possible on the basis of substantive criteria, the division of workers into semi-skilled and unskilled can be done only using formal criteria, such as occupational title or industrial branch. When discussing arrangements assumed for

SCO-1978, we noted that these criteria were used incoherently (some branches were simply missing) and, in effect, occupations were coded in categories on the basis of detailed occupational titles (e.g., “railway man,” “seamstress,” “sprayer,” etc.) rather than on the basis of “skills.”

For these reasons we decided to combine the groups of semi-skilled and unskilled workers into one major group in the new version of *Social Classification of Occupations (SCO-2009)*. Since the sets of basic categories in these groups were not compatible with each other in *SCO-1978* we also combined some of their basic categories. On the lowest level, the unskilled workers (whom we called “Elementary occupations”) correspond to the one introduced in *ISCO* (Group 9, “Elementary occupations”). The sense and the advantage of this modification lies in abandoning the overly detailed division of semi-skilled and unskilled workers, which results in a conceptually clearer division, making the whole classification easier to apply in practice.

Finally, we discuss the subgroup of unskilled service workers. As the percentages in Table 4.15 demonstrate, this subgroup’s occupations constitute the core of *SCO-1978* Group 6.

Table 4.15 Percentages of the most frequently coded categories of *SCO-1978* Group 6, “Semi-skilled and unskilled manual workers”

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations	Cumulated percent
6234	Cleaners	12.4	12.4
6231	Night and day watchmen, janitors, and doorkeepers	10.4	22.9
6311	Semi-skilled and unskilled workers in agriculture	8.1	31.0
6222	Packers, markers and taggers, pharmacy measurers	4.6	35.6
6214	Apprentice workers in construction	4.4	40.0
6219	Workers in food industry	4.4	44.4
6232	Janitors in apartment buildings	3.4	47.8
6233	Other janitors, cloakroom attendants, and ushers	2.5	50.4

SCO-1978 category 6234, “Cleaners,” is the most frequently used basic category among unskilled service workers and for the whole Major Group 6. In *ISCO-1988* this category is split into two: “Domestic helpers and cleaners” (code 9131) and “Helpers and cleaners in offices, hotels and other establishments” (code 9132). However, it turns out that 96 percent of all of its occupations are coded in the latter and only 4 percent in the former. Since the occupation of “cleaner” (cleaning woman) is almost always asso-

ciated with work for institutions rather than private persons, we conclude that *SCO-1978* category 6234 is strikingly homogeneous and there is no need to divide it any further.

SCO-1978 category 6231, “Night and day watchmen, janitors, and doorkeepers,” is different. In *ISCO-1988* about half of these occupations have been coded to category “Doorkeepers, watchpersons and related workers” (9152) - that is, to unskilled service workers - and the other half to category 5169, “Protective services workers not elsewhere classified” in Major Group 5 “Service workers and shop and market sales workers.” When discussing *SCO* Group 4, “Sales and service workers,” we mentioned that in the 1978 version of this classification there was no category for coding protective service workers; therefore, in *SCO-2009* we have added a new category, “Property and personal security guards” (under code 4510).

Table 4.16 Basic categories in subgroup 6400, “Elementary occupations” of the new *Social Classification of Occupations–2009*

Code in <i>SCO-2009</i>	Code in <i>SCO-1978</i>	Category name in <i>SCO-2009</i>	Percent of coded occupations
6410	6230	Watchmen, janitors, and cleaners	0.0
6411	6231	Night and day watchmen, janitors, and doorkeepers	10.4
6412	6232	Janitors in apartment buildings	3.4
6413	6233	Other janitors, cloakroom attendants, and ushers	2.5
6414	6234	Room cleaners	12.4
6415	6235	Street cleaners, bus cleaners, and other cleaners	1.4
6416	6236	Gravediggers	0.0
6420	6240	Messengers, porters, and kindred workers	0.0
6421	6241	Messengers and kindred workers	0.4
6422	6242	Porters, delivery men, and suppliers	1.8
6430	6250	Domestic cleaners and kitchen assistants	0.0
6431	6251	Domestic cleaners	1.9
6432	6263	Kitchen assistants and assistants at collection points	2.5
6440	none	Sales laborers	
6450	6260	Hospital helpers	0.1
6451	6261	Hospital attendants, hospital instrument sterilizers	2.2
6452	6262	Bath attendants and disinfectors	0.0
6453	6141	Paramedic assistants, cast-room attendants, surgical sterilizers	2.1
6460	6264	Other service laborers	0.9

Since there were no problems with heterogeneity or underuse of other categories listed in *SCO-1978*, we transferred all of them to the new classification (see Table 4.16). The only change was the addition of one category, "Sales laborers" (under code 6440), which did not appear in the 1978 version.

4.9 Group 7, "Farmers"

In the previous version of this classification, Group 7, "Farmers," consisted of 14 basic categories (Table 4.17), of which category 7111, "Farmers - farm owners," practically dominated the whole group (98.5 percent). Only two of the remaining categories were of some limited use: "Gardeners, plant-growers, bee-keepers, breeders, fishermen" (7121), which is a category of farmers running specialized farms, and "Farm-helping family-members" (7131). The remaining categories were chosen rarely or not at all.

Table 4.17 Percentage of occupations coded in the *SCO-1978* Major Group 7, "Farmers"

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations	Cumulative percent
7111	Farmers - farm owners	98.5	98.5
7121	Gardeners, plant-growers, bee-keepers, breeders, fishermen	0.6	99.1
7131	Farm-helping family-members	0.5	99.7
7211	Members of farm cooperatives	0.1	99.8
7110	Farmers - farm owners	0.1	99.9
7130	Private farm-helping family-members	0.1	100.0
7132	Private garden-helping family members, etc.	0.0	100.0
7000	Farmers	0.0	100.0
7100	Individual farmers	0.0	100.0
7112	Individual farmers - farm lease-holders	0.0	100.0
7120	Gardeners and breeders - owners	0.0	100.0
7133	Hunters	0.0	100.0
7200	Members of farm cooperatives	0.0	100.0
7210	Members of farm cooperatives	0.0	100.0

A great concentration of occupations in Group 7 makes it practically identical to the category of farm-owning farmers. For this reason further divisions within this group have no analytical significance and may simply be abandoned. Four categories are especially obsolete. The first one, "Members of farm cooperatives" (code 7200), involves a form of land ownership that today is either nonexistent or without any practical significance, in that respondents did not mention it at all to the interviewers. The second category, "Individual farmers - farm lease-holders" (code 7112), did not appear even once in the coding. The third and fourth categories include helping family members: 7130, "Private farm-helping family members" and 7132, "Private garden-helping family members, etc." We decided to drop these categories because the status of a "helping family-member" is rather unspecified. To make it specific we distinguished between the two most typical situations. For instance, if two spouses run the farm together and share work according to a functionality criterion, then both should be classified as "farmer - farm co-owner." If a son works on his father's farm and gets some benefits for this but has no voice in decisions concerning the farm's production profile, investments, and so on, then he should be classified among the hired work. An occupational role does not have to involve all of the elements typical of a specific job market or even all required by current legal regulations. Each economy has zones organized according to different rules (e.g., volunteer work or ghostwriting). The *Social Classification of Occupations* should allow the classification of occupational roles performed in certain atypical settings of work organization, remuneration, and social benefits.

4.10 Group 8, "Owners of production and service firms"

The group of owners is the most important element distinguishing the *Social Classification of Occupations* from *ISCO*. Owners constitute a basic segment of social structure and it is hard to think of a sociological classification that would not include them. Besides, because owners belong to the popular thinking about social stratification, the users of *SCO* surely expect this group to be considered in the classification.

Table 4.18 presents the most frequently coded categories in *SCO-1978* Major Group 8, "Owners of production and service firms." The first category on this list reveals that the group of owners was diversified in many respects. Over one-fifth of all coded occupations appeared in category 8115, "Store and restaurant owners." The analysis of occupational descriptions collected in our research leads to the following conclusions regarding the occupational differentiation of "Store and restaurant owners" (8115).

Table 4.18 Percentages of the most often coded categories in *SCO-1978* Major Group 8 "Owners of production and service firms"

Code in <i>SCO-1978</i>	Category name in <i>SCO-1978</i>	Percent of coded occupations	Cumulative percent
8115	Store and restaurant owners	21.6	21.6
8113	Owners of construction firms	11.5	33.1
8114	Owners of firms producing or mending clothing, footwear, and the like	8.9	42.0
8112	Owners of machine repairing firms	8.7	50.7
8116	Owners of taxicabs and other transportation means	8.1	58.8
8412	Owners of consulting firms	7.3	66.1
8312	Workers - individual contractors	7.1	73.2
8416	Other owners of firms offering intangible services	5.9	79.1
8119	Other owners of multi-branch production and service firms	3.8	82.9

1. Managing a store vs. managing a restaurant are two different kinds of activity. Managing a restaurant is often combined with offering hotel services, for instance:

*Owner of Chinese restaurant and store/managing personnel;
Owner of a roadhouse/supervision and management of personnel's work;
Owner of restaurant-and-hotel business/running business.*

2. The scale of business activities of persons coded in category 8115 differed significantly. For instance:

*Trading industrial goods-individual business activity/industrial goods retail on a market stall;
Salesman/he sells goods in school shop, gives out sweets, teaching aids, etc;
He ran food-and-beer stand/sold products;
Store co-owner/together with husband she runs two groceries-supplies, supervision, sales;
Owner of wholesale company;
Company co-owner/telephone talks, winning customers over, business strategies, market analysis.*

3. Stores or sale outlets deal with products of different branches. Sometimes managing them requires professional skills. Some target particular kinds of customers (e.g., outlets with agricultural production means for farmers). Listed among occupational descriptions are such occupational roles as:

Pharmacist – pharmacy owner/managing and selling in pharmacy;
Owner of store with electronic items/supplies and sales;
Owner of used car retail/car sales;
Sales of construction elements (windows and doors)/selling construction carpentry, assembling windows;
Sales – fishing items;
Pet store – retail;
Florist shop co-owner (with husband)/ florist shop co-owner, sales of flowers, bouquets, accounting, merchandise;
Poultry wholesale;
Company co-owner/trading fertilizers and feeds.

These examples demonstrate that occupational roles involving owners are substantially more heterogeneous higher than is the case for categories describing the roles and positions of hired work. This may be considered a consequence of distinguishing owners as a separate category. Small-scale private business is, in a sense, a miniature image of a large part of the corporate economy reflecting its complexity in terms of branches, organization schemes, and, to some extent, business scale. Thus, less than twenty code categories have to handle differentiation similar to that of hundreds of categories in the remaining part of the classification, in effect producing this segment's heterogeneity.

Because of the heterogeneity of *SCO-1978* category 8115, "Store and restaurant owners" and its considerable share in the whole group of "Owners" (21.6 percent), we decided to divide it into three separate basic categories involving owners of stores, restaurants, and hotels. These are:

- 8600 Owners of stores and other trade facilities
- 8416 Owners of hotels and boarding houses
- 8418 Owners of restaurants, fast-food services, cafés, and similar shops

As Table 4.18 reveals, the five most frequently chosen coding categories involved 58.8 percent of all owners. These categories belong in the set introduced in *SCO* in 1978. In 1993 this set was supplemented by two new subgroups of owners listed under codes 8300 and 8400.

Subgroup 8400 was intended to put together owner occupations that did not appear or appeared only rarely before the systemic change of 1989 because the nationalized economy covered these areas of business activity. Categories 8412, “Owners of consulting firms” (7.3 percent of the whole group of owners) and 8416, “Other owners of firms in (intangible) services” (5.9 percent) constituted the greatest share among the newly introduced categories. Other occupations in this subgroup appeared in coding less frequently but accepting them in the classification seemed justified.

In 1993 subgroup 8500 identifying the owners of large enterprises (over 50 employees) was also added. However, of 14,600 coded occupations, owner of a firm with over 50 employees did not appear even once. Possible reasons are the refusal of such persons to participate in the research or just a lack of information in the coded material with respect to the number of employees. Whatever the reason, because category 8500 did not seem useful, we decided to remove it from the new version of *SCO*.

SCO-1978 subgroup 8300, “Self-employed,” requires separate comment. This subgroup combines just two categories, both used relatively frequently. The category “Street traders, peddlers, etc.” was chosen in 2.5 percent of cases and “Self-employed workers” in 7.1 percent of cases. Sawiński (2005: Table A-10) provides occupational descriptions for the latter. From these descriptions it follows that the character of work performed on the job was often no different than that of hired labor. For instance:

Dressmaker/machine sewing;
District nurse/nursing the patients in their homes;
Delivery of advertising pamphlets;
Housing renovator/house and apartment refurbishing, painting,
wallpapering, tiling, paneling.

A question arises whether these occupations should be coded in the group of owners. It seems that the key element distinguishing an owner is having one's own workplace in the form of a firm that has separate resources; that can be further developed; that hires labor to perform some of the work tasks; and so on. Having only one's own labor and tools at one's disposal – as is the case with self-employed workers – does not fulfill the criteria of having one's own business firm and therefore of being a business owner. It seems that the 1993 decision to include this category in the group of owners did not stand the test of time. We thus decided to eliminate this category altogether. Self-employed workers should be coded as workers within hired labor.

SCO-1978 subgroup 8200, involving persons conducting business activity as concession holders, is another category that did not stand the

test of time. It was important at the time of creating the *Social Classification of Occupations*. Today, however, it has no practical significance and the number of occupations in this subgroup is close to zero. To make the classification more transparent we decided to skip this subgroup.

Before completing the discussion of the group of owners, we analyze respondents' answers coded to the *SCO-1978* basic category "Other owners of firms in (intangible) services" (Sawiński 2005: Table A-11). This is a residual category with a rather significant share (5.9 percent). It can help to illustrate problems occurring in coding occupations belonging to the group of owners.

In the aforementioned category some of the occupations refer to professional activity performed in the situation of self-employment. We mean occupations such as:

Physician [medical doctor]/seeing patients;
Journalist/writing articles;
Accountant/preparing balance sheets, counting tax, filling out tax returns;
Music teacher/teaching to play instruments;
Dentist/owner of a dentist's surgery [office]/preventive dentistry, prosthodontics.

In this case one can use the same criterion as in the case of self-employed workers and classify these occupations according to the substance of their work - a physician to the category of physicians, a journalist to the category of journalists, and so on. A problem arises when the occupational description explicitly indicates that the occupation is performed in the professional's own office (as is in the case of "dentist/owner of a dentist's surgery"). In this case the occupation should remain in the category of owners on the assumption that the criterion of ownership must be more important than the content of work and the level of skills required for its performance.

4.11 Summary

In this chapter we discussed the most important changes and modifications introduced in the new version of the *Social Classification of Occupations*. These changes consisted of dividing some categories into more detailed ones, combining some other categories, or eliminating categories that occurred only sporadically or corresponded to occupations that have disappeared from the job market. Finally, some basic categories were

added, corresponding to occupational roles that have appeared only in recent years.

Appendix contains the modified *Social Classification of Occupations, SCO-2009*. Table 4.19 provides a comparison of formal characteristics of the two *SCO* versions (1978 and 2009). The modifications reduced the number of basic categories by 141, which resulted in a simplified classification structure.

Table 4.19 Number of categories in the 1978 and 2009 versions of the *Social Classification of Occupations*

Division level	Number of categories in <i>SCO-2009</i>	Number of categories in <i>SCO-1978</i>
First (Major groups)	10	10
Second	30	30
Third	76	99
Fourth (basic classification categories)	259	400
Total number of categories	375	539

It must be emphasized that the modifications did not affect the original structure of the *Social Classification of Occupations*. They allowed for maintaining the former codes, which were necessary to secure comparability of the *SCO-1978* codes with the codes and divisions used in the 2009 version.

Most of the new arrangements did not change the assignment of occupations to the major occupational groups. The only exception is a part of managerial positions formerly coded in Major Groups 1, 2, and 4. In the new version they have all been transferred to Major Group 0 heading the classification.

In many parts of the 2009 version we simplified the rules for classifying occupations to basic categories and made them more uniform. Some modifications aimed at eliminating situations in which the extent of detailed information provided by the respondent would determine the level of placement (higher or lower) of the coding category in the social space. This should prevent the creation of research artifacts suggesting, for instance, a spurious intergenerational mobility generated solely by the use of inadequate coding categories.

Chapter 5

OCCUPATIONAL SCALES ACCORDING TO SKILL REQUIREMENTS, COMPLEXITY OF WORK, MATERIAL REMUNERATION, AND PRESTIGE

Although many empirical analyses in the sociology of class structure and social stratification involve indices (scales) of occupational position, two basic questions remain open: what dimensions of this position one should take into account and on what specific level. In this chapter we propose considering the occupational position as specified by four dimensions: (i) skill requirements for job assignment, (ii) complexity of work, (iii) material remuneration, and (iv) occupational prestige. Following the classic work of Jackson and Curtis (1968) we treat skill requirements, complexity of work, job income, and occupational prestige as constructs - synthetic variables inferred either from a set of appropriate indicators or from some aggregate measures. Wherever possible, we use in their construction the lowest aggregation level of the *Social Classification of Occupations*.

One may find a theoretical justification for choosing these scales in the first chapter of the book. At this point let us only remind the reader that the scales of skill requirements and complexity of work reflect factors related to *investments* made by individuals in the process of preparation for their occupational roles and while acting in these roles. It is important to remember that those are the variables characterizing occupational roles as such rather than the individuals who perform them in their jobs. In a similar way, material remuneration and occupational prestige constitute variables identified as *rewards* received for acting in occupational roles.

5.1 The scale of skill requirements

In its former rendition (Słomczyński 1983), the scale of skill requirements was a result of assigning to each category of the *Social Classification of Occupations* a value based on the most detailed level of three variables: general educational development, “special” occupational skills, and the desired level of formal education. We determine the first two of these variables – general educational development and “special” occupational skills – by adjusting the codes of the American *Dictionary of Occupational Titles* (U.S. Department of Labor 1965 and the current electronic version) to categories of the Polish *Social Classification of Occupations*. The third variable – the desired level of formal education – results from Polish data.

The index of general educational development (*General Educational Development - GED*) measures the level of sophistication (fluency) on which the worker in a given occupation needs to use the logic and arithmetic operations as well as language (reading and writing). Whether the worker has achieved this level through formal education or otherwise is of no importance. We assume that the lowest level indicates that the worker’s knowledge and skills are minimal, fulfilling the requirements set for the first grades of elementary school. However, the next level on a scale of 1 to 10 requires the worker (a) to know how to add, subtract, multiply, and divide both integers and decimal numbers, (b) to understand instructions containing at least two independent steps, and (c) to use in speaking and writing at least 2,500 words. Consecutive levels increase the requirements of mathematical skills, a science-based outlook on surrounding reality, and the language usage. Required at the highest level is knowledge of algebra and geometry – or statistics – in the range of basic college courses, knowledge of the foundations of deduction and induction, as well as an ability to compose and write brief reports.

Special occupational skills (*Special Vocational Training - SVT*) pertains to the preparation time needed to be able to perform in a given occupation, including the time of preparing for this occupational role in the course of formal schooling.

The *SVT* levels are as follows:

1. Work requiring (basically) no preparation.
2. Work requiring short preparation in the form of orally communicated instructions.
3. Work requiring preparation of no longer than one month.
4. Work requiring preparation of one to three months.
5. Work requiring preparation of three to six months.
6. Work requiring preparation of six months to one year.

7. Work requiring preparation of one to two years.
8. Work requiring preparation similar timewise to that provided by vocational school, from two to four years.
9. Work requiring preparation of four to ten years.
10. Work requiring preparation of more than ten years.

Already in the initial period of *GED* and *SVT* usage in sociology, Temme assigned their values to the American classification of occupations (1975). In its first Polish version, the scale of skill requirements involved a transformation key from the American classification to the 1978 *Social Classification of Occupations*. These codes were used in forming the synthetic construct.

The third variable - the desired level of formal education - in the original version came from classifications used in the 1970s for personnel listings in the Central Statistical Office (GUS). These listings singled out occupational groups requiring specific levels of education. Of all occupations considered, 122 were listed as requiring tertiary education, 63 - as requiring secondary education, and 168 - as requiring vocational education, while the remaining ones were assumed to require elementary education only. The current *Classification of Occupations of Vocational Training*, appended to the order of the Minister of National Education and Sport of April 18, 2002, defined the desired levels of education for many specific occupations. The scale presented in Appendix 5.1 of this chapter utilizes the aforementioned classification. It also makes use of the occupational categories in the *Classification of Occupations and Specialties* introduced by the order of the Minister of Economy and Work of December 8, 2004, which - in accordance with the *International Standard Classification of Education* (UNESCO 1997) - distinguishes four educational standards, from the level of completed tertiary education to the level provided by elementary schooling.

In the past twenty to thirty years the basic structure of skill requirements of the categories listed in the *Social Classification of Occupations* has not changed, just as no change has occurred in the skill levels taken into account by the *International Standard Classification of Occupations, ISCO-88*. For this reason the scale presented in this book is just a modification of the original scale (Słomczyński 1983: Appendix, pp. 141-146), resulting from aggregation of some categories and the addition of some new ones in the *Social Classification of Occupations, SCO-2009*. To construct the synthetic variable we used the original regression equation:

$$SREQ = -16.4 + 4.1 GED + 4.0 SVT + 6.1 DES$$

where *SREQ* denotes the estimated values of the scale of skill requirements, *GED* - the levels of general educational development (from 1 to 10), *SVT* - the levels of special occupational skills (from 1 to 10), and *DES* - the desired levels of formal education (from 1 to 4). Although the possible values of this scale span from -2.0 to 89.0, in practical terms, its minimal value (after being rounded to an integer) is 6 while the maximum one remains as high as its theoretical maximum (89). Here it should be mentioned that the scale values were originally created only for the three-digit *SCO* groups within which no differentiation was considered. In the construction of the new scale - because of the aggregation introduced and some necessary modifications - in certain cases these three-digit groups underwent internal differentiation.

In general, at the highest echelons of the scale of skill requirements, one finds positions of high management in the national and local administration, high positions in the police and military, high management positions in business and industry, and some occupations belonging to the group of professionals - lawyers, medical doctors, and architects. At the lowest echelons, one finds occupations belonging to the group of unskilled workers such as messengers, hospital attendants, sterilizers of hospital equipment, some occupations in the service sector, and domestic help.

5.2 The scale of the complexity of work

This section explains the foundation of the scale of the complexity of work. In the explanation, we use some earlier findings, in particular, the work of Słomczyński and Kacprowicz (1979). These authors took the following statement as a point of departure: "The analysis of work difficulty involves a number of synthetic factors.... However, the most important factor ... is the complexity of work that ... corresponds to a complex phenomenon of the skill level necessary to perform in a given job. Since all synthetic factors can be separately considered therefore the analysis involving the first factor - the complexity of work - can constitute the basis for creating an occupational hierarchy...." (Wesołowski 1970: 29).

Wesołowski points out that "the complexity of work" is a synthetic factor - it contains detailed variables, which are interrelated. The specification and analysis of detailed variables depend on the assumed scheme of analysis. Here we use a scheme known as "Data - People - Things" (Wiley 1969: 13-21; Kohn 1969, 1977). This scheme was initially worked out by specialists in work analysis (Fine and Heinz 1958). In reference to this scheme, it is worth quoting the authors of the Michigan Survey Research Center: "We found out that one of the most fruitful distinctions ... is the distinction

among the work with data, people, and things” (Robinson 1969: 402). This distinction was utilized in the already classic studies of occupation selection (Rosenberg 1957). Currently it constitutes the foundation of distinguishing occupations in the American *Dictionary of Occupational Titles* (U.S. Department of Labor 1965), available today in an electronic version.

Below we present the basic assumptions of this scheme followed by its operationalization used in our research.

The basic assumption of the scheme is that everything workers do while performing their occupational roles can be described in behavioral categories referring to people, data, and things. To describe a given job is, in other words, to point out elementary actions pertaining to interpersonal contacts, processing of information, and physical effort. These three separate dimensions of work description are called “data,” “people,” and “things.”

The scheme assumes that in each of the three dimensions one may distinguish many levels of work (elementary task) complexity. In our study we utilize, with some minor modifications and additions, the levels used in the work of Kohn (1969, 1977). As in all earlier analyses, we treat the numbers identifying the levels of elementary task complexity as values of interval variables.

The lowest level in the dimension of working with *data* is the perception of data requiring minimal intellectual effort (level 1) while the highest level is the generation of new ideas and their presentation in a novel form (level 9). Also considered is a situation of no contact, or almost no contact, with data at work (level 0). The scale is as follows:

0. No contact, or minimal contact, with data at work.
1. Comparing: Judging the readily observable functional, structural, or compositional characteristics (whether similar to or divergent from obvious standards) of data, people, or things.
2. Copying: Transcribing, entering, or posting data.
3. Computing: Performing arithmetic operations and reporting on and/or carrying out a prescribed action in relation to them. Does not include counting.
4. Standard data processing according to received instructions. Preparing reports based on easily obtained information from independent sources and putting them together. Using simple technical drawings for applying this information in practice.
5. Compiling: Gathering, collating, or classifying information about data, people, or things. Reporting and/or carrying out a prescribed action in relation to the information is frequently involved.

6. Analyzing: Examining and evaluating data. Presenting alternative actions in relation to the evaluation is frequently involved.

7. Coordinating: Determining time, place, and sequence of operations or action to be taken on the basis of analysis of data; executing determinations and/or reporting on events.

8. Synthesizing: Integrating analyses of data to discover facts and/or develop knowledge concepts or interpretations.

The extremes of the complexity of work in the second dimension, that is, working with *people*, involve - on the one hand - taking simple instructions on what should be done and how (level 1) and - on the other hand - affecting an individual's personality traits (level 9). The scale is as follows:

1. Taking instructions-helping: Attending to the work assignment instructions or orders of a supervisor. (No immediate response required unless clarification of instructions or orders is needed.)

2. Serving: Attending to the needs or requests of people or animals or the expressed or implicit wishes of people. Immediate response is involved.

3. Speaking-signaling: Talking with and/or signaling people to convey or exchange information. Includes giving assignments and/or directions to helpers or assistants.

4. Persuading: Influencing others in favor of a product, service, or point of view.

5. Diverting: Amusing others, usually through the medium of stage, screen, television, or radio.

6. Supervising: Determining or interpreting work procedures for a group of workers, assigning specific duties to them, maintaining harmonious relations among them, and promoting efficiency. A variety of responsibilities is involved in this function.

7. Instructing: Teaching subject matter to others, or training others (including animals) through explanation, demonstration, and supervised practice; or making recommendations on the basis of technical disciplines.

8. Negotiating: Exchanging ideas, information, and opinions with others to formulate policies and programs and/or arrive jointly at decisions, conclusions, or solutions.

9. Mentoring: Dealing with individuals in terms of their total personality in order to advise, counsel, and/or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual, and/or other professional principles.

In the third dimension – complexity of working with things – lifting or carrying loads without specialized equipment is considered to be at the lowest level (level 1) while having no substantial contact with things since they were delegated to subordinates is at the highest level (level 9). The full scale is as follows:

1. Handling: Using body members, handtools, and/or special devices to work, move, or carry objects or materials. Involves little or no latitude for judgment with regard to attainment of standards or selection of the appropriate tool, object, or materials.

2. Feeding-Offbearing: Inserting, throwing, dumping, or placing materials in or removing them from machines or equipment that are automatic or tended or operated by other workers.

3. Tending: Starting, stopping, and observing the functioning of machines and equipment. Involves adjusting materials or controls of the machine, such as changing guides, adjusting timers and temperature gauges, turning valves to allow flow of materials, and flipping switches in response to lights. Little judgment is involved in making these adjustments.

4. Manipulating: Using body members, tools, or special devices to work, move, guide, or place objects or materials. Involves some latitude for judgment with regard to precision attained and selection of the appropriate tool, object, or material, although this is readily manifest.

5. Driving-Operating: Starting, stopping, and controlling the actions of machines or equipment for which a course must be steered or which must be guided to control the movement of things or people for a variety of purposes. Involves such activities as observing gauges and dials, estimating distances and determining speed and direction of other objects, turning cranks and wheels, and pushing or pulling gear lifts or levers. Includes such machines as cranes, conveyor systems, tractors, furnace-charging machines, paving machines, and hoisting machines. Excludes manually powered machines, such as handtrucks and dollies, and power-assisted machines, such as electric wheelbarrows and handtrucks.

6. Operating-Controlling: Starting, stopping, controlling, and adjusting the progress of machines or equipment. Operating machines involves setting up and adjusting the machine or material(s) as the work progresses. Controlling involves observing gauges, dials, and the like, and turning valves and other devices to regulate factors such as temperature, pressure, flow of liquids, speed of pumps, and reactions of materials.

7. Precision working: Using body members and/or tools or work aids to work, move, guide, or place objects or materials in situations where ultimate responsibility for the attainment of standards occurs and selection of appropriate tools, objects, or materials, and the adjustment of the tool to the task require exercise of considerable judgment.

8. Setting up: Preparing machines (or equipment) for operation by planning order of successive machine operations, installing and adjusting tools and other machine components, adjusting the position of workpiece or material, setting controls, and verifying accuracy of machine capabilities, properties of materials, and shop practices. Using tools, equipment, and work aids, such as precision gauges and measuring instruments. Workers who set up one or a number of machines for other workers or who set up and personally operate a variety of machines are included here.

9. No substantial contact with things at work.

Without a detailed discussion of how the number of levels of the complexity of work was decided in each of the three dimensions, we emphasize the basic assumption of this construction: For each specific task resulting from the totality of the occupational role we regard as appropriate only one level in each dimension. We find this level by considering a set of work activities that are most characteristic of a given kind of work. Then we provide the description of general complexity of work in the form of three numbers, each specifying the level of the complexity of work in a particular dimension.

In the original version (1979), Słomczyński and Kacprowicz used a diversity of materials to determine the values of three scales – complexity of work with data, people, and things – for each category of the *Social Classification of Occupations*. In the process of coding they utilized the descriptions of work activities typical of particular occupational categories that were provided in the entries of the *Systematyczny Słownik Zawodów* (*Systematic Dictionary of Occupations*), GUS 1970a, business schedules, “pictures of workstations,” or explanations in the *Encyklopedyczny przewodnik: zawody i specjalności w szkolnictwie zawodowym* (*Encyclopedic Guide: Occupations and Specialties in Vocational Training*), PWN 1973. The final coding was based on results obtained from (i) initial coding of all categories of the *Social Classification of Occupations* by three experts, (ii) assignment to our categories of the code symbols of corresponding categories in the *Dictionary of Occupational Titles* (U.S. Department of Labor 1965), and (iii) the expertise of specialists in work analysis especially prepared for some of the categories.

The new version of the *Social Classification of Occupations - 2009* required a number of modifications that included assigning the scale values to new occupational categories or “averaging” a number of old codes in situations where the new classification aggregated some occupational groups. We constructed the general index of complexity of work (*COM*) on the basis of codes of the complexity of work with people, data, and things. We obtained the values of this index from the following regression equation:

$$COM = 4.95 SYM + 2.33 PPL + 1.43 THI + 13.71$$

where *COM* is the complexity of work with data, *PPL* denotes the complexity of work with people, and *THI* is the complexity of work with things. Coefficients in this equation resulted from a model for 30 chosen occupations in which the values of *SYM*, *PPL*, and *THI* for given workstations were independent variables (see Słomczyński and Kacprowicz 1979).

The construction of *COM* requires some explanation. For individual workstations, the (general) complexity of work is defined not only with respect to each dimension but also with respect to their mutual relationships. Of these relationships two kinds are of particular importance, one involving time and the other involving the nature of work. The first one specifies the proportion of time assigned to each dimension, and the other - the complexity of work in each of the three dimensions. The (general) complexity of work reflects the extent to which the problems solved at work require originality, new ideas, and intuition. When these problems involve many issues we say the complexity of work is of high intensity. Simple, routine work, requiring no consideration, defines the other extreme of the scale - the complexity of work of low intensity. Even a few hours of preparation is enough for a worker to perform all work assignments in a satisfactory way.

In sum, seven component variables characterize *COM*, the complexity of work at workstations: (1) the complexity of work with data, (2) the complexity of work with people, (3) the complexity of work with things, (4) the time of working with data, (5) the time of working with people, (6) the time of working with things, and (7) the general complexity of work. These variables are subject to a detailed factor analysis based on the data collected in 1972, 1978, 1988, 1992, and 2003 (see Słomczyński and Kacprowicz 1979; Słomczyński and Kohn 1988; Kohn and Słomczyński 1990; Słomczyński et al. 1996).

Table 5.1 presents the results of factor analysis performed on these data sets for all seven component variables. The first - and most important - factor appears to have the strongest relationship with two variables: the

complexity of work with data and the complexity of work with people. Values of factor loadings for these variables are from 0.75 to 0.96 and from 0.63 to 0.89, respectively. The loadings for the remaining variables (with respect to the same factor) are between 0.11 (the complexity of work with things) and - 0.96 (time of work with things). The data for 1988 and 2003 were estimated - in each case we assessed the time of work compared with the most similar data from earlier data sets. In general, a strong similarity of results for 1972-2003 is observed, although in the case of individual variables there appear to be certain anomalies, such as a very low factor loading for the scale of the complexity of work with things in 1992.

Table 5.1 Factor loadings of the variables defining the complexity of work in the studies conducted in 1972-2003

Variables	Year of study				
	1972	1978	1988	1992	2003
	Factor loadings				
Complexity of work with data	0.96	0.87	0.80	0.82	0.75
Complexity of work with people	0.78	0.89	0.65	0.69	0.63
Complexity of work with things	0.30	0.25	0.31	0.11	0.32
Time of work with data	0.84	0.59	0.52	0.52	0.50
Time of work with people	0.69	0.29	0.46	0.30	0.44
Time of work with things	-0.96	-0.64	-0.67	-0.69	-0.49
General complexity of work	0.85	0.85	0.78	0.78	0.71

We used the results of this analysis to compute the mean values of the first factor for selected occupational categories. In constructing the final version of *COM* we applied the transformation $COM = 50 F + 25$, where *F* corresponds to the original factor with a mean value 0 and standard deviation 1.

Table 5.2 presents the data for 30 selected occupational categories for 2003 and 1972. They demonstrate that among these categories the one with the highest general complexity of work is physicians (medical doctors), followed by the managers of small enterprises, designer engineers, chief engineers, and managers of technological centers. In the middle of this hierarchy are warehousemen, typists, and owners of small production enterprises. In the lowest positions are cleaning people, unskilled construction workers, and agricultural workers. The results for 1972 and 2003 demonstrate a high conformity of the values of the index. For this reason we use the same regression equation to estimate the values of *COM* for all categories of the new version of the *Social Classification of Occupations*.

Table 5.2 Arithmetic means of the index of general complexity of work in 2003 as compared with its mean values in 1972, in standardized units

Occupations	2003 Study		1972 Study	
	Rank	Mean	Rank	Mean
Physician (medical doctor)	1	1.63	1	1.52
Small enterprise manager	3	1.51	2	1.49
Engineer - designer	4	1.44	3	1.45
Chief engineer	2	1.52	4	1.48
Technical center manager	5	1.43	5	1.22
Technologist	7	1.11	6	1.08
Agronomist (agriculturalist)	8	0.99	7	1.05
Primary school teacher	6	1.22	8	1.03
Foreman	9	1.03	9	0.99
Economist in planning	10-11	0.65	10	0.65
Accountant	10-11	0.65	11	0.51
Clerk in business administration	13	0.49	12	0.49
Nurse	12	0.54	13	0.44
Warehouseman	14	0.02	14	0.30
Typist/coder	15-16	-0.35	15	-0.13
Owner of small production enterprise	15-16	-0.35	16	-0.34
Electrical fitter (wired)	17	-0.33	17	-0.35
Skilled worker in precision machining	18	-0.38	18	-0.44
Salesperson	19-20	-0.50	19	-0.48
Car (truck) driver	19-20	-0.50	20	-0.54
Miner	21	-0.53	21	-0.64
Crane operator	23	-0.64	22	-0.64
Weaver	24	-0.76	23	-0.76
Smelter/foundry worker	22	-0.55	24	-0.79
Stoker	25	-0.88	25	-0.97
Brick mason	26	-1.10	26	-1.03
Unskilled worker in food processing	27-30	-1.30	27	-1.19
Cleaner, housekeeper	27-30	-1.30	28	-1.21
Unskilled construction worker	27-30	-1.30	29	-1.26
Farm worker	27-30	-1.30	30	-1.26

Appendix 5.1 contains the estimated values of the index of general complexity of work for all categories of the *Social Classification of Occupations – 2009*. Categories with the highest level of the complexity of work with data and no contact with things achieved the highest value of the index: about 87.0 points. At the other end of the scale are types of work distinguished by minimal contact with people, minimal use of data, and the simplest kind of physical effort. These values on our scale were about 15.1 points.

Rewarded on the scale are those occupational categories that have a relatively high complexity of work with data. A position in this dimension is the most important one for the value of the general index. It is also worth mentioning the position in the least important dimension – the complexity of work with things – since the categories that have practically no contact with “things” during the time of work achieve the highest position in this dimension. In particular, this pertains to situations in which contact with things was replaced by contact with data following the ongoing division of work. We understand “things” in a broad sense. Some categories of office workers are located low on this dimension because they use simple office equipment at work. Like some categories of service workers they locate on this scale lower than certain categories of skilled manual workers.

5.3 The scale of material remuneration

Słomczyński and Kacprowicz (1979) presented various versions of scales of socio-economic status for the first edition of the *Social Classification of Occupations*. The most detailed version takes into account such variables as: (i) the arithmetic mean of the number of completed school grades, (ii) the number of points assigned to the workstation, (iii) the mean value of monthly earnings, (iv) the mean value of the index of standard of living, and (v) the mean value of the index of home appliances. However, these data were available for only a limited number of categories. For this reason we subjected the general index based on these variables to a regression analysis on two variables – average education and average earnings, available for all categories of the first edition of the *Social Classification of Occupations*. Hence, the former scale of socio-economic status became a linear function of education and income.

The construction of this scale as dependent on education was always controversial from both the theoretical and methodological point of view. Theoretically – as was already mentioned – education is identified with *investments* that the individual makes in the process of preparation for

occupational roles, while income is one of the forms of *rewards* for working in these roles. As Otis D. Duncan (1961a) points out, persons prepare themselves for an occupation in life by obtaining education. As a consequence of working in an occupation they receive income. Thus, occupation is a mediating factor between education and income. If we characterize an occupation with respect to the predominant education and the predominant income of persons working in a given occupation, we not only estimate the social and economic position of this occupation but also describe one of the main causes and one of the main consequences of labor market functioning for these persons. Duncan saw this fact as a justification for constructing the scale of socio-economic status. Although Słomczyński and Kacprowicz (1979) presented a scale similar to that suggested by Duncan they also voiced doubts about whether combining “causes” with “consequences” is a good theoretical solution.

Methodological doubts arise when an explanatory model uses the respondent’s education and position on the scale of socio-economic status when one of this scale’s components is the mean value of education in the given occupation. Education of the respondent – or, more precisely, of the equivalent individual – is an element of this mean. This objection has been voiced many times in the literature but without appropriate effects in practice.

For historical reasons, we present the original version of the scale of socio-economic status (Słomczyński and Kacprowicz 1979) adjusted for the current version of the *Social Classification of Occupations*. We do so because this scale – however constructed – reflects important characteristics of the stratification system under state socialism and therefore can be used to characterize the positions of individuals at the time. The first column of Appendix 5.2 shows the values of this scale.

The second column of Appendix 5.2 presents a new scale, which we call the scale of material remuneration (*MRE*). Construction of this scale is based on the amount of occupational income estimated for the period from October 1999 through January 2000. The main data source is Table X-2 prepared by the Central Statistical Office. This document provides the amount of earnings for each occupation of the *Classification of Occupations and Specialties*. In Table 5.3 we present examples of occupations and the corresponding income, which includes all additional remuneration granted to workers, such as payments for overtime work, payments for supervisory functions or the like, and, finally, awards and bonuses. In occupations with the highest income, average (total) income is more than five times higher than in occupations with the lowest income. This picture corresponds to that presented in the literature.

Table 5.3 Selected occupations and mean earnings used for constructing the scale of material remuneration

Occupational categories	Mean earnings
Higher administration officials	5,428.18
Directors and general managers	4,856.61
Small enterprise owners	4,678.90
Architects	3,061.57
Economists	2,917.67
Managers of small enterprises	2,745.72
College or university faculty	2,419.92
Electrical technicians	2,375.15
Railway engine drivers	2,107.50
Foundry workers	1,974.31
Accountants	1,930.97
Computer equipment operators	1,883.17
Electric line wireers	1,834.55
Machine assemblers	1,819.44
Secretaries	1,774.38
Welders and similar	1,736.63
Policemen and similar	1,720.18
Sailors and similar	1,653.29
Carriers, porters, and similar	1,436.58
Operators of automobile equipment	1,390.70
Assistant workers in mining	1,371.69
Nurses	1,273.85
Weavers, knitters, and similar	1,190.57
Waiters and barmen (bartenders)	1,057.49
Doorkeepers, janitors, and similar	1,030.99
Cleaners, housekeeping	976.21

The material presented was insufficient for use in all categories of the *Social Classification of Occupations*. The most important obstacle was the scarcity of information on managerial occupations belonging to Major Group 0. In addition, there was no information about the owners of large companies because - as mentioned earlier - in classifications based on *ISCO-88*, and therefore also in that used by the Central Statistical Office (GUS), company owners are not treated as representing an occupational category based on ownership title. For this reason we had to use different

GUS materials belonging to the series *Ile zarabiają Polacy* (How Much Do the Poles Earn). We also used materials of Sedlak & Sedlak published every couple of months since 1997 (available at www.wynagrodzenia.pl). In general, our additional data covered the period from October 1999 to February 2000. Since quarterly changes in earnings were slim but inflation was low during this period, we did not make corrections to the data collected on previously missing occupations.

At this point we needed to assign the amounts of income thus established to individual occupational categories in the form of average earnings. To achieve this we applied the transformation $Z = (U_i - \bar{U}) / \sigma_u$, where U_i denotes the amount of earnings (income) in the i -th occupation, \bar{U} is the average amount of earnings (income) in all occupations, and σ_u is the standard deviation of earnings (income). We transformed the values thereby obtained into the values of the *MRE* scale using the formula:

$$MRE = Z * 15 + 30$$

The values of the scale between 11 and 96 refer to the most detailed occupational categories that were subsequently aggregated into the categories listed in the *Social Classification of Occupations*.

Two pieces of information are particularly important for users of this scale. First, although in constructing the scale we used data covering only the period from October 1999 through February 2000, the scale nevertheless turned out to be very stable throughout the first phase of systemic transformation in 1989–1993. The biggest changes in the structure of earnings (income) occurred during this first phase. Later, for the whole 10 years starting in 1994 there were no significant changes in income proportions among various occupations. Correlation between the values of *MRE* for 1999–2000 and earnings (income) provided for 2005 by a report of Internet Earnings Studies (www.wynagrodzenia.pl), computed for 126 well-defined categories of the *Social Classification of Occupations* was 0.921.

The second important finding is that there are distinct changes between the structure of values of the 1979 scale of socio-economic status (*SES*) and that of the *MRE*. This explains our presentation in Appendix 5.2 of not only the current values of *MRE* but also the old *SES*. Use of the old *SES* scale is justified for assessing the situation of employees (workers) under state socialism. However, this is not the case after 1989. Our attempts to construct a new scale of socio-economic status demonstrated the same problem as the comparison of the old *SES* with the new *MRE*: political and economic changes introduced a different structure of material rewards for the effort of preparing for and fulfilling occupational roles.

5.4 The scale of occupational prestige

The first Polish *Scale of Prestige* fitting the *Social Classification of Occupations* was based on a study of experts (Słomczyński and Kacprowicz 1979). We present the values of this scale in the third column of Appendix 5.2. They are in a form that fits the new version of classification of occupations. After the construction of this scale some significant changes emerged with respect to occupational prestige. We demonstrate these by comparing the 1979 scale with the new scale of prestige discussed in this part of the chapter.

The initial work for preparing the 1979 scale of occupations consisted of making a suitable list of occupations and writing instructions on how to evaluate them. For each narrow category of the *Social Classification of Occupations* one to five occupational titles were chosen. After numerous consultations with users of this classification, a list of 500 occupational titles appeared. The experts evaluated these occupations using a system of double ranking: in the first stage they divided the set of all 500 occupations into ten groups; in the second stage they divided each group - again into ten more detailed subgroups.

Słomczyński and Kacprowicz (1979) demonstrated that the evaluations of experts appropriately represented public opinion. For a subset of 25 occupations the correlation between average evaluations of experts and average evaluations made by a representative sample of the adult population of Poland was very high ($r = 0.945$). Values of expected public opinion evaluations were assessed using a regression equation for the full list of 500 occupations. These values were aggregated in order to compute appropriate averages for all categories of the subset of 25 occupations of the *Social Classification of Occupations*. We provide these values in the third column of Appendix 5.2.

One may ask to what extent this scale represents occupational prestige thirty years later. To answer this question we will first note that in 2004, the (Polish) Center for Public Opinion Research conducted a new study of occupational prestige on a representative sample of the adult population in Poland (Domański 2005). Table 5.4 presents the results of this study. After comparing these with the results of a 1975 public opinion study, the authors of this book decided to undertake the task of constructing a new scale of occupational prestige.

Construction of this scale is based on a study of experts. It was conducted by the Center of Sociological Research (CSR), Institute of Philosophy and Sociology, Polish Academy of Sciences, between February 21 and May 10, 2005, under the direction of Paweł Sztabiński. We present here the most important findings of their final report.

Fifty-five experts were invited to take part in the research. They consisted of people who were knowledgeable on characteristics of occupations relevant to prestige, and also were predisposed to sociological reflection. Researchers selected a number of institutions to which they sent letters asking for a selection of individuals qualified as experts. Participation in this study was voluntary and the work involved was supposed to be done after hours. The experts received remuneration on a one-time basis.

Table 5.4 Average occupational prestige in 2004 compared with average occupational prestige in 1975, according to public opinion

Occupations	2004 Study ^a		1975 Study ^b	
	Rank	Mean	Rank	Mean
Professor (college or university)	1	81.6	1	92.2
Miner	2	77.2	7	76.9
Nurse	3	77.0	13	69.2
Teacher	4	76.3	4	82.3
Physician (medical doctor)	5	75.2	2	88.7
Computer scientist - systems analyst	6	74.3	—	—
Farmer	7	73.6	20	60.6
Armed forces captain	8	72.3	11	71.6
Factory engineer	9	72.1	6	76.9
Journalist	10	71.7	8	76.5
Brick mason - skilled worker	11	70.8	—	—
Turner - skilled worker	12	70.0	18	64.5
Judge	13	69.9	—	—
Bus or truck driver	14	69.6	23	58.0
Technician - computer operator	14	69.6	—	—
Policeman	16	69.0	—	—
Cleaner, housekeeping	17	68.8	30	45.7
Accountant	17	68.8	17	65.9
Store salesperson	19	68.6	25	55.5
Small store owner	20	67.5	24	55.9
Factory director	21	67.5	5	80.6
Lawyer - attorney	22	67.5	12	71.5
Priest	23	67.2	9	75.1
Entrepreneur - large business owner	24	66.4	—	—
Provincial governor	25	65.1	—	—

continued

Occupations	2004 Study ^a		1975 Study ^b	
	Rank	Mean	Rank	Mean
Tax attorney (tax advisor)	26	65.0	–	–
Medium-size city mayor	27	64.7	–	–
Farm worker	28	63.9	29	46.9
Office clerk	29	63.7	26	53.0
Stock-broker	30	63.3	–	–
Unskilled construction worker	31	62.5	28	50.3
Messenger	32	62.3	–	–
Insurance agent	33	61.5	–	–
Cabinet minister	34	58.8	3	88.0
Parliamentarian (Sejm deputy)	35	53.1	–	–
Political party official	36	51.3	–	–
Agricultural engineer	–	–	10	73.0
State-farm manager	–	–	14	69.1
Office manager	–	–	15	68.5
Factory foreman	–	–	16	66.5
Electrical technician	–	–	19	64.3
Locksmith - shop owner	–	–	21	60.6
Tailor - shop owner	–	–	22	59.4
Office secretary	–	–	27	52.2

^a Domański 2005: Table 1.^b Słomczyński and Kacprowicz 1979: Table III.2.

The sample was composed of experts from all over Poland working for: the Central Statistical Office (Department of Social Statistics) - 8 persons; Statistical Offices in Warsaw, Lublin, Bydgoszcz, Opole, Zielona Góra, Gdańsk, Białystok (Department of Surveys) - 9 persons; Voivodship Offices of Labor in Warsaw and Katowice (Center of Information and Planning Occupational Careers) - 14 persons; Institute of Labor and Welfare (Department of the Labor Market) - 18 persons; and the Ministry of Economy and Labor (Department of the Labor Market) - 6 persons. After receiving (from the heads of these institutions) the requested lists of potential participants in the study and all of the necessary information permitting contact with them the researchers sent each selected expert a set of materials containing: (i) a cover letter introducing the aim and procedure of the study, and instructions for participants in the study, (ii) a list of 111 or 112 occupational titles to be evaluated, (iii) index cards with the names of occupational

titles from the list, to help respondents to assess the occupational prestige evaluation on the form they were to fill out.

Researchers prepared 551 occupational titles for evaluation, which were selected so as to represent the broad occupational groups listed in the version of *Social Classification of Occupations* under preparation and which essentially duplicated those used in the earlier study of occupational prestige (Słomczyński and Kacprowicz 1979). They took some specific titles of occupations and specialties from *Nowa Klasyfikacja Zawodów i Specjalności* (New Classification of Occupations and Specialties) (Lelińska, Gruza, and Stahl 2004) and *ISCO-88*.

The participatory work of each expert in the study consisted of evaluating 111 or 112 occupational titles out of all 551 occupations on the scale of prestige, from the occupation with the highest prestige to the one with the lowest. Researchers prepared an individual collection of occupational titles for each respondent. The collection contained a group of 37 occupations evaluated by each respondent. All of the remaining occupational titles were allocated to individual respondents in such way that each occupation would be evaluated approximately the same number of times (see Bojanowski 2005).

Researchers prepared detailed instructions for the respondents, knowing that an evaluation of over 100 occupations with respect to prestige is a difficult task that requires constant attention and focus. They also wanted to ensure that the evaluation process would be standardized and the results as accurate as possible. For the same reasons, their instructions advised the respondents to work in a comfortable setting conducive to peace of mind, where the research materials could be arranged in a way that allowed optimal fulfillment of their task. The evaluation procedure was supposed to consist of four steps. In the first step, the respondent was to select the occupation with the highest prestige and the one with the lowest, and write their numbers and names on the form provided. This step helped in the evaluation of other occupations by giving the respondent a point of reference for further work. In the second step, the respondent was to divide index cards with the remaining occupations into three groups (without taking any notes), consisting of occupations of high prestige, average prestige, and low prestige. The third step aimed at ordering occupations of the first group (high prestige), then the second group, and finally those of the third group. In the fourth step, the respondent was to create a final hierarchy of occupations with respect to prestige. To minimize errors, respondents were supposed to write both the numbers and the titles of occupations in the order in which they had chosen them. If the respondent thought that two or more occupations should have the same position on the list he/she was asked to make a stronger effort to differentiate between

them in this respect. To simplify this task, researchers also prepared a graphic illustration of the scheme for evaluating occupations.

This is how the respondents were instructed to create their lists of occupational hierarchies. After completing the work they were asked to check the forms they had just filled out, seal them in the enclosed envelopes, and either return them to the study coordinator or send them directly to CSR.

We provide the aggregated evaluations – in the form of ranks – in the fourth column of Appendix 5.2. Occupations such as university or college full professors, the higher echelons of management in the state and regional administration at central and voivodship levels, lawyers – judges, assistant judges, and attorneys, in particular – and some occupations of artists, particularly composers, occupy the highest positions. Those of street cleaners, messengers, and gravediggers occupy the lowest.

5.5 Conclusion

We designed the scales of skill requirements, complexity of work, material remuneration, and occupational prestige presented in this work in a way that is best suited to the Polish conditions for characterizing occupational position. The researcher has leeway in using one of these scales or their combination and treating occupation either as an explained or explanatory variable. The choice of which scales to use should depend on research goals and theoretical assumptions. From a pragmatic point of view the scale of skill requirements can be considered the most universal because it correlates best with the remaining scales.

In concluding this chapter it is worth mentioning that other scales are also used in international research – particularly the *Standard International Occupational Prestige Scale – SIOPS* (Treiman 1977; Ganzeboom and Treiman 2003), and the *Standard International Socio-Economic Index of Occupational Status – ISEI* (Ganzeboom et al. 1992), which we mentioned in Chapter 1. However, research practice demonstrates that in Polish conditions the scales presented in this book have better diagnostic value than the “universal” scales usually applied with *ISCO-88*. Still keeping open the possibility of making international comparisons in the future the universal scales will also be adapted to the *Social Classification of Occupations, SCO-2009*.

Appendix 5.1

Scales of Skill Requirements and Complexity of Work

<i>SCO-2009</i> Code	Occupational Category	Skill Requirements	Complexity of Work
0000	SENIOR OFFICIALS AND MANAGERS	87.0	76.2
0100	TOP GOVERNMENTAL ADMINISTRATORS AND POLITICAL OFFICIALS	89.0	83.8
0110	Legislators and top governmental administrators	89.0	87.0
0111	Legislators, top administrators on central and regional level, including self-governing bodies	89.0	87.0
0112	Top administrators on local level (of cities and districts), including self-governing bodies	89.0	85.7
0170	Top officials of political parties and special-interest organizations	89.0	82.6
0171	Top officials of political parties and special-interest organizations on central and regional level	89.0	85.7
0172	Top officials of political parties and special-interest organizations on local level – of cities and districts	89.0	80.2
0180	Top ranks of armed forces and police	89.0	77.4
0200	TOP MANAGERS OF LARGE ENTERPRISES AND OTHER INSTITUTIONS	87.0	79.3
0290	Top management	89.0	87.0
0291	Top management of production and service enterprises – directors, presidents, board members, and trustees of businesses	89.0	87.0
0292	Top management of central and of special importance institutions in science, culture, education, healthcare, and related	89.0	81.0
0293	Top management of local institutions in culture, education, healthcare, and related	89.0	74.4
0294	Top management in business administration on central, regional and local level	89.0	69.1
0295	Chief engineers and technical managers in production and service enterprises	89.0	71.4
0296	Central management in other institutions	89.0	71.4
0300	PRODUCTION, OPERATIONS, AND ADMINISTRATIVE MANAGERS	87.0	65.4
0310	Production and operations managers	87.0	70.1
0311	Production and operations managers in production enterprises	87.0	70.1
0312	Production and operations managers in construction enterprises	87.0	70.1
0313	Production and operations managers in transportation	87.0	63.3
0320	Administrative managers	87.0	63.0
0321	Department managers in state and local administration, including self-governing bodies	87.0	63.0
0322	Financial and economic managers in offices and enterprises	87.0	63.0

continued

SCO-2009 Code	Occupational Category	Skill Requirements	Complexity of Work
0323	Managers of trade and service institutions	87.0	63.0
0340	Department managers in business administration	87.0	63.0
1000	PROFESSIONALS AND SPECIALISTS	85.0	74.0
1100	PROFESSIONALS	85.0	77.1
1110	Artists	82.0	77.1
1112	Writers and related	82.0	82.4
1113	Journalists, editors, reporters	82.0	77.0
1114	Artists in fine arts	82.0	78.7
1115	Musicians – performers	82.0	78.7
1116	Composers	82.0	82.4
1117	Singers, dancers, and choreographers	82.0	72.0
1118	Stage and movie directors and actors	82.0	77.0
1119	Other specialists in creative art	82.0	74.0
1120	Research scientists, and faculty of colleges and universities	87.0	80.1
1121	Professors in colleges and universities and research institutions	89.0	84.7
1122	Other faculty in colleges and universities, researchers	89.0	82.4
1123	Curators, custodians, and other specialists in archives, libraries, and museums	85.0	73.2
1124	Philologists and translators	85.0	74.0
1130	Teachers	85.0	74.7
1133	School inspectors	85.0	77.4
1134	Teachers and tutors in secondary schools	85.0	77.0
1135	Teachers and tutors in primary and vocational schools	85.0	74.2
1136	Coaches (tutors)	82.0	70.0
1140	Specialists in economics and social sciences	86.0	75.7
1141	Sociologists and political scientists	86.0	77.0
1142	Psychologists	86.0	77.0
1144	Economists, and specialists in banking and finances	86.0	73.2
1145	Specialists in management of human resources and development strategies	86.0	77.0
1146	Specialists in marketing, promotion, and PR (public relations)	86.0	73.2
1147	Specialists in welfare services and social work	86.0	73.2
1149	Other specialists in social sciences and humanities	86.0	73.2
1150	Law professionals	89.0	80.3
1153	Judges and assistant judges	89.0	82.0
1154	Public prosecutors and assistant prosecutors	89.0	82.0
1155	Legal trainees	86.0	77.0
1156	Legal specialists	89.0	82.0
1157	Lawyers (attorneys at law)	89.0	82.0
1158	Corporate lawyers and public notaries	89.0	77.0
1160	Specialists in natural, physical, and mathematical sciences	86.0	76.9

continued

<i>SCO-2009</i> Code	Occupational Category	Skill Requirements	Complexity of Work
1161	Biologists, zoologists, botanists, and related	86.0	73.7
1162	Chemists	86.0	73.7
1163	Mathematicians, physicists, and astronomers	86.0	80.1
1165	Specialists in informatics. Computer system programmers	86.0	80.1
1169	Other specialists in natural, physical, and mathematical sciences	86.0	80.1
1170	Physicians (medical doctors) and specialists in pharmaceuticals	89.0	77.5
1173	Physicians (medical doctors)	89.0	82.8
1174	Dentists	89.0	76.0
1175	Pharmacists	87.0	70.0
1180	Agronomy and veterinarian specialists	84.0	69.6
1185	Veterinarians	84.0	71.4
1186	Agronomists, agro-technologists, animal rearing specialists, and breeders	84.0	71.4
1187	Agricultural engineers, forestry engineers, horticultural engineers	84.0	65.2
1190	Clergy	85.0	82.2
1191	High clergy	87.0	84.7
1192	Other clergy: priests, pastors, clergymen	83.0	79.4
1200	SPECIALISTS IN TECHNICAL FIELDS	85.0	70.9
1220	Engineers	86.0	71.6
1221	Metallurgist engineers	86.0	71.4
1222	Mechanical engineers	86.0	71.4
1223	Electrical, electronic and power industry engineers	86.0	71.4
1224	Architects	86.0	78.2
1225	Geodesy, geology, and mining engineers	88.0	70.0
1226	Transportation engineers	86.0	70.0
1227	Chemical engineers	86.0	70.0
1229	Other engineers	86.0	70.0
1230	Engineering specialists	85.0	70.3
1231	Technologists	85.0	70.0
1232	Constructors and designers	85.0	75.9
1234	Engineering inspectors	85.0	68.2
1235	Engineers of industrial standardization	85.0	67.4
1236	Inspectors and instructors of industrial safety	85.0	67.4
1237	Technical inspectors	85.0	67.4
1238	Engineers of computer science, systems analysts and designers of computer systems	85.0	68.2
1240	Other specialists in engineering and technology	85.0	68.2
1241	Aircraft pilots	85.0	67.4
1242	Captains, navigators, and deck mechanics of oceanic sailing	85.0	65.2
1249	Other specialists in engineering and technology	85.0	60.0

continued

SCO-2009 Code	Occupational Category	Skill Requirements	Complexity of Work
2000	TECHNICIANS AND SPECIALIZED OFFICE WORKERS	69.0	57.3
2100	TECHNICIANS	72.0	56.4
2120	Technicians in industry, construction, and transportation	72.0	57.7
2121	Metallurgist technicians	72.0	57.7
2122	Mechanical technicians	72.0	57.7
2123	Electrical, electronics, and power industry technicians	72.0	57.7
2124	Geodesy, geology, and mining technicians	72.0	57.7
2125	Construction technicians	72.0	57.7
2126	Transportation technicians	72.0	57.7
2127	Chemical technicians	72.0	57.7
2129	Other technicians	72.0	57.7
2130	Technician specialists	72.0	55.7
2131	Construction and drafting assistants	72.0	53.5
2132	Dispatchers in industry and transportation	72.0	58.7
2133	Technician-inspectors of industrial operations	72.0	58.7
2134	Technicians in industrial standardization	72.0	57.5
2135	Technicians of industrial safety	72.0	57.5
2136	Technical associates	72.0	57.5
2137	Drafters	72.0	51.2
2138	Industrial laboratory workers	72.0	51.3
2139	Computer technicians	72.0	57.7
2140	Technical workers in sailing, and water and air transportation	73.0	59.5
2144	Pilots and navigators in inland sailing	73.0	56.3
2145	Electrician, mechanic, and navigator assistants in sea and inland sailing	73.0	56.3
2147	Pilots of non-passenger (industrial and agricultural) aircrafts	73.0	56.3
2300	SPECIALIZED OFFICE WORKERS	65.0	54.4
2320	Accountants and financial inspectors	65.0	53.3
2321	Chief cashiers, purchasing managers, and warehousemen	67.0	53.2
2322	Inspectors and instructors in bookkeeping	67.0	53.2
2323	Bookkeepers and accountants	67.0	53.2
2324	Record-keepers, inspectors in employment and wages	63.0	53.2
2325	Finance inspectors	67.0	53.2
2326	Computer operators and data processing technicians	63.0	54.0
2327	Stenographers	63.0	53.2
2328	Inspectors and instructors of administration	63.0	53.2
2330	Tax inspectors and other governmental officers	67.0	56.3
2331	Tax inspectors	67.0	56.3
2332	Officers in governmental welfare and retirement services	67.0	56.3
2333	Agents and other specialized workers in licensing	67.0	56.3

continued

<i>SCO-2009</i> Code	Occupational Category	Skill Requirements	Complexity of Work
2339	Other officers of governmental administration	67.0	56.3
3000	MIDDLE AND LOW-LEVEL NONMANUAL WORKERS	54.0	54.1
3100	MIDDLE-LEVEL SPECIALISTS AND SEMI-PROFESSIONALS	59.0	59.3
3110	Middle-level specialists in education and culture	59.0	68.9
3112	Trade, vocational teachers	59.0	79.1
3113	Nursery school teachers	59.0	58.2
3114	Middle-level educators in other types of schools: boarding schools, special schools	59.0	74.2
3116	Librarians	59.0	68.9
3119	Other middle-level specialized workers in education and culture	59.0	65.1
3120	Nurses and middle-level medical personnel	69.0	58.2
3121	Head nurses, obstetrics instructors	71.0	62.3
3122	Nurses, midwives, paramedics	69.0	58.2
3123	Medical laboratory workers, medical and dental technicians	69.0	57.7
3124	Veterinarian technicians and assistants	67.0	56.3
3126	Physical therapists (physiotherapists) and occupational therapists	69.0	56.3
3128	Middle-level therapists in traditional medicine	69.0	56.3
3129	Other medical middle-level specialists	69.0	56.3
3130	Product determination middle-level specialists	52.0	56.4
3131	Commodities and commerce specialists	52.0	56.5
3132	Nutritionists and technologists in nutrition	52.0	56.3
3140	Middle-level specialists in agronomy and animal rearing	50.0	53.7
3142	Agronomist and animal rearing technicians	50.0	53.5
3143	Agricultural, forestry, and horticulture technicians	50.0	53.5
3149	Other middle-level specialists in agriculture and forestry	50.0	51.1
3150	Middle-level specialists in finance, insurance, travel, and trade	56.0	50.5
3151	Stockbrokers	61.0	53.2
3152	Insurance agents	53.0	48.4
3153	Real estate agents	59.0	53.2
3154	Travel agents	59.0	53.2
3155	Trade agents and dealers, sales representatives	59.0	49.0
3156	Purchase agents	53.0	48.4
3157	Auctioneers	53.0	48.4
3159	Other middle-level specialists in trade and finances	59.0	53.2
3160	Middle-level specialized workers in business services	61.0	53.2
3161	Business brokers and dealers	61.0	53.2
3162	Middle-level specialized workers in clearing	65.0	53.2
3163	Employment agents	65.0	53.2
3169	Other middle-level business and trade specialized workers elsewhere unclassified	59.0	53.2

continued

SCO-2009 Code	Occupational Category	Skill Requirements	Complexity of Work
3170	Middle-level specialized workers in welfare and social work services	59.0	56.3
3200	ROUTINE OFFICE WORKERS	47.0	48.8
3210	Clerks	49.0	48.4
3211	Bookkeeping clerks	49.0	48.4
3212	Clerks in statistic, economic, and supplies departments	49.0	48.4
3213	Clerks in business administration	49.0	48.4
3214	Executive and highly qualified secretaries	49.0	36.1
3220	Cashiers in banks, post-offices, other offices, and industrial enterprises	47.0	36.1
3230	Secretaries and typists	46.0	36.1
3231	Secretaries	48.0	31.1
3232	Typists, computer data-entry workers	46.0	31.1
3233	Assistant secretaries	46.0	28.6
3234	Receptionists	44.0	28.6
3239	Other office workers	46.0	28.1
3240	Customs officers	44.0	34.7
3300	POLICE, ARMED FORCES, AND NATIONAL SECURITY FUNCTIONARIES	56.0	65.2
3310	Policemen	56.0	59.1
3320	Professional soldiers	56.0	59.1
3330	Officers and lower rank functionaries in fire services, industrial security and related services	56.0	47.2
3400	ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS	54.0	53.2
3410	Stage artists	54.0	53.2
3420	Athletes	54.0	53.2
4000	SALES AND SERVICE WORKERS	29.0	31.0
4100	STORE SALESPERSONS AND CASHIERS	32.0	32.1
4130	Store salespersons and cashiers	32.0	32.1
4131	Salespersons in shopping malls, supermarkets, and department stores	36.0	34.7
4132	Salespersons in traditional stores	32.0	31.1
4133	Salespersons in (open) markets	30.0	29.7
4134	Other salespersons	30.0	33.1
4135	Cashiers in stores and service shops	32.0	33.1
4200	SERVICE WORKERS IN TRANSPORT, MAIL AND RELATED FIELDS	29.0	33.0
4210	Conductors and guards	29.0	32.9
4211	Conductors	29.0	34.7
4212	Guards	29.0	31.1
4220	Mailpersons, telephone operators, and other workers in related services	31.0	33.0
4221	Mailpersons	31.0	34.7
4222	Telephone operators and telemarketers	31.0	29.7
4229	Other workers in transport, mail, and related services	31.0	34.7

continued

<i>SCO-2009</i> Code	Occupational Category	Skill Requirements	Complexity of Work
4300	WORKERS IN PERSONAL SERVICES	27.0	30.4
4310	Barbers and beauticians	28.0	27.0
4311	Hairdressers and make-up artists	28.0	27.0
4312	Beauticians and manicurists	28.0	27.0
4320	Cooks and waiters	27.0	32.9
4321	Cooks, confectioners, and café attendants	29.0	31.1
4322	Waiters, stewards, and buffet and bar attendants	25.0	34.7
4330	Workers in other personal services	27.0	31.2
4331	Photographers	29.0	36.1
4332	Assistants in photography and film copying laboratories	25.0	28.8
4334	Workers in funeral homes	27.0	32.1
4335	Astrologists and fortunetellers	27.0	31.1
4339	Other workers in personal services	27.0	28.8
4400	STORAGE AND SUPPLIES WORKERS	29.0	31.1
4410	Storage workers	29.0	31.1
4420	Supplies workers	29.0	31.1
4500	WORKERS OF SECURITY SERVICES	29.0	28.9
4510	Property and personal security guards	29.0	28.8
4600	MODELS AND HOSTESSES	28.0	31.1
4610	Models and hostesses	27.0	33.1
4611	Models	29.0	33.1
4612	Hostesses	25.0	29.6
5000	SKILLED MANUAL WORKERS	29.0	41.3
5100	FOREMEN AND OTHER FIRST-LINE SUPERVISORS	30.0	46.7
5160	Foremen and other first-line supervisors	32.0	46.7
5161	Foremen and other first-line supervisors in mining and production of metal objects	34.0	51.3
5162	Foremen and other first-line supervisors in textile, chemical, and food- processing industries	34.0	46.3
5163	Foremen and other first-line supervisors in construction	34.0	51.3
5164	Foremen and other first-line supervisors in transportation and storage	31.0	43.7
5165	Foremen and other first-line supervisors in agriculture and forestry	29.0	40.7
5200	SKILLED WORKERS	30.0	39.3
5210	Skilled workers in mining and related occupations	30.0	42.3
5211	Operators of mining machinery	30.0	49.0
5212	Miners	30.0	44.0
5213	Skilled workers in crude oil and gas mining	30.0	33.9
5220	Skilled workers in production of metals and electrical appliances, and in electrical and thermal energy transmission	31.0	43.0

continued

SCO-2009 Code	Occupational Category	Skill Requirements	Complexity of Work
5221	Skilled workers in metal production: smelters, rolling mill workers, blacksmiths, foundry workers, and related	31.0	46.7
5222	Electricians, power industry workers, fitters of electric transmission lines and telecommunication equipment	31.0	49.0
5223	Electric fitters, repairers, and wirers of electric, electromechanical, and telecommunication equipment	31.0	49.0
5224	Operators of machines making electric and electronic products	31.0	41.6
5225	Operators of equipment for electric and thermal power generation and transfer	31.0	41.7
5226	Fitters of electric and electronic product parts	31.0	37.2
5227	Stokers of industrial furnaces and central-heating boilers	31.0	35.8
5230	Skilled workers in construction and in production of construction materials	29.0	39.7
5231	Operators of equipment producing construction materials	29.0	41.7
5232	Brick masons, concreters, plasterers, assemblers of building constructions	29.0	40.3
5233	Assemblers of sanitary and gas installations, plumbers	29.0	40.3
5234	Carpenters and upholsterers	29.0	40.3
5235	Operators of wood-processing machines: milling machine operators and turners	29.0	41.7
5236	Floor-layers, glaziers, and other skilled workers in construction-finishing	29.0	33.9
5240	Skilled workers in construction of machines and devices, assemblers of steel constructions, and crane operators	30.0	42.3
5241	Machine tool operators	30.0	41.7
5242	Galvanizers and metalizing-machine operators	30.0	46.7
5243	Precision equipment and instrument makers and repairers	30.0	49.0
5244	Mechanics and repairers of machines and devices	30.0	37.2
5245	Crane and lift operators	30.0	41.7
5246	Assemblers of steel constructions, steel fixers, panel-beaters and metal-smiths	30.0	37.2
5247	Automobile-and-truck mechanics	30.0	41.7
5248	Mechanics and locksmiths in equipment maintenance in non-manufacturing business	30.0	37.2
5249	Toolmakers, tool repairers, and precision-equipment-and-instrument makers	30.0	37.2
5250	Skilled workers in chemical industry and food-processing	26.0	35.3
5251	Chemical apparatus operators and stokers	26.0	33.2
5252	Operators in processing tobacco, and related products	26.0	33.2
5253	Millers, bakers, confectioners, butchers, cured meats and sausage makers	26.0	31.8
5254	Glass and ceramics molders, kiln operators, glass grinders	26.0	31.8
5255	Glass and ceramics artists, and plastic decorators	26.0	46.7
5260	Skilled workers in textile and clothing industries	23.0	31.1
5261	Spinners, weavers, knitters and dyers of textiles and clothing	23.0	31.8

continued

<i>SCO-2009</i> Code	Occupational Category	Skill Requirements	Complexity of Work
5262	Tailors, furriers, hatters, glovers, and embroiderers	23.0	31.8
5263	Leather processing workers: tanners and dyers	23.0	30.4
5264	Skilled workers in production and repair of leather, rubber, plastic, and paper products	23.0	30.4
5270	Motor vehicle operators, engine drivers, and steam engine stokers	29.0	40.3
5271	Operators of heavy mechanical equipment	29.0	41.7
5272	Railway engine operators	29.0	41.7
5274	Car, truck, and bus drivers	29.0	41.7
5275	Tram and trolley drivers	29.0	40.3
5276	Light motor-vehicle operators and tractor drivers	29.0	40.3
5279	Other vehicle operators and drivers	29.0	35.8
5280	Sailors and fishermen	29.0	39.4
5281	Sailors, mechanics and radio mechanics	29.0	49.0
5283	Deck sailors	29.0	39.0
5284	Sea fishermen on fishing boats and cutters	29.0	39.0
5285	Inland fishermen	29.0	33.9
5290	Other skilled workers	29.0	40.4
5291	Printers, mimeographers, and related skilled workers in production of paper and textile items	29.0	49.0
5292	Quality and quantity controllers of finished products	29.0	38.2
5293	Samplers and sorters	29.0	34.1
5299	Other non-agricultural skilled manual workers	29.0	40.4
5300	AGRICULTURAL SKILLED WORKERS	28.0	37.9
5310	Skilled agricultural workers	28.0	40.3
5320	Skilled forestry workers	27.0	33.9
5330	Other skilled agricultural workers	29.0	39.6
5331	Gardeners and bee-keepers	29.0	38.9
5332	Other skilled agricultural workers	29.0	40.3
6000	SEMI-SKILLED AND UNSKILLED MANUAL WORKERS	13.0	18.1
6100	PLANT AND MACHINE OPERATORS, LABORERS	19.0	22.1
6150	Simple-task workers in industry, construction, and transportation	19.0	22.1
6151	Simple-task workers in industry	21.0	26.6
6152	Simple-task workers in building construction	21.0	23.8
6153	Simple-task workers in road and rail construction and maintenance	21.0	24.4
6154	Simple-task workers in transportation charged with packing, loading, and transporting people and cargo	19.0	17.8
6159	Other simple-task workers in industry, construction, and transportation	19.0	17.8
6300	AGRICULTURAL LABORERS	18.0	15.1
6310	Agricultural and forestry laborers	18.0	15.1
6311	Agricultural laborers	18.0	15.1

continued

SCO-2009 Code	Occupational Category	Skill Requirements	Complexity of Work
6313	Forestry workers, woodcutters	18.0	15.1
6314	Veterinarian nurses and paramedics	18.0	15.1
6400	ELEMENTARY OCCUPATIONS	8.0	17.0
6410	Watchmen, janitors, and cleaners	8.0	18.9
6411	Night and day watchmen, janitors, and doorkeepers	8.0	22.4
6412	Janitors in apartment buildings	8.0	22.4
6413	Other janitors, cloakroom attendants, and ushers	8.0	17.4
6414	Room cleaners	8.0	17.4
6415	Street cleaners, bus cleaners, and other cleaners	8.0	15.1
6416	Gravediggers	8.0	15.1
6420	Messengers , porters, and kindred workers	6.0	17.4
6421	Messengers and kindred workers	6.0	17.4
6422	Porters, delivery men, and suppliers	6.0	15.1
6430	Domestic cleaners and kitchen assistants	6.0	17.4
6431	Domestic cleaners	6.0	17.4
6432	Kitchen assistants and assistants in collection points	6.0	15.1
6440	Sales laborers	8.0	15.1
6450	Hospital helpers	6.0	16.0
6451	Hospital attendants	6.0	17.4
6452	Bath attendants and disinfectors	6.0	16.5
6453	Paramedic assistants, cast attendants, sterilizers	8.0	18.8
6460	Other service laborers	6.0	15.1
7000	FARMERS	29.0	40.3
7100	FARM OWNERS	29.0	40.3
7110	Farmers - farm owners	29.0	40.3
7120	Gardeners, plant growers, and breeders - owners	29.0	40.3
7300	FISHERMEN	29.0	40.3
8000	ENTREPRENEURS AND BUSINESS OWNERS	60.1	54.2
8100	OWNERS OF FIRMS IN PRODUCTION, CONSTRUCTION, AND TRANSPORT	58.0	51.3
8110	Owners of production, construction and transportation firms	58.0	51.3
8112	Owners of firms producing and repairing mechanical and electromechanical equipment	58.0	51.3
8113	Owners of firms producing construction materials, handling construction and assembly, and wood processing	58.0	51.3
8114	Owners of firms producing and mending clothing, footwear, and leather and travel accessories	58.0	51.3
8116	Owners of firms offering cargo and transportation services	58.0	44.3
8118	Owners of other production facilities	58.0	39.8
8400	OWNERS OF FIRMS IN INTANGIBLE AND PERSONAL SERVICES	64.0	57.1
8410	Owners of firms in intangible services	64.0	57.1

continued

<i>SCO-2009</i> Code	Occupational Category	Skill Requirements	Complexity of Work
8411	Owners of money exchange facilities and pawnshops	65.0	61.4
8412	Owners of consulting firms in technical, economic, and legal matters, and publicity and advertising agencies	64.0	61.4
8413	Owners of computer firms and audiovisual, photographic, and desktop publishing services	64.0	61.4
8414	Owners of travel, tourist, and entertainment agencies	62.0	57.1
8415	Owners of real estate agencies	62.0	57.1
8416	Owners of hotels and boarding houses	62.0	57.1
8417	Owners of barber-shops and beauty-parlors	58.0	44.3
8418	Owners of restaurants, fast-food services, cafés, and similar shops	58.0	39.8
8419	Owners of other firms in intangible and personal services	58.0	44.3
8600	OWNERS OF STORES AND OTHER TRADE FACILITIES	58.0	39.8
9000	NON-CLASSIFIED OR NOT APPLICABLE	99.8 ^a	99.8 ^a
9100	OTHER NON-CLASSIFIED OCCUPATIONS	99.8 ^a	99.8 ^a

^a missing data.

Appendix 5.2

1979 Scale of Socioeconomic Status, 2009 Scale of Material Remuneration, 1979 Scale of Occupational Prestige, and 2009 Scale of Occupational Prestige

SCO-2009 Code	Occupational Category	1979 Socio-economic Status	2009 Material Remuneration	1979 Occupational Prestige	2009 Occupational Prestige
0000	SENIOR OFFICIALS AND MANAGERS	61.1	73.7	64.0	73.3
0100	TOP GOVERNMENTAL ADMINISTRATORS AND POLITICAL OFFICIALS	75.4	76.9	69.0	78.7
0110	Legislators and top governmental administrators	86.2	81.6	85.4	88.2
0111	Legislators, top administrators on central and regional level, including self-governing bodies	86.2	82.0	85.5	95.2
0112	Top administrators on local level (of cities and districts), including self-governing bodies	74.8	81.3	73.4	81.2
0170	Top officials of political parties and special-interest organizations	72.8	73.2	63.8	66.6
0171	Top officials of political parties and special-interest organizations on central and regional level	76.4	76.1	67.3	79.7
0172	Top officials of political parties and special-interest organizations on local level - of cities and districts	69.0	70.2	58.8	53.4
0180	Top ranks of armed forces and police	70.4	75.8	69.6	81.3
0200	TOP MANAGERS OF LARGE ENTERPRISES AND OTHER INSTITUTIONS	64.2	78.3	72.3	79.0
0290	Top management	72.3	78.3	79.8	79.0
0291	Top management of production and service enterprises - directors, presidents, board members, and trustees of businesses	52.5	88.2	70.6	81.9
0292	Top management of central and of special importance institutions in science, culture, education, healthcare, and related	69.7	75.0	77.9	86.1
0293	Top management of local institutions in culture, education, healthcare, and related	65.5	74.1	60.9	73.4
0294	Top management in business administration on central, regional and local level	56.4	77.3	60.9	75.9
0295	Chief engineers and technical managers in production and service enterprises	70.0	78.2	64.4	73.4
0296	Central management in other institutions	60.9	77.1	71.8	83.2
0300	PRODUCTION, OPERATIONS, AND ADMINISTRATIVE MANAGERS	44.8	65.8	50.7	62.3

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupa- tional Prestige	2009 Occupa- tional Prestige
0310	Production and operations managers	56.6	68.1	58.1	57.2
0311	Production and operations managers in production enterprises	78.1	73.2	60.2	47.2
0312	Production and operations managers in construction enterprises	54.5	70.0	61.0	63.4
0313	Production and operations managers in transportation	37.2	61.1	53.0	60.9
0320	Administrative managers	43.4	69.0	52.0	62.2
0321	Department managers in state and local administration, including self-governing bodies	45.2	65.4	61.2	75.2
0322	Financial and economic managers in offices and enterprises	49.7	75.3	51.4	58.8
0323	Managers of trade and service institutions	35.4	66.2	43.4	52.7
0340	Department managers in business administration	34.3	60.3	42.1	67.6
1000	PROFESSIONALS AND SPECIALISTS	66.3	38.6	64.5	71.4
1100	PROFESSIONALS	65.8	36.8	66.9	73.7
1110	Artists	65.7	45.8	71.3	78.2
1112	Writers and related	61.9	43.9	81.8	78.2
1113	Journalists, editors, reporters	60.6	38.4	66.6	81.2
1114	Artists in fine arts	60.8	42.4	69.4	72.7
1115	Musicians - performers	46.8	39.1	79.1	81.1
1116	Composers	64.0	50.2	81.7	91.0
1117	Singers, dancers, and choreographers	43.7	46.1	59.0	67.7
1118	Stage and movie directors and actors	58.3	43.2	78.1	86.9
1119	Other specialists in creative art	49.3	44.1	71.3	72.1
1120	Research scientists, and faculty of colleges and universities	55.8	38.7	64.4	76.0
1121	Professors in colleges and universities and research institutions	72.1	50.4	81.7	97.3
1122	Other faculty in colleges and universities, researchers	67.5	32.6	76.0	79.1
1123	Curators, custodians, and other specialists in archives, libraries, and museums	57.7	36.1	35.5	50.5
1124	Philologists and translators	55.8	35.0	64.4	78.3
1130	Teachers	54.1	26.6	57.5	58.7
1133	School inspectors	66.2	31.7	61.9	60.4
1134	Teachers and tutors in secondary schools	62.2	27.2	60.4	68.7
1135	Teachers and tutors in primary and vocational schools	46.2	24.5	54.1	62.4
1136	Coaches (tutors)	41.8	23.0	53.5	43.2
1140	Specialists in economics and social sciences	64.4	34.6	70.2	65.0
1141	Sociologists and political scientists	64.4	31.8	66.6	76.6
1142	Psychologists	64.4	37.6	70.2	71.2
1144	Economists, and specialists in banking and finances	67.5	39.4	72.3	63.5

continued

SCO-2009 Code	Occupational Category	1979 Socio-economic Status	2009 Material Remuneration	1979 Occupational Prestige	2009 Occupational Prestige
1145	Specialists in management of human resources and development strategies	67.5	33.6	60.4	66.0
1146	Specialists in marketing, promotion, and PR (public relations)	62.2	34.1	60.4	65.5
1147	Specialists in welfare services and social work	62.2	31.8	60.4	43.7
1149	Other specialists in social sciences and humanities	63.9	33.9	73.9	68.5
1150	Law professionals	75.2	45.2	70.5	84.1
1153	Judges and assistant judges	74.0	43.9	82.4	94.6
1154	Public prosecutors and assistant prosecutors	71.7	45.7	79.9	93.7
1155	Legal trainees	72.6	30.0	49.3	62.2
1156	Legal specialists	77.7	52.0	70.5	74.8
1157	Lawyers (attorneys at law)	77.7	50.4	70.5	90.3
1158	Corporate lawyers and public notaries	77.7	48.9	70.5	89.2
1160	Specialists in natural, physical, and mathematical sciences	66.7	37.0	69.2	75.1
1161	Biologists, zoologists, botanists, and related	66.6	30.8	68.1	77.9
1162	Chemists	67.6	37.2	66.3	74.3
1163	Mathematicians, physicists, and astronomers	66.2	38.1	73.6	78.8
1165	Specialists in informatics. Computer system programmers	66.2	45.2	73.6	73.0
1169	Other specialists in natural, physical, and mathematical sciences	66.2	33.7	68.9	71.6
1170	Physicians (medical doctors) and specialists in pharmaceuticals	71.9	35.5	71.8	79.7
1173	Physicians (medical doctors)	72.6	38.1	78.0	87.8
1174	Dentists	68.9	29.6	72.5	74.3
1175	Pharmacists	68.5	34.1	58.6	74.8
1180	Agronomy and veterinarian specialists	64.1	33.1	59.7	67.0
1185	Veterinarians	74.0	36.5	68.0	77.5
1186	Agronomists, agro-technologists, animal rearing specialists, and breeders	64.9	31.7	57.5	66.1
1187	Agricultural engineers, forestry engineers, horticultural engineers	53.4	31.0	58.3	57.4
1190	Clergy	74.0	34.9	70.2	80.9
1191	High clergy	75.4	40.1	78.5	91.7
1192	Other clergy: priests, pastors, clergymen	72.6	29.6	61.9	70.0
1200	SPECIALISTS IN TECHNICAL FIELDS	62.4	40.4	64.4	69.1
1220	Engineers	71.5	39.3	71.6	69.1
1221	Metallurgist engineers	73.5	36.9	72.5	72.1
1222	Mechanical engineers	70.9	34.2	72.4	70.7
1223	Electrical, electronic and power industry engineers	71.8	39.6	74.9	66.7

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
1224	Architects	77.7	42.0	73.1	75.5
1225	Geodesy, geology, and mining engineers	73.6	49.8	71.8	64.4
1226	Transportation engineers	65.5	36.1	67.7	69.6
1227	Chemical engineers	67.7	35.9	70.8	74.3
1229	Other engineers	70.9	39.8	70.3	60.4
1230	Engineering specialists	56.9	36.7	52.3	62.8
1231	Technologists	51.2	34.7	51.6	54.1
1232	Constructors and designers	67.2	36.3	65.8	64.0
1234	Engineering inspectors	53.8	35.5	47.2	56.8
1235	Engineers of industrial standardization	55.6	32.1	51.9	68.9
1236	Inspectors and instructors of industrial safety	48.7	32.0	34.7	61.3
1237	Technical inspectors	54.4	39.4	48.9	56.8
1238	Engineers of computer science, systems analysts and designers of computer systems	71.5	47.0	71.6	77.5
1240	Other specialists in engineering and technology	58.8	45.1	69.3	75.2
1241	Aircraft pilots	66.3	51.6	74.4	80.6
1242	Captains, navigators, and deck mechanics of oceanic sailing	51.4	46.2	64.2	72.5
1249	Other specialists in engineering and technology	58.8	37.4	69.3	72.5
2000	TECHNICIANS AND SPECIALIZED OFFICE WORKERS	43.4	28.8	50.7	51.2
2100	TECHNICIANS	47.6	31.0	46.7	46.3
2120	Technicians in industry, construction, and transportation	44.1	32.6	48.7	46.5
2121	Metallurgist technicians	48.7	32.2	51.2	53.2
2122	Mechanical technicians	45.0	32.7	47.5	52.3
2123	Electrical, electronics, and power industry technicians	45.9	33.0	53.4	46.4
2124	Geodesy, geology, and mining technicians	53.7	43.4	53.1	49.6
2125	Construction technicians	44.2	33.6	48.9	41.9
2126	Transportation technicians	36.2	31.0	47.9	43.2
2127	Chemical technicians	40.5	27.2	49.3	42.3
2129	Other technicians	41.3	27.5	43.7	43.2
2130	Technician specialists	38.2	28.5	39.9	42.9
2131	Construction and drafting assistants	36.2	26.4	42.0	43.7
2132	Dispatchers in industry and transportation	37.5	31.4	41.3	53.6
2133	Technician-inspectors of industrial operations	37.0	30.9	38.0	39.6
2134	Technicians in industrial standardization	38.4	26.6	41.9	40.5
2135	Technicians of industrial safety	40.6	26.9	42.3	41.1
2136	Technical associates	44.2	26.8	40.8	41.1
2137	Drafters	37.0	25.8	41.4	43.9
2138	Industrial laboratory workers	34.3	28.4	31.8	34.4

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
2139	Computer technicians	44.2	33.1	42.3	48.2
2140	Technical workers in sailing, and water and air transportation	46.2	31.9	53.0	49.6
2144	Pilots and navigators in inland sailing	50.1	32.2	54.8	52.7
2145	Electrician, mechanic, and navigator assistants in sea and inland sailing	44.0	28.6	40.6	43.3
2147	Pilots of non-passenger (industrial and agricultural) aircrafts	50.1	35.0	54.8	52.7
2300	SPECIALIZED OFFICE WORKERS	40.8	26.6	49.5	56.0
2320	Accountants and financial inspectors	42.3	28.2	49.1	52.9
2321	Chief cashiers, purchasing managers, and warehousemen	42.4	27.3	45.8	51.8
2322	Inspectors and instructors in bookkeeping	44.1	28.2	48.8	56.8
2323	Bookkeepers and accountants	37.3	25.1	33.8	50.9
2324	Record-keepers, inspectors in employment and wages	41.4	29.1	52.9	67.6
2325	Finance inspectors	41.0	28.5	39.4	62.2
2326	Computer operators and data processing technicians	43.2	32.1	66.5	48.2
2327	Stenographers	48.5	26.5	64.6	31.2
2328	Inspectors and instructors of administration	40.9	28.6	40.6	54.1
2330	Tax inspectors and other governmental officers	42.1	25.0	55.0	59.1
2331	Tax inspectors	41.0	30.5	52.9	62.8
2332	Officers in governmental welfare and retirement services	41.0	21.4	52.9	50.9
2333	Agents and other specialized workers in licensing	41.0	23.8	52.9	57.7
2339	Other officers of governmental administration	45.2	24.1	61.2	64.9
3000	MIDDLE AND LOW-LEVEL NONMANUAL WORKERS	38.8	25.6	37.7	47.3
3100	MIDDLE-LEVEL SPECIALISTS AND SEMI-PROFESSIONALS	45.7	25.9	48.3	50.0
3110	Middle-level specialists in education and culture	46.1	24.0	50.0	55.9
3112	Trade, vocational teachers	39.6	23.1	54.1	56.3
3113	Nursery school teachers	40.3	21.7	41.2	58.1
3114	Middle-level educators in other types of schools: boarding schools, special schools	49.6	25.2	52.4	49.6
3116	Librarians	50.6	24.9	51.2	61.3
3119	Other middle-level specialized workers in education and culture	50.5	25.2	44.9	54.1
3120	Nurses and middle-level medical personnel	42.4	24.3	48.5	49.6
3121	Head nurses, obstetrics instructors	49.8	30.8	59.2	59.5
3122	Nurses, midwives, paramedics	43.7	21.8	46.0	55.9
3123	Medical laboratory workers, medical and dental technicians	42.2	25.3	45.0	47.3
3124	Veterinarian technicians and assistants	36.2	23.1	45.6	47.3

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
3126	Physical therapists (physiotherapists) and occupational therapists	40.1	22.0	46.5	52.5
3128	Middle-level therapists in traditional medicine	40.1	24.1	46.5	41.4
3129	Other medical middle-level specialists	42.4	22.8	48.5	43.3
3130	Product determination middle-level specialists	46.9	27.7	49.0	53.7
3131	Commodities and commerce specialists	46.2	28.2	46.7	54.1
3132	Nutritionists and technologists in nutrition	47.6	27.1	51.2	53.2
3140	Middle-level specialists in agronomy and animal rearing	47.4	21.1	45.5	42.7
3142	Agronomist and animal rearing technicians	40.5	28.5	48.0	49.6
3143	Agricultural, forestry, and horticulture technicians	40.0	26.1	43.7	39.0
3149	Other middle-level specialists in agriculture and forestry	47.5	26.1	38.0	39.6
3150	Middle-level specialists in finance, insurance, travel, and trade	37.1	31.9	29.6	45.5
3151	Stockbrokers	37.3	43.6	33.8	72.3
3152	Insurance agents	36.9	34.3	26.5	47.8
3153	Real estate agents	37.3	26.7	33.8	51.4
3154	Travel agents	37.3	28.2	33.8	44.6
3155	Trade agents and dealers, sales representatives	36.9	30.8	26.5	32.9
3156	Purchase agents	36.9	26.3	26.5	32.9
3157	Auctioneers	36.9	35.3	26.5	37.2
3159	Other middle-level specialists in trade and finances	36.9	30.0	26.5	44.6
3160	Middle-level specialized workers in business services	37.3	27.7	33.8	55.2
3161	Business brokers and dealers	37.3	30.2	33.8	58.1
3162	Middle-level specialized workers in clearing	37.3	29.1	33.8	62.2
3163	Employment agents	37.3	27.0	33.8	50.0
3169	Other middle-level business and trade specialized workers elsewhere unclassified	37.3	27.5	33.8	50.5
3170	Middle-level specialized workers in welfare and social work services	37.3	24.5	33.8	47.4
3200	ROUTINE OFFICE WORKERS	31.8	26.0	27.0	40.3
3210	Clerks	37.2	24.8	24.2	38.8
3211	Bookkeeping clerks	36.9	23.5	26.5	36.9
3212	Clerks in statistic, economic, and supplies departments	38.2	25.2	23.1	44.6
3213	Clerks in business administration	36.4	25.0	22.9	36.9
3214	Executive and highly qualified secretaries	37.2	25.5	34.1	36.9
3220	Cashiers in banks, post-offices, other offices, and industrial enterprises	32.0	23.5	31.7	37.2
3230	Secretaries and typists	28.9	22.5	24.9	30.1
3231	Secretaries	28.9	25.8	24.9	37.8

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
3232	Typists, computer data-entry workers	28.9	24.7	24.9	25.2
3233	Assistant secretaries	22.6	19.7	20.4	16.7
3234	Receptionists	22.6	20.0	20.4	33.8
3239	Other office workers	28.9	22.3	24.9	36.9
3240	Customs officers	28.9	33.0	27.2	54.9
3300	POLICE, ARMED FORCES, AND NATIONAL SECURITY FUNCTIONARIES	58.1	27.7	51.7	49.5
3310	Policemen	56.3	31.0	38.6	56.8
3320	Professional soldiers	47.5	26.4	46.9	46.0
3330	Officers and lower rank functionaries in fire services, industrial security and related services	43.0	25.7	31.4	45.6
3400	ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS	50.5	22.7	44.9	49.3
3410	Stage artists	50.5	23.0	44.9	37.2
3420	Athletes	50.5	22.4	44.9	61.3
4000	SALES AND SERVICE WORKERS	26.6	22.9	24.0	26.5
4100	STORE SALESPERSONS AND CASHIERS	23.1	21.1	22.6	20.1
4130	Store salespersons and cashiers	23.1	21.1	22.6	20.1
4131	Salespersons in shopping malls, supermarkets, and department stores	26.6	25.4	24.0	27.6
4132	Salespersons in traditional stores	23.1	19.4	22.6	19.4
4133	Salespersons in (open) markets	19.6	18.8	9.7	14.1
4134	Other salespersons	24.6	21.0	18.1	23.0
4135	Cashiers in stores and service shops	28.0	20.7	23.6	16.2
4200	SERVICE WORKERS IN TRANSPORT, MAIL AND RELATED FIELDS	25.0	23.5	17.4	25.1
4210	Conductors and guards	24.8	23.8	15.8	25.3
4211	Conductors	26.5	24.9	17.9	23.0
4212	Guards	23.3	22.6	13.7	27.5
4220	Mailpersons, telephone operators, and other workers in related services	25.0	23.1	18.9	24.8
4221	Mailpersons	23.3	23.2	16.8	27.5
4222	Telephone operators and telemarketers	29.0	22.4	24.7	18.0
4229	Other workers in transport, mail, and related services	22.8	23.7	15.3	28.8
4300	WORKERS IN PERSONAL SERVICES	27.3	20.8	24.2	25.9
4310	Barbers and beauticians	29.4	18.2	21.0	24.8
4311	Hairdressers and make-up artists	24.0	16.8	23.2	21.2
4312	Beauticians and manicurists	35.4	19.5	18.7	28.4
4320	Cooks and waiters	25.4	23.1	21.6	27.6

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
4321	Cooks, confectioners, and café attendants	26.8	25.4	24.0	29.5
4322	Waiters, stewards, and buffet and bar attendants	24.0	21.0	19.1	25.7
4330	Workers in other personal services	26.7	21.0	30.0	25.3
4331	Photographers	27.7	22.3	28.8	32.4
4332	Assistants in photography and film copying laboratories	25.8	20.7	31.2	25.7
4334	Workers in funeral homes	26.7	26.5	24.1	16.0
4335	Astrologists and fortunetellers	29.4	15.5	30.1	29.5
4339	Other workers in personal services	26.7	20.0	30.0	23.9
4400	STORAGE AND SUPPLIES WORKERS	25.0	24.7	27.1	23.8
4410	Storage workers	25.0	23.2	27.1	17.6
4420	Supplies workers	25.0	26.1	27.1	30.2
4500	WORKERS OF SECURITY SERVICES	25.0	24.7	27.1	25.7
4510	Property and personal security guards	25.0	24.7	27.1	25.7
4600	MODELS AND HOSTESSES	32.6	22.8	33.8	38.3
4610	Models and hostesses	32.6	22.8	33.8	38.3
4611	Models	40.2	21.8	40.6	47.3
4612	Hostesses	25.0	23.7	27.1	29.2
5000	SKILLED MANUAL WORKERS	27.1	25.8	28.8	26.9
5100	FOREMEN AND OTHER FIRST-LINE SUPERVISORS	34.4	30.9	33.5	34.1
5160	Foremen and other first-line supervisors	34.4	30.9	33.5	34.1
5161	Foremen and other first-line supervisors in mining and production of metal objects	39.4	38.1	45.1	34.1
5162	Foremen and other first-line supervisors in textile, chemical, and food- processing industries	35.1	28.4	34.7	35.0
5163	Foremen and other first-line supervisors in construction	36.5	31.6	38.8	36.0
5164	Foremen and other first-line supervisors in transportation and storage	34.0	30.1	18.4	34.5
5165	Foremen and other first-line supervisors in agriculture and forestry	34.9	26.2	30.4	31.1
5200	SKILLED WORKERS	27.2	25.4	33.2	24.8
5210	Skilled workers in mining and related occupations	31.7	36.2	42.0	30.3
5211	Operators of mining machinery	30.7	36.8	45.4	28.4
5212	Miners	37.5	37.9	48.5	30.6
5213	Skilled workers in crude oil and gas mining	27.0	34.0	32.1	32.0
5220	Skilled workers in production of metals and electrical appliances, and in electrical and thermal energy transmission	29.2	27.9	33.1	24.4
5221	Skilled workers in metal production: smelters, rolling mill workers, blacksmiths, foundry workers, and related	26.5	26.8	31.4	22.1

continued

SCO-2009 Code	Occupational Category	1979 Socio-economic Status	2009 Material Remuneration	1979 Occupational Prestige	2009 Occupational Prestige
5222	Electricians, power industry workers, fitters of electric transmission lines and telecommunication equipment	28.7	32.2	36.1	34.0
5223	Electric fitters, repairers, and wirers of electric, electromechanical, and telecommunication equipment	30.4	27.1	28.9	26.1
5224	Operators of machines making electric and electronic products	29.1	28.3	37.5	25.0
5225	Operators of equipment for electric and thermal power generation and transfer	29.1	26.4	35.0	25.7
5226	Fitters of electric and electronic product parts	30.9	25.4	32.4	24.3
5227	Stokers of industrial furnaces and central-heating boilers	30.0	29.0	20.3	13.5
5230	Skilled workers in construction and in production of construction materials	23.5	25.1	26.1	23.9
5231	Operators of equipment producing construction materials	23.8	28.7	33.3	22.5
5232	Brick masons, concreters, plasterers, assemblers of building constructions	22.5	23.6	25.7	21.6
5233	Assemblers of sanitary and gas installations, plumbers	24.3	24.9	29.1	27.9
5234	Carpenters and upholsterers	23.8	23.9	23.8	24.8
5235	Operators of wood-processing machines: milling machine operators and turners	23.8	24.3	26.1	23.9
5236	Floor-layers, glaziers, and other skilled workers in construction-finishing	22.5	24.9	18.4	22.5
5240	Skilled workers in construction of machines and devices, assemblers of steel constructions, and crane operators	26.9	25.9	36.6	25.9
5241	Machine tool operators	30.0	26.2	38.9	27.5
5242	Galvanizers and metalizing-machine operators	29.1	25.6	40.2	18.5
5243	Precision equipment and instrument makers and repairers	26.5	26.7	33.7	27.5
5244	Mechanics and repairers of machines and devices	27.8	28.2	34.3	26.0
5245	Crane and lift operators	23.4	25.6	34.8	28.9
5246	Assemblers of steel constructions, steel fixers, panel-beaters and metal-smiths	24.3	26.1	37.8	22.1
5247	Automobile-and-truck mechanics	30.0	25.0	40.4	31.5
5248	Mechanics and locksmiths in equipment maintenance in non-manufacturing business	27.8	24.1	34.3	26.1
5249	Toolmakers, tool repairers, and precision-equipment-and-instrument makers	26.9	26.0	36.6	24.6
5250	Skilled workers in chemical industry and food-processing	28.1	24.2	28.1	26.5
5251	Chemical apparatus operators and stokers	24.6	25.9	31.1	27.9
5252	Operators in processing tobacco, and related products	24.2	24.0	37.5	21.6
5253	Millers, bakers, confectioners, butchers, cured meats and sausage makers	22.4	23.2	22.4	24.8
5254	Glass and ceramics molders, kiln operators, glass grinders	20.2	24.9	25.2	22.5

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
5255	Glass and ceramics artists, and plastic decorators	24.6	23.0	34.2	35.6
5260	Skilled workers in textile and clothing industries	23.0	21.1	23.4	20.2
5261	Spinners, weavers, knitters and dyers of textiles and clothing	21.1	20.6	24.7	22.1
5262	Tailors, furriers, hatters, glovers, and embroiderers	23.2	21.7	26.3	27.5
5263	Leather processing workers: tanners and dyers	24.8	20.6	22.4	10.4
5264	Skilled workers in production and repair of leather, rubber, plastic, and paper products	22.8	21.9	20.3	20.7
5270	Motor vehicle operators, engine drivers, and steam engine stokers	24.2	24.7	25.0	22.6
5271	Operators of heavy mechanical equipment	31.8	26.1	15.0	15.3
5272	Railway engine operators	42.4	29.1	42.0	37.8
5274	Car, truck, and bus drivers	26.1	26.7	32.4	27.3
5275	Tram and trolley drivers	26.1	23.8	21.2	27.9
5276	Light motor-vehicle operators and tractor drivers	22.4	21.9	25.1	18.0
5279	Other vehicle operators and drivers	27.9	20.6	14.1	9.0
5280	Sailors and fishermen	28.0	22.8	30.7	29.3
5281	Sailors, mechanics and radio mechanics	34.6	24.5	48.9	33.8
5283	Deck sailors	31.5	24.0	32.4	31.1
5284	Sea fishermen on fishing boats and cutters	25.5	22.4	31.9	18.5
5285	Inland fishermen	23.8	20.1	21.9	33.8
5290	Other skilled workers	22.5	20.8	32.0	20.1
5291	Printers, mimeographers, and related skilled workers in production of paper and textile items	26.0	23.7	39.4	28.4
5292	Quality and quantity controllers of finished products	22.9	21.2	38.7	29.7
5293	Samplers and sorters	19.7	19.4	17.9	12.6
5299	Other non-agricultural skilled manual workers	21.5	18.9	32.0	9.5
5300	AGRICULTURAL SKILLED WORKERS	19.1	21.1	19.8	21.9
5310	Skilled agricultural workers	20.7	21.6	21.6	9.0
5320	Skilled forestry workers	18.4	22.8	18.6	39.2
5330	Other skilled agricultural workers	18.2	18.8	19.2	17.4
5331	Gardeners and bee-keepers	18.4	19.5	19.2	23.9
5332	Other skilled agricultural workers	18.0	18.1	19.2	10.8
6000	SEMI-SKILLED AND UNSKILLED MANUAL WORKERS	15.9	19.4	7.3	9.9
6100	PLANT AND MACHINE OPERATORS, LABORERS	18.1	20.3	8.6	8.8
6150	Simple-task workers in industry, construction, and transportation	18.1	20.3	8.6	8.0
6151	Simple-task workers in industry	17.8	20.5	12.5	10.7
6152	Simple-task workers in building construction	16.1	20.5	5.1	3.6

continued

SCO-2009 Code	Occupational Category	1979 Socio-economic Status	2009 Material Remuneration	1979 Occupational Prestige	2009 Occupational Prestige
6153	Simple-task workers in road and rail construction and maintenance	22.0	20.3	11.6	10.9
6154	Simple-task workers in transportation charged with packing, loading, and transporting people and cargo	17.3	20.0	6.9	6.5
6159	Other simple-task workers in industry, construction, and transportation	17.3	20.2	6.9	8.1
6300	AGRICULTURAL LABORERS	14.6	19.6	7.1	16.2
6310	Agricultural and forestry laborers	14.6	19.6	7.1	16.2
6311	Agricultural laborers	14.6	21.3	7.1	9.0
6313	Forestry workers, woodcutters	14.6	19.4	7.1	12.2
6314	Veterinarian nurses and paramedics	14.6	18.2	7.1	27.5
6400	ELEMENTARY OCCUPATIONS	15.1	18.4	6.1	5.6
6410	Watchmen, janitors, and cleaners	15.7	18.7	6.0	6.2
6411	Night and day watchmen, janitors, and doorkeepers	16.1	19.1	3.8	7.5
6412	Janitors in apartment buildings	16.1	20.4	12.5	10.4
6413	Other janitors, cloakroom attendants, and ushers	16.1	18.3	7.4	8.6
6414	Room cleaners	15.6	18.2	3.5	5.4
6415	Street cleaners, bus cleaners, and other cleaners	14.8	18.8	2.9	1.4
6416	Gravediggers	14.8	17.6	2.7	4.0
6420	Messengers, porters, and kindred workers	14.8	21.1	2.7	4.6
6421	Messengers and kindred workers	14.8	21.8	2.7	3.2
6422	Porters, delivery men, and suppliers	14.8	20.3	2.7	5.9
6430	Domestic cleaners and kitchen assistants	14.3	17.9	7.4	6.3
6431	Domestic cleaners	14.3	17.9	7.4	6.3
6432	Kitchen assistants and assistants in collection points	14.8	17.9	7.0	6.3
6440	Sales laborers	15.7	16.0	8.1	5.3
6450	Hospital helpers	15.7	18.3	7.0	4.5
6451	Hospital attendants	15.7	15.6	8.1	8.1
6452	Bath attendants and disinfectors	16.1	14.5	4.6	4.5
6453	Paramedic assistants, cast attendants, sterilizers	19.2	14.8	25.4	4.5
6460	Other service laborers	15.7	16.7	8.4	5.2
7000	FARMERS	18.7	21.9	23.2	30.5
7100	FARM OWNERS	18.6	20.6	23.0	22.3
7110	Farmers - farm owners	18.7	20.0	23.2	15.7
7120	Gardeners, plant growers, and breeders - owners	18.4	21.1	22.7	28.9
7300	FISHERMEN	29.3	24.5	44.5	46.9
8000	ENTREPRENEURS AND BUSINESS OWNERS	44.3	64.7	46.7	57.6

continued

SCO-2009 Code	Occupational Category	1979 Socio- economic Status	2009 Material Remune- ration	1979 Occupational Prestige	2009 Occupational Prestige
8100	OWNERS OF FIRMS IN PRODUCTION, CONSTRUCTION, AND TRANSPORT	28.5	52.8	38.7	48.7
8110	Owners of production, construction and transportation firms	28.5	52.8	38.7	48.7
8112	Owners of firms producing and repairing mechanical and electromechanical equipment	30.1	49.4	55.2	59.5
8113	Owners of firms producing construction materials, handling construction and assembly, and wood processing	29.2	59.6	37.5	60.4
8114	Owners of firms producing and mending clothing, footwear, and leather and travel accessories	29.2	61.3	31.1	39.6
8116	Owners of firms offering cargo and transportation services	28.8	43.2	32.7	36.0
8118	Owners of other production facilities	27.4	50.1	40.7	51.4
8400	OWNERS OF FIRMS IN INTANGIBLE AND PERSONAL SERVICES	60.0	76.6	54.7	66.5
8410	Owners of firms in intangible services	60.0	76.6	54.7	66.5
8411	Owners of money exchange facilities and pawnshops	60.0	75.1	54.0	45.1
8412	Owners of consulting firms in technical, economic, and legal matters, and publicity and advertising agencies	60.0	79.4	58.2	73.9
8413	Owners of computer firms and audiovisual, photographic, and desktop publishing services	60.0	82.0	57.1	74.8
8414	Owners of travel, tourist, and entertainment agencies	60.0	74.2	53.2	67.6
8415	Owners of real estate agencies	60.0	78.8	51.0	71.6
8416	Owners of hotels and boarding houses	60.0	74.2	53.2	67.6
8417	Owners of barber-shops and beauty-parlors	25.6	49.2	34.2	45.0
8418	Owners of restaurants, fast-food services, cafés, and similar shops	28.6	56.8	38.8	55.4
8419	Owners of other firms in intangible and personal services	60.0	70.2	54.7	66.1
8600	OWNERS OF STORES AND OTHER TRADE FACILITIES	28.6	56.8	38.8	55.4
9000	NON-CLASSIFIED OR NOT APPLICABLE	99.8 ^a	99.8 ^a	99.8 ^a	99.8 ^a
9100	OTHER NON-CLASSIFIED OCCUPATIONS	99.8 ^a	99.8 ^a	99.8 ^a	99.8 ^a

^a missing data.

Chapter 6

COMPUTER-AIDED CODING AND SCALING OF OCCUPATIONS

This chapter presents the rules for using our computer application programs to facilitate the process of coding occupations according to the *Social Classification of Occupations-2009 (SCO-2009)*. Our applications take into account the particulars of coding occupations according to a sociological classification, which makes our program different from the very few computer tools in existence for coding occupations. Our applications permit flexible configuration of information concerning the occupations selected for coding as well as the standardization of coding conditions, which results in improved quality of the coding process. The outcome of this process consists of classification codes and, optionally, of the values of corresponding scales. The available scales of occupations are presented in Chapter 5. Our application programs offer the option of automatically grouping the *SCO-2009* occupational codes into 14 socio-occupational groups, as discussed in Chapter 7.

Enclosed in this book is a CD containing our application programs. Attached to it is documentation (in English) that can help in using our main application program for coding occupations supplied in English, according to *SCO-2009* directly. Our programs can also be used when the names of occupations are supplied in other languages; first, the user must translate the classification to this language and create a list of key words. Facilitating the second task is an additional application program, also provided on the CD. We authorize buyers of the book to translate *SCO-2009* to any language and to use both application programs provided on the CD.

This chapter consists of six sections. Section 6.1 presents current directions of development in coding occupations with a special focus on the differences in coding according to a systematic vs. a sociological classification. Discussed in this framework are the assumptions involved in the

methods of aiding the process of coding occupations according to *SCO-2009*, which are implemented in our computer application programs.

Section 6.2 describes the formatting rules of *SCO-2009* in its computer version. Familiarity with these rules is essential if users want to add their own categories to the basic classification version or modify the codes of the residual categories (such as “not applicable,” or “missing data”), or to translate the classification to another language for use in coding data on occupations collected in that language. Section 6.3 addresses the latter category of users. It describes how to use our application program *sco2009index* to distinguish key words in the classification. This task is a necessary step in preparing the translated classification for coding survey results with our main application program *sco2009coder*.

Sections 6.4 and 6.5 focus on coding data on occupations by applying the attached application program *sco2009coder*. Requirements pertaining to the content and format of data on occupations prepared for the coding are presented in Section 6.4. It explains how to organize the research data in the format required and how to prepare documents describing a specific data set. Section 6.5 presents the step-by-step procedure necessary in the process of coding occupations using application program *sco2009coder*. It also describes available options and useful tips for applying them.

Section 6.6 summarizes the most important rules for coding occupations according to *SCO-2009*. In addition, users will find a specification of their rights with respect to using and modifying *SCO-2009* as well as a brief summary of rules for using both appended application programs: *sco2009index* - for creating the index of key words - and *sco2009coder* - for coding information on occupations.

6.1 Rules for coding occupations according to *SCO-2009*

Rules for coding occupations according to *SCO-2009* are determined by the fact that it belongs to the group of sociological classifications. In this sense, it differs significantly from systematic classifications. Recognizing the differences between these two types is important because their coding is based on different rules.

The purpose of a systematic classification is to locate individual occupations in the structure of the economy. To code an occupation properly, it is usually sufficient to know its occupational title, such as “architect,” “teacher,” or “farmer.” The limited scope of necessary information prompted the appearance of computer programs designed to code occupations according to systematic classifications (Ossiander and Milham 2006; Scruton 2009). One important reason for this was to bring down the cost

of coding. Thus, these programs have been based on algorithms that automatically fit occupational titles from dictionaries of occupations to the descriptions provided by the interviewers. Coders were requested to code only those occupations for which the automatic process did not provide adequate occupational titles from the dictionary.

The effectiveness of this method of coding depends mainly on whether the program reads occupational descriptions by optical character recognition or these descriptions must first be converted to a computerized form. The first method usually helps to identify a specific classification code in slightly less than 50 percent of cases (Scruton 2009: 29). When the data are available in a computerized form the proportion of such cases rises to 75-95 percent (NIOSH 2005; Ossiander and Milham 2006). Neither of these situations eliminates the need to engage coders to complete the task. However, when dealing with data sets consisting of hundreds of thousands of entries yearly - a typical situation in statistical offices - this approach can produce considerable savings.

Adequate computer programs can achieve considerable accuracy in coding occupations for which this method can be used. Various authors report different numbers but in general these methods provide greater than 90 percent consistency with the codes assigned to the same occupations by experienced coders (Ellias 1997; Scruton 2009). A common opinion is that the accuracy of computer coding is greater than that achieved by typical coders, which is considered to be no higher than 75-80 percent (Ellias 1997; NIOSH 2005; Scruton 2009).

In spite of the considerable merits of computer programs designed for automatic coding of occupations, so far they have not been applied in sociological classifications. This is mainly because the selection of a specific classification code is a much more complex task than is the case of a formal classification. In addition to location in the subjective structure of the economy it involves rank in the hierarchy of positions in the firm (workplace) as well as relation to the firm's ownership. Because the scope of data necessary for determining this goes far beyond the occupational title, the coding process cannot be reduced to finding this title in a dictionary. Sometimes subtle nuances determine the assignment of an occupation to a specific major group. For instance, a manager directing a large restaurant is classified in Major Group 0, "Senior officials and managers" because he or she performs this work on the basis of a contract. But a person performing the same kind of work on the basis of a lease agreement would be classified in Major Group 8, "Entrepreneurs and business owners."

For this reason the coding of occupations according to a sociological classification cannot be accomplished without coders. Moreover, it requires

coders who are well versed in the structure of this classification and understand the criteria to be applied in assigning individual occupations to specific groups and categories.

In this context the tasks to be performed by a computer application designed to aid in coding occupations must be different than those discussed earlier. The main task does not change: to determine the proper classification category on the basis of key words. The aim is to find an adequate fragment of the classification that can remind the coder in which setting the category under consideration appears. The application should also facilitate a shift to parts of the classification where other categories worth considering might be located. Only the juxtaposition and comparison of various possibilities allow the coder to make an accurate decision. The computer application should help the coder to locate all potential categories rather than merely select one of them.

Another important task of the application is that it must provide the coder with a full set of data necessary to code a specific occupation. The scope of these data usually differs for different occupations, for instance, the current occupation of the respondent vs. the occupation of his or her father. The task is further complicated by the fact that this information may be scattered all over the questionnaire. The application program has to collect all of the necessary pieces of data on one computer screen, so that the coder making the decision can see all of them at once.

The prepared application program fulfills both tasks. It integrates all of the data necessary to code an occupation and on the basis of key words allows the assembly of a subset of classification categories from which the coder can select the one that most accurately mirrors the socio-occupational position of the performer of the coded occupation.

This application program has more than a decade-long history. The first version, which appeared at the beginning of the 1990s, was designed as a tool to help in coding survey data according to *SCO-1978* - the predecessor of our *SCO-2009* (for details, see Chapter 2). This first application used the *DOS* operating system, which limited the number of lines shown on the screen, thus preventing full performance of the required tasks. Only when new computer techniques allowed information to be graphically displayed on the computer screen did truly efficient screening of the existing information assets during the coding process become possible. At this point the application program was rewritten for the Windows platform and for the next ten years it was successfully used to code survey results according to *SCO-1978*.

In 2007 the 1978 version of the *Social Classification of Occupations* was replaced by the new one, which was the Polish version of *SCO-2009* presented in this book. The application program for coding occupations

according to the new version was offered as an attachment to the book presenting the new classification to the Polish readers (Domański, Sawiński, and Słomczyński 2007). Since then, this new classification of occupations has been applied not only in academic studies but also in commercial research. Because of today's much broader scope of users, many new comments and postulates have reached the authors and helped them to make further improvements to the application program.

The current version of the coding application program, which is attached to this book, has broader applicability in comparison with the earlier versions. Because all previous versions were designed for use with a specific classification, this classification together with its search and find procedure was embedded in the program, and users could have no impact on them. The present version is more flexible in this sense. First, it starts with the assumption that users may need the application program for coding research data written in a language other than English - the language in which the enclosed basic version of the classification is written. This situation requires translating the classification to the other language and creating a list of key words. Since the latter task is complex and time consuming, this book includes another application program to help in creating such a list.

Second, in the current version of the application program we assume that users may need to supplement the classification with some entries. This may be a result of the fact that in the stratification system of a given society there are areas that may require a more detailed approach than the one we used in *SCO-2009*. Another reason could be a need to fit the codes of the residual categories corresponding to situations when the classification does not apply.

6.2 Structure of the *SCO-2009* file in the computer format

The computer version of the classification is written as an ASCII file. In such files, no other format symbols are used except a special sequence at the end of each line (ASCII 13-10). The enclosed CD contains a computer version of *SCO-2009* in English (file *sco2009eng.clf*). Further down we present some examples from this file.

6.2.1 Category declarations

The classification file consists of declarations of its consecutive categories. Declaration of a single category is a string of commands defining its elements. A command format is discussed using the example in Window

6.1. It contains a classification fragment involving categories from 1120 to 1124. The content of this box corresponds to a relevant fragment of *SCO-2009* presented in Appendix.

Window 6.1 Example of the format in the computer version of *SCO-2009* involving categories 1120 through 1124

```
#c=1120
#n=Research scientists, and faculty of colleges and universities
#c=1121
#n=Professors in colleges and universities and research institutions
#s=Professors in universities and research institutions
#d=[Department], section, and [laborator]y [head]s, [chairperson]s;
[professor]s and associate [professor]s;
other independent [research] and [teaching] [specialist]s in [college]s,
[universit]ies, and [research] [institute]s. {[faculty]}
#c=1122
#n=Other faculty in colleges and universities, researchers
#d=Assistant [professor]s, [teaching] and [research] associates in [college]s,
[universit]ies, and [research] [institute]s. {[faculty]} {[specialist]}
#c=1123
#n=Curators, custodians, and other specialists in archives, libraries, and museums
#s=Specialists in archives, libraries, and museums
#d=[Curator]s, [custodian]s, instructors, associate and assistant [specialist]s
in [archive]s, [librar]ies, [museum]s, [art] [galler]ies, and [histor]ic
[monument]s;
chief [librar]ians;
[director]s of [art] centers;
[art] [dealer]s.
#c=1124
#n=Philologists and translators
#d=[Philolog]ists, [translator]s, sworn [translator]s, [interpreter]s,
[linguist]s. {[specialist]} {[foreign-language]} {[language]}
```


Lines in the file starting with symbol “#” are interpreted as program commands. A sequence of two to four commands is used to specify a single classification category. A command starting with symbol “#c” marks the beginning of a definition of a new category. In the type of command under discussion, the symbol “=” is always followed by a four-digit code of the category declared. It should be noted that following the symbol “#” letters may be written as either capital or small without altering the command interpretation.

The name of the classification category is the second command necessary in its definition. It starts with the “#n” identifier followed by the symbol “=” and the name of the category. In the case of category 1123 presented in Window 6.1 the name is:

Curators, custodians, and other specialists in archives, libraries, and museums

During the classification reading-in, its consecutive lines are linked into one string until the symbol “#” denoting the beginning of a new command. Empty lines are neglected in this process. The command format does not impose any limitation on the number of characters in a line but – in order to make the file easier to read under the text editor – lines are limited to 80 characters. If the command exceeds this limit it is divided into an appropriate number of lines, each no longer than 80 characters.

The names of categories are listed in the documentation of the file containing the coded occupations, as well as in other places. However, most computer programs designed to analyze survey data do not accept long names, and thus shorten them to a certain number of initial characters. For this reason, in the computer version of the classification we introduce a “short name” used in writing the documentation of the coding results. In the basic classification version provided, we specified that the length of any short name should not exceed 60 characters, as is customary in many statistical packages. In each case where the name of the category exceeded 60 characters, a separate short name was created. This task is carried out by command “#s”. For instance, in the definitions presented in Window 6.1 a short name was created for category 1123, namely:

Specialists in archives, libraries, and museums

In this case the short name is 47 characters long. It should be short enough to be accepted in full by the majority of programs for survey data analysis.

If the length of the original (full) name of the category does not exceed 60 characters there is no need to create an additional short name and

command “#s” is not applied. In the output of the documentation the full names, defined by command “#n,” are then listed. This is the case of category 1124 in Window 6.1. The full name, “Philologists and translators,” is short enough to avoid cutting by the majority of programs for analyzing survey results.

The last command - marked by “#d” identifier - defines a detailed occupational composition of the category defined. This command is applicable only to categories constituting the basic classification units. Among the categories shown in Window 6.1 this applies to categories 1121 through 1124. This is why the detailed content of these categories is listed in the box. Meanwhile, category 1120 is of a higher level. In this case, command “#d” is not applicable because the detailed content of this category is the sum of the contents of all of its basic categories.

The content of the category description, like any other command, may be divided into a suitable number of consecutive lines. These lines are linked together during the classification reading-in.

6.2.2 Rules for distinguishing key words

In the detailed descriptions of classification categories there is a special notation aimed at distinguishing some words as key words. During the coding stage, on the basis of key words provided by the coder, the application conducts a search to find categories that could potentially contain the given occupation. From the set of categories resulting from this search the coder selects the one he or she considers the best suited to the occupational description. The process of distinguishing some words in the classification as key words is also known as creating an index, or as indexing the classification. The index of *SCO-2009* was created using a separate application program (*sco2009index*) enclosed in this book. This application may also be used to create an index for *SCO-2009* if it is translated to another language. Section 6.3 explains how to use this application. We now turn to an explanation of the rules for distinguishing the key words in the detailed descriptions of classification categories.

We consider the description of category 1121 “Professors in universities and research institutions” (Window 6.1). Key words in category descriptions are distinguished by square brackets. The key word “Department” is the first one distinguished. In indexing the classification we decided that this word appears so frequently in descriptions of occupations belonging to this category that it merits a distinction as a key word. In Window 6.1 the word “Department” starts with the capital letter D. However, all of the words in the process of search are automatically formatted in lowercase, so case does not matter in the category description.

“Section” is the next word in the description of category 1121. It was not distinguished as a key word because we did not consider it a sufficient identifier of this category (it may nevertheless be a good identifier for some other categories). The following word “and” is a conjunction, an auxiliary element of syntax, and thus not a good key word candidate. Articles *a*, *an*, and *the*, pronouns such as *other*, and prepositions such as *of*, *for*, or *by* are similar in this respect.

The exact form of a key word depends on inflection – changes made in the form of a word to express its grammatical function or attribute – such as tense, mood, person, number, case, or gender. The scope of these changes varies among languages. Many East European (Slavic) languages are highly inflected. In comparison, English words are much less affected by inflection. Still, the issue of inflection must be addressed even in English in the context of formulating certain key words. Since the classification of occupations is, roughly speaking, a set of nouns, inflection in its English version most often involves grammatical number: singular vs. plural. In situations both the singular and the plural of a noun may appear in descriptions, and the plural is not made by adding letter “s” to the singular, the function of key word is assigned to the string of letters these two grammatical forms have in common rather than to the full noun in singular. For instance, in category 1121 (Window 6.1) the second key word distinguished consists of a string: “laborator.” This string appears in the category description in the phrase “and laboratory heads.” Had the full word “laboratory” been made a key word, the application program would not have identified it in descriptions involving the plural: laboratories. Limiting the key word to the inflected part, “laborator” allows both forms to be identified. Perhaps, even a shorter string, “labora” would work. However, one has to bear in mind that an exceedingly short key word can create ambiguity. For example, the string “labor” cannot be used as an identifier because it would lead to the selection of both unskilled workers (the labor/laborer/laborers) and laboratory/laboratories, which are two different things.

In some situations, a word deserving a distinction as a key word does not appear in the detailed category description, for example, the word “faculty” in category 1121. It appears in the name of the higher order category (1120), but not in the detailed descriptions of any of the lower order. In at least some of these basic categories (e.g., 1121) the word “faculty” would make a good identifier. It was therefore added to the description of this occupation – at the end, to avoid interference with the already assumed syntax. Putting a key word in curly brackets signals that this word will not be highlighted as part of the category description during the coding of occupations. For this reason the description seen by the coder will maintain its original form.

6.2.3 Category order

Definitions of all classification categories must remain in the ascending order of their codes. Category 0000 “Senior officials and managers” is the first category of *SCO-2009* and as such, has the lowest four-digit code. At the very end of the classification is category 9999 “Not applicable.” This last code is optional. The user can change it and end the classification with another code.

Procedures performing the classification reading-in check whether the categories are in ascending order of their codes. If not, a syntax error is signaled, requiring correction to the proper order.

6.2.4 Classification header

From the way the commands associated with consecutive classification categories are being read-in (Section 6.2.2) it follows that there is no room for commentaries in the classification file because its entire content undergoes reading-in and interpretation. The only exception consists of the lines preceding the command initializing the first classification category denoted by symbol 0000. These lines can be used to describe the content and purpose of the classification file, as shown in Window 6.2, which presents a header of the enclosed English version of *SCO-2009*.

Window 6.2 Header of the *Social Classification of Occupations (SCO-2009)* in the computer format

SOCIAL CLASSIFICATION OF OCCUPATIONS 2009

by Henryk Domanski, Zbigniew Sawinski, and Kazimierz M. Słomczyński.

Translated from the Polish language and reedited for the English language version by
Jeryzyna Słomczyńska.

Index of key words created by Zbigniew Sawinski.

6.2.5 Residual categories

Besides categories related to the distinguished occupational groups, *SCO-2009* may contain some residual categories. Such categories correspond to situations when information about an occupation collected in the survey cannot be coded in any category provided for occupational groups.

This situation occurs most commonly when the person whose occupation the question concerns does not work. Another common reason is a lack of sufficient information about the person's occupation. This is more likely to happen when the question is not about the respondent's occupation but about occupations performed by others, for instance the respondent's parents or spouse. Still another reason may be the respondent's refusal to provide information concerning occupation.

SCO-2009 allows the assignment of different codes to these varying situations if necessary. Since individual researchers and research centers are accustomed to different ways of taking this into account, in *SCO-2009* we decided not to define residual categories in any rigid way. The only requirement is for the user to have at least two such categories. The first one corresponds to a situation usually described in survey research as "not applicable." Assigned here are all cases in which the occupation cannot be coded because the respondent was not asked about it. For example, if a question concerns the respondent's spouse but the respondent is single, the question of spouse's occupation is not addressed. In general, not asking a question about occupation is a consequence of a specific answer received in the filtering question. If such an answer appears in the data file, at the coding stage the issue of occupation would be skipped automatically and in the place for occupation code, the code for "not applicable" written in. In the basic version of *SCO-2009* this code was set as "9999." However, users can set any number between 9200 and 9999. The category "not applicable" should be used in all cases where the question about occupation was not asked. Because the reason it was not resulted from answers to other questions of the questionnaire, at the point of coding occupations this reason is not recorded again.

Declaration of the obligatory category "not applicable" is executed by replacing the command "#c", which is the standard command for category initialization, by the command "#cn". This command must appear exactly once in the classification file. The lack of such a command, or the fact that it occurs more than once, is signaled as a syntactic error at the stage of classification reading-in.

The second obligatory residual category in the computer version of *SCO-2009* involves situations in which the occupation cannot be coded because sufficient information necessary for its determination is missing even though the respondent was asked the question concerning this occupation. This situation involves answers such as "I don't know" or "it is hard to say" as well as answers formulated in such a general or imprecise way that the coder is unable to select a specific classification category. All of these situations are declared in *SCO-2009* as "missing data." In the basic computer version of this classification the code 9998 was assigned to the category of

“missing data.” In this case as well, users are free to select any number between 9200 and 9999 as their own code for this category.

Window 6.3 Fragment of *SCO-2009* containing declarations of default residual categories

```
#c=9990
#n=Standard residual categories
#cm=9998
#n=Missing data
#d=[Miss]ing data, [not] [available], [don't] know, [DK]s, [hard] to [say], [refusal]s.
#cn=9999
#n=Not applicable
#d=[Not] [applicab]le, not [asked]
```

The category of “missing data,” which is obligatory in *SCO-2009*, should be treated as a general one that is used in all situations when the reason for missing information is not distinguished and separately coded or when the reason there is no information concerning this person’s occupation is unclear. This category must appear exactly once in the classification file. The command initializing this category takes the form of “#cm” and its proper occurrence is checked during file reading-in.

Since both default residual categories are always of the lowest order (basic classification categories) their declarations must contain detailed descriptions (see Window 6.3). Relevant parts of these descriptions may be distinguished as key words because residual categories undergo the same search process as all occupational categories. They are also directly accessible during the coding process - from the coder’s interface by way of two buttons assigned to this task.

6.2.6 Supplementing the classification with additional categories

The basic version of *SCO-2009* distinguishes a total of 375 categories. Among them are 10 groups of the highest or first level (major socio-occupational groups) divided into 30 subgroups of the second level, 75 subgroups of the third level, and finally 260 categories of the fourth level (basic classification units) constituting the lowest classification level (see Table 4.19). Chapter 4 presents a number of arguments indicating that

SCO-2009 appropriately matches the socio-occupational stratification system in Poland – the country where it was created. In using this classification to study the socio-occupational system of another country, researchers may discover that some areas of that country’s socio-occupational stratification system are not adequately represented by *SCO-2009* in its basic form enclosed in this book. With this in mind, we made it possible for users to supplement the classification with additional categories in order to achieve a better measurement fit to the actual profile of the socio-occupational structure in other stratification systems.

Users may supplement the classification in its various parts. The decimal system used in *SCO-2009* leaves much room on each level. Supplements can consist of adding entirely new categories or of splitting higher level subgroups into two or more categories of a lower level. Each of these options will be addressed separately.

The addition of a new category may involve an occupation or a social role significant in a given system and thus requiring distinction. For instance, let us assume that in a certain society a separate occupational segment is created by a significant number of real-estate owners whose business consists of managing their real-estate assets including the rental of these assets to tenants. Such persons are usually referred to as “landlords.” There is no separate category of landlords in *SCO-2009* because in Poland such a group is insignificant. Researchers do not need to consider its particulars in the global analysis of Polish social structure. However, assuming that the group of landlords is considerable in the country of our example, researchers can easily add it to *SCO-2009* provided they want to use this classification in their research.

The first step in supplementing the classification with a new category consists of deciding in which major socio-occupational group this category should be located. There is no doubt that in the case of landlords only one major group would be fitting: Group 8 – “Entrepreneurs and owners.” In *SCO-2009* Group 8 is divided into three subgroups: 81 – “Owners of firms in production, construction, and transport,” 84 – “Owners of firms in intangible and personal services,” and 86 – “Owners of stores and other trade facilities.” It seems that landlords fits none of these subgroups. Therefore, at this level a separate subgroup should be created for them using the first available symbol, for instance: 82 – “Landlords.” Window 6.4 shows the set of commands that would thus need to be added to the classification file between the definitions of categories 8118 and 8400.

After adding each new category it is worth checking the syntactic correctness of the new set of commands as well as the cohesion of the distinguished key words with the search procedure implemented in the current classification version. The application program *sco2009index* may

be used for this purpose. For instance, in the case of category 8200 “Landlords” this test would reveal that the word “landlords” has already appeared in category 8418 in the context of “pub landlords.” However, the description of category 8418 clearly states that it refers exclusively to pub owners. Therefore, if two separate categories are found associated with the word “landlords,” it should not be confusing as to which of them should be used.

Window 6.4 Set of commands defining the additional category of “Landlords”

```
#c=8200
#n=Landlords
#d=[Landlord]s;
[owner]s of [land], [condomini]um, [house]s, [apartment]s, [real] [estate];
owners [rent]ing their [property]. {[lease]} {[sub-lease]} {[landlady]}
```

Besides adding new categories to *SCO-2009* it is also possible to divide certain subgroups into categories of a lower level. In the original version of this classification, out of 75 third-level categories, 18 have not been divided into fourth-level categories. However, these divisions may be justified in some countries.

For instance, consider category 7110 “Farmers - farm owners.” In the basic version of *SCO-2009* we did not divide it into fourth-level categories. For the sake of this explanation, assume that in a certain stratification system in which a considerable part of the population earns a living from farm work, there are two types of farms. The dominant type is made up of small farms that do not produce enough crops to provide income sufficient for sustaining the farmer and his or her family. These farm owners seek additional sources of income, mainly through part-time work as unskilled workers. The second type is made up of farms large enough to provide sufficient income for farmers and their households. Farm work is the only job for these farm owners.

In the stratification system under discussion, the category of farmers (7110) should be divided into two lower-level categories, for example: 7111 - “Farmers-workers” and 7112 - “Traditional farmers.” This can be accomplished by inserting definitions of both these categories into the file between the existing third-level categories 7110 and 7120.

It is necessary to bear in mind that some limitations are imposed on modifications of the basic version of *SCO-2009*. First of all, to retain its

essence all categories of this basic version must be preserved. This requirement is implemented in both of the enclosed application programs: *sco2009index* - aiding the creation of modified or translated classification of occupations and *sco2009coder* - aiding the process of coding research results. Each of these programs starts by checking whether the provided classification file contains all of the requested categories of the basic version of *SCO-2009*. If not, the screen will display the list of missing categories that must be returned to the file to make the application usable again.

Window 6.5 Example of a classification of reasons why the question concerning occupation was not asked

```
#c=9900
#n=Not applicable
#c=9910
#n=Students
#d=[Student]s.
#c=9920
#n=Unemployed, jobless
#d=[Unemploy]ed, [jobless].
#c=9930
#n=Retired and pensioners
#d=[Retire]d and [pension]ers.
#c=9940
#n=Housekeepers
#d=[Housekeep]ers, [rais]ing [child]ren, taking [care] of [famil]y members,
etc. {[housewife]}
#c=9950
#n=Not working for other reasons
#d=[Not] [work]ing for other [reason]s.
#cn=9990
#n=Not applicable (other reasons)
#d=[Not] [applicab]le, not [asked]
```

The only exception to this rule is made for residual categories for which *SCO-2009* reserves code numbers 9200 through 9999. In this area the user may define any number of residual categories and divide them into groups as needed. The basic version contains only two such categories: 9998 - "Missing data" and 9999 - "Not applicable" (see Section 6.2.5). However, some coding standards may require more detailed divisions, as shown in the example presented in Window 6.5.

When substituting the basic residual categories with a set of their own, users must remember the program requirement to mark two of them as default categories (see Section 6.2.5).

6.3 Aiding the preparation of a new classification with the *sco2009index* application program

The enclosed application program *sco2009index* helps in the process of distinguishing key words in the detailed descriptions of classification categories and their organization into a proper search index. This necessity arises each time the basic version of *SCO-2009* is translated to another language. The program also allows checking of the formal correctness of the classification file after it has been supplemented with new categories as well as synchronizing the previous index of key words with the key words in newly added categories.

6.3.1 Working with a classification file

A classification file should be prepared in the text format according to the rules discussed in Section 6.2. The file may be assigned any name but its extension has to meet the requirements imposed by the program *sco2009index* needed for processing the classification. By the end of this program execution the latest classification version containing all modifications introduced in the current run is written. The file-name extension - recorded in the form "*.z??", where "??" is the version number - provides information on which version of the file it is. When reading in the classification for the first time it is useful to supplement its name with extension ".z01." Then the classification version resulting from all modifications introduced in this session is given the extension ".z02." In the next modification session the latest classification version - "*.z02" - will be read in as input data while the file obtained as a result of the newest round of changes, that is, the output file on this run, will be recorded as "*.z03," and so on. The process of modifying the classification file may therefore be completed in several sessions with the result of each of them retrievable.

The application program allows the distinguishing of any words as key words with the option of removing earlier ones. Such changes can concern all classification categories or just those selected by the user. A word distinguished as a key word is marked by square brackets, as is shown in Section 6.2.2. The user may accomplish this task directly, using any text editor to insert the brackets where appropriate in the detailed descriptions of classification categories. However, using the application program to complete these tasks makes the work proceed much faster since the user is able to trace all occurrences of a given word in the entire classification from the program level.

6.3.2 Starting the *sco2009index* application program

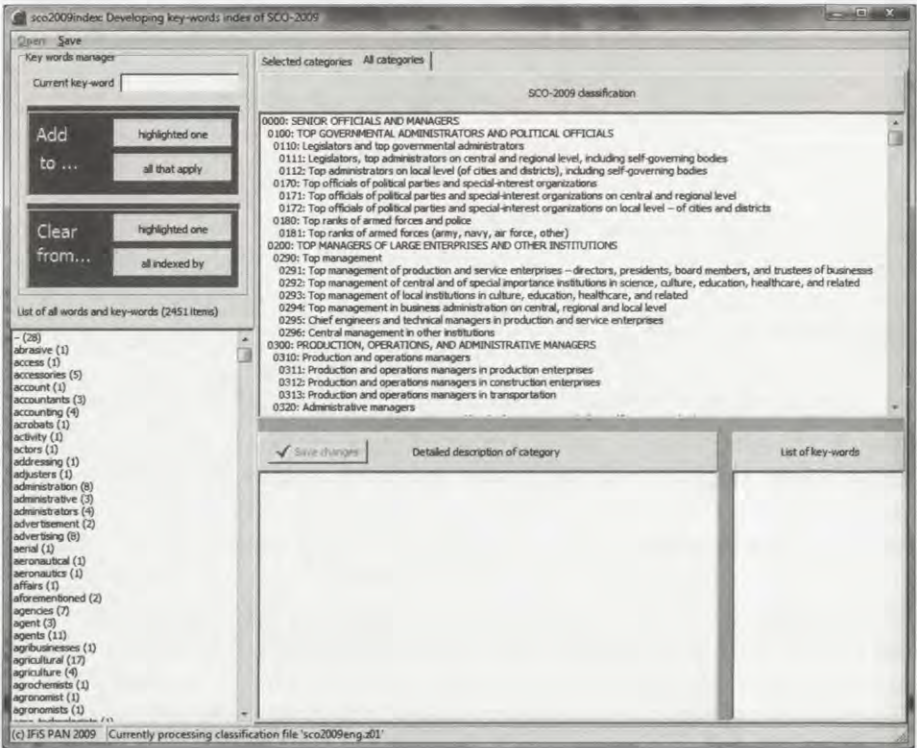
Before starting to work users are advised to place the *sco2009index.exe* module in a separate folder together with the classification file. After starting the program by clicking on the program module the user should select “Open” from the main menu. A dialog box appears allowing for the classification file to be read in as input in the current editing session. The dialog box displays all files having name extensions in the format discussed in Section 6.3.1. Most often, the user will choose the file with the highest extension number – the most recently edited classification version. However, occasionally, it might be necessary to ignore recent changes and to edit some earlier version instead. It is thus recommended that all earlier versions be kept until the work on the classification file is completed and the user considers the very last version final.

During reading in of the input file, the application program checks it for formal correctness. In particular, this involves checking whether all of the classification codes are in a four-digit format, whether category declarations are listed in ascending order, whether there are names for all categories as well as descriptions for all basic (lowest-level) categories, and finally, whether the default categories of “missing data” and “not applicable” are declared. It also checks whether the input classification file contains all categories included in the basic version. If any of these requirements is not met an “Error messages” box opens, listing descriptions of all of the errors registered in this process. The user should then make all of the required corrections and additions to the input classification file under the text editor and restart the whole process.

Once the structure of the input classification file is formally correct the interface presented in Figure 6.1 opens on the screen. The lower part of the left panel displays an alphabetically ordered list of all words appearing in the detailed category descriptions. Next to each word appears a number in round brackets denoting in how many category descriptions this word

occurs. Each word is counted in the exact grammatical form of its appearance in category descriptions. For instance, in the list provided in Figure 6.1 one can see that the singular word “agent” appears in descriptions of three categories while the plural word “agents” appears in 11 of them

Figure 6.1 Interface of the application program *sco2009index* immediately after starting. Displayed is only the basic classification with no key words distinguished

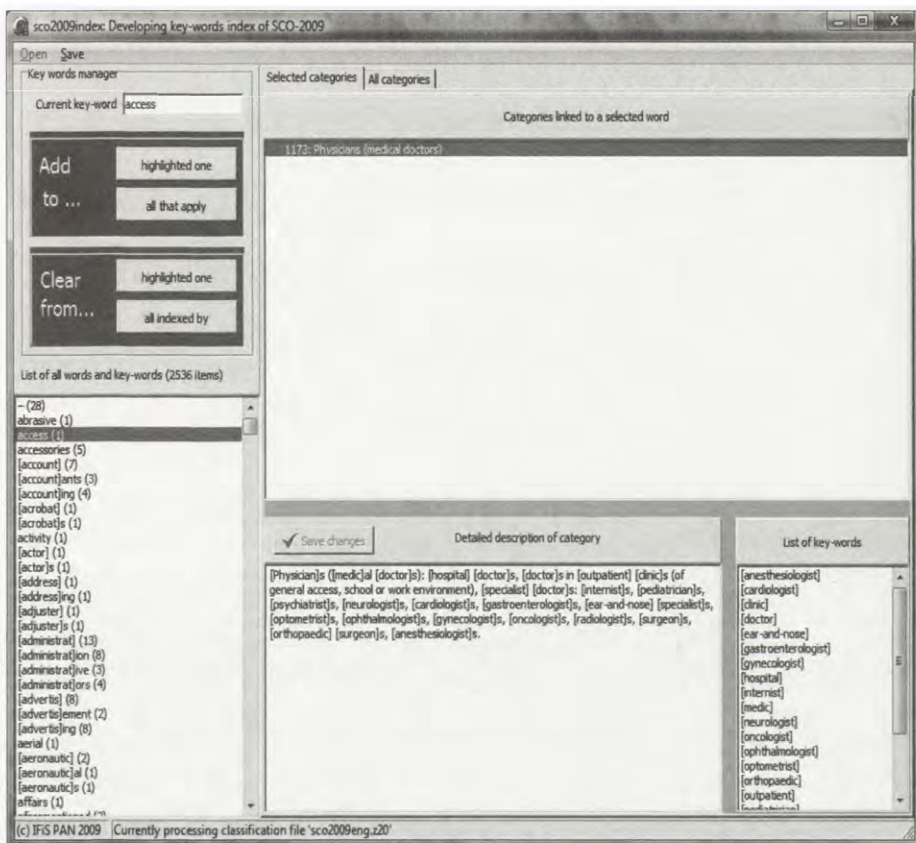


The line above the list reveals how many different words appear together in descriptions of classification categories. Number 2451 shown in this example refers to the basic classification in English before indexation. In translating the classification to another language, the number of different words depends mainly on whether the language contains inflected nouns. If so, the number of words will be significantly greater because of the larger variety of inflected forms for a single noun. For instance, the classification in Polish – a Slavic language with significant inflection of nouns – contained over 5,000 different words before indexation.

6.3.3 Displaying key words

In an indexed classification, the list displayed on the screen contains key words as well as other words (Figure 6.2) since both appear as separate strings. In each key word the particular part formally distinguished as the key word is shown in square brackets.

Figure 6.2 Screen corresponding to the context analysis for occurrence of the word “access”



Rules used to display key words may be clarified by considering the example of “administrat” – a string distinguished as a key word in the search procedure. Since this string constitutes a key word, it is displayed in square brackets. The number shown next to it reveals that it appears in descriptions of 13 categories. Hence, for the coder using this word in searching for an adequate category in the process of coding an occupation 13 basic

(lowest-level) categories would be displayed. The next three positions on the list:

[administrat]ion (8)
[administrat]ive (3)
[administrat]ors (4)

are the actual words containing the key word “administrat.” It is worth noting that the sum of the numbers shown in round brackets is 15. It is larger than the number of categories identified by the “administrat” string alone because the word appears more than once in some of the 13 category descriptions.

6.3.4 Analysis of the context in which a given word appears

To check on the context of a given word, the user should left-click this word on the list. For instance, assume we want to check the context of the word “access,” which was not distinguished as a key word and we want to determine why (Figure 6.2).

After clicking the word “access,” tab “Selected categories” opens. It contains a list of categories in which the word “access” appears. Since “access” appears just once in the entire classification, the list contains only one basic category: 1173, “Physicians (medical doctors).” Clicking on this category causes the corresponding line on the list of all classification categories to be highlighted as well as the detailed content of this category to be displayed in the lower part of the screen. The gray bars separating fields serve as splitters. They make it possible to change the size of an adjacent field when part of it is not visible. To make it visible, the user must select the splitter with the mouse and drag it in the desired direction.

In the second line of the detailed description shown in the screen (Figure 6.2), the word “access” appears. Its context reveals that this word is part of an explanation that category 1173 also includes medical doctors working in out-patient clinics (clinics outside hospitals). This shows that the word “access” does not identify category 1173 and therefore is not marked as a key word for this category.

In the detailed description of category 1173 the word “access” is preceded by the word “general.” Also a part of the explanation, the latter is not specific to this category and therefore it is not marked as a key word. However, its homonym (a word of the same spelling but different meaning) is actually a key word for another category: 0180, “Top ranks of armed forces and police,” where it denotes a high-ranking military officer. For this

reason, the index includes both “[general]” – a noun distinguished as a key word – and “general” – an adjective, which is not a key word.

In category 1173 the majority of words have been distinguished as key words. It is worth noting that if a word is distinguished as a key word it is marked as such (displayed in square brackets) in all instances of its appearance in the category description. For example, in the first line of this description the word “doctor” appears three times, in each case in square brackets. Hypothetically, if the brackets were omitted in one these cases, the system would consider the word as differing from the other two occurrences. As a result, the index would contain the word twice: as “[doctor]” – a key word – and as “doctor” – not distinguished as key word. During the verification of index cohesion immediate doubt or even confusion would arise as to why it was decided that the word “doctor” would not identify category 1173 “Physicians (medical doctors)?” To avoid such confusing situations we decided that once a given word is distinguished as a key word for a certain category it must be marked as such in all of its occurrences in this category description.

6.3.5 Distinguishing key words

At the start of the process of translating the classification to another language none of its words are distinguished as key words. Figure 6.1 illustrates this situation, in which no key words appear in the highlighted list. The user may distinguish them considering one word at a time by clicking it and checking the categories (category descriptions) in which it appears. The detailed category description reveals the specific context of this appearance. Once the user decides that all occurrences of this word accurately identify the relevant classification categories, he or she can distinguish it as a key word by using the button “all that apply” located in the green field of the left panel (Figure 6.2).

The application program immediately executes each change command in the list of distinguished key words. The new key word is marked in descriptions of all of the relevant categories while the left-panel list is rearranged to the updated status. Following each change the highlighted line – serving as the list cursor – marks the word with which this change has been associated.

During each change the exact string currently distinguished as a key word is shown in the editing field displayed at the top of the left panel “Current key word.” This string may not be identical with the corresponding word in the list. Section 6.3.2 discussed an example of the key word “administrat” that identified categories with descriptions containing any of the three following words: “administration,” “administrative,” or “administra-

tors.” If the user decides to accept this procedure he or she should first check whether each of these words accurately identifies the appropriate classification categories. After completing this verification the field “Current key word” displays the last word checked, which would be “administrators” in our example. Now the user should replace this word with its key word form - “administrat” - and select “all that apply” to secure its key word status. The program will mark this string as a key word in all instances where the words “administration,” “administrative,” or “administrators” appear throughout the classification.

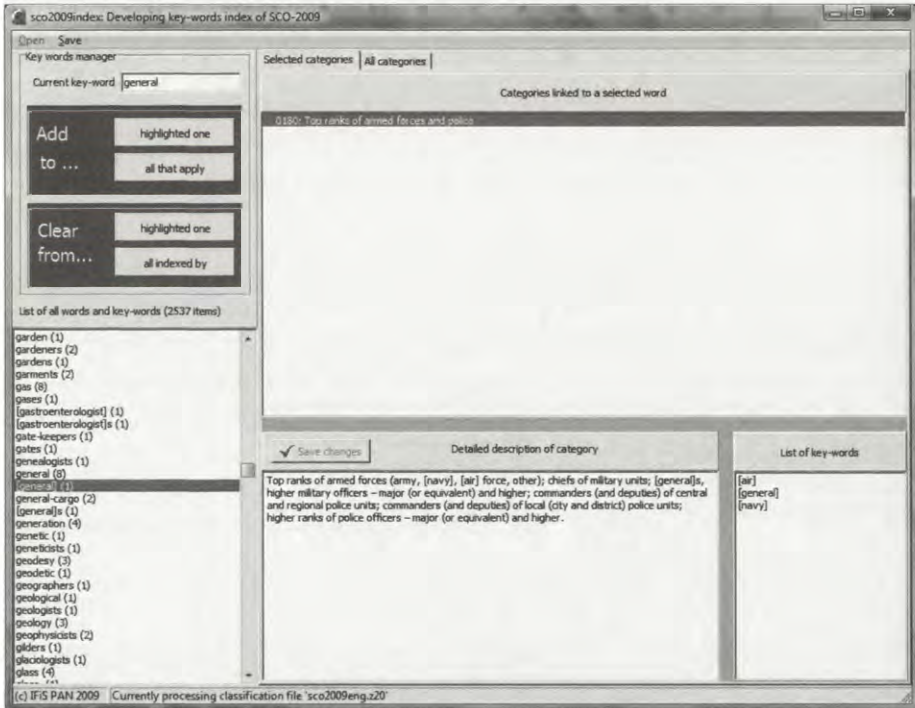
Figure 6.3 Context analyses for occurrence of the word “general”



The command for distinguishing a word as a key word in all of the categories in which it appears is not convenient in situations where the word cannot function as such in certain categories. In Section 6.3.4 we discussed the word “general” in terms of its functioning as a key word in fewer than all categories. In the list of all words, “general” appears in three forms - “general,” “general-cargo,” and “generals.” Figure 6.3 shows the context analysis for the word “general.” It appears in eight categories listed in the field “Categories linked to a selected word.” Shown below is the detailed

description of the first category – 1133, “School inspectors.” In this context the word “general” defines the limits of responsibility of a school inspector. A similar situation occurs in the remaining seven categories. In all of them the word “general” refers to commonality or universality and should not be distinguished as a key word.

Figure 6.4 Distinguishing the word “general” as a key word

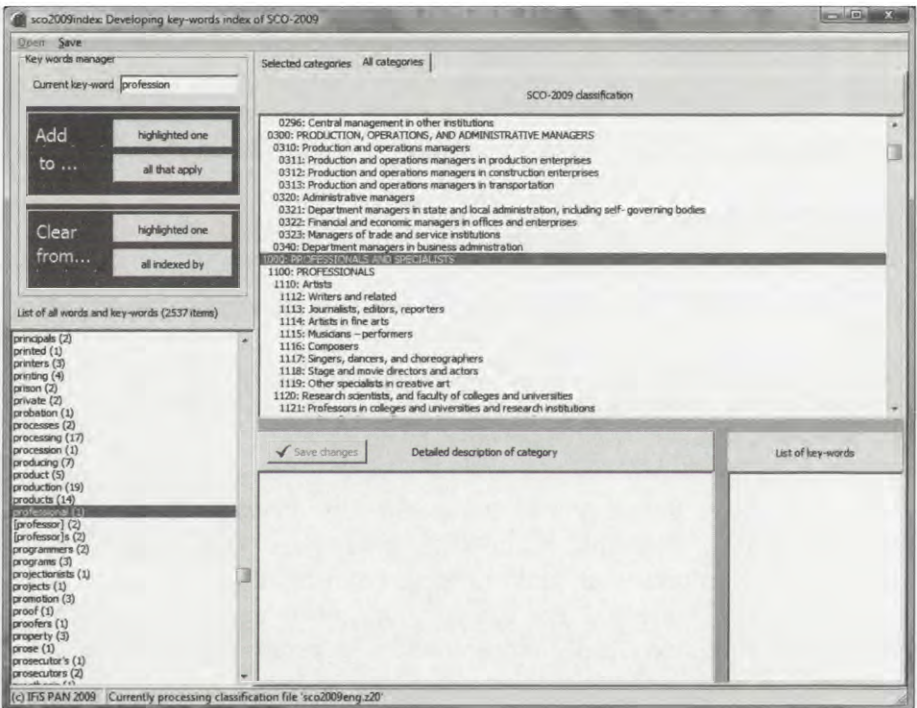


Going through the categories associated with the word “general” leads to the conclusion that only in the case of category 0180, “Top ranks of armed forces and police” should this word be distinguished as a key word, as illustrated in Figure 6.4. The category in question is listed in the right panel and highlighted. To distinguish the word “general” as a key word for this category the user must place it in the editing field “Current key word” and press the button “highlighted one” in the green field of the left panel. However, had the button “all that apply” been pressed instead, the program would distinguish “general” as a key word for all categories in which it appears.

When the prospective key word is associated with a single classification category, another method may be useful. The content of the field showing

the detailed category description can be edited directly. In the example considered above, the user can add square brackets to the word “generals” appearing in the description of category 0180 (Figure 6.4) transforming it into “[general]s”. Inserting these brackets activates the button “Save changes” appearing in the top line of the panel, which contains the detailed category description. Pressing this button initiates verification of the formal correctness of the distinguished key word followed by its inclusion in the list. If the square brackets are not inserted correctly (e.g., only one bracket is inserted, or both brackets are either left or right, as in: “[general[s]”, the program displays a diagnostic revealing the error and the erroneous change is ignored.

Figure 6.5 Distinguishing the word “profession” as a key word in all categories of Major Group 1000, “PROFESSIONALS AND SPECIALISTS”



The option of distinguishing a key word by using the button “highlighted one” can also be applied to situations of inserting a word in all categories of a selected category branch, as illustrated in Figure 6.5. Selected in the right panel is the tab “All categories” while the list cursor is set on

category 1000, "PROFESSIONALS AND SPECIALISTS." Since this is a top-level category, or a major occupational group, after pressing the button "highlighted one" the selected key word "profession" is distinguished in descriptions of all basic categories belonging to this group. It should be remembered that if a given key word did not occur in the given category description, this action adds it to this description in the way shown in Section 6.2.5. After this operation is completed all categories with codes starting with digit 1 will be associated with the key word "profession."

6.3.6 Revoking key-word status of previously distinguished key words

Occasionally, it happens that a word is distinguished as a key word erroneously, for instance, by pressing the "all that apply" button instead of the "highlighted one." For this reason the application program contains an option for revoking the key-word status of an already distinguished word for all or some categories.

For example, suppose the user changes his or her mind concerning the previously discussed issue (Section 6.3.5, Figure 6.5) of whether to distinguish the word "profession" as a key word for all categories belonging to major socio-occupational group 1000, "PROFESSIONALS AND SPECIALISTS." To cancel the previously completed operation, type the given key word in the editing field "Current key word" and then press the button "all indexed by" located in the red field of the left panel. This procedure cancels all previous instances distinguishing this word as a key word in category descriptions as well as removes its latest additions.

To revoke the key-word status in individual categories, use the button "highlighted one" located in the red field "Clear from." The key word in question must be typed in the editing field "Current key word," while the category in which the revoking action takes place is listed in the right panel and highlighted. Another way to accomplish this task is to directly edit the detailed category description by removing the square brackets, which distinguish this word in whole or in part, from all its appearances there. It is necessary to remember that the activation of the editing changes is triggered only by pressing the button "Save changes."

Cancellation of the key-word status of a given word or the addition of a new key word results in the automatic rearrangement of the list of words. After completing any of these operations the cursor is set on the word whose status was changed (the line in which it appears is highlighted). This allows users to follow the results of changes as they are made.

6.3.7 Navigation between fields

At the stage of index building it is best to apply the methods provided in the program to navigate between fields.

Double-clicking, or pressing the Enter key at the stage of browsing the left-panel list, results in highlighting of all categories involving the word currently highlighted in the list. This comes in handy when the user needs to determine which classification categories are linked with this word.

When the user browses through the selected categories (a list displayed after selecting the tab “Selected categories”) using the mouse or the up and down arrow keys, the fields “Detailed description of category” and “List of key words” show details relevant to a given category. Double-clicking on this category or pressing the Enter key triggers a switch to the window “All categories” and a display of the entire classification with the location of the given category highlighted. This option allows the user to quickly assess the locations in the whole classification of categories linked with a specific key word.

Finally, double-clicking on one of the words in the “List of key words” located next to the detailed category description triggers a display of the list of all categories linked with the selected key word. This display allows for quick finding out in which other categories the word distinguished in the detailed description of the currently considered category still appears.

6.3.8 Ending work with the application program

The main menu at the top of the screen contains the commands Save and Quit. The Save command saves all results of the work accomplished so far. It should be used not only to save the final results of a session but also to protect the latest results from the consequences of a sudden power failure or damage to the computer system. The Save command writes each consecutive version of the classification over the previous one.

The Quit command ends the session. Before it is executed the user is asked whether to save the latest results of the work.

In the final session in which all work on the classification is completed, it is suggested that the extension of the name of the latest classification version be changed. The program-assigned extension (the letter “z” and the number of the latest version, as discussed in Section 6.3.1) should be replaced by extension “.clf.” The application program for coding occupations assumes by default that the name of the final classification file has this extension.

6.4 Content and format of data required for coding occupations

Information concerning occupations comes from various sources. Most frequently it is collected through surveys conducted using either standard interviews or respondents' written replies to questionnaires. Questions concerning occupations may pertain not only to the respondent's current job but also to his or her job in the past (for instance, respondent's first job), or a job the respondent intends to engage in the future, or one he or she aspires to. Some occupation-related questions concern occupations performed by other persons, for instance the respondent's spouse, siblings, parents, or children. Sometimes the question concerns the respondent's closest friend or an acquaintance. Questions concerning occupations of different persons usually belong to different blocks in the questionnaire.

6.4.1 Content of the data set concerning the coded occupation

Data concerning occupation are collected by asking two types of questions - closed and open. Closed questions usually pertain to the sole fact of performing a job (the filter question) as well as all of its characteristics, which can safely be left for the interviewer to categorize during the interview. Open questions pertain to descriptive characteristics, such as occupational title, name of the job position, list of typical tasks on the job, and sometimes the name of the firm (workplace) or branch of industry.

Table 6.1 presents a typical block of questions concerning the respondent's occupation. Of the total of eight questions, four are closed and five are open questions. At the process of coding occupations with *SCO-2009* open questions should be used exclusively when asking about the occupational title as well as the name of position on the job. Open questions are also recommended for obtaining additional information about typical tasks on the job. Many occupations require very detailed data to distinguish the correct classification category. Other questions pertaining to occupational and job characteristics may be asked in the closed form. When working with *SCO-2009*, remember to ask a separate question on whether the respondent, or another person whose occupation and job are discussed, is a hired employee or an owner (co-owner) of the firm (workplace) in which this person works (Table 6.1, Question 7). It is also recommended to ask a separate question concerning whether this person supervises the work of others, since relevant information is not revealed in answers to questions about occupation or position on the job. Questions concerning the number of supervisees, the size of the firm (workplace), or the type of business provide additional information. In certain situations it

helps in deciding in which basic *SCO-2009* category to code the person's occupation.

Table 6.1 Example of a set of questions pertaining to the respondent's current occupation

-
1. Do you currently have a permanent job?
 1. yes
 2. no → go to question 10
 2. In what occupation are you working now? Specifically, what is your job title?

 3. What is your position or rank in the firm (workplace)?

 4. What is your job about? Please describe in your own words what you do at work, what you do at work in general?

 5. What kind of business activity is your firm (workplace) engaged in? What does it manufacture or what services does it provide?

 6. How big is your firm (workplace)? How many people (including you) are employed there?
 1. one person business /self-employed
 2. from 2 to 4 persons
 3. from 5 to 10 persons
 4. from 11 to 20 persons
 5. from 21 to 50 persons
 6. from 51 to 100 persons
 7. from 101 to 500 persons
 8. over 500 persons
 7. Are you an employee or an owner/co-owner of your firm (workplace)?
 1. an employee
 2. an owner/co-owner
 8. Do you supervise the work of others?
 1. yes, I do
 2. no → skip question 9
 9. How many persons do you supervise at work?
 persons
-

In addition to information pertaining directly to the occupational role performed on the job, contextual information is also useful in coding occupations. The purpose of the latter is to enhance the image of the occupation performer – a useful supplement to basic data in the event they are incomplete or incoherent. Education is the most often used contextual characteristic. Because it constitutes a formal requirement for performing many occupations (e.g., medical doctor), knowledge of educational level helps in deciding whether the performer of an occupational role described in the questionnaire can be assigned to a given classification category. Another contextual characteristic – gender – plays a similar role: Some occupational roles may be inaccessible or at improbable for either female or male performers.

Variables related to a specific (historical) time in the past (e.g., the year of starting the first job) represent another group of contextual variables. They make it possible to relate the respondent's occupational role to the functioning economic system and social and political conditions at the time, and other elements affecting the position of the performer of this occupational role. Sometimes the same occupational title refers to different occupational roles depending on the time during which the respondent performed on the job, for instance, as in the case of positions in political parties in post-communist countries.

6.4.2 Presentation of data concerning occupation during the process of coding

The application program for coding occupations discussed in this chapter takes into account the customary rules of designing and asking questions on occupation in survey research studies. A single computer screen displays all of the necessary information for each occupation coded, regardless of whether or not the given questions followed each other in the questionnaire. Having on display at the same time all relevant information concerning a given occupational role and the context in which it was performed helps in selection of the correct classification category. Our application program is capable of displaying on the screen answers to closed questions as well as the full content of answers to open questions. In the process of coding, users can select each word in the displayed answer to an open question and use it to search for a correct classification category, rather than retype it on the computer keyboard.

To provide insight into the totality of information describing each occupation, all of it should be accessible in the computer data file. In particular, this concerns answers to open questions, which should be copied into the file verbatim from the questionnaire. In the case of computer-aided

research (CATI, CAPI, or SAPI) a data file in this format is available after completing the study. When the questionnaire is prepared in a paper version (PAPI), the answers written in the questionnaire need to be entered into the computer file.

Coding occupations based on information available in the form of a computer data file has many advantages in comparison with reading it directly from the questionnaire. The basic advantage is that for each occupation the user is able to see on the computer screen all of the information he or she considers necessary for correct coding. In many surveys this information comes from questions asked in various parts of the questionnaire. This carries the risk that some coders might be unwilling to locate all of this information and analyze it. Displaying all of the relevant information on the screen in a unified way has a standardizing effect on coders' decision-making. It thus reduces the number of errors resulting from incorrect interpretation of incomplete occupational data.

The second advantage of storing all occupational information in the computer data file is that the coding process can be repeated under exactly the same conditions. This makes it possible to repeat the coding process and compute the ratio of inter-coder reliability.

The third advantage of having a computer data-file storing all of the information on occupations is that it facilitates organization of the coding process. This makes it easier to divide the coding material among a number of coders working simultaneously and also facilitates randomization. If the accuracy of some coder's work is in question it is easy to repeat the coding.

6.4.3 Preparation of parameters controlling the application program

Before running the application program it is necessary to prepare the file of parameters defining the location of information, which describes the occupations to be coded. It is assumed in the program that the data concerning each respondent are written in the data file as constant length records, in which the same information is identically located. This is the most common way of writing and storing survey data in computer files, which is also known as the fixed format, or text format, or ASCII. If the data file is in structural format (e.g., a file with an extension ".sav" in SPSS) it must first be exported to the text format.

The parameter file, like the data file, must be written in the text format. The best way to prepare it is to use an editor working with text files exclusively. For instance, the Windows "Notepad" editor satisfies this requirement.

The CD enclosed in this book contains, in addition to the application program, a demonstration parameter-file controlling its execution (*example.zpa*). Also included is a file containing the respondents' answers

(*example.dat*). The data are from the European Social Survey conducted in Poland in the fall of 2008 on a national sample. The interviews were conducted in Polish but translated into English for the sake of publishing this book. Respondents were asked about their occupation at the main job, spouse's occupation, and parents' occupations when the respondent was 14 years of age. Questions concerning parental occupations differed from those concerning the respondent and the spouse. This example demonstrates how to prepare the controlling parameters when there are a few occupations to code in the questionnaire and the amounts of information for individual occupations differ from each other.

6.4.3.1 Command syntax

Window 6.6 presents the beginning of the parameter file contained on the enclosed disk as *example.zpa*. This fragment illustrates the way the program interprets the file content. Only the lines starting with symbol “#” are interpreted. We call these lines commands. Other lines are ignored and may have any content, making them useful for providing explanations that help in efficient preparation of the parameter file. If the program does not work correctly these lines will be useful in finding errors. The demonstration file starts with a header presenting the purpose of the file.

Window 6.6 A header of a demonstration file of parameters controlling the execution of the application program for coding occupations

Parameters of coding occupations using the application program: sco2009coder

An example for the book:

Henryk Domanski, Zbigniew Sawinski, and Kazimierz M. Slomczynski.

Sociological Tools Measuring Occupations: New Classification and Scales. Warsaw: IFIS Publishers, 2009.

Commentary: Starting in the next line are the commands

#R 1-4 Respondent's ID

Each command is composed of three elements separated by spaces. The first one is the command identifier. It consists of the symbol “#” and a string of alphanumeric characters (usually containing a single letter or digit) necessarily following the symbol “#” and without a space between.

The second element is a string of characters whose content depends on the specific command. This string is always separated from the command identifier by a space.

The third element appears only in some commands. This is any string of words separated by a space from the second element. The program considers all characters (up to the end of the line) that follow the space separating the second element from the third one. The content of the third element may be separated internally by spaces.

Line “#R 1-4 Respondent’s ID” in Window 6.6 shows how the application program interprets a command. The line starts with symbol “#,” which means it contains a command. Starting with this symbol the command interpreter reads the string of characters until it arrives at a blank space. This string is considered the command identifier. In this case, it is “#R.” Both small and capital letters are allowed in command identifiers and in either case the interpretation remains the same. After reading, the string is compared against the list of acceptable command identifiers since not all combinations of symbol “#” and other characters are accepted. If a given string does not make an acceptable command identifier, the program signals a syntax error and an appropriate diagnostics appears on the screen. The detection of a syntax error interrupts the execution of the program allowing the user to correct the parameter file before the next computer run.

After reading and interpreting the command identifier the program reads the second element, which consists of the string following the dividing blank space. The program reads the second element until it reaches another blank space or a character marking the end of a line. In the example provided the string “1-4” is interpreted as the second element. We will call the second element of this command its first parameter.

The third element - called the second parameter - appears in only some commands. The whole string between the blank space following the first parameter and the end of the line is interpreted as the second parameter. In this case, the second parameter reads “Respondent’s ID”. According to the command syntax the second parameter can have internal blank spaces. Our example contains one - between the word “Respondent’s” and the word “ID.”

6.4.3.2 Declaration of the record identifier

Command “#R” shown in Window 6.6 denotes the location of the record identifier (location from which the program reads it in). After the coding of occupations is completed those identifiers constitute indispensable links between occupational codes and the corresponding records in the survey data file. Following the blank separating the command identifier comes the first parameter, which consists of locations of the first and last characters of the record ID separated by symbol “-.” In our example (Window 6.6) the first parameter is: “1-4,” which means that the respondent identifier is

located in positions 1 to 4 of each record in the data file. Respondent identifier can consist of any string of characters; in particular, its format can contain both numbers and letters. However, this string must be unique in order to secure one-to-one correspondence between computer records and data provided in relevant questionnaires. The application program checks whether this requirement is satisfied when it first reads the input file containing the respondents answers.

The second parameter of the “#R” command consists of the description of the variable containing the record identifier. The name provided will be printed as the label of the record-identifying variable in the output file containing the codes of all occupations considered. The variable corresponding to the record identifier is named by default “REC_ID.” If it happens to be identical to the mnemonic name of another variable it can be changed in the documentation of the output file (Section 6.4.4). The user cannot change this mnemonic at the stage of preparing the command.

6.4.3.3 Declarations of occupations coded

Following the declaration of the record identifier located in the parameter file are blocks of commands consisting of declarations of occupations coded. These declarations define locations in the data file of information on specific occupations and the way they are displayed on the computer screen. Blocks of commands can be placed in the parameter file in any order, which – in particular – does not have to conform to the order of information on occupations in the data file containing the results of the survey.

6.4.3.3.1 Command of initialization for the coded occupation

The initialization command begins the declaration of the coded occupation, as shown in the example in Window 6.7. The string “#J” is interpreted as the command identifier. The first parameter of the command consists of a string, which begins the mnemonics of variables carrying information about the coded occupation. This string must start with a letter and be no longer than five characters. In the example shown in Window 6.7 the string “ROCC_” constitutes the first parameter. The second parameter of this command consists of a name identifying the occupation during the execution of the application program and in the documentation of the file containing the coding results. In our example it is the notice “Respondent’s occupation.”

Window 6.7 An example of the command of initialization for the occupation coded

```
#J ROCC_ Respondent's occupation
```

It is important to make sure that the name identifies the performer of the occupation and the context in which he or she performs it. If the respondent was asked about a few different jobs it should be noted which one is referred to (e.g., “current job,” or “first job,” or a “job when the respondent was 24”). If the question concerns the job of another person, the name should identify the job performer (e.g., “spouse’s job,” or “father’s job”).

We recommend using the same principles when creating the mnemonics of variables. Restrictions are more rigid here because mnemonics of variables cannot exceed five characters. The most important issue is to design mnemonics that avoid confusion about which variables they refer to. For instance, the mnemonic SOCC may indicate “spouse’s occupation.” However, if in the same survey there is also a question about the sister’s (or the sibling’s) occupation, this mnemonic could eventually cause confusion concerning whose occupation it refers to. Some researchers – particularly those who keep a paper version of the questionnaire for reference – prefer to design mnemonics that involve the number of the question inquiring about a given variable. For instance, the mnemonic Q30 could denote “respondent’s occupation” where Question 30 inquired about this variable. There are many useful ways to design mnemonics to the user’s satisfaction.

6.4.3.3.2 Filter command

Occupational codes do not have to appear in all data records. If, for instance, we are coding spouse’s occupation and the respondent is single, this question is not asked in the first place. The program distinguishes situations in which occupation coding does not take place and, instead of an occupational code, the symbol for “not applicable” needs to appear. Such situations can be defined using the filter command.

Actually, the filter command makes it possible to select all cases in which occupation needs to be coded. All remaining cases are skipped at this point and the symbol “not applicable” is automatically inserted into the appropriate data fields of relevant records in the output data file. In the basic version this symbol is 9999; for scale values, it is 99.9. The same applies to

providing results in the form of a division into 14 socio-occupational groups. The user can then replace these symbols with others only by recoding the values of the symbols in the output file after having completed the coding process.

Window 6.8 displays an example of a filter command. The string “#F” is the command identifier. The first parameter of this command is the location of the field in the data file from which the filter values are read. The range of values for the filter makes up the second parameter. The example provided in Window 6.8 means that if the digit “1” constitutes the fifth character of the data record, then the occupation should be coded; if another character appears there, the symbol “not applicable” should be written in the occupation data field.

Window 6.8 Example of a filter command

```
#F 5 1
```

The width of the filter field can be more than one character. For instance, the first parameter being “10–11” would mean that the filter consists of two-digit values and those are located as the tenth and eleventh character of each record. Similarly, the filter values may be defined as a range of values. For instance, the second parameter provided as “8–12” means that the occupation should be coded in all cases when the field of the filter location reads the values 08, 09, 10, 11, or 12.

A lack of the second parameter means that any string appearing in the filter field satisfies the filter condition. This rule is useful in situations in which the answer to just one open question provides all of the information we have about the occupation coded. In such cases the filter location should cover the whole field reserved for writing the respondent’s answer in the text while the second parameter of the command should be left blank. The application program requires coding occupations only in those of data records that have any text written in the field indicated for answers.

6.4.3.3.3 *Group of commands defining available information about the coded occupations*

This group of commands makes it possible to specify information on occupation that is available in the coding process. The researcher decides on the scope of this information, choosing from the set of questions asked at the interview those that may provide useful details concerning the occu-

pations to be coded. The program provides the user with twelve information fields in which the selected items of information may be displayed during the coding process. These fields differ from each other only by size, which was fitted to the volume of answers in a typical set of questions concerning occupation. Table 6.2 shows the size of all twelve fields in which respondents' answers can be displayed. Also provided is a model way to use these fields in the event that the pattern and order of questionnaire questions on occupation correspond to the example presented in Table 6.1.

Table 6.2 Numbers, sizes, and typical content of domains for display of information collected on occupation

Number of the displayed field	Number of rows displayed (each row approx. 50 characters)	Recommended field content	Question number in Table 6.1
1	2	Occupation/job title	2
2	2	Position or rank	3
3	4	Job activities or duties	4
4	3	Business or industry of the firm (workplace)	5
5	1	Size of the firm (workplace)	6
6	1	Ownership of the firm (workplace)	7
7	1	Supervising/managing other employees	8
8	1	Number of subordinates	9
9	1	Education	none
10	1	A field for additional contextual characteristic	none
11	1	A field for additional contextual characteristic	none
12	1	A field for additional contextual characteristic	none

Window 6.9 shows the fragment of a model parameter file involving a group of commands specifying information displayed in the case of coding a respondent's occupation. Each command contains its identifier, the first parameter specifying the location of relevant information in the data file and the second parameter containing the description of a given field in the form displayed on the screen during coding. In addition, commentaries such as *Question F22* refer to questions in the questionnaire from which the displayed information is derived.

Window 6.9 Group of commands specifying information on occupation, which is displayed during coding

```
=====
Occupation no 1: Respondent's occupation
=====
```

```
#J ROCC_ Respondent's occupation
```

```
#F 5 1
```

```
Question F22
```

```
#I1 21-100 Occupation/job title
```

```
Question F23
```

```
#I2 101-180 Activities/duties
```

```
Question F24
```

```
#I3 181-260 Business/industry
```

```
Question F15
```

```
#I4 13 Establishment size
```

```
#T 1 Under 10
```

```
#T 2 10 to 24
```

```
#T 3 25 to 99
```

```
#T 4 100 to 499
```

```
#T 5 500 or more
```

```
#T 6 Not applicable
```

```
#T 7 Refusal
```

```
#T 8 Don't know
```

```
#T 9 No answer
```

```
Question F12
```

```
#I5 6 Employment relation
```

```
#T 1 Employee
```

```
#T 2 Self-employed
```

```
#T 3 Working for own family business
```

```
#T 6 Not applicable
```

```
#T 7 Refusal
```

```
#T 8 Don't know
```

```
#T 9 No answer
```

```
Question F13
```

```
#I6 7-11 Number of employees
```

```
#T 66666 Not applicable
```

```
#T 77777 Refusal
```

continued

#T 88888 Don't know

#T 99999 No answer

Question F14

#I7 12 Employment contract

#T 1 Unlimited duration

#T 2 Limited duration

#T 3 No contract

#T 6 Not applicable

#T 7 Refusal

#T 8 Don't know

#T 9 No answer

Question F16

#I8 14 Supervising other employees

#T 1 Yes

#T 2 No

#T 6 Not applicable

#T 7 Refusal

#T 8 Don't know

#T 9 No answer

Question F17

#I9 15-19 Number of subordinates

#T 66666 Not applicable

#T 77777 Refusal

#T 88888 Don't know

#T 99999 No answer

Question F6

#I10 20 Education

#T 0 Not completed primary education

#T 1 Primary or first stage of basic

#T 2 Lower secondary or second stage of basic

#T 3 Upper secondary

#T 4 Post secondary

#T 5 First stage of tertiary

#T 6 Second stage of tertiary

#T 7 Refusal

#T 8 Don't know

#T 9 No answer

Question F1

#I11 1020 Gender

#T 1 Male

#T 2 Female

Identifiers of commands causing the display of information consist of “#I” and an integer from 1 to 12. Because both constitute the identifier elements, they must not be separated by a space. For instance, the first command of the group “#I1 21-100 Occupation/job title” will result in displaying in the field denoted as “Occupation/job title” the fragment of a data file consisting of characters from 21st through 100th. According to the second command, the field “Activities/duties” will show the data-file fragment consisting of characters from 101st through 180th, the field “Business/industry” – the fragment consisting of characters from 181st through 260th, and so on. During the process of coding, information will be displayed on the computer monitor as is shown in Figure 6.6.

Figure 6.6 Typical display of the content of information domains defined with commands presented in Window 6.9

The screenshot shows a software window titled "sco2009coder: Coding occupations to Social Classification of Occupations SCO-2009". The interface includes a menu bar (Notepad, Report, Options, Find non-coded, Save results, Info, Quit session) and a toolbar with navigation buttons. A "FILE NAVIGATION" section contains a dropdown menu set to "2438" and buttons for "by data records" and "by occupations". Below this is a section for "Respondent's occupation" with an "Assigned category of SCO-2009" field. A "Coding actions" section contains buttons for "NOT APPLICABLE", "CANCEL", "MISSING", "REPEAT", and "CODE". A "KEY WORDS" section has input fields for "1st" and "2nd". The main area displays a list of fields with their corresponding values:

Occupation/job title	Simple-task worker in building construction
Activities/duties	Renovating houses and apartments – plastering, tiling, wall-painting
Business/industry	Housing renovations, refurbishment
Establishment size	Under 10
Employment relation	Employee
Number of employees	Not applicable
Employment contract	Limited duration
Supervising other employees	No
Number of subordinates	Not applicable
Education	Primary or first stage of basic
Gender	Male

At the bottom of the window, a status bar reads: "(c) IFS PAN 2009 10 occupations have been already coded. 101 remain to be coded."

The user can display the chosen information by selecting any configuration of fields. It should be remembered that fields 1 through 4 are a larger size and therefore are better suited to displaying answers to open questions. Fields 5 through 12, in turn, can fit just one line of text and are therefore more appropriate for showing answers to closed questions.

The second parameter of each command consists of the name that will appear next to a given field as an explanation of its content (see Figure 6.1). Because the sole purpose of the name is to carry sufficient information about this content, the name should be chosen so that it satisfies this need. On the other hand, it cannot be too long. The space provided fits up to about 20 characters.

Respondents' answers to open questions are displayed during coding in the same form in which they were put in the data record. In the case of displaying information written in a language other than English the user needs to make sure diacritics specific to this language are shown correctly. The program should work correctly in languages based on the Roman alphabet. If a problem arises one has to take into account that this application program processes and displays national characters in the ANSI (American National Standards Institute) standard, which for the majority of these languages should be consistent with ISO 8859. If respondents' answers are written in the file in a different standard they have to be converted to ANSI first.

Part of occupational information comes from closed questions in which the respondents' answers are pre-categorized and represented in the data file by numerical symbols. However, displaying these symbols during the coding process is inconvenient for coders who would be forced to check repeatedly the meaning of the symbol in the coding frame. To eliminate this problem the program allows the assignment of recognizable names to numerical symbols and displays these names instead of numbers. This task is accomplished with the command "#T" identifier. The command has two parameters. The first one is the symbol of answer appearing in the data record; the second - the name of this symbol in plain words. Window 6.9 shows examples of how this instruction is used. In field 4, which displays information on the number of employees in the respondent's firm (workplace), it was predetermined that symbol "1" in column 13 of the data record would be transformed into the display: "Under 10"; symbol "2" - into "10 to 24," and so forth.

In addition, if the meaning of the numerical symbol is not set up through command "#T" then the program will display the symbol in its form provided in the data record. This simple method is efficient in instances where the numbers refer directly to the anticipated answers, as illustrated in Window 6.9. Command "#19" refers to the variable "Number of subordinates" to which the answers must be provided in positive integers indicating the number of these employees. The only "#T" commands to apply here are those referring to residual symbols "Don't know" and "Not applicable" so that the numeric symbols denoting these categories will not be mistaken for the number of subordinates.

6.4.3.4 *Commands generating occupational scales*

The application program allows the assignment of values for the six scales presented and discussed in Chapter 5 to each occupation coded. Together with the codes of occupations these values are exported to the output file and may be used at the analysis stage. Table 6.3 presents the list of all available scales.

Table 6.3 Available occupational scales and their notation

Scale number	Scale name	Scale mnemonic	Section presenting the scale
1	Scale of skill requirements	SRQ	5.1
2	Scale of the complexity of work	CPX	5.2
3	1979 Scale of socio-economic status (SES)	S79	5.3
4	Scale of material remuneration	MTR	5.3
5	1979 Scale of occupational prestige	P79	5.4
6	2009 Scale of occupational prestige	PRS	5.4

The command for generating the value of a specific scale begins with the “#S” identifier immediately followed by (i.e., without a space) the number corresponding to the requested scale number. The first parameter of this command constitutes a mnemonic of the scale requested. This mnemonic may be up to three characters long (if it is longer the 4th and further characters will be ignored). The scale mnemonic becomes the second part of the output variable mnemonic. For instance, if the string *CPX* denotes the scale and in the command defining occupation the first part of the mnemonic is given as “ROCC_” then the mnemonic for the output variable carrying the values of this scale will be “ROCC_CPX.”

Window 6.10 Examples of the command assigning scales to the occupation coded

```
#S2 CPX (Work complexity scores)
#S6 PRS (Prestige scores)
```

The name of the scale constitutes the second parameter of the command. As in the case of the mnemonic, this name is attached to the name of the coded occupation. For instance, if the command's second parameter is the string “(Work complexity scores)” while the occupation

name is “Respondent’s occupation,” the output variable corresponding to this scale will be named:

Respondent’s occupation (Work complexity scores)

In preparing the data documentation in English we recommend using the mnemonics and scale names suggested in Table 6.3 to facilitate the ordering of notations used in various surveys.

It is important to keep in mind that the application program will assign the scale values only to those categories of *SCO-2009* that appear in its basic version since the scale values were computed exclusively for these categories (see Chapter 5). If the user broadens the original set of categories of *SCO-2009* then the program will assign the symbol of missing data to all categories added (99.8).

The same rule pertains to the user-created residual categories. The program will also assign the “missing data” (99.8) symbol to cases in which the question about occupation was not asked. The only exception is the category declared “not applicable” by default (see Section 6.2.5). The symbol 99.9 will be assigned to this category.

6.4.3.5 *Creating a division into 14 socio-occupational groups*

Chapter 7 of this book presents a useful scheme for grouping the *SCO-2009* categories into 14 socio-occupational groups. This division can be created automatically, by recoding the occupational codes of the basic classification, which is accomplished by using the command with identifier: “#x14” (see Window 6.11). As in the case of the scale generating command, the first parameter of this command consists of the second part of the output-variable mnemonic. We recommend using the string *C14* as the parameter value. It will be helpful for distinguishing this division from divisions into a different number of segments (that some classification users could opt to define on their own). The command’s second parameter carries the second segment, the name of the output variable. For instance, if the value of the second parameter is: “(14 categories)” then its compound with the first part of the name defined in the command of occupation initialization results in:

Respondent’s occupation (14 categories)

As in the case of scales, in the process of constructing the 14-group division the program will assign the symbol 98 denoting “missing data” to all user-introduced classification categories, and the symbol 99 - to the default category “not applicable.”

Window 6.11 Block of commands for creating a division into 14 socio-occupational groups

```
#X14 C14 (14 categories)
#T 01 High-level officials and managers
#T 02 Professionals
#T 03 Technical specialists
#T 04 Technicians
#T 05 Administrative workers and middle-level specialists
#T 06 Office workers
#T 07 Sales and service workers
#T 08 Foremen
#T 09 Skilled manual workers
#T 10 Manual workers in elementary occupations
#T 11 Unskilled workers in services and trade
#T 12 Laborers in agriculture, forestry, and fishing
#T 13 Farm owners
#T 14 Business owners

#T 98 Missing data
#T 99 Not applicable
```

6.4.4 Output-file format

The occupational codes already assigned are written into the output file in the text format (ASCII). This file is created independently of the input data file used for reading in and displaying information concerning the occupations to be coded. Corresponding to each record of input data is one specific record of output data. The latter consists of the respondent's identifier (as defined in the "#R" command) and the required information concerning all coded occupations about which the respondent was asked in the survey.

The content of the final output data file is described in the format of the SPSS script. Window 6.12 contains the script presenting the data for the example attached to this book.

The first block of the command script beginning with the words DATA LIST contains mnemonic identifiers of consecutive fields carrying information and the locations of these variables. The second block, beginning VARIABLE LABELS, contains the names that define the content of variables in the records of the output file. If the user wishes to process the coded occupational data in an environment different from SPSS, then on the basis of these two blocks of script the locations of the output variables can be determined.

Window 6.12 Output-file documentation

```

DATA LIST file='example.asc' record=1/
  REC_ID 1-6 (A)
  ROCC_SCO 7-10
  ROCC_C14 11-12
  POCC_SCO 13-16
  POCC_C14 17-18
  FOCC_SCO 19-22
  FOCC_C14 23-24
  MOCC_SCO 25-28
  MOCC_C14 29-30
..... (scales)
.
VARIABLE LABELS
  REC_ID
  "Respondent's ID"
  ROCC_SCO
  "Respondent's occupation (SCO-2009)"
.....
.
VALUE LABELS
  ROCC_SCO
  POCC_SCO
  FOCC_SCO
  MOCC_SCO
  0000 "SENIOR OFFICIALS AND MANAGERS"
  0100 "TOP GOVERNMENTAL ADMINISTRATORS AND POLITICAL OFFICIALS"
  0110 "Legislators and top governmental administrators"
  0111 "Legislators and administrators on central and regional level"
.....
  9998 "Missing data"
  9999 "Not applicable"
.
VALUE LABELS
  ROCC_C14
  POCC_C14
  FOCC_C14
  MOCC_C14
  01 "High managers"
  02 "Professionals"
.....
  98 "Missing data"
  99 "Not applicable"

```

continued

```

MIS VAL
ROCC_SCO
POCC_SCO
FOCC_SCO
MOCC_SCO
(9998)
.
MIS VAL
..... (scales)
(99.8)
.
MIS VAL
ROCC_C14
POCC_C14
FOCC_C14
MOCC_C14
(98)
.
RECODE
ROCC_SCO
POCC_SCO
FOCC_SCO
MOCC_SCO
(9999=SYSMIS)
.
RECODE
..... (scales)
(99.9=SYSMIS)
.
RECODE
ROCC_C14
POCC_C14
FOCC_C14
MOCC_C14
(99=SYSMIS)
.

```

The third block of the script, starting VALUE LABELS, presents the meaning of consecutive classification codes of *SCO-2009* names of 14 socio-occupational groups and specifies the residual symbols (“missing data” and “not applicable”) for all variables listed. To save space, Window 6.12 shows only a fragment of this block limited to the first few categories of *SCO-2009* replacing further commands with dotted lines. The script

provides the list of all basic classification categories so that during the coding process all of the code meanings can be shown on the screen. The names of occupational categories stored in the script are declared in the classification as short names (6.2.1). The full names of basic classification categories are listed in Appendix 1.

The purpose of further command blocks beginning with the words MIS VAL and RECODE is to declare the residual symbols the omission of which is substantiated by the way certain procedures of data analysis operate. Declared in MIS VAL blocks are the symbols corresponding to the categories of missing data. The RECODE blocks specify the symbols corresponding to situations in which the respondent was not asked about a given occupation (“not applicable”). Declarations of residual symbols are particularly useful in performing computations on the scales of occupations since they prevent mistaking residual symbols for regular ones. This prevents errors in assessing values of some parameters of scale distributions such as the mean.

6.4.5 Rules for writing occupational codes in the updated working file

After completing each coding session the application program re-writes the working file, which contains occupational codes prepared so far. This file, with the extension “.zda,” is automatically written at the completion of each execution of the program. It contains the updated equivalents of all records existing in the input data file. Data fields of occupations still to be coded are filled with space symbols. During the following execution of the program, all of the occupations coded so far are read in and the screen displays the first occupation to be coded next. The user needs to ensure that the file containing only part of the occupations coded does not get lost between the consecutive coding sessions.

After all occupations are coded, at the end of the session, the application program asks the user whether to write the data file in its final version. In addition to the occupations coded, this version also contains the symbols of scales and 14 socio-occupational groups, provided that the user declared in the parameter file that the scales and the 14-group division should be written out. The final version of the data file gets an extension “.asc.” Together with writing the data file in its final version the file documentation in the format discussed in Section 6.4.4 is also written out.

Configuring the file’s final version allows the addition of the scales and the 14-group divisions to the material coded earlier. Thus, at the stage of preparing the parameters for coding, the user does not need to decide which scales will be needed last. To get the required scales later on it is sufficient to use the application program to open the working file of the

occupations coded earlier and request the writing of its final version using the parameter file with added commands.

6.5 The coding process

6.5.1 Start of the application program and checking for correctness of parameters

The application program for coding occupations requires that all of the necessary files – the classification file, the parameter file, and the input data file – be placed in the same folder. Thus, before starting the main work task the user should open a separate folder and place all of these files in it. At the time of coding this folder will store the working files that have been created as well as the final file containing the occupational codes and, possibly, the values of scales and symbols assigning the occupations to 14 socio-occupational groups.

After starting the application program, select “Open project” from the main menu. In response, the program displays a dialog box allowing attachment of the classification file. The latter should have a standard “.clf” extension. After attaching the classification file the program begins examining the formal correctness of its structure (Section 6.2). If any problems are detected the “Error messages” window opens, listing all formal inaccuracies. The user needs to correct these errors and restart the application program.

After successful reading in of the classification file, a dialog box opens allowing the parameter file to be attached. Its default name extension is “.zpa”. As with the classification file, the program starts by interpreting the parameter file. If it finds any syntax errors a diagnostic appears on the screen specifying the nature of each error. The user needs to correct all errors and restart the program.

Once the parameter file is diagnosed as error free, the application program opens a new dialog box, which allows attachment of the input data file (with the file-name extension “.dat”). It should be noted that mutual correspondence between declarations of consecutive information fields and the actual content of these fields in the data file is not examined. This is because from the level of the application program it is impossible to estimate what form the data should have in particular data fields. The program only examines whether each location of a data field remains within the character limit specified by the length of data records.

After reading in the data file, the program examines whether the current folder contains the working file holding occupations that are already coded

(described in Section 6.4.5). If it is there, the program reads this file in and examines its content with respect to conformity with the formats specified in the parameter file.

After completing successful reading in of all files, the application program displays the coding screen. Highlighted on the screen is the first occupation that still has to be coded. If all occupations have already been coded, the program displays a relevant message and the coding screen moves to a display of the first occupation coded.

6.5.2 Coding an occupation

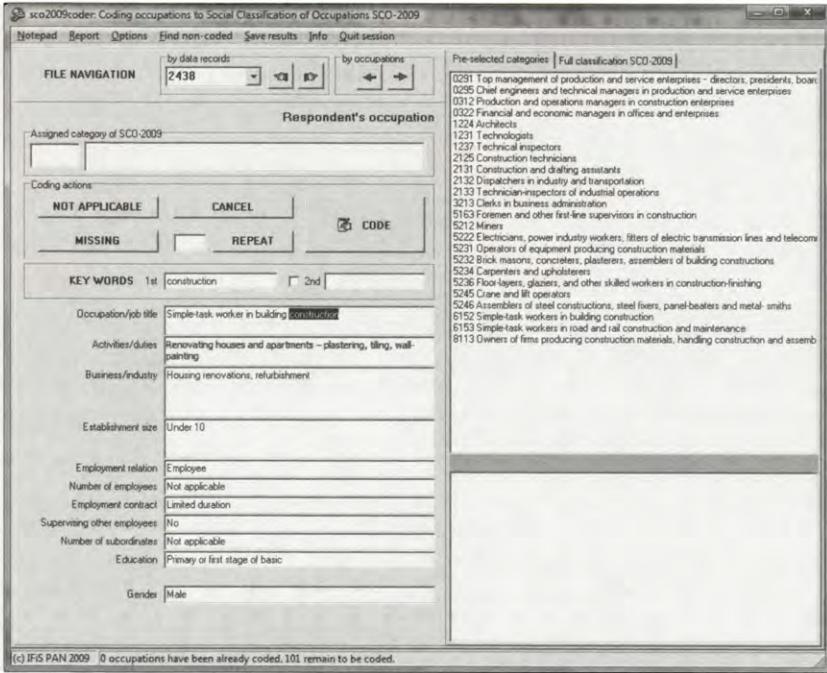
Shown in Figure 6.6 is a typical coding screen. In the lower part of the left panel are all pieces of information that the researcher considered important for the process of coding and declared in the parameter file (Section 6.4.3.5). The fields above, titled “Category of SCO-2009,” display the code and the description of the coded category. Before coding, both of these fields remain blank. Above the field, in bold font, is a description of the coded occupation, as listed in the parameter file in the command defining the coded occupation. In this case the description is “Respondent’s occupation.”

To find an appropriate classification category the user should to drag the mouse onto one of the words shown in any fields displaying information about the occupation coded (e.g., information fields “Occupation/job title,” “Activities/duties,” or “Business/industry”) and select its part as a key word using the left mouse button. The selected key word will appear in the field denoted “1st” in the line titled “KEY WORDS” in the left panel. At the same time in the right panel a tab “Pre-selected categories” will appear displaying all classification categories that contain the given key word in their description, as shown in Figure 6.7.

Alternatively, the user can type the chosen key word into the editing field denoted “1st” using the computer keyboard. As the user types consecutive characters, the program keeps searching the index and displaying the classification categories corresponding to the current string of typed letters in the field “Pre-selected categories.”

If the set of selected categories appears too large, it can be narrowed by adding another key word. To do this, click on the check-box appearing to the right of the first key-word field. Once this check-box is marked it is blocked from the further editing process and the field of the second key word (marked “2nd”) opens. Now the selection of another word from any description will move it to the second key-word field. As a result of this action the list of “Pre-selected categories” will shorten to include only those that have both key words in their descriptions. Entering the second key word from the keyboard will have the same effect.

Figure 6.7 Example of the screen for coding an occupation (stage 1)



sco2009coder: Coding occupations to Social Classification of Occupations SCO-2009

Notepad Report Options Find non-coded Save results Info Quit session

FILE NAVIGATION by data records: 243B by occupations: [Navigation buttons]

Pre-selected categories: Full classification SCO-2009

0291 Top management of production and service enterprises - directors, presidents, board
0295 Chief engineers and technical managers in production and service enterprises
0312 Production and operations managers in construction enterprises
0322 Financial and economic managers in offices and enterprises
1224 Architects
1231 Technologists
1237 Technical inspectors
2125 Construction technicians
2131 Construction and drafting assistants
2132 Dispatchers in industry and transportation
2133 Technician-inspectors of industrial operations
3213 Clerks in business administration
5163 Foremen and other first-line supervisors in construction
5212 Miners
5222 Electricians, power industry workers, fitters of electric transmission lines and telecom
5223 Operators of equipment producing construction materials
5232 Brick masons, concrete, plasterers, assemblers of building constructions
5234 Carpenters and upholsters
5236 Floor-layers, glaziers, and other skilled workers in construction-finishing
5245 Crane and lift operators
5246 Assemblers of steel constructions, steel fitters, panel-beaters and metal-smiths
6152 Simple-task workers in building construction
6153 Simple-task workers in road and rail construction and maintenance
9113 Owners of firms producing construction materials, handling construction and assemb

Assigned category of SCO-2009: [Empty field]

Respondent's occupation

Coding actions: NOT APPLICABLE CANCEL MISSING REPEAT CODE

KEY WORDS 1st: construction 2nd: [Empty field]

Occupation/job title: Simple-task worker in building construction

Activities/duties: Renovating houses and apartments - plastering, tiling, wall-painting

Business/industry: Housing renovations, refurbishment

Establishment size: Under 10

Employment relation: Employee

Number of employees: Not applicable

Employment contract: Limited duration

Supervising other employees: No

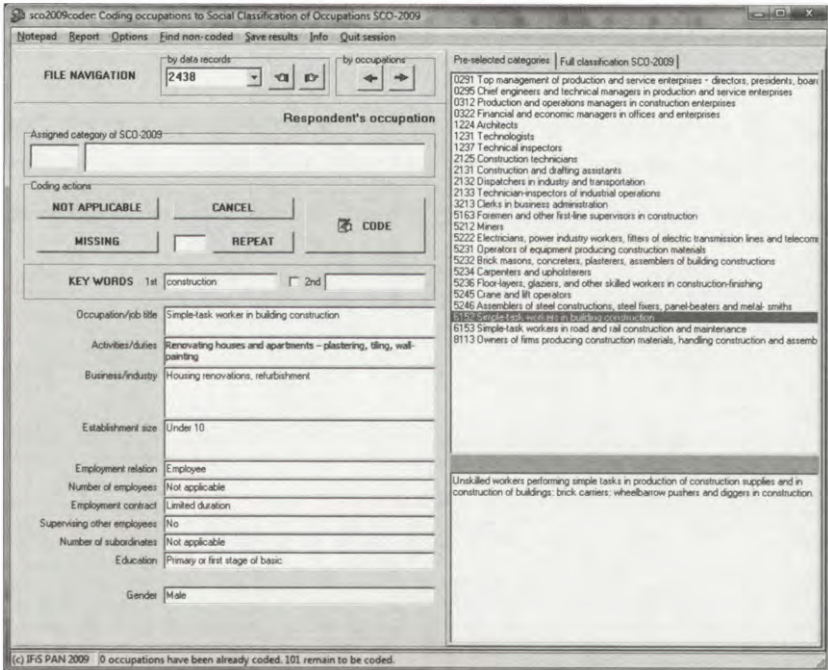
Number of subordinates: Not applicable

Education: Primary or first stage of basic

Gender: Male

(c) IFIS PAN 2009 0 occupations have been already coded, 101 remain to be coded.

Figure 6.8 Example of the screen for coding an occupation (stage 2)



sco2009coder: Coding occupations to Social Classification of Occupations SCO-2009

Notepad Report Options Find non-coded Save results Info Quit session

FILE NAVIGATION by data records: 243B by occupations: [Navigation buttons]

Pre-selected categories: Full classification SCO-2009

0291 Top management of production and service enterprises - directors, presidents, board
0295 Chief engineers and technical managers in production and service enterprises
0312 Production and operations managers in construction enterprises
0322 Financial and economic managers in offices and enterprises
1224 Architects
1231 Technologists
1237 Technical inspectors
2125 Construction technicians
2131 Construction and drafting assistants
2132 Dispatchers in industry and transportation
2133 Technician-inspectors of industrial operations
3213 Clerks in business administration
5163 Foremen and other first-line supervisors in construction
5212 Miners
5222 Electricians, power industry workers, fitters of electric transmission lines and telecom
5223 Operators of equipment producing construction materials
5232 Brick masons, concrete, plasterers, assemblers of building constructions
5234 Carpenters and upholsters
5236 Floor-layers, glaziers, and other skilled workers in construction-finishing
5245 Crane and lift operators
5246 Assemblers of steel constructions, steel fitters, panel-beaters and metal-smiths
6152 Simple-task workers in building construction
6153 Simple-task workers in road and rail construction and maintenance
9113 Owners of firms producing construction materials, handling construction and assemb

Assigned category of SCO-2009: [Empty field]

Respondent's occupation

Coding actions: NOT APPLICABLE CANCEL MISSING REPEAT CODE

KEY WORDS 1st: construction 2nd: [Empty field]

Occupation/job title: Simple-task worker in building construction

Activities/duties: Renovating houses and apartments - plastering, tiling, wall-painting

Business/industry: Housing renovations, refurbishment

Establishment size: Under 10

Employment relation: Employee

Number of employees: Not applicable

Employment contract: Limited duration

Supervising other employees: No

Number of subordinates: Not applicable

Education: Primary or first stage of basic

Gender: Male

(c) IFIS PAN 2009 0 occupations have been already coded, 101 remain to be coded.

If a category appears among the occupational categories listed in the right panel of the screen that can be considered adequate for coding this occupation, the user should mark it by left-clicking. Then its full description will appear in the field “Detailed category description” (Figure 6.8). This description helps in making a final decision as to whether this is the right category. Clicking on other categories makes it possible to check whether other descriptions would be better.

If the user is unable to find an adequate category by using the key words he or she can look for it in the full version of the classification. The full version can be switched to by clicking the tab “SCO-2009 classification” located at the top of the right panel. The full version of SCO-2009 will appear in this panel with the cursor marking the last category shown on the previous screen (Figure 6.9). Going through the full classification the user can consider how to assign similar occupations to specific classification categories and thus decide where the current occupation should be assigned.

The coding of the occupation is finalized when the user clicks the button “CODE.” The occupational code most recently marked on the list displayed in the right panel is entered into the data file (Figure 6.9).

Figure 6.9 Example of the screen for coding an occupation (stage 3)

The screenshot shows the 'sco2009coder' application window. The main area is titled 'Respondent's occupation' and contains a form with the following fields:

- Assigned category of SCO-2009: 6152 Simple-task workers in building construction
- Coding actions: NOT APPLICABLE, CANCEL, MISSING, 6152, REPEAT, CODE
- KEY WORDS: 1st, 2nd
- Occupation/job title: Simple-task worker in building construction
- Activities/duties: Renovating houses and apartments – plastering, tiling, wall-painting
- Business/industry: Housing renovations, refurbishment
- Establishment size: Under 10
- Employment relation: Employee
- Number of employees: Not applicable
- Employment contract: Limited duration
- Supervising other employees: No
- Number of subordinates: Not applicable
- Education: Primary or first stage of basic
- Gender: Male

On the right, the 'Pre-selected categories' list shows the following items:

- 5295 Inland fishermen
- 5290 Other skilled workers
- 5291 Printers, nameographers, and related skilled workers in production of paper and printing
- 5292 Quality and quantity controllers of finished products
- 5293 Samplers and sorters
- 5299 Other non-agricultural skilled manual workers
- 5300 AGRICULTURAL SKILLED WORKERS
- 5310 Skilled agricultural workers
- 5320 Skilled forestry workers
- 5330 Other skilled agricultural workers
- 5331 Gardeners and bee-keepers
- 5332 Other skilled agricultural workers
- 6000 SEMI-SKILLED AND UNSKILLED MANUAL WORKERS
- 6100 PLANT AND MACHINE OPERATORS, LABORERS
- 6150 Simple-task workers in industry, construction, and transportation
- 6151 Simple-task workers in industry
- 6152 Simple-task workers in road and rail construction and maintenance
- 6154 Simple-task workers in transportation charged with packing, loading, and handling
- 6155 Other simple-task workers in industry, construction, and transportation
- 6300 AGRICULTURAL LABORERS
- 6310 Agricultural and forestry laborers
- 6311 Agricultural laborers
- 6313 Forestry workers, woodcutters
- 6314 Veterinarian nurses and paramedics
- 6400 ELEMENTARY OCCUPATIONS
- 6410 Watchmen, janitors, and cleaners
- 6411 Night and day watchmen, janitors, and doorkeepers
- 6412 Janitors in apartment buildings
- 6413 Other janitors, cloakroom attendants, and ushers
- 6414 Floor cleaners
- 6415 Street cleaners, bus cleaners, and other cleaners
- 6416 Grave-diggers

Sometimes one cannot select a classification code from those listed in *SCO-2009* because information concerning the coded occupation is incomplete or the situation presented in the questionnaire does not indicate occupational engagement. Figure 6.10 shows a relevant example. The user must decide whether the problem involves incomplete information or, according to the premises of the survey, a situation is described that should not be considered performance of a job. The user can select the adequate code by clicking one of two available buttons: “NOT APPLICABLE” or “MISSING.”

Figure 6.10 Example of an occupation coding screen in the situation of either incomplete information or an occupation in which the person cannot be considered a performer

The screenshot shows the 'sco2009coder' application window. The title bar reads 'sco2009coder: Coding occupations to Social Classification of Occupations SCO-2009'. The menu bar includes 'Notepad', 'Report', 'Options', 'Find non-coded', 'Save results', 'Info', and 'Quit session'. The 'FILE NAVIGATION' section has a dropdown menu set to '4163' and buttons for navigation. The main area is titled 'Father's occupation' and contains an 'Assigned category of SCO-2009' field. Below this is the 'Coding actions' section with buttons for 'NOT APPLICABLE', 'MISSING', 'CANCEL', 'G152', 'REPEAT', and 'CODE'. The 'KEY WORDS' section has fields for '1st' and '2nd'. The 'Occupation/job title' field contains the text 'Father was then in the concentration camp'. Other fields include 'Activities/duties' (Don't know), 'Business/industry', 'Employment status' (Don't know), 'Number of employees' (Don't know), 'Supervising other employees' (Don't know), 'Number of subordinates' (Don't know), 'Education' (Primary or first stage of basic), and 'As classified by respondent' (Don't know). A status bar at the bottom indicates '(c) IFIS PAN 2009' and '1 occupation have been already coded, 100 remain to be coded.'

The application program includes an option of repeating the choice of the last coding category when dealing with the next occupation, by selecting the “REPEAT” button located in the left panel next to the “CODE” button. The field by the “REPEAT” button displays the symbol of the last coding category chosen. Dragging the mouse cursor to this field displays the name of this category. The option of repeating the last coding choice is particularly useful in surveys in which the respondent answers questions

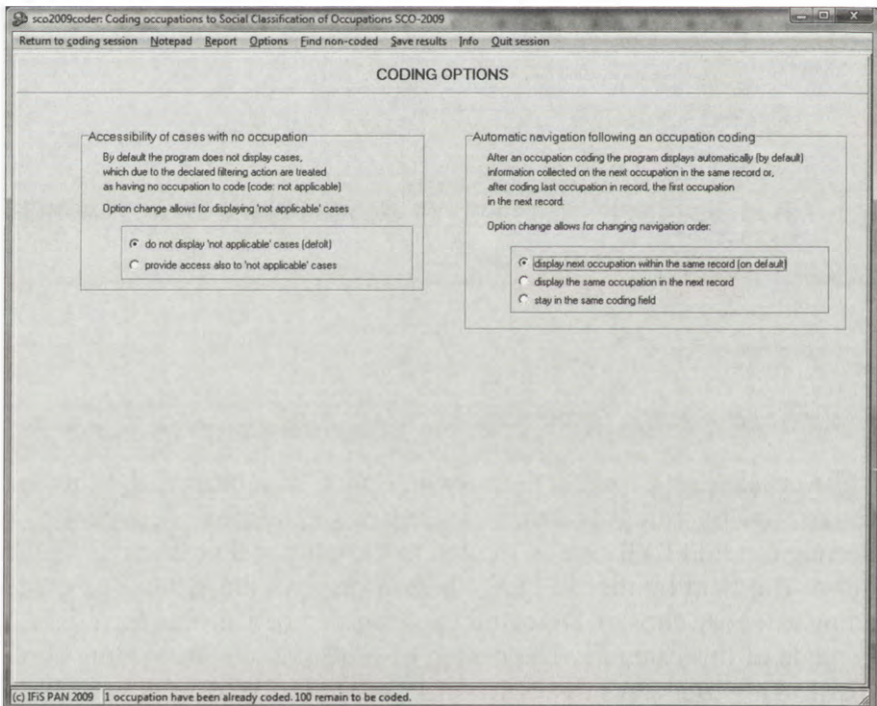
concerning a sequence of jobs performed, because occupations are likely to repeat in them.

Within the set of buttons relevant to the process of coding is also a “CANCEL” button, which is used to cancel the most recent coding decision. After this operation the occupation field is again considered free of any code. Using the “CANCEL” button is recommended in situations when the coder has doubts about the adequacy of the assigned code and wants to consult with a supervisor about the decision. Marking one occupation as non-coded among occupations that are already coded will make it easier to find later.

6.5.3 Navigation in the file of coded occupations

When a respondent is asked about a few different occupations (e.g., current occupation, occupation in the first job, father’s occupation, spouse’s occupation, etc.) there are two options for navigating in the file of coded occupations. The first one is by browsing through consecutive occupations in the respondent’s record, and the second, by reviewing the same occupation for consecutive respondents (e.g., in a given work cycle the father’s occupation is coded exclusively).

Figure 6.11 Screen for selecting a coding option



The application program starts by choosing the first option: in the process of coding, it displays consecutive occupations existing in the respondent's record and only after exhausting this list switches to occupations in the record of the next respondent. If the user wants to choose the second option right away he or she can switch to it by selecting "Options" from the main menu. This will generate the screen shown in Figure 6.11. In the right panel the user can select the occupation, which will be shown as the next one in the coding process.

The navigation rule decides (by default) the order of switching between coded occupations. However, the user can request a change in this order, by using the buttons in the upper-left part of the screen in the panel "FILE NAVIGATION" (see Figure 6.10). The frame "by occupation" contains two buttons with arrows, one pointing left, the other pointing right. Selecting the left arrow switches to the earlier occupation in the same data record or - if the occupation shown on the screen is the first one in the current record - to the last occupation in the previous record. The left arrow button is useful when it is necessary to return to the previously coded occupation (e.g., to correct the assigned classification category). The right arrow button allows browsing through occupations to be coded later. This can be useful if the user wants to see what answers were provided concerning other occupations mentioned in the same questionnaire. For instance, the currently displayed description refers to the occupation performed in the first job, which is ambiguous. In this case it is helpful to examine descriptions of occupations performed in later jobs, which may be useful in deciding how to code the occupation in the first job.

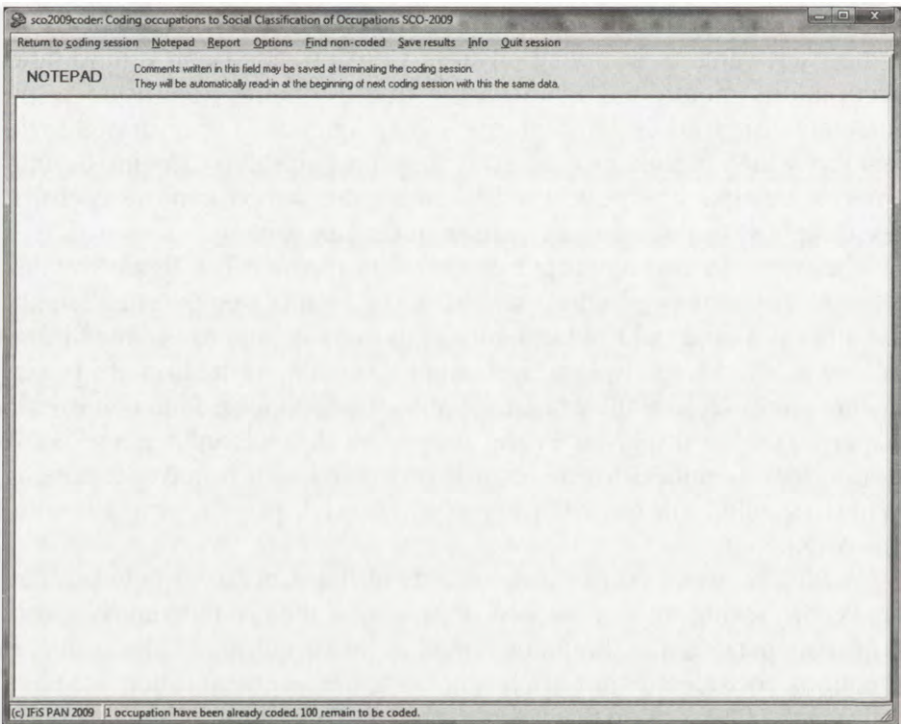
The user can also navigate between data records. The frame "by data records" contains two buttons with icons of a hand, one pointing left and the other pointing right. Selecting these moves one record backward (left) or forward (right) to display information about the occupation of a person in the same social situation (e.g., father's occupation if it is currently displayed). Also displayed in the frame "by data records" is the list of respondent identifiers for all records processed, which makes it possible to find a specific data record by its identifier and displays information about this occupation.

Moving between consecutive records of the data file or between data fields corresponding to the coded occupations, the program automatically skips occupations that should be coded as "not applicable." The coding of situations considered "not applicable" is usually accomplished automatically via the filter option (see Section 6.4.3.3). During the coding process it results in skipping some occupations or even full data records. To access these data fields the global option has to be changed by selecting "Options" in the main menu, which displays the screen of coding options. The left

window shows the declared method of program processing in a situation where the given occupation does not pertain to the respondent (Figure 6.11). Switching options displays all of the occupations including those automatically coded as “not applicable.”

Setting the screen at the first occupation still to be coded constitutes the last available navigation function in the application program. The command executing this function appears in the main menu as “Find non-coded.” After this function is selected the application program browses the data file and searches for the first non-coded occupation, which if found, is set in this place on the coding screen. It is useful to select this function at the end of the coding session in order to determine whether any occupations were not unwittingly skipped in the process of coding (which can happen when navigation methods keep changing). If the program determines that all occupations in the file have already been coded, a message appears on the screen: “No more non-coded occupations in the data file.”

Figure 6.12 Notepad view



6.5.4 Documentation of the coding process: Notepad and Report

During the coding process the user may open *Notepad* from the main menu. Figure 6.12 shows the resulting screen, where any commentary can be written in the editing window. These commentaries are automatically archived together with the data set to be read in each time the user opens this file. This is a convenient way of recording all comments and observations pertaining to coding problems or issues that require addressing with the coding supervisor. Notepad content is stored in text format (files with an extension “.zno”).

Also accessible from the main menu is Report. Its execution results in opening a window that allows information about the current coding session to be saved. Information includes the time of starting the session, the number of occupations coded so far, and the number of occupations still to be coded. At the time of exiting the application program, Report can be written to an external file (with an extension “.zre”). This form contains information about the timing of the coding session and the number of occupations coded during its execution, as shown, for example, in Window 6.13. These reports can be useful for managing the work of coders in large surveys.

Window 6.13 Example of the report from a coding session

```
>>> REPORT FROM A SESSION OF CODING OCCUPATIONS <<<
*** November 28, 2008 at 19:13:06
Session of coding occupations was started.
Coding parameters successfully read-in from file: C:\SCO-2009\example.zpa
Coding data successfully read-in from file: C:\SCO-2006\example.dat
Data set contained 30 records.
Occupations coded so far read-in from file: C:\SCO-2009\example.zda
The total of 30 respondents have occupations for coding.
Data set contains 98 occupations for coding, of which 96 occupations are not yet coded.
Notepad content read-in from file: C:\SCO-2009\example.zno
*** November 28, 2008 at 19:33:53
Working file of occupations coded was written as: C:\SCO-2009\example.zda
File contains 98 occupations. 71 occupations are yet to be coded.
*** November 28, 2008 at 19:13:54
Session of coding occupations was terminated.
Session lasted 20 minutes.
25 occupations were coded during the session.
```

6.6 Scope of utilization of the *sco2009coder* application program and users' rights

Both the *sco2009coder* application program - designed to code occupations according to *SCO-2009* - and the *sco2009index* application program - to assist in preparing the classification in the format required - constitute an integral part of this publication. As a result, both are covered by copyright and can be used only by following the general rules for using the licensed programming software. In particular, they must not be distributed or disseminated in any form or field without the written consent of copyright owner. The owner of a single copy of this book is authorized to make only one copy of the program for his or her own archiving needs. In effect, the owner of a single copy of this book - who becomes a lawful owner of single copies of both application programs - has a right to use these programs for coding occupations on only one computer at a time. If the need arises to use them simultaneously on many computers, each must be equipped with a separate copy of legally purchased software.

The lawful owner of the book and the application programs is entitled to receive, at no additional charge, all updates of these application programs in the event such updates are made. Information concerning possible updates will be available at the Web site www.ifispan.waw.pl where such updates would eventually be available for download.

Both application programs are designed for exclusive use with the *Social Classification of Occupations* in its 2009 version. By purchasing this book the user obtains no authorization to employ them in indexing or otherwise in assisting work with other classifications. At the start of work each application program examines whether the classification that was read in is consistent with the basic version of *SCO-2009* in terms of number of items and hierarchical order. If there is no consistency the program displays a relevant message and stops working.

The only modifications authorized by the authors of this classification are those resulting from (a) supplementing the basic *SCO-2009* with user-created categories or (b) translating *SCO-2009* to another language.

Application program *sco2009coder* has been tested by coding occupations in surveys conducted by the Institute of Philosophy and Sociology of the Polish Academy of Sciences in 2003 through 2009. Both the former version of *Social Classification of Occupations* in Polish (*SCO-1978*) and the current Polish version (*SKZ-2007*) have been applied in this testing. In 2007 the application program was published as an appendix to the Polish version of this book (Domański, Sawiński, and Słomczyński 2007), which allowed it to be tested in many academic and commercial surveys. As authors, we attempted to address and correct immediately all errors and

shortcomings of the program as users informed us about them. We also took into account many comments and suggestions from coders with respect to the available functions and work ergonomics.

Although the application program *sco2009coder* can be considered thoroughly tested, we cannot rule out the existence of shortcomings that have not yet been manifested in practice. According to the general rules guiding the distribution and dissemination of computer software, the owners of the copyright are not responsible for any detrimental consequences or material loss associated with utilization of these application programs.

Because application program *sco2009index* was designed especially for users of *SCO-2009*, its range of testing is currently rather limited. It was used in editing and indexing the English version of *SCO-2009*, which is included in this book in its electronic version (file *sco2009Eng.clf*). The application program was also tested in editing and indexing the Polish version of *SCO-2009*. The testing revealed no problems with Polish diacritical characters. All were correctly recognized, displayed, and sorted by the program *sco2009index* as well as during the coding of Polish answers with the assistance of the program *sco2009coder*.

At this point a word of caution is in order. We are unable to guarantee that both application programs will work equally well in any national language and alphabet or any computer operating system. We tested our programs only in the Windows operating system. Since this system is used broadly in the computer world, we hope many potential users will be able to utilize our software successfully in their social research. We recommend that all users visit the Web site of our institute (www.ifispan.waw.pl) to check for new updates of both of our application programs. We intend to continue working on them, taking into consideration essential changes in computer technologies and software standards as well as suggestions obtained from researchers and coders who read this book and from users of our programs. We hope that this extensive collaboration will contribute to a substantial improvement of computer software for studying socio-occupational differentiation and the related social problems and to bringing new knowledge on these issues in cross-national perspective.

Chapter 7

VALIDITY OF THE *SOCIAL CLASSIFICATION OF OCCUPATIONS-2009*

The question of how to use occupational classifications and scales in analysis of data is the final problem we consider. It should be remembered that classifications and scales are designed to operationalize social positions or - to put it in more general terms - locations in the social structure. Social structure should be broadly understood, whether a class structure, a division of society into socio-occupational groups (such as teachers, technicians, or office workers), or a gradation of detailed positions. In general, one can analyze social structure in terms of any set of distances and barriers defined by occupations.

In using the *Social Classification of Occupations (SCO-2009)*, the main decision concerns the translation of a few hundred basic *SCO* categories into broadly defined groups reflecting macro-level class models. Below, based on both theoretical arguments and analytical results, we present a way of resolving this problem. We focus on the following question: How can be the 260 basic *SCO-2009* categories aggregated into an optimal class map?

7.1 Schemes for aggregating occupations

We begin with a few typical examples from research practice: (i) one wants to measure the effect of occupation on religiousness or authoritarianism; (ii) in social mobility analysis we need to determine the patterns of recruitment to intelligentsia, business owners, manual workers, and farmers; (iii) occupation serves as a control variable in analyzing the rela-

tionship between, for example, education and income. In each of these three situations we define the individual's position in the social structure in terms of his or her occupation coded as an array of a few hundred numbers.

At this point we come to the question of how to allocate a few hundred basic *SCO* categories to analytically useful divisions consisting of basic segments of social structure. This is a problem of aggregating the most detailed categories into "big classes."

The need for aggregation stems, in the first place, from a scientifically natural aim to reduce the number of data into a more comprehensive set of categories. If we want to assess the impact of the individual's location in the social structure on religiousness, we can present this relationship in the form of a single parameter (e.g., the regression coefficient between church service attendance and occupational prestige position), or a number of parameters - regression coefficients identifying the extent of religiousness for a dummy-coded intelligentsia, business owners, workers, and farmers. Since the second model involves more parameters it provides a more exact description of this association; although the more parameters the model involves, the more difficult it is to interpret.

Aggregation is necessary also because of a limited number of cases. In general, sociological analyses are based on relatively small samples not exceeding 2,000 people. This limitation must be considered when variables identifying location in the social structure are operationalized. If we define this "location" in terms of a categorical variable, the categories involved have to be of sufficient size; hence, their number has to be limited.

The main issue concerns what criteria to use in aggregating occupations and how many categories to distinguish. According to a common view, such aggregation should reflect the most important social divisions and barriers referred to as "social classes" as do both *EGP* (Goldthorpe 2000) and Erik Olin Wright's scheme (1997). For this reason, the usual criteria considered in aggregating occupations are "class" characteristics, such as ownership of the means of production, the division of work into "manual vs. non-manual," the required skills level, the extent of autonomy at work, or location in the hierarchy of positions. Based on these criteria, 260 basic classification categories transform into a dozen or fewer segments identifying intelligentsia, lower-level non-manual workers, manual workers, owners, farmers, and so on.

Since theories of social structure deal with universals that say little or nothing about detailed occupational roles, we need to compare theoretical statements with empirical findings. This is the final argument and "the last instance" in mapping the most important lines of social divisions. Based, for example, on the results concerning intergenerational mobility in various

countries including Poland, we know that one of the most important mobility barriers identifies a unique position of farmers in the social structure; the next one separates the categories of non-manual workers from manual workers; the final one locates business owners at a still different set of positions (Sawiński and Domański 1986; Domański 2004a; Domański and Przybysz 2007). Having these analyses in mind, one cannot neglect those categories in aggregating occupations into major categories.

Using *SCO* as a measure of social position, researchers have applied various schemes for collapsing basic occupational units into meaningful segments of social structure (Zaborowski 1995; Słomczyński, Zaborowski, and Mach 1998; Domański 1999). The most popular scheme is a division into 14 groups, including high-level officials and managers, non-technical intelligentsia, technical intelligentsia, technicians, a few categories of middle and low-level non-manual workers, business owners, skilled and unskilled manual workers, agricultural laborers, and farmers. The division into 14 groups was published as an SPSS syntax planned as a standard analytical tool for researchers (Domański and Sawiński 1995a; Domański 2004b). One can surely aggregate these categories into some larger socio-occupational groups in order to produce an even more general mapping of social distances.

In aggregation of the basic occupational units - the lowest *SCO* level - into 14 categories we took into account both the theoretical premises and results of empirical research on social structure.¹ Empirical validation of this scheme revealed its substantial discriminatory power with respect to characteristics of material position, lifestyle, and attitudes (Domański and Sawiński 1995b; Domański and Przybysz 2003). Validation studies - carried out on various sets of data - provided further support recommending the 14-category division as an operationalization scheme for "social position" on the basis of *SCO-2009* as well. To make readers more familiar with this scheme, in the next section, we describe each of the 14 groups and the results of some additional analyses demonstrating the validity of this scheme.

This recommendation is addressed to all researchers. Of course, we know that there are other tools for coding occupations. However, the *SCO* may be regarded as a universal scheme that is applicable beyond academic sociology. One can use our classification in all analyses of associations between location in the social structure and attitudes, aspirations, consumption patterns, and any other characteristics of the individual. In particular,

¹ Particularly important among them are Domański (1985); Sawiński and Domański (1986); Domański and Sawiński (1987); Domański (1987); Sawiński and Domański (1987, 1989b); Domański and Sawiński (1991); Domański (1994, 1999, 2002, 2004b).

it applies aptly in marketing research as well as in public opinion research. We turn to these wider applications in the final section of this chapter, which demonstrates how to transfer from the *SCO* lowest level (of basic occupational categories) to the classification known in marketing and public opinion research as *ESOMAR Social Grade* (European Society for Opinion and Marketing Research). The *Social Grade* scheme is the most widely used research tool in marketing and opinion research. One of its applications is in the Eurobarometer research producing information for commissions of the European Union.

7.2 Division into 14 socio-occupational groups

The results of the aforementioned analyses on social stratification in Poland were our starting point. We referred to them in constructing a range of aggregation schemes, considering their usefulness in the analysis of various areas of social structure. In the first place, we referred to dimensions concerning the distribution patterns of some important “resources” and “rewards,” such as education, prestige, income, ownership of material assets, indicators of lifestyle and participation in culture. The second area of our validity tests dealt with “relational” aspects of social structure, such as intergenerational and intragenerational mobility, friendship patterns, and assortative mating. The third group of variables related to a variety of attitudes and orientations. We focused separate attention on comparing the validity of our 14-group scheme with *EGP*, which is currently the most popular operationalization scheme for class membership in cross-country comparative research (Domański and Sawiński 1995a; Domański and Przybysz 2003). As expected, our scheme was better suited to Poland for the majority of variables, working successfully in many contexts.

We now proceed to a characterization of the 14 socio-occupational groups presenting the composition and reasons for identity of each.

1. High-level officials and managers. This category consists of persons holding top management positions in state administration, political parties, army, justice, business organizations of various levels (from largest corporations and trade chains to small businesses), and other institutions.

Access to power equated with authority is the distinctive characteristic of this category. In the case of higher rank managers (directors) in business enterprises, management power may accompany the ownership title, which applies in particular to managers of large business enterprises and members of boards of directors. It is worth noting that the issue of the extent to which managers are business employees and the extent to which they own the businesses they manage attracted much attention (see Zeitlin

1974). This issue remains without a clear-cut answer; however, empirical findings tend to demonstrate that the relationship between “being an owner” and “being an employee” includes a wide spectrum starting with hired managers that have no share in the business ownership and ending with rentier-owners who take no part in the management.

It should be emphasized that in the *Social Classification of Occupations* the title “high-level managers” refers only to employees. Having institutional power (*authority*), which can, but does not have to, be accompanied by a share in ownership, is the defining characteristic of this occupational role.² Executive power that comes with a position at the top of the occupational ladder, warranting a privileged portfolio or other titles, is the defining characteristic of this occupational access to other goods such as high income, stock options, luxurious cars, attractive pension schemes, and lavish housing. Another determinant of membership in this category concerns particular recruitment and career patterns, which are based on such characteristics as loyalty, observation of institutional norms, full-time availability, specific political affiliations (in the case of governmental positions), or easier general access to high positions due to inheritance of wealth and parents’ assets (Kerbo 1996). However, the “universal” meritocratic criteria, such as skills and education (both the kind and the level) are relatively less important (see Wasilewski 1990).

Included in the category of *high-level officials and managers* are: top governmental administrators down to the level of district mayor, officials of political parties and trade unions (down to the level of large enterprises) on organization payroll, chief judges and chief prosecutors, directors of large enterprises, presidents of large companies and cooperatives in both the state and private sectors, top ranks of armed forces, police, fire brigades, and other uniformed guards, as well as all positions that could be considered equivalent to the above. It should also be pointed out that it includes only part of the occupational positions assigned to the *SCO-2009* category of *high level officials* (listed under symbol 0 in the division into 10 major groups). All managers of medium and lower level are located elsewhere.

2. Professionals. In East European countries such as the Czech Republic, Hungary, Poland, and Russia, this category may be referred to as the “non-technical intelligentsia.” From the perspective of the occupational division of labor they can also be called non-technical specialists. The identity of

² In survey research, the criterion of classifying individuals as owners, as opposed to employees, lies in the answer to a question usually formulated as “Are you: (a) an employer or self-employed, or (b) an employee?” Classified as high-level managers are those respondents who present themselves as employees.

this category relates to its leading role in the fulfillment of important social functions involved in scientific research, “production” of knowledge, education, health services, creation and development of culture, management of the economy, and organization of social life and public activity. The main indicator of belonging to non-technical professionals is having higher education (although this is not a necessary condition). Commonly, members of the intelligentsia in Poland are granted the highest prestige. Their typical preferences, likes and dislikes, leisure activities, consumption patterns, and therefore their specific lifestyle – considered as a sign of “high culture” – create a point of reference for other social categories. Members of the intelligentsia display the highest degree of intellectual flexibility, tolerance, moral liberalism, and self-assurance (Słomczyński and Kohn 1988; Kohn and Słomczynski 1990; Domański 2002). Empirical research on the Polish intelligentsia demonstrates that among its characteristics is a strong sense of identity enhanced by the literature and mass media, a sense of historic continuity, and a conviction of playing the leading role in the life of the nation (Borucki 1980; 1993). Self-identity of specialists is strengthened by the formalized patterns of recruitment to these occupational roles and their job security. An entrance “pass” to these occupations is based on a university or college degree and, in certain professions (e.g., attorneys or medical doctors), also successful passage of special selection exams and completion of a several years of extracurricular training.

In *SCO-2009*, occupations belonging to non-technical professionals have been coded in the category of “professionals and specialists” marked by symbol 1 in the division into 10 major groups. While studies on professionals carried out in various countries have consistently demonstrated that this category is composed of various segments, the most important of its divisions is the one into non-technical professionals vs. specialists – in East European societies also referred to as the “technical intelligentsia” (Brint 1984; Van den Werfhorst and de Graaf 2004). To the first of these groups we assigned scientists, persons engaged in creative arts professions (artists, writers, and journalists), lawyers, specialists in economics, business administration, and management, teachers in schools of secondary and tertiary education, medical doctors and pharmacists, and clergy. Non-technical intelligentsia also includes middle-level managers, provided that performing their managerial functions belongs in the realms of professional occupations – this concerns positions such as directors-actors, professors heading scientific teams, or medical doctors managing hospital departments. Freelance occupations and professions are also listed in this category.

3. Technical specialists. As in the case of non-technical professionals, membership in this category is determined mainly by a formalized recruit-

ment pattern based on an educational career that ends in receiving a university or college degree. However, as compared with the former, occupational roles of the members of technical specialists are generally more closely related to material production. This basic difference in job content and character of work results in differences of attitudes, aspirations, and lifestyle; for example, in Poland, members of this category spend more of their leisure time making things with their hands, while they read fewer books and go to the theater less frequently than members of the other group (Domański 2000). Among technical specialists are, first of all, engineers and specialists in engineering positions, managers of production departments, designers and constructors, specialists in agriculture and forestry, and veterinarians.

4. *Technicians.* In the occupational division of labor this category is located close to technical intelligentsia. Many technicians perform occupational roles in production, repairs, and maintenance of machines and devices; they differ from technical specialists by their lower level of education and skills. Still, the proximity in the content of work and assignments between these two groups of technical specialists (“higher” and “lower”) shows up in their common preferences of ways to spend leisure time; for example, according to sociological surveys carried out in Poland, “do-it-yourself” household projects are especially important to both groups. On the other hand, they differ from other categories of non-manual workers in their relatively lower attendance at theaters, museums, operas, and other forms of participation in “higher culture” (Domański 2000). Holding medium-level positions in work organization and having secondary education of a vocational profile make an identity indicator for technicians as a social category. Belonging in this category are technicians and technologists of various specialties (construction, mechanical and electrical engineering, chemical processing, agriculture, forestry, medical technology, etc.), drafters, lab technicians, nurses, and technical managers including foremen.

5. *Administrative workers and middle-level specialists.* Assignment to this category relates to performing non-manual work requiring special occupational training and at least a secondary level of education. Their location in the social hierarchy is close to non-technical professionals with respect to attitudes and lifestyle, most likely an effect of the similar character of work of the two categories (as is the case with technicians and technical specialists). Assigned to this group are managers of office departments, technicians in economics and data processing, inspectors of work organization and product quality, bookkeepers and tellers in banks and offices, middle-level specialists in educational, cultural, and leisure-time activities, including teachers, tutors, and instructors in elementary and vocational schools, kindergartens, boarding houses, and similar.

6. Office workers. In theories of industrial society and service economics this category (in English literature referred to as *clerical workers*) is considered a constitutive segment of the social structure. Typically, in all countries office workers are located at the lowest levels of the hierarchy of non-manual workers. Performing simple routine non-manual tasks that do not require specialized skills defines this group's identity. Also characteristic of this group is its high intragenerational mobility (advancing to higher echelons of the occupational structure during their work career) and weak attachment to the currently performed occupation. In particular, this applies to women taking maternity leave and, subsequently, returning to the workforce, since clerical work is strongly feminized. Compared to other segments of the socio-occupational structure, office workers show the lowest group identity. The group is composed of clerks in offices and other institutions, typists, secretaries and receptionists, clerks in supplies, office space administrators, and similar.

7. Sales and service workers. The identity of this segment is based on the distinctive character of work involved in routine service and sales. Persons belonging to the group perform occupational roles combining elements of non-manual and manual work. For this reason, it is a typical borderline category situated in the social hierarchy between the block of non-manual work and the manual workers' categories. The majority of those in this group consists of rank-and-file workers employed mainly in trade and services. Salespeople and cashiers in all kinds of stores are the dominant occupation. Others consist of workers in warehouses and fast-food services, conductors and guards, mailpersons and other workers in postal services, workers in personal services (photographers, barbers, hairdressers, and beauticians), skilled workers in restaurants, bars, and cafés (cooks, waiters, barmen [bartenders]). In *SCO-2009* this category also includes managers in stores and service outlets, lower rank officers in the armed forces, police, and fire services, customs officers, industrial and personal security guards. The decision to include them in this group resulted from an analysis of validity (presented later), which was aimed to determine how to aggregate the *SCO* detailed classification units in the 14 categories. It turned out that the managers in stores and service outlets were the closest to the category of sales and service workers and the same was true for lower ranks in the armed forces, police, fire, and other services.

8. Foremen. The reason for making *foremen* a separate group was their unique position in the division of labor resulting from their performance of two usually contradictory roles: executing power and doing manual work. *Foremen* are managers of the smallest organization units as well as workers like those they manage. The separate location of this group in the social structure was reflected in the *EGP* classification, in which it goes

under the name of *lower supervisory and lower technician occupations*.³ In Poland, the relative share of this group is clearly on the rise. In the period 1982-99 it accounted for 2 percent of the workforce, while in 2002 it was already 5 percent, and in 2004, 6.7 percent. *Foremen* occupy the highest position among manual workers in the social hierarchy. However, their location between managers and the rank-and-file categories determines their distinctive position relative to manual workers. On average, *foremen* earn higher income, enjoy a higher standard of living, and have greater access to goods and resources than do *skilled manual workers*. Their preferences, life orientations, and values make them closer to *office workers* (Słomczyński and Kohn 1988; Kohn and Słomczyński 1990; Domański 2000). In the *SCO* this group is composed of foremen of all kinds of activity except for agriculture.

9. *Skilled manual workers.* This group could be regarded as the one closest to the traditional core of the working class, if one defines it in terms of Marxian theory. Its members perform manual work in production, processing, repair, transportation, and distribution of material objects; they act in occupational roles that require skills and on-the-job training, often documented by a diploma from a vocational school that prepares individuals for a specific occupation. In East European countries *skilled manual workers* are the largest segment of social structure - in the 1990s they constituted 20-25 percent of the working population (Domański 2000). With respect to earnings, they match middle-level administrative workers. In Poland they also enjoy relatively high prestige exemplified by the traditionally high position of miners. What tends to lower their overall status is their low ranking in participation in culture - a phenomenon typical of lower classes - starting with low readership of books and periodicals, low number of books owned, and ending with watching unimpressive TV programs.

Life orientations characteristic of a more traditional (as compared with non-manual workers) system of values are factors enhancing the identity of *skilled manual workers* as a segment of the social structure. It has been well established confirmed by research that this group displays a rather high level of authoritarianism and conformity, a tendency to be influenced by programs of populist parties (in Poland: the Self-Defense and the League of Polish Families in 2001-2005), and a high moral conservatism expressed in strong condemnation of homosexuality, marital infidelity, abortion, and

³ This is not an exact equivalent of our *foremen*. In *EGP*, *lower supervisory and lower technician occupations* make up a more heterogeneous category involving first-line supervisors and lower echelons of technicians.

a lack of acceptance of women's occupational work since it undermines their traditional roles as mothers and wives (Domański, Rychard, and Śpiewak 2005). The lifestyle of skilled manual workers displays strong family bonds and significant attachment to local neighborhood networks. They show a stronger (relative to other groups) sense of communal solidarity and collective action manifested in common membership in trade unions and in common striving to accomplish collective goals. High self-esteem and self-confidence, together with a sense of belonging to a social class making products that satisfy social needs are also factors increasing social cohesion among them (Gardawski 1997). Performing occupational roles requiring skills and experience secures the continuity of their positions as members of this category. This has an intergenerational dimension since career patterns are transmitted to children.

In the segment of skilled manual workers, we included all occupations that involved the direct processing of materials and making of products, except for work considered preparatory or auxiliary to the main processing and production. Also in this group are car and truck drivers, railway engine and other vehicle operators, printers, quality controllers, and sailors. To this category belong almost all occupations included in *SCO-2009* Major Group 5, "Skilled manual workers," except foremen and laborers in agriculture.

10. *Manual workers in elementary occupations.* In earlier publications referring to *SCO* this group has also been known as "unskilled manual workers in production." It includes manual workers performing preparatory or auxiliary tasks required for advancement of the main production process, such as the preparation of material, packing, storage, or loading. It also includes workers engaged in construction, railway track or road work, or similar, as well as persons performing outwork.

Manual workers in elementary occupations deserve to be distinguished as a separate group for two reasons. The first and the main reason is the low level of their complexity of work and technological regime, neither of which calls for special skills and experience. The other reason is their job mobility. One could say that this group constitutes a "migratory" segment of the social structure that is easy to enter and easy to quit. Their work has low stability and quite often it is seasonal (e.g., in construction or road work). All of these factors determine the specific social composition of this group enhanced by its recruitment patterns. Its members come from the lowest layers of the working class or from the rural environment. The low educational level of *workers in elementary occupations* brings about low earnings and social prestige. Having little to offer on the job market these workers have no bargaining power against their employers or the state, and no political power. A lack of occupational identification triggers their low self-identity as a social group.

11. Unskilled workers in services and trade. This group includes simple unskilled work of a service nature. It includes occupations such as room cleaners, domestic cleaners, doorkeepers, hospital attendants, paramedic assistants, kitchen assistants, cloakroom attendants, or janitors. Research on social stratification indicates that this category is located in the social structure similarly to that of *manual workers in elementary occupations* (in production). The main difference between the two lies in the character of work. In the case of unskilled workers in services and trade its essence is in providing service, which locates this work in a different social context. Specifically, the contextual difference is that in services the work is mainly individual (rather than collective) and it is performed at a different pace (no machines and production or assembly line). This sets off a different system of remuneration, for example, there is no piecework and there are fewer formal regulations.

12. Laborers in agriculture, forestry, and fishing. The identity of this group as compared with other groups of manual workers is related to a strong sociocultural barrier between urban and rural populations. Correlated with this are many other well-established social divisions. Characteristic of rural dwellers is a strong inheritance of social position, marital homogamy, a limited cognitive perspective, and a traditional outlook on life. The unique character and strength of this identity makes internal differentiation of this group with respect to occupational position and skills less important. For this reason we included in this group foremen and both skilled and unskilled manual workers. In addition to occupations engaged in farming, laborers in forestry and fishermen in coastal and inland waters are also included here.

13. Farm owners. This category identifies the empirically most distinctive segment of social structure - the peasant class, which in modern Western societies is referred to as farmers. Many criteria play a decisive role in farmers' identity: ownership of individual farms, a strong link of occupational work with family life and the resulting strong inheritance of parental position, a variety of occupational tasks (running the farm, growing crops, breeding animals, managing sales, etc.), cultural dissimilarity from city dwellers, geographic isolation from urban sites, and finally a system of values in which both religiousness and traditionalism play important roles (Gorlach 2001). These characteristics are reflected in the sustaining of particularly strong social barriers, which are most visible in social mobility, friendship, and marriage patterns, which situate farm owners in a separate dimension of the social structure (Sawiński and Domański 1986; Domański and Przybysz 2007). Besides *farm owners*, we assigned to this category their family members living in the household because farm work is a collective effort and it is shared by the whole family

living together. Also assigned to this category are inland-waters fishermen who own cutters and other elements necessary for creating their workplace. They are similar to *farm owners* in their work character, also obtaining natural products from the environment.

14. *Business owners.* Classified in this group are owners of private workplaces engaged in production, construction, transportation, and services. The main indicator of their identity consists in their ownership of the means of production, which in all sociological theories identifies members of a specific social class, provided that social structure is considered from the point of view of class divisions. Depending on the theory, members of the class are called capitalists, or bourgeoisie, or simply, owners. We assigned to the group of *business owners* all occupations listed in *SCO-2009* Major Group 8 (*Entrepreneurs and business owners*). This group includes all owners of the means of production outside agriculture, without differentiating with respect to size of the business (i.e., from the owner of a large company to a self-employed craftsman). In spite of the integrating character of the ownership of the means of production, this group is strongly differentiated by disparity in the size of their businesses. Included here are both businessmen who own companies with a few hundred employees as well as owners of small repair outlets, shops, and cafés, who run them as single-person or family businesses. Also located in this group are self-employed such as private taxicab drivers or street vendors. These differ from other business owners in that while they do not have strictly distinguished workplaces, their work situation shares many other elements with the business owners, for example, freedom in work organization, independence in investments and labor hires, tax responsibilities similar to *business owners*, and so on. Our reason for not separating owners with respect to size of the business was the still small number of big business owners in the country. In surveys carried out on national samples this group would consist of too few cases, according to estimates based on the value of assets, this category stood at 17–18,000 in 2008 (Jasiecki 2009). Of course, one can still create this division at the analysis stage if it is required by research goals.

7.3 Delineation of borderlines between groups

Our division of social structure into 14 segments resulted from theoretical criteria and empirical studies on social stratification. However, this is a typology providing no indication as to which detailed classification units of the *SCO* should be placed in each segment. For example, we knew that top management, representing the people in power, should be made into a separate category; that we needed to divide the intelligentsia into

“non-technical” and “technical” professions; that besides the middle-level non-manual workers we needed to distinguish office workers. However, we did not know precisely which *SCO* categories to assign to managers, professionals, administrative and office workers, and so on. To settle these issues it was necessary to carry out as detailed as possible an analysis on the *SCO* categories. In the following sections we provide indirect tests seeking the similarity between detailed categories of *SCO* in order to determine a reasonably accurate basis for aggregating occupations.

Before presenting which big-class maps successfully capture social structuration at the micro level, it should be mentioned that there is already a methodology for aggregating elementary categories into wider segments of the social structure that is based on various criteria of proximity between micro-level units. So far, social mobility has been the most frequently used criterion in such analyses. The intensity of mobility among the given categories was considered to reflect social distances; weak mobility barriers between categories indicated relatively greater permeability that allowed for merging them into larger segments and vice versa - strong barriers made it necessary to maintain the division (Rytina 1992; Krymkowski, Sawiński, and Domański 1996).

This approach is rarely applied since it requires very large data sets with numbers of cases a few times larger than is customary in typical surveys. One needs samples of adequate size to determine distances among the lowest-level units. In addition to the analyses cited above we should point out the newest American results, in which the authors used a division into 126 occupational categories (Weeden and Grusky 2005). Delineation of borderlines between these categories (the “cartographic” analyses) was determined on the basis of 55 variables concerning various characteristics of social position and attitudes. Weeden and Grusky used the data from the General Social Survey, combining the data for 1972-2002.

We carried out similar analyses on the *SCO* categories. For this purpose we had to use the previous *SCO* version because at this point there was no data set at hand that could be coded with *SCO-2009*. To assess inter-category “proximity” with respect to location in the social structure, we took into account the data characterizing social mobility patterns and marriage patterns. Social mobility rates and the degree of marital heterogamy are usually treated in sociological analyses as the determinants of basic axes of distances and barriers (Schumpeter 1951; Sorokin 1959). These phenomena are assumed to reflect the mechanisms that generate hierarchical divisions - with more intensive social mobility and less homogeneous marriage pattern indicating relatively weaker distances and barriers.

The classical intergenerational mobility table - respondent’s occupation by social origin - was the starting point for reconstructing the map of

distances among the *SCO* categories. Social origin was identified in terms of fathers' occupational categories when respondents were age 14. Fathers' categories were cross-classified by the respondents' occupational categories provided at the time of the interview. In regard to marital selection we cross-classified husbands' occupational categories by the wives' occupational categories. In order to create a large enough data set to construct these tables we combined all editions of the Polish General Social Survey from the years 1992–1995, in which occupations of fathers, respondents, and spouses were coded according to *SCO*.⁴ Then we combined the PGSS data sets with the data from a survey carried out on a national sample in 1998 by the Institute of Philosophy and Sociology, Polish Academy of Sciences, and the data from the first two editions of the European Social Survey for 2002 and 2004. Detailed information about drawing the sample and the goals set for these studies is listed in the authors' publications (Domański 2000; Cichomski and Morawski 2002; Sztabiński and Sztabiński 2006). All studies were carried out on random samples of the adult population. Respondents were asked questions that allowed coding of their own occupations as well as those of their spouses and fathers according to *SCO*.

In this way we obtained a data set of 12,000 cases. It was still too small a number to be used in setting distances among almost 300 *SCO* categories of the lowest level. We therefore selected only 37 categories – the maximum possible number bearing in mind limitations in sample sizes – making this aggregation based on theoretical premises and empirical knowledge of their social proximity as well as the necessity to ensure a sufficient number of cases in each. These categories are listed in Table 7.1 and Appendix 7.1. The appendix provides detailed information on assigning all elementary *SCO* categories to the 37 categories. In analyzing marital patterns we used a still smaller data set of 10,000 cases because the 1998 study questionnaire did not carry a question about the occupation of the respondent's spouse. Of course, we recognized that mapping of distances on the basis of data collected over the span of about ten years made sense only if the patterns of mobility and marital choices were reasonably stable across time. Fortunately, both proved to be relatively stable in Poland (Domański and Przybysz 2007).

In order to determine the degree of proximity between these categories (defined in terms of mobility barriers and marital homogamy) we used correspondence analysis. This belongs to the same class of statistical techniques as canonical analysis, discriminatory analysis, and multidimensional

⁴ Starting with the 1997 PGSS edition, information regarding all occupations has been coded exclusively with *ISCO*.

scaling, which allow the more parsimonious capture of patterns of variability in life chances, social mobility, marital choices, life conditions, culture, demography domain, and so on. In correspondence analysis the input table is a two-way distribution. In our case this was a table of 37 occupational categories of fathers by 37 of the same occupational categories of the respondents and, separately, a 37 by 37 table of the “husband-wife” distribution. Using correspondence analysis (CA) it is possible to present these categories (graphically) in a multidimensional space so that the distances between them, defined in the two-way table, are revealed in terms of a minimal number of dimensions. They array detailed units (37 categories) as nearer and farther from each other along metric scales that correspond to maximum stickiness on constraint in the observed moment. The CA results are usually presented in a two-dimensional space.

The measure of similarity between two categories of the same variable (in a mobility table - between the respondents' categories) consists in comparing conditional distributions of the second variable (of the fathers' categories). For example, in our 37 by 37 mobility table, similarity between the categories of “politicians” and “managers in production” for respondents is determined with respect to their fathers' occupations. This measure is a weighted Euclidean metric, known in the literature as the “chi-square distance.”⁵ The more similar the conditional distributions for two categories, the smaller the chi-square distance, and, as we can expect, the closer the two categories. In the same way we find the distance between any two categories of the other variable. Using this information one can lay out occupational categories of the respondents and their fathers in a multidimensional space that can be identified with a multidimensional mapping of social structure. As regards locations of categories in particular dimensions, these are identified in terms of their coordinate values, which we interpret as indicators of distance between the categories. The maximum number of dimensions in correspondence analysis is $K = (I - 1)(J - 1)$, where I denotes the number of rows and J - the number of columns in the input table.

The application of correspondence analysis allowed us to find out which categories were located close to each other and which were farther from each other in the social structure defined in terms of marital choices and intergenerational transitions. This constituted the basis for a fairly exact delineation of basic segments of social structure in Poland.

Results of the correspondence analysis are presented in Table 7.1 and in Figures 7.1 and 7.2. The first two columns of Table 7.1 show the coor-

⁵ It is named for its similarity to the chi-square statistic.

dinate values, which determine locations of the 37 categories in the first two (considered the most important) dimensions of the social structure. It should be kept in mind that in correspondence analysis sets of the coordinate values are extracted separately for the two variables, this is, in this case for respondents and their fathers. In Table 7.1 we provide them only for the respondents, to retrieve the actual big-class map; still, it should be noted that they do not substantially depart from the coordinate values for the fathers.

Table 7.1 Location of occupational categories in the social structure according to social mobility patterns and marital patterns. Coordinate values from the correspondence analysis (CA) on the joint data set obtained in surveys carried out in 1992–1995, 1998, 2002, and 2004

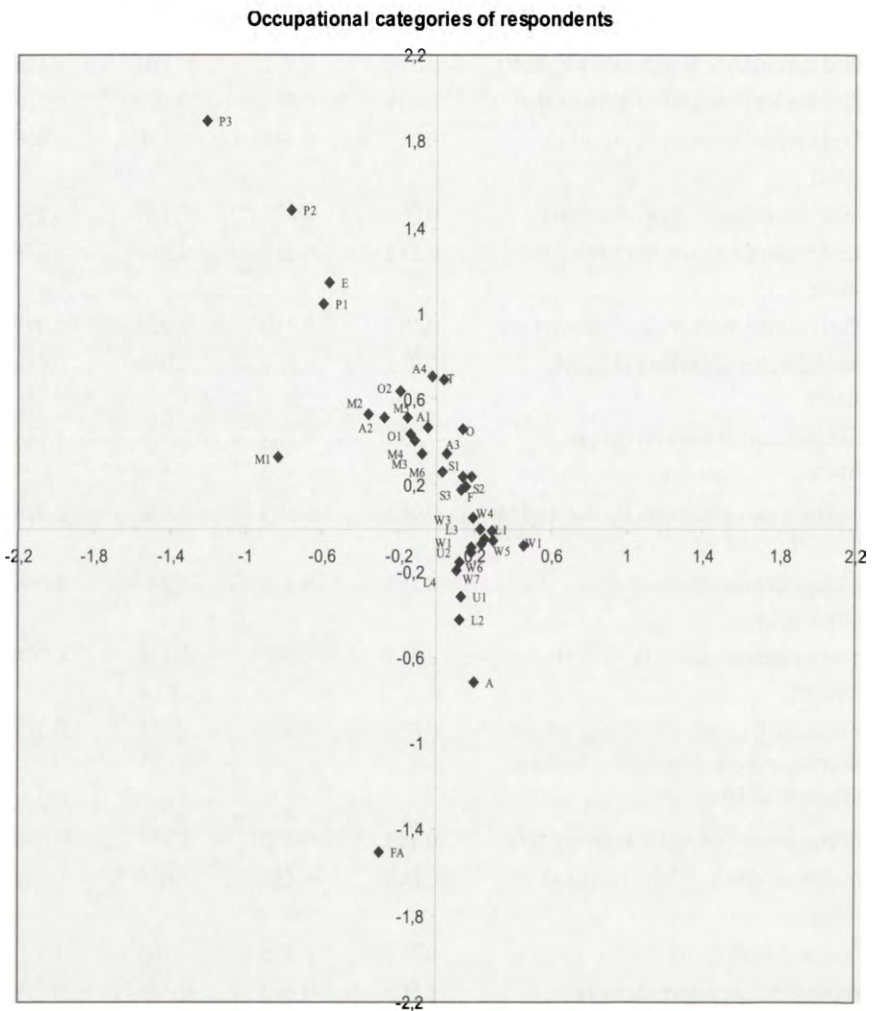
Occupational categories	Coordinate values in CA first two dimensions			
	for respondent's occupation (mobility patterns)		for husband's occupation (marriage patterns)	
	1 st dimension	2 nd dimension	1 st dimension	2 nd dimension
Politicians (top governmental and party officials)	0.330	-1.896	0.695	-1.287
Top managers in material production (industry, construction, etc.)	0.535	-0.816	0.607	-0.904
Top managers in information business and services	0.345	-0.170	0.650	-1.446
Engineering managers	0.413	-0.268	0.558	-0.658
Technician managers	0.515	-0.340	0.433	-0.482
Sales managers	0.262	0.061	0.260	0.257
Teachers in secondary schools, writers, journalists, artists	1.046	-1.344	0.767	-1.923
Scientists, lawyers, teachers in secondary schools, other non-technical specialists	1.481	-1.737	0.740	-1.639
Medical doctors	1.896	-2.737	0.714	-1.607
Engineers	1.146	-1.278	0.680	-1.252
Technicians	0.689	0.092	0.511	-0.497
Administrative workers of middle-level	0.473	-0.104	0.564	-0.760
Teachers in elementary schools	0.513	-0.619	0.618	-0.869
Nurses	0.531	0.115	0.659	-1.088
Insurance and real estate agents, brokers, and other business specialists	0.706	-0.053	0.425	-0.364
Office workers	0.461	0.311	0.444	-0.290

continued

Occupational categories	Coordinate values in CA first two dimensions			
	for respondent's occupation (mobility patterns)		for husband's occupation (marriage patterns)	
	1 st dimension	2 nd dimension	1 st dimension	2 nd dimension
Salespersons	0.243	0.312	0.272	-0.155
Mailpersons, conductors, and other rank-and-file transportation workers	0.242	0.408	-0.245	0.646
Barbers, hairdressers, cooks, photographers, and other rank-and-file workers in personal services	0.177	0.298	0.412	0.283
Foremen	0.195	0.343	0.164	0.457
Miners	-0.078	1.040	0.123	0.665
Skilled manual workers in heavy industry	-0.074	0.531	0.130	0.425
Skilled manual workers in construction	-0.001	0.514	0.149	0.616
Skilled manual workers in precision industry	0.047	0.434	0.231	0.606
Skilled manual workers in chemistry	-0.060	0.673	0.326	0.458
Skilled manual workers in clothing industry	-0.112	0.419	-0.040	0.623
Skilled manual workers in transportation	-0.197	0.240	0.229	0.493
Unskilled manual workers in heavy industry	-0.012	0.664	-0.064	0.955
Unskilled manual workers in light industry	-0.423	0.280	0.272	1.080
Unskilled manual workers in road and rail construction and maintenance	-0.052	0.569	-0.528	0.729
Unskilled workers in internal transportation	-0.159	0.275	-0.238	1.094
Janitors, cleaners, domestic cleaners, messengers	0.315	0.292	-0.133	0.708
Paramedics, hospital attendants, kitchen assistants, and other manual workers in elementary occupations	-0.090	0.424	-0.261	0.218
Business owners in material production	0.440	-0.310	0.456	-0.609
Business owners in information and services	0.640	-0.432	0.441	-0.800
Laborers in agriculture	-0.717	0.456	-0.105	1.410
Farm owners - peasants, farmers	-1.506	-0.668	-2.376	-0.495

The last two columns of Table 7.1 present the coordinate values for the patterns of marital choices. For the sake of clarity we report only the values for the husbands' categories. The respective values for the wives are basically similar and do not change our conclusions concerning aggregation. To provide a graphical illustration of these two-dimensional configurations of categories, in Figure 7.1 we present the coordinate values for mobility patterns and in Figure 7.2 - those for patterns of marital selection.

Figure 7.1. Intergenerational mobility barriers among SCO categories. Two-dimensional CA map: coordinate values in the first two dimensions



Occupational categories

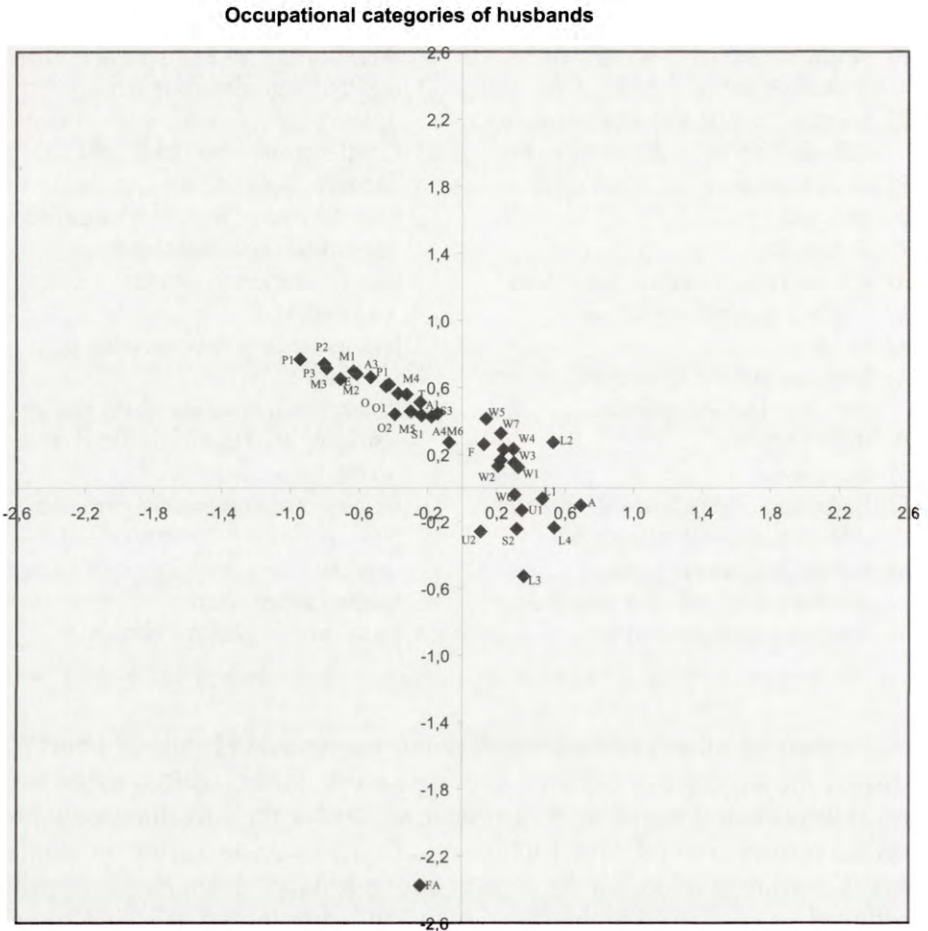
M1 Politicians (top governmental and party officials)	F Foremen
M2 Top managers in material production (industry, construction, etc.)	W1 Miners
M3 Top managers in information business and services	W2 Skilled manual workers in heavy industry
M4 Engineering managers	W3 Skilled manual workers in construction
M5 Technician managers	W4 Skilled manual workers in precision industry
M6 Sales managers	W5 Skilled manual workers in chemistry
P1 Teachers in secondary schools, writers, journalists, artists	W6 Skilled manual workers in clothing industry
P2 Scientists, lawyers, teachers in secondary schools, other non-technical specialists	W7 Skilled manual workers in transportation
P3 Medical doctors	L1 Unskilled manual workers in heavy industry
E Engineers	L2 Unskilled manual workers in light industry
T Technicians	L3 Unskilled manual workers in road and rail construction and maintenance
A1 Administrative workers of middle-level	L4 Unskilled workers in internal transportation
A2 Teachers in elementary schools	U1 Janitors, cleaners, domestic cleaners, messengers
A3 Nurses	U2 Paramedics, hospital attendants, kitchen assistants, and other manual workers in elementary occupations
A4 Insurance and real estate agents, brokers, and other business specialists	O1 Business owners in material production
O Office workers	O2 Business owners in information and services
S1 Salespersons	A Laborers in agriculture
S2 Mailpersons, conductors, and other rank-and-file transportation workers	FA Farm owners - peasants, farmers
S3 Barbers, hairdressers, cooks, photographers, and other rank-and-file workers in personal services	

To sum up - the configuration of points presented in Figures 7.1 and 7.2 display the structure of distances among the categories reduced to the two most important dimensions. Coordinate values for the first dimension are on the vertical axis and those for the second dimension are on the horizontal axis. Coordinate values for the second dimension have been proportionally reduced, as compared to the first dimension, according to its lesser importance. In CA, the "importance" of a given dimension is measured in terms of the eigenvalues extracted from the two-way distribution (so-called inertia). Therefore, we reduced the original coordinate values for the second dimension by the ratio of the first eigenvalue to the second.

What conclusions emerge from these data? Insofar as the proposed class model of 14 categories fits empirical data, it should be reflected in patterns of social mobility and marital choices. Generally speaking, the two-dimen-

sional map of mobility and marital homogamy barriers suggests that our 14 categories validly represent the basic contours of social stratification in Poland, or, formulating this more cautiously, nothing suggests that this division should be rejected.

Figure 7.2. Barriers of marital selection among SCO categories. Two-dimensional CA map: coordinate values in the first two dimensions



Occupational categories - see p. 257.

What shows up on first sight is the hierarchical pattern of mobility barriers and a structure of marital selections that is roughly consistent with the location of these categories in various dimensions of social stratification. On one pole of this hierarchy are the categories included in

non-technical professionals, on the other, farmers. In Figures 7.1 and 7.2 the hierarchy proceeds from the upper left to the lower right corner. The second characteristic is the separate location of farm owners - a fact confirmed by all earlier analyses on the relational aspects of social structure. The third feature is a dichotomy between non-manual and manual categories, corresponding in market economies to the division into middle and working classes. This dichotomy does not manifest itself in a clear social barrier, but non-manual work categories are in general located higher than those associated with manual work.

The relatively greater proximity of the detailed categories belonging to the given class segments of the social structure would support the validity of the division into 14 big classes. For instance, medical doctors, scientists, and artists, all included in non-technical professionals, should be closer to each other and farther from others; the same should be expected with respect to other big segments. It seems, however, that this conjecture has only limited application in our analyses since we use only 37 categories, which do not represent each of the 14 segments to the same degree. Given this limitation, we point out a few regularities that could be useful for *SCO* users at the stage of aggregating categories of the elementary level.

1. First, at the measurement level of the 14 group-scheme, the division into 14 groups was constructed as a nominal variable, where, by assumption, the groups did not form an unambiguous hierarchy (in which case, this did not differ from the majority of such constructs). However, as one can see, barriers to social mobility and marital choices are structured by a hierarchical array that in general reflects the dimension referring to social position. Dwelling on it one can use this scheme as a quantitative (ordinal) scale, in which the category of non-technical professionals (referred to as *professionals*) is located at the highest position, followed by *high-level officials and managers*, and technical professionals (referred to as *technical specialists*). Below these three segments (classes) are *administrative workers and middle-level specialists*, followed by *business owners*, and *technicians*. Located in the bottom part are the categories of workers, and below them - *farm owners*.

2. Notwithstanding the measurement level, the basic aim of this analysis was to validate the 14-category scheme with respect to the closeness (or separation) of the detailed categories. The first observation concerns the *non-technical professionals*. For the purpose of this analysis we divided them into three categories: (1) secondary school teachers (together with writers, artists, etc.), (2) medical doctors, and (3) scientists, lawyers, and all other members of non-technical professionals in the *SCO* - the latter had to be taken together because of their small sample sizes. Our results reveal that these categories were marked by distinctive patterns of mobility and

marital choices, suggesting that they should be placed together in spite of some visible differences among them.

The second issue concerns the primary school teachers. Consistent with an earlier finding, primary school teachers differ from other constituent categories of professionals, which suggests classifying them in some other segment of the social structure. Note that in social stratification defined in terms of barriers to social mobility and marital selection, primary school teachers occupy a position between the categories of professionals, on the one hand, and the *middle and lower-level non-manual workers* and *entrepreneurs and business owners*, on the other.

3. What should be done with the class of *high-level officials and managers*? In the 37 by 37 cross-classification they are represented by senior politicians, managers in material production, and managers in services. The first of these three categories includes top governmental administrators and high officials in political parties and trade unions; the second category consists of managers of institutions in production and banking; the third one includes top management of scientific, educational, and cultural institutions (e.g., management of research institutes, secondary schools, theaters, newspaper editors-in-chief, and managers of similar institutions). The highest among the three in the hierarchy of mobility distances are the managers in material production; they are closest to the non-technical professions. Managers in services are closer to business owners and middle-level non-manual workers. In the map constructed from the marital patterns, though, politicians and top managers in services were located above managers in production. In the light of these data it is difficult to consider the *high-officials and managers* as an internally cohesive segment of the social structure. This suggests instead further disaggregation of this category in construction of the valid big-class scheme. Against such disaggregation is an already small size of elite categories, for which reason we recommend keeping this segment undivided.

4. Constructing *SCO-2009* we placed all managerial positions in the category of *senior officials and managers* to ensure the clarity and cohesion of criteria concerning managerial and supervisory roles. This category includes all “managers” beginning with governmental minister and ending with store manager. However, the results of our validity tests reveal that occupations characterized only by their management role do not compose a homogeneous segment of the social structure. They differ significantly with respect to the content of their occupational roles, a criterion that more strongly differentiates the social position of this category than fulfillment of managerial functions, which suggests that “managers” should be placed in different segments of the 14-group division. Particularly striking is the

low position of “store managers,” which strongly argues in support of including them among the *sales and service workers*.

5. The next recommendation pertains to *business owners*. According to many studies this is a strongly differentiated segment of the social structure (Bechhoffer and Elliot 1981) that is also reflected in the map of distances among the 37 categories: there is a clear intergenerational mobility barrier between business owners in the sphere of material production (manufacturing, construction, transportation) and in the sphere of information and services (e.g., consulting, tourism, informatics, computer science). Owners in the latter, more closely connected to the modern market sector, are located closer to professionals and specialists, and owners in the former – to non-manual workers of middle level and managers in social services. These differences argue in support of a few categories of owners (for instance, in *EGP* they are divided into those who hire workers and the self-employed). However, a rather small number of representatives of this category suggests leaving it undivided.

6. Three categories in our analysis represent *sales and service workers*: workers in transportation (e.g., mailpersons, conductors, telephone operators); in personal services (barbers, photographers, cooks, stewards, supply workers, guards); and, the largest subgroup, salespersons. Differences among these categories (engaged in different services) in the character of work are not reflected in strong marriage distances and barriers to intergenerational transition.

7. Bearing in mind empirical studies on the working class, a lack of a clear mobility barrier between skilled and unskilled workers is observed. Figure 7.1 shows that to a considerable extent they overlap in the social structure considered as a two-dimensional system of distances. Certainly, the fact that the unskilled workers do not differ from the skilled workers with respect to mobility patterns does not question the sense of separating them in the scheme of the macro-level divisions – barriers in marriage patterns (see Figure 7.2), and inequality in incomes, prestige, or culture demonstrate that such divisions really exist. The last remark concerns agricultural laborers – in the hierarchy of distances created by mobility and marital choices they are situated closer to manual workers than to the “peasant class” (i.e., *farm owners*), which shows they should be differentiated as a separate segment in the social structure.

In Appendix 7.2 we provide methods of translating (in the form of SPSS syntax) the elementary *SCO* codes into the 14 segments.

7.4 Higher-level aggregation schemes

We usually refer to more concise class-schemes consisting of a few segments of the social structure. This rationale can be dictated by various reasons, such as a need to present the most basic social distances, clarity of presentation, or a statistical necessity to operate on a small number of categories. In analyzing a relatively small data set, it is very likely that in such categories as *high-level officials and managers* or *laborers in agriculture, forestry, and fishing* there will be too few cases.

In seeking to collapse the 14 categories into more general segments, one has to realize that some methods of aggregation are better justified than others. Bearing in mind both the theoretical and empirical arguments, we recommend that when approaching the aggregation of categories in the 14-group division, in the first step one should merge the following categories:

- 1) *non-technical professionals* with *technical specialists* - that is, in the Polish case, *non-technical intelligentsia* with *technical intelligentsia*;
- 2) *professionals and technical specialists* with *high-level officials and managers*;
- 3) *technicians* with *administrative workers and middle-level specialists*;
- 4) *workers in elementary occupations* with *unskilled workers in services and trade*.

Empirical reasons for such mergers can be found in the already quoted validity tests. Merging non-technical professionals and specialists with higher managers is also justified by theoretical arguments associated with the idea of the so-called *service class*. According to analysts of the long-term changes in social structure, modern societies are witnessing a growing gap between specialists (referred to as the *service class*) and the lower categories of non-manual workers (Dahrendorf 1959; Goldthorpe 1982). An appearance of this segment should be considered a sign of the times - a rise in importance of modern bureaucrats in administration, economy, and governmental structures. The *service class* was born out of positions combining the tasks of managers and specialists in organizations - in fact, it includes specialists and the management of enterprises who perform occupational roles involved in the notion of "services"; these are based on the delegation of authority and autonomy - from the upper echelons downward - which is in the interest of the employing organizations. The distinctive position of the *service class* is marked by such features as employment on a long-term engagement, a large scope of autonomy, a lack

of stringent supervision, fixed salary, retirement benefits, and open opportunities for systematic advancement on the organizational ladder.

At the core of the “service class” is the relationship of “service” in which the employee renders “service” to the employer in return for “compensation” in terms of both immediate rewards (e.g. salary) and long-term or prospective benefits (e.g. assurances of security and career opportunities). Within this relationship, employers must allow a certain amount of autonomy and discretion to the employee; employees must also be encouraged to make a moral commitment to the employing organization. In contrast to the service relationship is the “labor contract” typical of working class occupations, but also seen in attenuated forms among office workers. Labor contracts entail a relatively short-term exchange of money for effort, and employees are closely supervised and given discrete amounts of labor in return for a wage (Goldthorpe 2000).

There is strong evidence that these conceptual distinctions are reflected in class differentiation among employee positions. Erikson and Goldthorpe (1992: 42) have noted that the division between the service relationship and the labor contract is similar to the conventional divisions made in several European countries. France distinguishes between *cadres* and *employés* and *ouvriers*, Germany between *Beamte* or *Angestellte* and *Arbeiter*, and the UK between *staff* and *workers*. This rationale is also reflected in the construction of the EGP in separating the category of the *service class* from the lower non-manual categories (Erikson and Goldthorpe 1992; Goldthorpe 2000).

Returning to the issue of aggregation, we should add that two other mergers could be performed in certain situations:

- 5) *office workers* with *administrative workers and middle-level specialists* (mainly because of similarities in orientations, opinions, and lifestyle);
- 6) *foremen* with *skilled manual workers* - having specialized skills is a common characteristic of these two categories, leading to similar placement within the social structure.

We now indicate categories for which mergers with other categories require more caution, of which the first is *laborers in agriculture, forestry, and fishing*. With respect to their work character and place of residence, this category is the closest to *farm owners*, with whom they are linked in one category in many analytical schemes. However, this merger would somewhat contradict the findings presented above concerning barriers to social mobility and marriage, which indicate that *laborers in agriculture, forestry, and fishing* are indeed a separate segment of the social structure.

For this reason one should consider an alternative possibility – of merging *laborers in agriculture, etc.*, with *manual workers in elementary occupations*. These two categories are the closest to each other, as revealed by our findings in Table 7.1 and Figures 7.1 and 7.2.

Business owners are the second category with an ambiguous location. The fact that the majority are engaged in trade and service activities makes this category similar to *sales and service workers*; however, there are too many differences in other characteristics to justify a merger of these categories into one “class.” On the other hand, from the point of view of criteria of class membership, *business owners* are the closest to *high-level officials and managers*. According to Erikson and Goldthorpe (1992) this is the most important reason to include big business owners in the same category as top managers, high-level specialists, and high-level officials in state administration. Given that big owners are necessarily involved in extensive managerial as well as entrepreneurial activity, there is an assumption of their affinity with higher grade managers (Erikson and Goldthorpe 1992; Goldthorpe 2000). In any case, this argument applies only to big business owners, overlooking the internal differentiation of the segment including both business owners and employees.⁶ In Poland and East European societies, *business owners* are similar to *high-level officials and managers* with respect to material well-being such as income and material possessions, which locate both of them at the top of the economic dimension. However, this seems to be one of a very few common characteristic of these categories; in education, lifestyle, and many other aspects, *business owners* are in much lower positions than *high-level officials and managers*.

The category of *sales and service workers* is the third one that requires comment regarding merger issues. One can hardly combine them with other categories. However, in some analyses there could be a need to apply a dichotomous division into manual and non-manual workers. In survey and market research (less frequently in academic research) there is often a need to present results in such a clear-cut way in spite of the *sales and service workers* being located on the borderline of these two big segments. The results of our analyses do not provide a definite suggestion whether to include *sales and service workers* among either the non-manual or manual workers. In Poland this category lies firmly between the two big segments. For this reason, we recommend keeping it separate. However, if it is necessary to apply a sharp division between non-manual and manual work, the most appropriate way would be to disaggregate constituent groups of the *sales and service workers* category and allocate them in either

⁶ Analytical work by Evans (1992) presents a critique of this approach.

of the big segments, specifically, among *office workers* and *skilled manual workers*. Given that *sales and service workers* are a numerous category (14 percent in Poland) one has to take into account that this reclassification would result in a larger differentiation of the lowest level of non-manual workers and higher levels of manual workers with respect to many variables.

Finally, we mention divisions that need to be maintained. This issue relates to differentiation within the segments of both non-manual and manual workers. As was demonstrated in validity testing of the 14-group division, the “class” of non-manual workers is more differentiated (compared to manual workers) with respect to the character of work, skills level, and characteristics of the social position. Resulting from this lack of symmetry is a more stretched hierarchy of distances among the non-manual vs. manual workers’ categories. This suggests that in analyses of the most general social divisions it is advisable to apply the three-category class scheme consisting of two categories of non-manual workers (e.g., professionals/specialists and lower-level non-manual workers) and just one category of all manual workers. Of course, this division is not optimal; in our opinion, it is better to use a classification, in which besides the two categories of non-manual workers there are two categories of manual workers (not counting farmers and owners).

7.5 *SCO* application to marketing and public opinion research – *ESOMAR Social Grade*

In marketing and public opinion research the most commonly used background variable is the *ESOMAR Social Grade* scheme (ESOMAR 1997). Taking this into account we provide below ways to recode the most detailed units of *SCO* to *ESOMAR Social Grade*. Needless to say, *SCO*, which proves to be a valid measure of social position, can also be used by marketing and public opinion researchers.

Keep in mind that the *Social Grade* scheme – recommended by the European Society for Opinion and Marketing Research (ESOMAR) – finds wide application not only in commercial research but also as a key background variable in research funded by the European Union, especially in the Eurobarometer. The *Social Grade* scheme is derived from three variables: occupation of the main income earner in the household, the level of his or her education, and the household economic status measured by the ownership of consumer durables.

Terminal Educational Age (T.E.A.) takes into account any professional training or education undertaken by the respondent. In the version recom-

mended by ESOMAR the five categories are defined for T.E.A: 13 years of age or younger, 14 years, 15–16 years, 17–20 years; and 21 and older. Economic status contains 10 items although the list may be subject to future revision in accordance with market developments. The current (i.e., 2009) basket of durable products consists of a color TV set, a video recorder, a video camera, 2 or more cars, a still camera, a PC or home computer, an electric drill, an electric deep fat fryer, a clock-radio, a second home or a holiday home/flat. For the purposes of the *Social Grade* analysis the six economic status levels are defined as households possessing zero durables, one, two, three, four, and five or more.

The most important variable is the socio-occupational position of the main income earner in the household. It is coded using the following 16 categories:

1. General management, directors or top management with responsibility for 6 employees or more;
2. Self-employed professionals;
3. Employed professionals;
4. General management, directors or top management with responsibility for 5 employees or less;
5. Middle management, other management with responsibility for 6 employees or more;
6. Middle management, other management with responsibility for 5 employees or less;
7. Business proprietors, owners (full/partner) of company or owners of a shop, craftsmen, and other self employed persons with responsibility for 6 employees or more;
8. Employed positions, working mainly at desk;
9. Business proprietors, owners (full/partner) of company or owners of a shop, craftsmen, and other self employed persons with responsibility for 5 employees or less;
10. Students;
11. Employed nonmanual positions, not at desk but traveling or in a service job;
12. Farmers and fishermen;
13. Responsible for ordinary shopping and looking after the home, housewives;
14. Supervisors and skilled manual workers;
15. Other (unskilled) manual workers, servants;
16. Retirees or unable to work through illness, unemployment, or temporarily not working.

Insofar as this information is collected on the basis of allocations made by respondents who are presented with the list of the 16 categories, the reliability of *Social Grade* hinges on the validity of these assignments. ESOMAR gives no guidelines on which detailed occupations are included in the basic 16 categories. This is a definite shortcoming of the *Social Grade* in terms of validity and reliability of this scheme, since the coders are forced to make arbitrary and intuitive decisions based on their own criteria. One way to overcome this ambiguity is to use *SCO-2009*; in Appendix 7.3 we provide instructions concerning allocation of the four-digit *SCO* code to the 16 categories of the *Social Grade* scheme for the purposes of everyday research.

The final *Social Grade* scheme consists of six “classes” determined by a cross tabulation of 16 socio-occupational categories with five Terminal Education Age categories and six categories of economic status. We list them below, without providing their definitions and exact ways of constructing the three-dimensional 16 x 6 x 5 matrix - they are given in the cited ESOMAR publication (1997).

The six categories of the *Social Grade* are as follows:

- A. Well educated top managers and professionals.
- B. Middle managers.
- C1. Well educated nonmanual employees, skilled workers and business owners.
- C2. Skilled workers and nonmanual employees.
- D. Skilled and unskilled manual workers and poorly educated people in nonmanual/managerial positions.
- E. Less well educated skilled and unskilled manual workers, small business owners, and farmers/fishermen.

7.6 Summary

The *Social Classification of Occupations, SCO-2009* was developed with the main intention of coding information concerning occupational positions. While there are 260 detailed codes to use, in order to apply the *SCO* scheme in data analysis one needs some guidelines on the allocation of these elementary codes to more general categories that validly represent the basic segments of the social structure. In this chapter, we demonstrated how to derive this big-class map from a few hundred codes of the *SCO*. In doing so we recommended a scheme of 14 basic segments that form a useful discriminatory analytic tool for social policy, academic purposes, and marketing research, and which could be added to any data set

involving information coded according to the *Social Classification of Occupations*. This scheme can serve as a general background variable applicable to a range of national and international data sets, given its principal purpose as a means for operationalization of locations in the social structure.

In Appendix 7.2, we give detailed SPSS instructions on how to allocate the elementary *SCO-2009* codes into 14 and 6 big groups, which, as we attempted to show could be interpreted as a reflection of the most important segments of the social structure. In Appendix 7.3 we provide a similar algorithm for deriving the *Social Grade* scheme from the *SCO* codes. These guidelines are based on data sets from the European Social Survey; however, one can easily apply them to any data set containing information concerning occupation that is coded according to *SCO-2009*. This applies to both the respondent's occupation and any other occupation, which in sociological research include, in the first place, occupations of parents, spouses, siblings, and close friends.

Appendix 7.1

Input file for the Correspondence Analysis

This is an SPSS program, which we used to aggregate the elementary *SCO* categories (4-digit code) into 37 categories used in the correspondence analysis (CA). The variable names are taken from European Social Survey data 2004 carried out in Poland by the Institute of Philosophy and Sociology, Polish Academy of Sciences, on a national sample age 15 and above. *RESPSCO* identifies the occupational category of the respondent coded with *SCO*, *FASCO* refers to the occupational category of the respondent's father, and *SPOUSSCO* identifies the occupational category of the respondent's spouse. We recoded these into three new variables "RESP37," "FA37," and "SPOUS37." The results of these analyses are presented in Table 7.1. It should be noted that the recoding does not include all elementary *SCO* categories (i.e., it is not exhaustive) because the occupational structure of the ESS sample did not exhaust all *SCO* codes.

```
COMPUTE RESP37= RESPSCO.
```

```
COMPUTE FA37=FASCO.
```

```
COMPUTE SPOUS37=SPOUSSCO.
```

```
RECODE RESP37 FA37 SPOUS37 (1 thru 0162=1) (0200 thru 0235=2)
(0280=2) (0270 thru 0272=2) (0240 thru 0262=3) (1131 thru 1132=3)
(1151=3) (1171 thru 1172=3) (3111=3) (0281 thru 0283=4) (1210 thru
1215=4) (1182 thru 1183=4)
(2110 thru 2114=5) (2310 thru 2318=5) (2200 thru 2221=5) (4100 thru
4115=6)
(1000=8) (1100 thru 1119=7) (1130 thru 1134=7) (1120 thru 1129=8)
(1140 thru 1149=8) (1150=8) (1152 thru 1159=8) (1160 thru 1165=8)
(1167 thru 1169=8)
(1173 thru 1176=9) (1180 thru 1181=10) (1184 thru 1187=10)
(1200 thru 1209=10) (1216 thru 1237=10)(1166=10) (2000=11) (2120 thru
2146=11) (3140 thru 3144=11) (2320 thru 2334=12)(1135 thru 1136=13)
(3112 thru 3116=13) (3140 thru 3144=11) (3121 thru 3128=14) (3150 thru
3164=15) (3210 thru 3241=16)
(4000=17) (4120 thru 4199=17) (4400 thru 4421=17) (4200 thru 4223=18)
(4300 thru 4339=19) (4500 thru 4999=19) (5000=22) (5100 thru 5145=20)
(5150 thru 5152=36) (5300 thru 5339=36) (6300 thru 6319=36) (5200=22)
(5210 thru 5213=21) (5220 thru 5227=22)
```

(5230 thru 5236=23) (5240 thru 5249=24) (5250 thru 5255=25) (5290 thru 5294=25) (5260 thru 5264=26) (5270 thru 5276=27) (5281=24) (5282=24) (5280=18) (5283 thru 5285=27)
 (6000=29) (6111=28) (6120 thru 6124=28) (6211 thru 6213=28)
 (6112=29) (6113=29) (6216 thru 6219=29) (6210=29)(6264=29)
 (6130 thru 6138=30) (6216 thru 6219=30) (6224 thru 6226=30) (6220 thru 6223=31)
 (6140 thru 6142=32) (6260 thru 6263=32) (6230 thru 6251=33)
 (7000 thru 7999=37) (8000 thru 8110=34) (8111=34) (8112 thru 8213=34)
 (8300 thru 8999=35) (9111=2) (9112=4) (9113=6) (9121=2) (9122=3)
 (9123=6)
 (9211=4) (9212 thru 9213=6) (9221=4) (9222=6) (ELSE=SYSMIS).

VARIABLE LABELS

RESP37 'RESP37' FA37 'FA37' SPOUS37 'SPOUS37'.

VALUE LABELS RESP37 FA37 SPOUS37

1 'politicians' 2 'topman prod.' 3 'topman serv.' 4 'eng.man.' 5 'tech.man.'
 6 'sal.man.' 7 'teach.sec.art' 8 'scien.law.spec.' 9 'doctors' 10 'engineers' 11
 'technicians' 12 'admin.work.' 13 'teachelem.' 14 'nurses' 15 'insur.agents'
 16 'office' 17 'sales'
 18 'transp.work' 19 'barbers' 20 'foremen' 21 'miners' 22 'skilled.heavy' 23
 'skilled.const.' 24 'skilled.prec.' 25 'skilled.chem.' 26 'skilled.cloth.' 27
 'skilled.transp.' 28 'unskill.heavy' 29 'unskill.light' 30 'unskill.road' 31
 'unskill.inter.transp.' 32 'janitors' 33 'hosp.attend.' 34 'owners.prod' 35
 'owners.serv.' 36 'lab.agr.' 37 'farmers'.

Appendix 7.2

Input file: Recode of the *SCO-2009* elementary codes into 14 and 6 class categories

The SPSS program listed below is an example of translation of the elementary *SCO* codes into 14 and 6 big-class maps. These instructions can be applied to any data set. As in Appendix 7.1, we refer to variables used in the Polish file of the European Social Survey 2004.

```

COMPUTE OCC14=RESPSCO.
RECODE OCC14
(0100=01)(0110 thru 0112=01)(0170 thru 0172=01)(0180=01)
(0290 thru 0292=01)(0294=01)(0296=01)
(0293=02)(1100=02)(1110=02)(1112 thru 1124=02)(1133 thru 1134=02)
(1136=02)(1140 thru 1142=02)(1144 thru 1147=02)(1149 thru 1150=02)
(1153 thru 1158=02)(1160 thru 1163=02)(1165=02)(1169=02)
(1170=02)(1173 thru 1175=02)(1190 thru 1192=02)(3151=02)
(3161=02)
(0295=03)(0312=03)(1180=03)(1185 thru 1187=03)(1200=03)
(1220 thru 1227=03)(1229 thru 1232=03)(1234 thru 1238=03)
(1240 thru 1242=03)(1249=03)
(0310 thru 0311=04)(0313=04)(2100=04)(2120 thru 2127=04)
(2129 thru 2140=04)(2144 thru 2145=04)(2147=04) (3120 thru 3124=04)
(3126=04)(3128 thru 3129=04)(3132=04)(3140=04)(3142 thru 3143=04)
(3149=04)
(0320 thru 0322=05)(1130=05)(1135=05)(2300=05)(2320 thru 2328=05)
(2330 thru 2333=05)(2339=05)(3100=05)(3110=05)
(3112 thru 3114=05)(3116=05)(3119=05)(3130 thru 3131=05)
(3150=05)(3152 thru 3157=05)(3159 thru 3160=05)(3162 thru 3163=05)
(3169 thru 3170=05)
(3200=06)(3210 thru 3214=06)(3220=06)(3230 thru 3234=06)
(3239 thru 3240=06)
(0323=07)(0340=07)(3300=07)(3310=07)(3320=07)(3330=07)
(3400=07)(3410=07)(3420=07)(4000=07)(4100=07)(4130 thru 4135=07)
(4200=07)(4210 thru 4212=07)(4220 thru 4222=07)(4229=07)
(4300=07)(4310 thru 4312=07)(4320 thru 4322=07)(4330 thru 4332=07)
(4334 thru 4335=07)(4339=07)(4400=07)(4410=07)(4420=07)
(4500=07)(4510=07)(4600=07)(4610 thru 4612=07)
(5100=08)(5160 thru 5164=08)
(5200=09)(5210 thru 5213=09)(5220 thru 5227=09)(5230 thru 5236=09)

```

(5240 thru 5255=09)(5260 thru 5264=09)(5270 thru 5272=09)
 (5274 thru 5276=09)(5279 thru 5281=09)(5283 thru 5285=09)
 (5290 thru 5293=09)(5299=09)
 (6100=10)(6150 thru 6154=10)(6159=10)
 (6314=11)(6400=11)(6410 thru 6416=11)(6420 thru 6422=11)
 (6430 thru 6432=11)(6440=11)(6450 thru 6453=11)(6460=11)
 (5165=12)(5300=12)(5310=12)(5320=12)(5330 thru 5332=12)
 (6300=12)(6310 thru 6311=12)(6313=12)
 (7100=13)(7110=13)(7120=13)
 (7300=14)(8000=14)(8100=14)(8110=14)(8112 thru 8114=14)
 (8116=14)(8118=14)(8400=14)(8410 thru 8419=14)(8600=14)
 (9999=sysmis)
 (else=98).
 MIS VAL OCC14 (98).

VARIABLE LABELS OCC14 'RESPONDENT OCCUPATION 14 CATEGORIES'.

VALUE LABELS OCC14

- 1 'high managers'
- 2 'professionals'
- 3 'specialists technical'
- 4 'technicians'
- 5 'administrative workers'
- 6 'office workers'
- 7 'sales and service'
- 8 'foremen'
- 9 'skilled workers'
- 10 'manual workers in prod.'
- 11 'unskilled work in service'
- 12 'agricultural laborers'
- 13 'farmers'
- 14 'owners'.

COMPUTE OCC6=OCC14.

RECODE OCC6 (1 thru 3=1) (4 thru 7=2) (8 thru 9=3) (10 thru 11=4)
 (12 thru 13=5) (14=6) (ELSE=SYSMIS).

VARIABLE LABELS OCC6 'RESPONDENT OCCUPATION 6 GROUPS'.

VALUE LABELS OCC6

- 1 'professionals'
- 2 'other non-manual'
- 3 'skilled workers'
- 4 'unskilled workers'
- 5 'farmers and agr. laborers'
- 6 'owners'.

Appendix 7.3

Input file: Recode of the *SCO-2009* elementary codes into *ESOMAR Social Grade* scale

This is an SPSS program, which we used to aggregate the elementary *SCO-2009* codes into 16 socio-occupational categories used in the *ESOMAR Social Grade* scale. It is constructed based on three variables: (i) *SCO-2009* four-digit code, (ii) the number of employees in manager's responsibility, denoted here as *s*, and (iii) a dummy variable, referred to *o* indicating whether the person is an owner (1 = yes, 0 = no). Since *SCO-2009* includes only codes for occupational categories without students, housewives, and other categories outside labor market - which are distinguished in the *Social Grade* scale - one should create additional codes for categories of "Student" (code 10), "Housewife" (13), and "Retired, unemployment, etc." (16). In instructions presented below these categories are assigned with *SCO-2009* codes: 9210 (students), 9213 (housewives), and 9216 (retired, unemployed). A way of supplementing the *SCO-2009* classification with additional codes is presented in section 6.2.6.

```
compute grad16=-1.
if(((sco>=0 and sco<=296) or sco=312) and s>=6) grad16=1.
if(((sco>=1100 and sco<=1134) or (sco>=1136 and sco<=1249)) and o=1)
grad16=2.
if(((sco>=1100 and sco<=1134) or (sco>=1136 and sco<=1249)) and o=0)
grad16=3.
if(((sco>=0 and sco<=296) or sco=312) and s<=5) grad16=4.
if((sco=300 or sco=310 or sco=311 or (sco>=313 and sco<=340)) and
s>=6) grad16=5.
if((sco=300 or sco=310 or sco=311 or (sco>=313 and sco<=340)) and
s<=5) grad16=6.
if((sco>=8000 and sco<=8600) and s>=6) grad16=7.
if (sco=1135 or (sco>=2000 and sco<=3151) or sco=3154
or (sco>=3160 and sco<=3330)) grad16=8.
if((sco>=8000 and sco<=8600) and s<=5) grad16=9.
if (sco=9210) grad16=10.
if ((sco>=3152 and sco<=3153) or (sco>=3155 and sco<=3159) or
(sco>=3400 and sco<=4612) ) grad16=11.
if (sco>=7000 and sco<=7300) grad16=12.
```

```
if (sco=9213) grad16=13.  
if (sco>=5000 and sco<=5332) grad16=14.  
if (sco>=6000 and sco<=6460) grad16=15.  
if (sco=9216) grad16=16.  
mis val grad16 (-1).
```

Val lab grad16

-1 'Missing data'

- 1 'Top management with 6 employees or more'
- 2 'Self-employed professional'
- 3 'Employed professional'
- 4 'Top management with 5 employees or less'
- 5 'Middle management with 6 employees or more'
- 6 'Middle management with 5 employees or less'
- 7 'Owner with 6 employees or more'
- 8 'Employed position working at desk'
- 9 'Owner with 5 employees or less'
- 10 'Student'
- 11 'Employed non-manual in a service job'
- 12 'Farmer and fisherman'
- 13 'Housewife'
- 14 'Skilled manual worker'
- 15 'Unskilled manual worker'
- 16 'Retired, unemployment, etc.'

APPENDIX

SOCIAL CLASSIFICATION OF OCCUPATIONS-2009

0000 SENIOR OFFICIALS AND MANAGERS

0100 TOP GOVERNMENTAL ADMINISTRATORS AND POLITICAL OFFICIALS

0110 Legislators and top governmental administrators

0111 Legislators, top administrators on central and regional level, including self-governing bodies

Parliamentarians: deputies (members of the lower chamber), senators (members of the higher chamber), parliament high officials and their second- in-command;

Chiefs (heads) of the office of the council of ministers (government head's chief of staff or an equivalent position);

Prime ministers and deputy prime ministers (premiers and vice-premiers), ministers, vice-ministers, undersecretaries of state;

Presidents (chiefs of state) and vice-presidents (deputy chiefs of state);

Government plenipotentiaries and delegates, diplomatic and consular officials (heads of embassies, consulates, ambassadors, consuls, vice- consuls, attaché). top management of high central offices, such as the state central bank and central statistical office;

National chiefs of police, prison system, and fire services;

Top management of internal units of central offices on the level of departments, teams, and bureaus;

Experts of the top management of the government's central offices: counsels of the prime minister (premier), deputy prime ministers (vice-premiers), ministers, vice-ministers, heads of central offices;

Expert staff of the president (of state);

Embassy counsels;

Management of central and regional state (governmental) administration (including positions responsible to the department of justice), heads of regional units, presidents of large cities and their deputies, presidents, vice-presidents and secretaries of main regional administrative offices, department managers of these offices and their deputies, heads of regional chapters of high central offices and their deputies.

- 0112 Top administrators on local level (of cities and districts), including self-governing bodies
 Management of local state (governmental) administration (including positions responsible to the department of justice) on the level of cities and districts;
 City mayors, heads of districts, township offices, and their deputies. heads and members of local self-government bodies, e.g., city and district councils;
 Heads of municipal and local registries;
 Heads and their deputies of municipal and district courts, municipal and district prosecutors and their deputies.
- 0170 Top officials of political parties and special-interest organizations**
- 0171 Top officials of political parties and special-interest organizations on central and regional level
 Top officials of political parties, youth organizations, student organizations, and other social organizations on central and regional level;
 Leaders, presidents, vice presidents, press spokespersons, bureau chiefs, managers of central and regional offices (and their departments and sections) of trade unions, trade-union-associations, and crafts associations;
 Leaders, presidents, vice presidents, press spokespersons, bureau chiefs, managers of central and regional offices (and their departments and sections) of other social organizations (e.g., national Red Cross or equivalent, humane societies, ecological and environmental associations, etc.).
- 0172 Top officials of political parties and special-interest organizations on local level – of cities and districts
 Top officials of local chapters of political parties, youth organizations, student organizations, and other social organizations on municipal and district level;
 Managers, presidents, and secretaries of municipal and district offices of trade unions, trade-union-associations, craft associations and other social organizations (e.g., national Red Cross or equivalent, humane societies, ecological and environmental associations).
- 0180 Top ranks of armed forces and police
 Top ranks of armed forces (army, navy, air force, other);
 Chiefs of military units;
 Generals, higher military officers – major (or equivalent) and higher;
 Commanders (and deputies) of central and regional police units;
 Commanders (and deputies) of local (city and district) police units;
 Higher ranks of police officers – major (or equivalent) and higher.
- 0200 TOP MANAGERS OF LARGE ENTERPRISES AND OTHER INSTITUTIONS**
- 0290 Top management**
- 0291 Top management of production and service enterprises – directors, presidents, board members, and trustees of businesses
 Top management in central organizations – federations, boards, conglomerates, state railways regional directorates, central cooperatives, cooperative unions;
 Top management of main industrial centers, central offices, trade central offices, central warehouses;
 Top management of large industrial, mining, construction, and transportation companies;
 Production, technical, economic, and trade managers and other deputies of chief managers in the aforementioned companies;

Managers of sales, marketing, promotion, advertising, customer services in the aforementioned companies;
 Management of medium and small enterprises, appointed enterprise administrators;
 Presidents and managers of cooperatives;
 Managers of department stores and their deputies;
 Managers of other companies and enterprises;
 Management of banks and their local branches;
 Managers and deputy managers of large farm conglomerates in agriculture, breeding, horticulture, and forestry in state and cooperative ownership sectors, managers of plant breeding stations and dairy cooperatives;
 Managers of small farmer agricultural cooperatives;
 District foresters;
 Managers of service enterprises in hunting;
 Managers of agribusinesses.

- 0292 Top management of central and of special importance institutions in science, culture, education, healthcare, and related
 Top management of scientific institutions and educational institutions of secondary and tertiary level: university (college) presidents and vice-presidents, provosts, (vice-chancellors);
 Deans and deputy deans;
 Directors of scientific institutes;
 Directors of post-secondary schools, principals of secondary schools: grammar schools, technical schools (including special education schools for physically handicapped, mentally handicapped);
 Managers of cultural institutions;
 Managers of large public libraries;
 Managers of archives, museums, and galleries;
 Management of theaters, opera-houses, operetta-houses, ballet theaters, philharmonic halls, and show-business organizations;
 Heads of musical groups, ballet ensembles, artistic groups, musical departments, artistic managers;
 Editors-in-chief of periodicals, newspapers, weeklies, monthlies, magazines, press agencies, radio and TV agencies;
 Management of institutions of healthcare and welfare;
 Heads of medical clinics and hospitals;
 Heads of sanatoriums, public-health stations, and other medical institutions;
 Managers of welfare services.
- 0293 Top management of local institutions in culture, education, healthcare, and related
 Top management of cultural institutions on municipal and district level – of cities and districts (townships);
 Managers of municipal and local public libraries;
 Managers of archives, museums, and galleries;
 Managers of theaters, showrooms, show-business organizations;
 Editors-in-chief of municipal and local periodicals, newspapers, weeklies, monthlies;
 Managers of municipal and local radio and TV stations;
 Principals of elementary schools, middle schools, vocational schools (including special education schools for physically handicapped, mentally handicapped), schools of agricultural training, youth culture centers, correction facilities, childcare centers, and similar;

- Managers of kindergartens (including special education kindergartens for physically handicapped, mentally handicapped), day-care centers, dormitories, child centers, orphanages, children's playgrounds, swimming clubs and facilities, sports clubs, stadiums, sports sections in youth centers, youth tourist centers and dormitories, school workshops, and similar;
- Managers of medical clinics, hospital departments (e.g., anesthesiology, radiotherapy, work hygiene);
- Heads of hospital departments, medical offices, dental offices, obstetrics clinics, public-health-watch organizations, medical clinics, dental clinics, health centers, hospital outpatient services, specialized medical clinics;
- Managers of medical emergency services, public health stations, medical cooperative services;
- Heads of hospital departments, sanatoriums (sanitariums);
- Pharmacy and drugstore managers, managers of medical laboratories (analytical, radiological, etc.), physical therapy facilities, prosthetic clinics;
- Public health inspectors;
- Heads of animal clinics (veterinarians) and other facilities for animal care.
- 0294 Top management in business administration on central, regional and local level
Top management in business administration on central, regional, and local level - of cities, regions, and districts (townships);
Top management in business administration in central organizations - ministries, industrial branch federations, conglomerates, cooperative unions, managers of financial and economic administration, transportation and storage, chief accountants and other high level managers in the aforementioned institutions;
Managers of departments, sectors, sections, and other such subunits.
- 0295 Chief engineers and technical managers in production and service enterprises
Chief engineers and technical managers;
Chief: engineers, specialists, constructors, experts, inspectors, controllers, dispatchers, designers, technologists, mechanics, production managers;
Chief specialists in technical matters, managers and heads of departments, sections, centers, and groups dealing with production, technical, technological, operations, maintenance, investments, and technical control issues;
Managers of engine rooms, foundry, rolling mills, pouring rooms, mixing shops, distribution board rooms, prototype shops, workshops, copy rooms;
Heads of groups, sections, industrial laboratories, studios, technical studios, etc.;
Managers of engine rooms;
Managers of forest utility departments;
Managers of departments, sections, and centers for: studies and development projects, construction design, industrial design, draftsmanship.
- 0296 Central management in other institutions
Management of agricultural, breeding, horticultural, and forestry farms (businesses);
Harbor captains (top harbor authorities) and captains of oceanic sailing - on ships, ore-and-coal carriers, container ships, general-cargo vessels, bulk carriers, factory ships, sailing ships, and oceanic yachts;
Managers of motor and rail traffic boards;
Engine house managers.

0300 PRODUCTION, OPERATIONS, AND ADMINISTRATIVE MANAGERS**0310 Production and operations managers**

- 0311 Production and operations managers in production enterprises
 Technical managers on engineering level;
 Department or section managers;
 Technical managers on technician positions or equivalent;
 Technical, production, and operations managers not classified elsewhere;
 Paint-shop managers;
 Shift foremen.
- 0312 Production and operations managers in construction enterprises
 Managers of construction sites, construction operations, construction departments, construction equipment bases.
- 0313 Production and operations managers in transportation
 Airline captains, aircraft crew managers;
 Train and bus dispatchers;
 Air-traffic controllers, air-traffic equipment operators, air-traffic security specialists;
 Managers of trains and mail-coaches;
 Captains of inland (inshore, lake, and river) sailing on ships, boats, tugboats, yachts, ferries, hydrofoils, speedboats;
 Skippers of fishing boats, cutters, and barges.

0320 Administrative managers

- 0321 Department managers in state and local administration, including self-governing bodies
 Chief judges in courts and chief notaries in public notary's offices;
 Managers of public notary's offices and boards of appeal;
 Department and section managers in state administration and self-governing bodies;
 Managers of horticulture departments;
 Managers of environmental protection and wildlife conservation on central and regional level.
- 0322 Financial and economic managers in offices and enterprises
 Chief accountants in industrial, mining, construction, and transportation enterprises;
 Economic, trade, finance, and accounting managers in industrial, construction, and transportation enterprises;
 Managers in employment and wages;
 Chief specialists in investment contracts;
 Managers of storage, transportation, and economic administration in industrial, construction, and transportation enterprises;
 Personnel managers, economic, trade, finance, and accounting managers in trade, services, and state administration;
 Managers of personnel, wages, and investment, of storage and transportation, and of economic administration in trade, services, and state administration;
 Managers of warehouses and dispatching;

Managers of auxiliary and experimental stations in agriculture, horticulture, breeding, bee-keeping, poultry farming, animal husbandry, fox and mink farming, foal breeding, fruit farming, and wicker cultivation;

Land stewards.

0323 Managers of trade and service institutions

Managers of telephone exchanges, radio stations, and post-offices, postmasters;

Managers of school libraries, library bibliographical sections, art rooms and studios in museums and archives;

Specialists in scientific and technical information;

Business service specialists;

Administrative managers of culture centers;

Store and service shop managers;

Managers (and deputies) of department stores, sales departments and individual stands;

Managers in restaurants, cafés, bars, buffets, canteens, cafeterias, delicatessens, fast-food services, and dining rooms;

Restaurant chefs, managers of catering services;

Managers of agricultural purchase services for crops, livestock, fruit, and recyclable waste;

Managers of markets and bazaars;

Managers of service shops, household-appliance repair-shops, barber and hairdresser shops, beauty parlors, rental companies, video shops, movie theaters, and similar.

0340 Department managers in business administration

Department managers in offices;

Managers of front offices, reception halls, typing, data processing, and computer sections.

1000 **PROFESSIONALS AND SPECIALISTS**

1100 **PROFESSIONALS**

1110 **Artists**

1112 Writers and related

Writers, men and women of letters, and similar;

Playwrights, novelists, prose writers, poets;

Literary critics, essayists;

Text writers for songs, librettists, scriptwriters;

Advertisement and commercials' writers in advertising agencies.

1113 Journalists, editors, reporters

Journalists, reporters, feature writers, columnists, editors;

Newspersons, anchors, presenters, reporters, commentators in radio, television, and film;

Managing editors;

Editors in publishing offices.

1114 Artists in fine arts

Artists in fine arts, graphic artists, painters (portraitists, landscapists), sculptors, lithographers, wood cutters, engravers, graphic designers, cartoonists;

Painting and sculpture restorers and conservators;

Stage and set designers for theater and film;

- Artist-photographers, fashion designers;
 Artistic directors in advertising agencies;
 Artists-decorators;
 Fashion designers, applied art designers, industrial designers, furniture, graphics, textiles),
 window dressers, interior decorators;
 Advertisement and book illustrators, tattooists.
- 1115 Musicians – performers
 Musicians-performers (pianists, violinists, clarinetists, harpists, oboists, organists, percussio-
 nists, saxophonists, cellists, guitarists, trombonists), conductors (of symphony, chorus, vocal
 ensemble), bandmasters, concertmasters, musical directors.
- 1116 Composers
 Music composers, instrumentation arrangers and designers, musicologists.
- 1117 Singers, dancers, and choreographers
 Opera and operetta singers, soloist singers, chorus singers, pop singers, other singers, songsters,
 vocalists;
 Ballet dancers, ballerinas, other dancers, ballet choreographers.
- 1118 Stage and movie directors and actors
 Stage and movie directors, directors of TV and radio programs;
 Director assistants;
 TV and radio narrators and announcers;
 Stage and movie actors.
- 1119 Other specialists in creative art
 Other specialists in freelance creative art.
- 1120 Research scientists, and faculty of colleges and universities**
- 1121 Professors in colleges and universities and research institutions
 Department, section, and laboratory heads, chairpersons;
 Professors and associate professors;
 Other independent research and teaching specialists in colleges, universities, and research
 institutes.
- 1122 Other faculty in colleges and universities, researchers
 Assistant professors, teaching and research associates in colleges, universities, and research
 institutes.
- 1123 Curators, custodians, and other specialists in archives, libraries, and museums
 Curators, custodians, instructors, associate and assistant specialists in archives, libraries,
 museums, art galleries, and historic monuments;
 Chief librarians;
 Directors of art centers;
 Art dealers.
- 1124 Philologists and translators
 Philologists, translators, sworn translators, interpreters, linguists.

- 1130 Teachers**
- 1133 School inspectors
School inspectors of general curriculum, culture, and physical fitness programs, consultants of teaching methods;
Specialists in audiovisual and other teachings aids;
Specialists in teaching methods.
- 1134 Teachers and tutors in secondary schools
Teachers and tutors in secondary schools: high schools, technical high-schools, post-secondary schools (for high-school graduates;
Also for students preparing to teach in special education for the physically handicapped, mentally handicapped).
- 1135 Teachers and tutors in primary and vocational schools
Teachers and tutors in primary and vocational schools, in middle schools;
Teachers and tutors in elementary schools (also of special education - for physically handicapped, mentally handicapped);
Religion teachers.
- 1136 Coaches (tutors)
Coaches (tutors).
- 1140 Specialists in economics and social sciences**
- 1141 Sociologists and political scientists
Sociologists, political scientists.
- 1142 Psychologists
Psychologists, psychotherapists.
- 1144 Economists, and specialists in banking and finances
Economists, econometricians, auditors, banking analysts, finance consultants.
- 1145 Specialists in management of human resources and development strategies
Specialists in enterprise development strategies, research and development, enterprise resource management, management of human resources, employment, and personnel;
Work analysts, planners, specialists in industrial safety, specialists in on-the-job training, specialists in human resources.
- 1146 Specialists in marketing, promotion, and PR (public relations)
Specialists in marketing, promotion, and PR (public relations), sales specialists, press spokespersons.
- 1147 Specialists in welfare services and social work
Specialists in welfare services and social work.
- 1149 Other specialists in social sciences and humanities
Other (elsewhere unclassified) specialists in social sciences and humanities: statisticians, archaeologists, ethnographers, ethnologists, philosophers, historians, demographers, biometricians, genealogists, etymologists, lexicologists, graphologists, morphologists, semanticists, phonologists, anthropologists, criminologists, penologists, victimologists.

- 1150 Law professionals**
- 1153 Judges and assistant judges
Judges, assistant judges, state and district arbitrators;
Court administrators.
- 1154 Public prosecutors and assistant prosecutors
Public prosecutors, deputy prosecutors, assistant prosecutors, arbitration and disciplinary judges, ombudsmen.
- 1155 Legal trainees
Legal trainees in courts, prosecutor's offices, public notary's offices, attorney's offices;
Legal officers in courts and prosecutor's offices;
Court bailiffs;
Attorney's assistants, defense assistants, legal assistants, corporate lawyer's assistants, public notary's assistants, clerks in courts, judge clerks, legal clerks, inheritance clerks, legal consultants in property transfer (clerks);
Specialists in legal and financial documentation.
- 1156 Legal specialists
Lawyers, jurists.
- 1157 Lawyers (attorneys at law)
Lawyers (attorneys at law).
- 1158 Corporate lawyers and public notaries
Corporate lawyers and public notaries.
- 1160 Specialists in natural, physical, and mathematical sciences**
- 1161 Biologists, zoologists, botanists, and related
Biologists, biochemists, microbiologists, zoologists, botanists, bacteriologists, anthropologists, physiologists, ichthyologists, cytologists, geneticists, ecologists, histologists, mycologists, toxicologists, taxonomists, embryologists, genetic engineering specialists, entomologists, hydrobiologists, immunologists, mammalogists, ornithologists, parasitologists;
Pharmacologists, pathologists, anatomists, endocrinologists, epidemiologists, histopathologists, neuropathologists, biophysicists.
- 1162 Chemists
Chemists, crystallographers.
- 1163 Mathematicians, physicists, and astronomers
Mathematicians, physicists, geophysicists, astronomers.
- 1165 Specialists in informatics. Computer system programmers
Computer scientists, system programmers;
Database programmers;
Software engineers.
- 1169 Other specialists in natural, physical, and mathematical sciences
Meteorologists, climatologists, weather forecasters, specialists in ballistics, in hydrodynamics, geologists, geophysicists, geographers, petrologists, mineralogists, glaciologists, oceanographers, paleontologists, seismologists, volcanologists, and elsewhere unclassified specialists in natural, physical, and mathematical sciences.

- 1170 Physicians (medical doctors) and specialists in pharmaceutics**
- 1173 Physicians (medical doctors)
Physicians (medical doctors): hospital doctors, doctors in outpatient clinics (of general access, school or work environment), specialist doctors: internists, pediatricians, psychiatrists, neurologists, cardiologists, gastroenterologists, ear-and-nose specialists, optometrists, ophthalmologists, gynecologists, oncologists, radiologists, surgeons, orthopaedic surgeons, anesthesiologists.
- 1174 Dentists
General dentists and dental inspectors, pedodontists, prosthodontists, orthodontists, periodontists, dental and maxillofacial surgeons.
- 1175 Pharmacists
Pharmacists, pharmacist assistants, pharmaceutical inspectors.
- 1180 Agronomy and veterinarian specialists**
- 1185 Veterinarians
Veterinarians.
- 1186 Agronomists, agro-technologists, animal rearing specialists, and breeders
Chief agronomists, chief agro-technologists, chief animal-rearing specialists, chief breeders, chief plantation inspectors, agronomists, agro-technologists, animal-rearing specialists, pomologists, engineering specialists in soil improvement;
Inspectors in animal rearing, crop and livestock contracts, plant, crop, and forestry protection;
Plant breeders and selectors in plant selection stations, soil scientists.
- 1187 Agricultural engineers, forestry engineers, horticultural engineers
Agricultural engineers, forestry engineers, horticultural engineers and engineering specialists in agriculture, forestry, and horticulture.
- 1190 Clergy**
- 1191 High clergy
High clergy: primate, archbishops, bishops, bishop suffragans, deans, deacons, parish priests.
- 1192 Other clergy: priests, pastors, clergymen
Other clergy: priests, pastors, clergymen, vicars, preachers, rabbis, orthodox priests, imams, missionaries, monks, nuns, theologians.
- 1200 SPECIALISTS IN TECHNICAL FIELDS**
- 1220 Engineers**
- 1221 Metallurgist engineers
Metallurgist and casting engineers;
Molding and casting engineers, radioactive substance specialists, metallurgical analysts.
- 1222 Mechanical engineers
Mechanical engineers - specialists in industrial machines and apparatus, agricultural machinery, foundry machines and apparatus, textile industry (mechanical processing of fiber), etc.
- 1223 Electrical, electronic and power industry engineers
Electrical engineers, electronic engineers, power industry engineers, communication engineers, engineers - computer hardware designers.

- 1224 **Architects**
Architects, industrial architects, civil engineers, construction engineers, sanitary engineers, hydro-engineers, road-works engineers.
- 1225 **Geodesy, geology, and mining engineers**
Geodesy engineers, geology engineers, mining engineers, hydrology engineers;
Geological analysts, mining engineers in mining of coal, diamonds, metal ores, mineral oil, and natural gas.
- 1226 **Transportation engineers**
Engineers of public transportation: railway engineers, city traffic engineers.
- 1227 **Chemical engineers**
Chemical engineers, engineers in wood, leather, and food processing, etc. engineers of chemical processing, oil and natural gas processing, fuel and natural gas processing and distribution.
- 1229 **Other engineers**
Other engineers.
- 1230 Engineering specialists**
- 1231 **Technologists**
Construction technologists, chemical technologists, mechanics in agricultural industry, documentation technologists.
- 1232 **Constructors and designers**
Aircraft constructors (aviation constructors), mechanical constructors, other designers: engineers-designers, urban-plan designers, interior decorators, clothing designers, etc.
- 1234 **Engineering inspectors**
Engineering inspectors in production and operations, technical inspectors, machine and device inspectors, work inspectors, quality control inspectors, transportation and communication inspectors.
- 1235 **Engineers of industrial standardization**
Engineers of industrial standardization;
Engineering specialists in work organization, workload specialists.
- 1236 **Inspectors and instructors of industrial safety**
Engineers of industrial safety of work, engineering inspectors and instructors of industrial safety.
- 1237 **Technical inspectors**
Technical inspectors, supervisory inspectors, inspectors of production and operations, construction inspectors, transportation and communication inspectors, mining inspectors, measurement engineers, technical instructors.
- 1238 **Engineers of computer science, systems analysts and designers of computer systems**
Engineers of computer science, systems analysts and designers of computer systems.
- 1240 Other specialists in engineering and technology**
- 1241 **Aircraft pilots**
Pilots: aircraft pilots, copter pilots, glider pilots, test-fly pilots.

- 1242 Captains, navigators, and deck mechanics of oceanic sailing
Captains, navigators, and deck mechanics of oceanic sailing, navigators (deck and other), deck mechanics of oceanic sailing – on ships, ore-and-coal carriers, container ships, general-cargo vessels, bulk carriers, factory-ships, oceanic yachts;
Aircraft on-board navigators, radio-navigators, and mechanics.
- 1249 Other specialists in engineering and technology
Other specialists in engineering and technology.
- 2000 TECHNICIANS AND SPECIALIZED OFFICE WORKERS**
- 2100 TECHNICIANS**
- 2120 Technicians in industry, construction, and transportation**
- 2121 Metallurgist technicians
Metallurgist technicians – testing, casting, molding and rolling mill technicians.
- 2122 Mechanical technicians
Mechanical technicians in machines and apparatus production and operations;
Aeronautical and automatic control technicians;
Industrial apparatus technicians, textile industry technicians.
- 2123 Electrical, electronics, and power industry technicians
Electrical technicians, electromechanical technicians, electronics technicians, communication technicians, power industry technicians, cinematography equipment operators (of movie cameras, video cameras, camcorders), sound editors in movies, dubbing equipment operators, microphone and tape or cassette recorder operators, micro-photographers, macro-photographers, sound system operators in radio and TV, film, TV, video, and movies camera operators;
Special effects technicians in film and TV;
Recording equipment operators: on discs, tapes, and video;
Sound mixers, installation technicians, studio equipment operators in radio and TV;
Sound system and sound effects technicians;
Mobile unit operators.
- 2124 Geodesy, geology, and mining technicians
Geodesy technicians, geology technicians, mining technicians, hydrology technicians;
Irrigation technicians.
- 2125 Construction technicians
Construction technicians, civil engineering technicians, hydro- and sanitary- engineering technicians, road-works technicians, etc.
- 2126 Transportation technicians
Technicians of public transportation: railway engineers, city traffic engineers.
- 2127 Chemical technicians
Chemical technicians, wood, leather, and food processing technicians.
- 2129 Other technicians
Shoe and leather-clothing technicians, (textile) clothing technicians, printing technicians, technical editors;
Other technicians not mentioned elsewhere.

- 2130 Technician specialists**
- 2131 Construction and drafting assistants
Construction and drafting assistants.
- 2132 Dispatchers in industry and transportation
Construction site controllers, power grid controllers, shift work controllers;
Controllers and dispatchers in transportation: rolling stock dispatchers, passenger traffic controllers, engine house and coach house dispatchers.
- 2133 Technician-inspectors of industrial operations
Technician-inspectors of industrial operations;
Inspectors in production, operations, and transportation;
Quality control assistants;
Inspectors and seal-of-approval officers in construction materials and products, work safety inspectors, quality-product inspectors for electric, electronic, construction, industrial, and mechanical products, inspectors in services, food products, and products for children;
Industrial safety inspectors in: consumer protection, electricity, electronics, and construction domains, in industrial plant site and operations, in industrial and commercial waste processing, pollution, and contamination, in stores and markets, in transportation, and work conditions;
Transportation inspectors for technical inspection of norms and standards, inspectors of work safety and technical supervision;
Train dispatcher assistants.
- 2134 Technicians in industrial standardization
Technicians in industrial standardization, technician-work planners;
Technicians-specialists in industrial work efficiency, in work methods, and work planning, ergonomists, specialists in work standardization, valuation, and work studies.
- 2135 Technicians of industrial safety
Technicians of industrial safety and other specialists in industrial safety .
- 2136 Technical associates
Technical documentation specialists, specialists in machine operation economy, materials economy, technicians-specialists in investment accounting;
Technical specialists in fuel economy;
Technician-analysts.
- 2137 Drafters
Drafters-constructors, measurement and technical drafters;
Graphic designers in geodesy, measurement graphic designers (without heads of drafter teams);
Cartographers, map drafters photogrammetric image specialists;
Air, surface, water, underwater, topographic, hydrological, and mining measurement designers;
Technical drafters in: aeronautics, architecture, civil, electrical, and electronics engineering, heating and ventilation systems, mechanical engineering, topography, geology, technical tools;
Specialists in technical drawings and chart drawing.
- 2138 Industrial laboratory workers
Industrial laboratory workers in chemistry and electrical engineering, samplers;
Industrial laboratory assistants.

- 2139 Computer technicians
Technicians - designers of computer hardware.
- 2140 Technical workers in sailing, and water and air transportation**
- 2144 Pilots and navigators in inland sailing
Pilots of inland sailing (inshore, lake, and river): on motor ships, sailing ships, tugboats, and yachts;
Navigators in inland sailing;
Deck officers in inland sailing;
Ferry, hydrofoil, and speedboat pilots;
Aircraft, copter, and glider pilots.
- 2145 Electrician, mechanic, and navigator assistants in sea and inland sailing
Electrician, mechanic, and navigator assistants in oceanic sailing on sailing ships, motor ships, ore and coal carriers, container ships, general cargo vessels, bulk carriers, factory-ships, oceanic yachts, deck and engine room assistants in oceanic sailing, electrician, mechanic, and navigator assistants in inland (inshore, lake, and river) sailing on motor ships, sailing ships, tugboats, fishing ships, and yachts;
Deck and engine room assistants in inland sailing.
- 2147 Pilots of non-passenger (industrial and agricultural) aircrafts
Pilots of non-passenger (industrial and agricultural) aircrafts.
- 2300 SPECIALIZED OFFICE WORKERS**
- 2320 Accountants and financial inspectors**
- 2321 Chief cashiers, purchasing managers, and warehousemen
Chief cashiers, chief purchasing managers, chief tax inspectors, chief warehousemen.
- 2322 Inspectors and instructors in bookkeeping
Inspectors and instructors in bookkeeping, finance, budgeting, and tax accounting.
- 2323 Bookkeepers and accountants
Bookkeepers, accountants, liquidators, loss adjusters .
- 2324 Record-keepers, inspectors in employment and wages
Statisticians, statistic inspectors;
Economic inspectors, instructors, and record-keepers;
Inspectors and instructors in planning, employment and wages, transportation, supplies and sales;
Planners;
Trade specialists and analysts;
Export specialists;
Streamlining specialists.
- 2325 Finance inspectors
Finance and tax inspectors;
Banking and accounting inspectors;
Inspectors in wholesale, retail outlets, and similar.

- 2326 Computer operators and data processing technicians
Inspectors of data processing;
Database administrators;
Computer network administrators;
Programmers of communication systems, application programmers;
Other specialists of computer analysis unclassified elsewhere;
Specialists in computerization;
Data processing operators;
Peripheral equipment operators, computer terminal operators, printing equipment operators.
- 2327 Stenographers
Stenographers, shorthand typists;
Interpreters, translators of technical and trade documentation;
Foreign-language correspondence writers.
- 2328 Inspectors and instructors of administration
Inspectors and instructors of economic administration, human resources, personnel, on-the-job training, social organizations;
Public notary's counsel;
Inspectors of environmental protection.
- 2330 Tax inspectors and other governmental officers**
- 2331 Tax inspectors
Tax inspectors and specialists;
Excise (duty, tax) specialists.
- 2332 Officers in governmental welfare and retirement services
Inspectors and officers in pension, retirement, and welfare services;
National insurance (social security) and claims specialists.
- 2333 Agents and other specialized workers in licensing
Agents and other specialized workers in licensing (issuing licenses, permits, certificates, and similar), immigration officers, passport officers.
- 2339 Other officers of governmental administration
Censors of governmental administration, local service inspectors, inspectors of governmental administration, pricing inspectors, wages inspectors, measure-and-weight inspectors, civil defense specialists, elections specialists, legislators, officials in local service commissions.
- 3000 MIDDLE AND LOW-LEVEL NONMANUAL WORKERS**
- 3100 MIDDLE-LEVEL SPECIALISTS AND SEMI-PROFESSIONALS**
- 3110 Middle-level specialists in education and culture**
- 3112 Trade, vocational teachers
Trade, vocational teachers (persons engaged in practical skill-training in school workshops, enterprise (company) schools, on-the-job training programs, etc.).
- 3113 Nursery school teachers
Nursery school teachers, kindergarten teachers, teachers in small-child-care centers.

- 3114 Middle-level educators in other types of schools: boarding schools, special schools
Teachers and tutors in extra-curricular activity (in boarding houses, dormitories, childcare centers, etc.);
Tutors in district youth culture centers;
Instructors in youth centers, in sport centers;
Probation officers for juveniles;
Parole officers;
Post-release officers for juvenile delinquents;
Social workers, welfare workers (aid workers for children, for family, for others);
Social welfare foundation workers;
Social workers in psychiatric and medical clinics, detention centers, nursing homes, handicapped persons facilities;
District culture center administrators.
- 3116 Librarians
Librarians.
- 3119 Other middle-level specialized workers in education and culture
Other middle-level specialized workers in (physical) education and culture, e.g., tourist guides, sea and mountain rescuers, sport trainers, coaches, and similar;
Driving instructors, pilot instructors, swimming instructors;
Governesses.
- 3120 Nurses and middle-level medical personnel**
- 3121 Head nurses, obstetrics instructors
Head nurses, nursing instructors and inspectors, obstetrics instructors;
Head nurses in hospital departments, midwives;
Registered nurses in pediatrics, orthopaedics, psychiatry;
Scrub nurses, anesthesiologist nurses, clinical nurses, intensive care nurses.
- 3122 Nurses, midwives, paramedics
Nurses, operating block (room) nurses, midwives, paramedics.
- 3123 Medical laboratory workers, medical and dental technicians
Medical laboratory workers, medical and dental technicians and assistants;
Pharmaceutical technicians, pharmacy laboratory technicians;
Serologists, hematologists;
Audiometric equipment, electrocardiograph, electroencephalograph, X-rays (roentgenography), scanner, optical scanner, ultrasound scanner, CAT scanner, and endoscope technologists;
Laser and electronic medical equipment technologists.
- 3124 Veterinarian technicians and assistants
Veterinarian technicians and assistants;
Veterinarian hygiene inspectors (below the rank of veterinarian doctor);
Veterinarians (below the rank of veterinarian doctor).
- 3126 Physical therapists (physiotherapists) and occupational therapists
Chiropractors, electrotherapists, orthopaedic technicians;

- Physical therapists (physiotherapists), occupational therapists;
 Massage therapists, osteopaths, recreation therapists, prosthesis technicians, opticians, optometrists.
- 3128 Middle-level therapists in traditional medicine
 Therapists using natural means and methods, herbalists, alternative medicine practitioners (healing by touch), healers.
- 3129 Other medical middle-level specialists
 Other medical specialists unclassified elsewhere, e.g., hygiene instructors, instructors of physical therapy, health education instructors, hygiene inspectors;
 Massage therapists, school hygienists, nutritionists, dieticians, dentist assistants, homeopaths, orthophonists, orthoptists (eye alignment therapists), therapists, blind-person therapists and assistants, orthoepists, speech therapists.
- 3130 Product determination middle-level specialists**
- 3131 Commodities and commerce specialists
 Commodities and commerce specialists.
- 3132 Nutritionists and technologists in nutrition
 Nutritionists and technologists in nutrition and other similar specialists setting standards and technology of meal preparation, nutrition managers.
- 3140 Middle-level specialists in agronomy and animal rearing**
- 3142 Agronomist and animal rearing technicians
 Agronomist and animal rearing technicians;
 Agrochemists, agricultural equipment, mechanization, and contracting instructors;
 Plant conservation and protection, plant selection, and forestry assistants, etc.;
 Pomologists and taxydermists.
- 3143 Agricultural, forestry, and horticulture technicians
 Agricultural, forestry, and horticulture technicians and technician specialists.
- 3149 Other middle-level specialists in agriculture and forestry
 Agricultural products and forestry appraisers.
- 3150 Middle-level specialists in finance, insurance, travel, and trade**
- 3151 Stockbrokers
 Stockbrokers and appraisers of bonds, stocks, and other securities.
- 3152 Insurance agents
 Group and other insurance agents, insurance middlemen.
- 3153 Real estate agents
 Agents for buyers and sellers of real estate: apartments, houses, plots, land property and similar.
- 3154 Travel agents
 Travel agents and consultants.
- 3155 Trade agents and dealers, sales representatives

Salespersons, sales representatives, trade agents, trade dealers, business agents and representatives.

- 3156 Purchase agents
Purchase and sales agents, supply agents, wholesale agents, agents in payment installment plans.
- 3157 Auctioneers
Complaint arbitrators, appraisers, insurance appraisers, auctioneers, claim inspectors, complaint and compensation inspectors.
- 3159 Other middle-level specialists in trade and finances
Other middle-level specialists in trade and finances.
- 3160 Middle-level specialized workers in business services**
- 3161 Business brokers and dealers
Business brokers and dealers, trade brokers, loading agents.
- 3162 Middle-level specialized workers in clearing
Clearing agents, freight forwarding agents, transportation and loading agents.
- 3163 Employment agents
Employment agents, worker recruiters, employment clerks, youth employment agents.
- 3169 Other middle-level business and trade specialized workers elsewhere unclassified
Other middle-level business and trade specialized workers elsewhere unclassified;
Publishing agents;
Concert and concert tour organizers;
Theatrical agents;
Sport agents, sporting event dealers and organizers;
Agents and representatives for business, promotion, and advertising.
- 3170 Middle-level specialized workers in welfare and social work services
Middle-level specialized workers in welfare and social work services.
- 3200 ROUTINE OFFICE WORKERS**
- 3210 Clerks**
- 3211 Bookkeeping clerks
Bookkeeping clerks in: budgeting, finances, taxes, crediting, check clearing, cash settlement, and inventorying;
Account controllers, invoicing clerks.
- 3212 Clerks in statistic, economic, and supplies departments
Statistics clerks;
Economic clerks in supplies, sales, merchandizing, employment, wages, and planning departments;
Supplies technicians.
- 3213 Clerks in business administration
Clerks in business administration, record keeping, registration, residence, personal, social, cultural, and organizational issues;

Clerks in purchasing department;
 Documentalists, receptionists, file clerks;
 Administrative, building, and hotel management clerks, and similar;
 Administration manager in construction enterprise;
 Clerks in legal management of enterprise own and leased ground issues.

- 3214 Executive and highly qualified secretaries
 Executive and highly qualified secretaries: top secretaries in institutions directors', presidents', and other managers' offices.
- 3220 Cashiers in banks, post-offices, other offices, and industrial enterprises
 Cashiers in banks, post-offices, other offices, and industrial enterprises, except for cashiers in stores, markets, restaurants, cafés, etc., box offices, ticket offices;
 Trade union treasurers;
 Clerks in billing, invoice writing;
 Donation collectors for charities, special funds;
 Debt and tax collectors;
 Rent collectors.

3230 Secretaries and typists

- 3231 Secretaries
 Proof readers in offices;
 Secretaries;
 Court (office) secretaries.
- 3232 Typists, computer data-entry workers
 Typists, computer data-entry workers.
- 3233 Assistant secretaries
 Assistant secretaries.
- 3234 Receptionists
 Receptionists.
- 3239 Other office workers
 Office workers editing letters, applications, addressing and mailing letters, operating franking machines, addressing letters, correspondence, operating document sorters, compiling books, lists;
 Data-entry workers on computers, tapes, cards;
 Persons operating converters, sorters, seechecks. Coders in statistics and data processing;
 Fax, telegraph, telex, computer-text-editor operators.
- 3240 Customs officers
 Customs officers;
 Immigration officers.

3300 POLICE, ARMED FORCES, AND NATIONAL SECURITY FUNCTIONARIES

- 3310 Policemen
 Lower rank police and Ministry of Internal Affairs (MIA) officers - from second lieutenant to captain;

- Non-commissioned police and MIA officers and functionaries;
Prison guards, warders.
- 3320 Professional soldiers
Junior military (army and navy) officers - from ensign to captain;
Non-commissioned military (army and navy) officers - from corporal to senior sergeant.
- 3330 Officers and lower rank functionaries in fire services, industrial security and related services
Officers and lower rank functionaries in fire services, industrial security, and related services.
- 3400 ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS**
- 3410 Stage artists
Circus and stage artists;
Circus artists: acrobats, tightrope walkers, trapeze performers, clowns, (snake) charmers, hypnotists, illusionists, imitators, animal voice imitators, jugglers, magicians, prestidigitators, wild animal trainers and tamers, puppet animators, ventriloquists;
Musicians and singers in cabarets, entertainment clubs, disc clubs, and similar places, disc-jockeys (DJ), musical presenters;
Strip-teasers, strippers;
Stage singers, vocalists;
Pianists, violinists, clarinetists, organists, percussionists, saxophonists, guitarists, trombonists;
Extras (at film set).
- 3420 Athletes
Athletes: wrestlers, boxers, football players, soccer players, cyclists, motor race drivers, speedway riders, jockeys, other professional athletes;
Billiard, bridge, chess instructors;
Sport referees, sport officials;
Martial arts trainers.
- 4000 SALES AND SERVICE WORKERS**
- 4100 STORE SALESPERSONS AND CASHIERS**
- 4130 Store salespersons and cashiers**
- 4131 Salespersons in shopping malls, supermarkets, and department stores
Salespersons in shopping malls, supermarkets, and department stores.
- 4132 Salespersons in traditional stores
Salespersons in traditional stores.
- 4133 Salespersons in (open) markets
Salespersons in (open) markets, in market booths, stalls, and stands, on fairs and second-hand sales.
- 4134 Other salespersons
Other salespersons;
Salespersons in stores of unknown type, clerks at collection points, livestock and crop appraisers.

4135 Cashiers in stores and service shops
Cashiers in stores and service shops, restaurants, bars, pubs, bookmakers, bookies (in race courses), croupiers.

4200 SERVICE WORKERS IN TRANSPORT, MAIL AND RELATED FIELDS

4210 Conductors and guards

4211 Conductors
Conductors, cashiers (in ticket offices and on trains and coaches), luggage charge cashiers, ticket inspectors, inspectors in trains (sleeping cars, couchettes), coaches, buses, trolleys, trams, passenger vessels;
Operators of traffic information booths.

4212 Guards
Guards.

4220 Mailpersons, telephone operators, and other workers in related services

4221 Mailpersons
Mailpersons, postmen, delivery persons (of parcels, subscriptions).

4222 Telephone operators and telemarketers
Telephone operators, telegraphists, radio-telegraphists, (Morse operators), radio-operators, teletypists, radio-broadcasting systems operators, and telemarketers.

4229 Other workers in transport, mail, and related services
Mail distributors, sorters.

4300 WORKERS IN PERSONAL SERVICES

4310 Barbers and beauticians

4311 Hairdressers and make-up artists
Hairdressers, make-up artists, and wig-makers.

4312 Beauticians and manicurists
Beauticians, manicurists, and pedicurists.

4320 Cooks and waiters

4321 Cooks, confectioners, and café attendants
Cooks, delicatessen product makers, confectioners, and café attendants.

4322 Waiters, stewards, and buffet and bar attendants
Waiters, buffet and bar attendants;
Stewards in ships, ferries, flight attendants on airliners.

4330 Workers in other personal services

4331 Photographers
Photographers, specialists in artistic, advertising, aerial, architectural, fashion photography, in publishing, industrial, science, medical, forensic, and police photography, portrait and press photographers, shop photographers.

- 4332 Assistants in photography and film copying laboratories
Assistants in photography and film copying labs, photocopying, photographer's shops and studios;
Film copy maintenance and conservation workers, retouchers, and similar.
- 4334 Workers in funeral homes
Funeral service, funeral procession service, undertakers, morticians, corpse embalmers, crematory (crematorium) workers, funeral home workers.
- 4335 Astrologists and fortunetellers
Astrologists, numerologists, fortunetellers, psychics, palmists, palm readers;
Tarot fortunetellers and similar.
- 4339 Other workers in personal services
Other workers in personal services: maids, chambermaids, servants, dressing room service, hotel dressing-room attendants.
- 4400 STORAGE AND SUPPLIES WORKERS**
- 4410 Storage workers
Storage workers.
- 4420 Supplies workers
Supplies workers.
- 4500 WORKERS OF SECURITY SERVICES**
- 4510 Property and personal security guards
Property and personal security guards, transport guards and escorts, bodyguards, security guards.
- 4600 MODELS AND HOSTESSES**
- 4610 Models and hostesses**
- 4611 Models
Fashion show models, clothing models, live models in shop windows;
Product demonstrators in advertising;
Photographer's, painter's, sculptor's and other artist's models.
- 4612 Hostesses
Hostesses advertising products in stores, malls;
Information service providers at conferences, congresses, conventions, and similar events;
Personal companions for foreign guests, foreigners.
- 5000 SKILLED MANUAL WORKERS**
- 5100 FOREMEN AND OTHER FIRST-LINE SUPERVISORS**
- 5160 Foremen and other first-line supervisors**
- 5161 Foremen and other first-line supervisors in mining and production of metal objects
Foremen and other first-line supervisors in mining and production of metal objects, foremen and other first-line supervisors in mining and natural gas, oil, and peat extraction;

Foremen and other first-line supervisors in metal production, in plastic and thermal processing of molten metal ore in foundry furnaces;

Melter supervisors, furnace supervisors, and similar;

Foremen in rolling metal in sheets;

Foremen and other first-line supervisors of electromechanical and installation work at generation and distribution of electric and thermal power, or at production, maintenance, and repair of electric equipment and power transmission systems;

Foremen and other first-line supervisors in charge of industrial and heating furnaces and of machine lubrication.

5162 Foremen and other first-line supervisors in textile, chemical, and food-processing industries

Foremen and other first-line supervisors in textile, chemical, and food-processing industries, foremen and other first-line supervisors in production of items in natural and synthetic fiber;

Foremen and other first-line supervisors in production of clothing, leather and rubber shoes (footwear) and accessories, and paper and plastics items;

Foremen and other first-line supervisors in chemical processing and production of plastic, glass, and ceramic items;

Foremen and other first-line supervisors in food processing;

Foremen and other first-line supervisors in wood processing and production of wooden items;

Foremen and other first-line supervisors in paper production and printing.

5163 Foremen and other first-line supervisors in construction

Foremen and other first-line supervisors in construction and in making construction materials;

Foremen and other first-line supervisors in construction and assembly works;

Foremen and other first-line supervisors in rail-track works and road-works.

5164 Foremen and other first-line supervisors in transportation and storage

Foremen and other first-line supervisors in transportation and storage;

Foremen and other first-line supervisors in short-distance transportation and in control of devices for earthworks, road-works;

Foremen and other first-line supervisors in transshipment: dockers (longshoremen), loaders, dispatchers in transportation companies;

Foremen and other first-line supervisors in warehouses and internal transportation;

Foremen and other first-line supervisors in quality control and packing rooms.

5165 Foremen and other first-line supervisors in agriculture and forestry

Foremen and other first-line supervisors in agriculture and forestry;

Foremen in orchards, foremen in animal breeding, in barns, cowsheds, in pig, cattle, and poultry farms;

Tractor foremen;

Fishing foremen;

Forestry foremen.

5200 SKILLED WORKERS

5210 Skilled workers in mining and related occupations

5211 Operators of mining machinery

Operators of mining machinery, combined cutter-loader operators, operators of machinery for crude oil and natural gas extraction and peat formation.

- 5212 Miners
Miners, rock-splitters, shot-firers, mining drillers, mining construction workers in deep and opencast mines, mining rescuers.
- 5213 Skilled workers in crude oil and gas mining
Miners-loaders, skilled workers in crude oil and gas mining, peat formers, signalers.
- 5220 **Skilled workers in production of metals and electrical appliances, and in electrical and thermal energy transmission**
- 5221 Skilled workers in metal production: smelters, rolling mill workers, blacksmiths, foundry workers, and related
Skilled workers in metal production: sinterers, smelters, rolling mill workers, blacksmiths, casters, coremakers, temperers, foundry workers, steel workers, and similar;
Core setters, casters;
Welders – gas, arc, shielded-metal arc, flux- covered arc, plasma arc, oxyacetylene, oxyhydrogen; Electron-beam machine and resistance machine welder setters;
Solderers (brazers) – torch, furnace, induction;
Silver;
Sinterers, metal cleaners, heat treaters;
Converter furnace operators, bessemer-Bottom makers, Thomas furnaces, oxygen furnaces, electric arc furnaces;
Hot mill tin rollers, carbonizers.
- 5222 Electricians, power industry workers, fitters of electric transmission lines and telecommunication equipment
Electricians and power industry workers at generation, transmission, and distribution of electric and thermal power;
Fitters in construction and maintenance of electric and telecommunication transmission systems;
Fitters and maintenance workers of underground and surface cables, electric traction cables, and telecommunication cables.
- 5223 Electric fitters, repairers, and wirers of electric, electromechanical, and telecommunication equipment
Electric fitters, repairers, and wirers of electrical machines and apparatus, fitters of electrical apparatus, devices, and other electrical products;
Clock, watch, electronic, and computer equipment solderers;
Specialized workers in repair of electrical, electromechanical, and telecommunication equipment;
Motion picture projectionists.
- 5224 Operators of machines making electric and electronic products
Operators of machines and devices manufacturing electric and electronic products;
Operators at assembly lines producing electronic and precision instruments and equipment (audiovisual and radio equipment, television sets, chronometers, clocks, watches, electronic subassemblies, microelectronic equipment, office equipment, precision instruments, hearing aids).
- 5225 Operators of equipment for electric and thermal power generation and transfer
Operators of equipment for electric and thermal power generation and transfer;
Operators of air-conditioning and refrigerating equipment.

- 5226 Fitters of electric and electronic product parts
Fitters of electric and electronic product parts;
Workers specialized in manufacturing and repair of electric, electronic, and other precision items;
Wire drawers;
Fitters and repairmen of electronic, audiovisual, computer, data processing, industrial electronic, medical, meteorological, optical, radar, radio, signaling, prototype, telecommunication, and television equipment, signaling systems, measurement instruments and scientific equipment;
Assemblers of radio and television antennas;
Electronics-mechanics of computers, audiovisual equipment, business equipment, electronic calculators, office equipment, radio and television;
Audiovisual electronic equipment (radio, television, computer) maintenance and service workers.
- 5227 Stokers of industrial furnaces and central-heating boilers
Stokers of industrial furnaces, stationary high-pressure boilers and central- heating boilers.
- 5230 Skilled workers in construction and in production of construction materials**
- 5231 Operators of equipment producing construction materials
Operators of equipment producing construction materials.
- 5232 Brick masons, concreters, plasterers, assemblers of building constructions
Brick masons, concreters, plasterers, stucco artists, wall painters, stove- fitters, roofers;
Skilled workers in concrete and ferroconcrete works;
Scaffolding assemblers, assemblers of building constructions, foundation layers.
- 5233 Assemblers of sanitary and gas installations, plumbers
Assemblers of sanitary, gas, and ventilation systems, assemblers of gas and steam pipelines, plumbers.
- 5234 Carpenters and upholsterers
Carpenters, shipwrights, boat-builders, coopers, wheelwrights, modelers in wood, woodwork (including construction woodwork) painters, upholsterers (of furniture, mattresses, and upholstery in cars and other transportation vehicles);
Shipwrights (in ships and shipyards), carpenters and wooden construction builders in theaters, mines, at construction sites, carpenters, furniture carpenters;
Furniture carpenters, bentwood furniture makers, frame makers, coopers, makers of wooden sport equipment and models, pipe, chest, trunk, box, and other wooden product makers.
- 5235 Operators of wood-processing machines: milling machine operators and turners
Operators of wood-processing machines - wood milling and planing machine operators, wood turners and similar;
Setters and operators of woodworking machines: jigsaw and frame-sawing machines;
Operators of machines making wood products;
Operators of sawing, boring, sanding, barking, peeling, finishing, rubbing, staining, painting, lacquering, and spraying machines and those set for fabricating furniture and other wood products;
Workers applying wood preservatives and engaged in wood seasoning;
Operators of wood seasoning, barking, and grinding machines;
Operators of plywood making machines;

Workers in production of cellulose, pulp, and paper pulp;
Operators of machines grinding lumber into pulp.

- 5236 Floor-layers, glaziers, and other skilled workers in construction-finishing
Woodblock-floor layers, parquet-floor layers, hardwood-floor installers, floor coverers, stone (marble) floor installers, mosaic floor installers, glaziers (glass-setters), tilers, and other skilled workers in construction finishing;
Stained-glass window makers.

5240 Skilled workers in construction of machines and devices, assemblers of steel constructions, and crane operators

- 5241 Machine tool operators
Machine tool operators - turners, milling machine operators, planers, grinders, drillers, machining workers. zinc-plating machine operators.

- 5242 Galvanizers and metalizing-machine operators
Galvanizers and metalizing-machine operators - metalizers, burnishers, welders, bronze workers, engravers, gilders, galvanizers, and similar.

- 5243 Precision equipment and instrument makers and repairers
Makers and repairers of precision equipment, mechanisms, and instruments - office machines, analytical equipment, scales and balances, calibrated precision instruments (micrometers, calipers), barometers, clocks and watches, photographic equipment and supplies, prosthetic devices (artificial limbs, plastic cosmetic restoration appliances, dentures, and similar), ophthalmic, surgical, orthopedic, and other medical and dental equipment and instruments, nautical and optical equipment, scientific precision equipment;
Jewelers, watchmakers, opticians.

- 5244 Mechanics and repairers of machines and devices
Mechanics and repairers of machines and devices, locksmiths (assemblers), mechanics in maintenance and operations (setting).

- 5245 Crane and lift operators
Operators of cranes, lifts, hoists, conveyors, overhead cranes, gantry cranes, and of crushing, grinding, sorting, and separating equipment;
Operators of machines in earthworks, track-laying, road building, and similar construction work;
Operators of earthwork machines: bulldozers, earth movers, road rollers, stone-spreading, asphalt-paving (blacktop-paving, blacktop-spreading), concrete-paving machines, sidewalk (pavement) laying machines;
Operators of cranes (portal, tower, and pedestal);
Floating - mounted on barges;
Mobile and locomotive;
Construction tower), derricks (stationary and floating), overhead and gantry cranes, mine lifts, conveyors, water gates (locks, air locks, sluices), drawbridges, and turn bridges.

- 5246 Assemblers of steel constructions, steel fixers, panel-beaters and metal-smiths
Assemblers of steel and metal constructions, riveters, metal drillers, wire and steel-rope twisters, steel fixers, panel-beaters, body mechanics, boiler makers, steel cutters, tracers.

- 5247 Automobile-and-truck mechanics
Mechanics of automobiles, trucks, and other transportation vehicles.

- 5248 Mechanics and locksmiths in equipment maintenance in non-manufacturing business
Mechanics and locksmiths in equipment maintenance in non-manufacturing business.
- 5249 Toolmakers, tool repairers, and precision-equipment-and-instrument makers
Toolmakers, tool repairers, and precision-equipment-and-instrument makers.
- 5250 Skilled workers in chemical industry and food-processing**
- 5251 Chemical apparatus operators and stokers
Operators of chemical apparatus in preparing mixtures and solutions, of diffusion processes and chemical reactions, and furnace tenders in chemical processing;
Operators at production of medications, pharmaceuticals, and disinfectants;
Operators of mixing, blending, grinding, and crushing machines;
Operators of furnaces, ovens, autoclaves, boilers, driers, tumblers, retorts, bunkers, cement mills, conveyors, pumps, coolers;
Operators of filter presses, shaker screens, centrifuges, condenser tubes, precipitator, fermenting, and evaporating tanks, scrubbing towers, and batch (or continuous) stills;
Operators of crude wood destructive distillation;
Operators of catalytic converters and vacuum-drum driers;
Operators processing petroleum and gas (natural, manufactured);
Compounders, blenders, crude-oil treaters, lead recoverers, paraffin-plant operators, refinery operators, furnace operators, pumpers, still-pump operators, treaters, gas testers, natural-gas-treating-unit operators, oil-recovery unit operators, wax molders, grease makers.
- 5252 Operators in processing tobacco, and related products
Operators in processing tobacco, and related products;
Tobacco leaf blenders (granulating blenders), blending-line attendants, casing-fluid tenders (flavoring makers);
Cigars and cigarettes makers;
Tobacco and tobacco products packers.
- 5253 Millers, bakers, confectioners, butchers, cured meats and sausage makers
Millers, bakers, confectioners, butchers, cured meats (cold cuts) and sausage makers, and other skilled workers in agricultural crop and livestock processing;
Butchers, fish butchers, fish cleaners, poultry stickers, meat, poultry, and fish cutters and trimmers, fillet preparers, cutlet makers, dry curers, smoked meat and sausage preparers, sauce makers;
Bakers, confectioners, icing makers, confectionery cookers, cake and pastry preparers, chocolate-production-machine operators, chocolate molders, dough mixers, pan greasers, oven operators and tenders;
Pickle and marinade preparers;
Milk, butter, cheese, ice-cream, and other dairy product preparers;
Vegetable juice, fruit juice, and other beverage (water, sodas, etc.) preparers, fruit preserve makers;
Sugar and shortenings makers.
- 5254 Glass and ceramics molders, kiln operators, glass grinders
Glass cullet crushers, mill and blender operators, abrasive graders, rouge mixers, clay and glaze makers, combustion analysts, glass furnace tenders, batch-and-furnace operators, oven tenders, kiln operators and placers, annealers, glazing-machine operators, fiberglass machine operators, glass- bulb, glass-rolling and glass-ribbon machine operators, forming-machine operators, molders, batters, handle makers, pressers, rolled glass crosscutters, engraver-tenders;

Lens hardeners, contact printers, stone roughers, and burr grinders;
Bevellers, grinders, engravers, stone polishers, belt sanders, groovers, sandblasters, slab grinders;
Other skilled workers in etching, grooving, sharpening, smoothing, polishing stone, clay, or glass using abrasive machine tools.

- 5255 Glass and ceramics artists, and plastic decorators
Glass printers, decorators, screen-printers, photoengravers;
Tile shaders;
Pottery, glass hand-brush painters;
Sign painters (letterers);
Decorating-machine operators;
Optical-glass silverers;
Mirror silverers, silvering applicators, paint-spray tenders;
Stampers, stamping-machine operators.

5260 **Skilled workers in textile and clothing industries**

- 5261 Spinners, weavers, knitters and dyers of textiles and clothing
Spinners, weavers, (hand) knitters, knitting machine operators, bleachers, cleaners and dyers of fiber, fabric, and clothing, yarn rewinders, finishers, lacemakers, clothing ironers;
Preparers of natural and synthetic fiber, mixers, carders, extractors, sorters;
Workers manufacturing cellulose;
Weaving loom setters;
Netting makers;
Loom assemblers.
- 5262 Tailors, furriers, hatters, glovers, and embroiderers
Skilled workers in production and repair of apparel (garments, clothing) and accessories, fur and leather products - tailors, seamstresses, furriers, glovers, hatters, underwear makers, embroiderers, and similar;
Milliners, fur, leather, and clothing carvers (cutters), cutters of clothing patterns, cutters of umbrellas and covers (casings);
Hatters, makers of umbrellas, children's toys (dolls and similar), sails, garments (also in leather).
- 5263 Leather processing workers: tanners and dyers
Fur and leather processing workers: tanners and dyers;
Fullers, leather polishers, fur shearers;
Operators of machines for production of leather and fur products in its initial stage;
Operators of leather cutting, tanning, finishing, and polishing machines.
- 5264 Skilled workers in production and repair of leather, rubber, plastic, and paper products
Skilled workers in production and repair of footwear, leather, rubber, paper, and accessories;
Shoemakers - upper makers, groover-and-turners, heel builders, bed, side, toe, string, and heel-seat lasters, toe-formers, outsole cutters, heel-nailing-machine operators, vulcanizers, and other skilled workers tending machines that trim, shape, smooth, join, and finish shoe parts to make footwear;
Handbag, wallet, coin purse, key case, belt and other leather object makers;
Saddlers, leather workers, clothing and leather clothing makers;
Skilled workers in production of paper and cardboard;

Bookbinders (cutting-machine operators, book trimmers, book-jacket-cover-machine and gluing-machine operators);

Operators of machines making paper goods: envelopes, writing pads, notebooks, calendars and appointment books, paper, cellophane, and plastic bags, soft tissue, paper towels, toilet paper, binders, folders, boxes, cartons, playing cards, bandage and dressing items.

5270 **Motor vehicle operators, engine drivers, and steam engine stokers**

5271 Operators of heavy mechanical equipment

Operators of heavy mechanical equipment, mechanics and operators of chain or rip saw, wood-cutters (lumbermen).

5272 Railway engine operators

Railway steam, electric, and diesel engine operators and assistants;
Metro (underground, tube, subway) operators and assistants.

5274 Car, truck, and bus drivers

Car, truck (lorry), and bus drivers;
Drivers of dump trucks, flatbed trucks, vans, minivans;
Drivers of taxicabs, emergency ambulances, delivery trucks and vans, mail vans, and minibuses.

5275 Tram and trolley drivers

Tram and trolley drivers.

5276 Light motor-vehicle operators and tractor drivers

Light motor-vehicle operators and tractor drivers;
Motorcycle drivers, racecar drivers, speedway riders, tricycle drivers, motor-rickshaw drivers.

5279 Other vehicle operators and drivers

Railway steam-engine stokers;
Other vehicle operators and drivers.

5280 **Sailors and fishermen**

5281 Sailors, mechanics and radio mechanics

Sailors, mechanics and radio mechanics on motor and sailing ships of oceanic sailing – on ships, ore and coal carriers, container ships, general cargo vessels, bulk carriers, factory-ships, oceanic yachts – and inland sailing (inshore, lake, and river) – on motor ships, barges, fishing boats, cutters, and tugboats;

Ferry, hydrofoil, speedboat, and ambulance-vessel crew. ferry carriers.

5283 Deck sailors

Deck sailors on motor and sailing ships of oceanic sailing – on ships, ore and coal carriers, container ships, general cargo vessels, bulk carriers, factory-ships, oceanic yachts – and inland sailing (inshore, lake, and river) – on motor ships, barges, fishing boats, cutters, and tugboats.

5284 Sea fishermen on fishing boats and cutters

Sea fishermen (of oceanic sailing) on fishing boats, cutters, and factory-ships;
Skilled crew of oceanic factory trawlers;
Lighthouse keepers.

5285 Inland fishermen

Inland fishermen - engaged in fish breeding and fishing in ponds, lakes, and rivers, on fishing boats and cutters.

5290 Other skilled workers

5291 Printers, mimeographers, and related skilled workers in production of paper and textile items

Printers, mimeographers, and related skilled workers in production of paper and textile items printed by photographic techniques;

Stereotypers and electrotypers;

Typesetters;

Linotype and monotype operators;

Offset-press operators;

Photocomposing-machine and phototypesetter operators;

Desktop publishing operators;

Photoengraving - etchers, finishers, printers, and proofers;

Rotogravure, photogravure, and rotophotogravure operators;

Lithography retouchers;

Computer-controlled-color-photograph-printer operators, color-printer operators, film developers, photocopy operators, photograph finishers;

Stencil-machine operators, stampers;

Pattern embossers on fabrics, silk.

5292 Quality and quantity controllers of finished products

Quality and quantity controllers of finished products.

5293 Samplers and sorters

Samplers and sorters.

5299 Other non-agricultural skilled manual workers

Other non-agricultural skilled manual workers;

Window blind and shutter manufacturers and assemblers.

5300 AGRICULTURAL SKILLED WORKERS

5310 Skilled agricultural workers

Tractor and combine harvester operators, and other skilled agricultural workers;

Operators of agricultural equipment: harvesters, binders, tractors.

5320 Skilled forestry workers

Foresters, sub-foresters, and other skilled forestry workers: hunters, trappers, hunt beaters.

5330 Other skilled agricultural workers

5331 Gardeners and bee-keepers

Gardeners and bee-keepers.

5332 Other skilled agricultural workers

Other skilled agricultural workers;

Incubator operators.

6000 SEMI-SKILLED AND UNSKILLED MANUAL WORKERS

6100 PLANT AND MACHINE OPERATORS, LABORERS

6150 Simple-task workers in industry, construction, and transportation

6151 Simple-task workers in industry

Workers in the outwork system in manufacturing metal, electric, and electronic products;

Workers performing preparatory and auxiliary tasks at thermal and plastic processing of metal ores in foundry furnaces – ore-melter helpers, mill helpers, mold setters, blast-furnace-keeper helpers, steel-pourer helpers, furnace helpers, and similar;

Unskilled workers (production laborers) performing simple tasks in mechanical and thermal processing of raw metal ores in mining and metallurgical industries;

Unskilled workers (production laborers) performing simple tasks in machinery and equipment production and repair;

Car sprayers;

Unskilled workers (production laborers) performing simple tasks in manufacturing and repair of other metal products;

Unskilled workers (production laborers) performing simple tasks in generation and distribution of electric and thermal power and in production, maintenance, and repair of electric equipment and electric power transmission systems;

Dispensers, molders, and firers of products in manufacturing building materials (full and hollow bricks), stonemasons, tilers, brick-firing-machine operators;

Coking plant workers;

Workers performing preparatory and supporting tasks in chemical processing and in production of glass and ceramics;

Operators of glass, pottery (ceramics), porcelain, and earthenware making machines;

Operators of glass-embossing, pressing, blowing, cutting, finishing, and polishing machines;

Operators of glass-preparing machines (filtering, extracting, milling, and mixing);

Supporting workers in printing, mimeographing, and photographic reproduction applied in making paper and textile products;

Printing machine operators;

Operators of font-casting machines, phototypesetters, printing presses, lithographic presses, and machines for offset, rotogravure, wallpaper printing, textile printing. unskilled workers performing simple tasks in wood processing and fabrication of wood products, e.g., hewers;

Unskilled workers performing simple tasks in production and repair of apparel (garments, clothing): cutters, seamstresses, buttonholers, ironers, trimmers, and helpers;

Operators of weaving looms and knitting machines;

Operators of jacquard fitted looms;

Operators of clothing making machines;

Loom operators;

Spinners;

Operators of sewing machines: standard, leather sewing, overlock finishing, hat making, button-hole making, seamstresses;

Operators performing simple supporting and preparatory tasks in manufacturing natural and synthetic fiber products: raw material cleaners, carders, thread stichers, yarn spoolers, darners;

Fiber preparers, spoolers, yarn twisters;

Operators of yarn mixing, stitching (knitting), and twisting and of fiber processing machines;

Operators of fiber and yarn producing equipment (apparatus);

Operators of bleaching, cleaning, drying, ironing, and mangling machines;
Unskilled workers performing simple tasks in manufacturing products made of natural and synthetic fibers and their helpers;
Unskilled workers performing simple tasks in manufacturing and repair of footwear and accessories made of leather, rubber, paper, plastics, and synthetics – sole sewers, hobnail-stickers, heel-attachers, oilskin polishers, plastic welders, and similar;
Outworkers in manufacturing clothes (garments), footwear and accessories;
Operators of machines producing pharmaceuticals and cosmetics;
Operators of machines producing detergents, medications, and distilling perfumes;
Operators of machines producing munition, explosives, mines, fireworks, bangers, caps, matches, flares;
Metalizers, galvanizers;
Operators of anodizing, oxidizing, platerizing, electroplaterizing, laminating, painting (dyeing), cleaning, degreasing, grinding, and electropolishing machines;
Operators of machines producing photographic supplies;
Operators of machines developing and fixing films and photographs;
Operators of machines producing photosensitive supplies;
Operators of machines producing candles, pencils, laundry supplies (except for detergents), linoleum (or similar floor-covering products), and industrial gases;
Operators of machines producing rubber products (e.g., rubber stamps);
Operators of vulcanizing machines, mills;
Operators in production of rubber;
Operators of machines making products of rubber and synthetics;
Operators of plastic milling, cutting, drilling, and laminating machines;
Operators in production of plastic;
Operators of presses, mills, and injection molding machines;
Unskilled workers performing simple tasks in food industry;
Operators in processing meat and fish: salting, freezing, canning, preserving, sterilizing, washing, blanching;
Autoclave operators at processing meat and fish;
Operators at milk processing, pasteurization, and in production of powdered milk;
Operators at production of condensed milk, at milk cooling, and vacuum packaging of milk products;
Operators of feedstuff, rice, and spices producing equipment;
Operators of milling, shelling, and shucking machines;
Operators of bread, pastry, cookies, biscuits, noodles, and chocolate products making machines;
Operators of blanching, canning, drying, dehydrating, freezing, preserving, sterilizing, pressing, washing, vacuum packaging machines for fruits, vegetables and legumes, mushrooms, margarine, olive and vegetable oils, and peanuts;
Operators of machines for rafination and crystallization of sugar;
Operators of machines for cutting, mixing, drying, roasting, fermenting, and packaging tea, coffee, and cocoa;
Operators at production of tobacco, cigarettes, and cigars;
Operators of machines for cutting, mixing, fermenting, drying, and manufacturing tobacco products;
Brewers, winemakers, distillery workers;
Operators of machines for mixing, distilling, pouring, bottling alcohol, spirits, liquors, wine, beer, and vinegar;

- Laborers (manual workers) in industrial laboratories;
Greasing, lubricating, waxing, and cleaning workers, ash removers, grate cleaners, and chimney sweeps;
Laboratory helpers in industrial enterprises (companies, businesses);
Other outworkers.
- 6152 Simple-task workers in building construction
Unskilled workers performing simple tasks in production of construction supplies and in construction of buildings;
Brick carriers;
Wheelbarrow pushers and diggers in construction.
- 6153 Simple-task workers in road and rail construction and maintenance
Semiskilled workers in road construction and in public and internal enterprise transportation: flagstone pavers, blacktop spreaders, track-laying workers, diggers, and laborers in earth, road, and hydro-engineering work;
Soil-improvement and geodetic workers;
Workers servicing surface (automobile), air, and city transportation equipment;
Track-switch cleaners;
Grade-crossing attendants;
Track-switch attendants;
Surface traffic setters and attendants;
Railway steam, electric, and Diesel engine operator assistants.
- 6154 Simple-task workers in transportation charged with packing, loading, and transporting people and cargo
Workers in loading, unloading, handling, transshipment of goods (in trucks, freight cars, container ships and general cargo vessels), dockers, porters, coachmen, carters;
Unskilled workers in storage and transportation, in warehouses and storage rooms, workers in storage and dispensing working tools, materials, and finished products;
Pallet setters, carding-mill-product collectors, packers, taggers, markers, and workers performing simple tasks in counting, measuring, and weighing;
Canning, labeling, bottling workers, pharmaceutical dispensers;
Workers in internal plant transportation handling delivery, loading, unloading, carrying, and stacking products, and similar tasks;
Drivers in internal plant transportation;
Workers performing simple tasks and auxiliary staff in local transportation and in handling equipment for earthworks, road-works, and rail-track works, diggers, and wheelbarrow pushers;
Workers performing simple tasks on ships of oceanic and inland (inshore, lake, and river) sailing, except for dockers and other handling and transshipment workers.
- 6159 Other simple-task workers in industry, construction, and transportation
Railway steam-engine stokers and ship steam-engine stokers in oceanic and inland (inshore, lake, and river) sailing: on ships, ore and coal carriers, container ships, general cargo vessels, bulk carriers, factory-ships, oceanic yachts, barges, fishing boats, cutters, and tugboats;
Other semiskilled and unskilled workers.

- 6300 AGRICULTURAL LABORERS**
- 6310 Agricultural and forestry laborers**
- 6311 Agricultural laborers
Semiskilled and unskilled agricultural laborers in reaping, mowing, sowing, and plowing; Cattlemen, shepherds, stablemen, and similar hired labor in agricultural farms.
- 6313 Forestry workers, woodcutters
Semiskilled and unskilled forestry workers, woodcutters.
- 6314 Veterinarian nurses and paramedics
Veterinarian nurses and paramedics.
- 6400 ELEMENTARY OCCUPATIONS**
- 6410 Watchmen, janitors, and cleaners**
- 6411 Night and day watchmen, janitors, and doorkeepers
Night and day watchmen, janitors, and doorkeepers;
Sacristans, gate-keepers;
Parking attendants, park and garden service, zoo service and guards;
Museum guards, doormen, hotel floor-attendants.
- 6412 Janitors in apartment buildings
Janitors and doormen in apartment buildings.
- 6413 Other janitors, cloakroom attendants, and ushers
Other janitors, cloakroom attendants, and ushers.
- 6414 Room cleaners
Room cleaning service in hotels and boarding houses, bellboys (bellhops).
- 6415 Street cleaners, bus cleaners, and other cleaners
Street (streets, bus, tram, and metro stops, parks, apartment buildings) cleaners, workers in garbage collection services (also in municipal trash collection service), bus (and other transportation vehicles) cleaners, cleaners and washers employed in industrial technological processes, and other cleaners.
- 6416 Gravediggers
Gravediggers.
- 6420 Messengers, porters, and kindred workers**
- 6421 Messengers and kindred workers
Messengers, delivery service workers, and similar.
- 6422 Porters, delivery men, and suppliers
Porters and elevator service persons;
Workers in home delivery of press (newspapers, magazines and other periodicals and nonperiodicals), milk, and shopping products.

6430 Domestic cleaners and kitchen assistants

6431 Domestic cleaners

Domestic cleaners, maids.

6432 Kitchen assistants and assistants in collection points

Unskilled workers performing simple tasks in food preparation and serving, kitchen help in restaurants.

6440 Sales laborers

Street vendors, door-to-door vendors, direct sales, street vendors of food, sodas, ice-cream;

Street-vendors of industrial products, clothing, press, books, cigarettes, flowers, chemicals, cosmetics, and other items;

Peddlers, vendors selling phone-ordered products;

Auxiliary workers in collection points;

Auxiliary workers in stores and pharmacies (drugstore s). other laborers in services.

6450 Hospital helpers

6451 Hospital attendants

Hospital attendants.

6452 Bath attendants and disinfectors

Bath attendants and disinfectors.

6453 Paramedic assistants, cast attendants, sterilizers

Paramedic assistants, cast attendants, surgical sterilizers, outpatient home-care workers.

6460 Other service laborers

Other unskilled service laborers: laundrymen, ironers, handwash;

Coal carriers.

7000 FARMERS**7100 FARM OWNERS**

7110 Farmers - farm owners

Farmers - farm owners;

Farmers (single-farm owners) raising crop, potatoes, beet, vegetables, feed grains, tobacco;

Cattle, pigs, and poultry breeders;

Family members helping in running private agricultural, horticultural, and breeding farms;

Members of agricultural cooperatives.

7120 Gardeners, plant growers, and breeders - owners

Owners of gardens and hothouses, gardeners and vegetable growers specializing in producing flowers, vegetables, fruits, herbs;

Fruit farmers raising fruit trees, owners of Christmas tree plantations;

Bee keepers, owners of apiaries;

Animal breeders, owners of breeding farms (e.g., fur animals: fox, mink, nutria, rabbit, ferret);

Family members helping private owners of gardens, hothouses, breeding farms, etc.

- 7300 FISHERMEN**
 Skippers, fishing cutter owners, fishermen, owners of fishing ponds.
- 8000 ENTREPRENEURS AND BUSINESS OWNERS**
- 8100 OWNERS OF FIRMS IN PRODUCTION, CONSTRUCTION, AND TRANSPORT**
- 8110 Owners of production, construction and transportation firms**
- 8112 Owners of firms producing and repairing mechanical and electromechanical equipment
 Owners of firms producing and repairing mechanical and electromechanical and other precision equipment, owners of metal processing firms, owners of car repair shops.
- 8113 Owners of firms producing construction materials, handling construction and assembly, and wood processing
 Owners of firms producing construction materials, handling construction and assembly, and wood processing (carpenters, modelers, upholsterers, sawmill owners).
- 8114 Owners of firms producing and mending clothing, footwear, and leather and travel accessories
 Owners of firms producing and mending clothing, footwear, and leather and travel accessories; Laundry and mangle owners, shoemaking shop owners;
 Owners of firms producing items of paper, rubber, animal and plant waste, and plastics (synthetics).
- 8116 Owners of firms offering cargo and transportation services
 Taxicab owners;
 Owners of buses, minivans, trucks, cargo-trucks;
 Owners of specialized vehicles: jacks, elevators, hydraulic ramps, cranes, tank trucks for transportation of cement, chemicals, sewage disposing trucks, waste trucks;
 Owners of firms providing intracity and intercity (long distance) passenger transportation;
 Owners of carrier firms of national and international range;
 Owners of cargo-carrier firms;
 Owners of horse-powered cargo transportation vehicles(coachmen).
- 8118 Owners of other production facilities
 Owners of other production facilities: bakeries, patisseries, charcuteries (cured meat shops), etc.;
 Persons running production businesses as (leasing) agents.
- 8400 OWNERS OF FIRMS IN INTANGIBLE AND PERSONAL SERVICES**
- 8410 Owners of firms in intangible services**
- 8411 Owners of money exchange facilities and pawnshops
 Owners of money exchange facilities – pawnshops, credit agencies, foreign exchange shops, etc.;
 Pawnshop money-lenders.
- 8412 Owners of consulting firms in technical, economic, and legal matters, and publicity and advertising agencies
 Owners of consulting firms in technical, economic, and legal matters, and publicity and advertising agencies.

- 8413 Owners of computer firms and audiovisual, photographic, and desktop publishing services
Owners of computer firms and audiovisual, photographic, and desktop publishing services.
- 8414 Owners of travel, tourist, and entertainment agencies
Owners of travel, tourist, and entertainment agencies, tennis courts, fitness clubs, sports clubs, survival schools.
- 8415 Owners of real estate agencies
Owners of real estate agencies.
- 8416 Owners of hotels and boarding houses
Owners of hotels, inns, lodges, boarding houses, hostels, motels, bed-and-breakfast facilities, guest-rooms, camping sites;
Persons running hotel business on the basis of agent contract, franchise authorization, or similar.
- 8417 Owners of barber-shops and beauty-parlors
Owners of barber-shops, beauty-parlors, and others (e.g., sauna, massage parlors).
- 8418 Owners of restaurants, fast-food services, cafés, and similar shops
Owners of restaurants, buffets, cafeterias, canteens, fast-food services, cafés, pubs (also called landlords), carry-out service, and similar shops;
Persons running food service on the basis of agent contract, franchise authorization, or similar.
- 8419 Owners of other firms in intangible and personal services
Owners of other firms in intangible and personal services;
Owners of schools and training courses;
Owners of funeral homes.
- 8600 **OWNERS OF STORES AND OTHER TRADE FACILITIES**
Owners of stores, other trade facilities, sales outlets, supermarkets, boutiques;
Owners of wholesale outlets;
Merchants;
Persons managing stores, sales outlets, on the basis of agent contract (lease).
- 9000 **NON-CLASSIFIED OR NOT APPLICABLE**
- 9100 **OTHER NON-CLASSIFIED OCCUPATIONS**
Other non-classified occupations.
- 9900 **STANDARD RESIDUAL CATEGORIES**
- 9990 **Standard residual categories**
- 9998 Missing data
Missing data, not available, don't know, DKs, hard to say, refusals.
- 9999 Not applicable
Not applicable, not asked.

REFERENCES

- Andorka, R. and T. Kolosi. 1984. *Stratification and Inequality*. Budapest: Institute for Sociology.
- Bakker, B. and C. Jol. 1997. "Socio-economic Status: the Choice between Reference Persons." *Netherlands Official Statistics* (Summer): 48-55.
- Bechhofer, F. and B. Elliot. 1981. „Petty property: the survival of a moral economy”. Pp. 182-200 in *The Petite Bourgeoisie. Comparative Studies of Uneasy Stratum*, edited by F. Bechhofer and B. Elliot. New York: St. Martin's Press.
- Berthold, M. R. 2007. "Fuzzy Logic." Pp. 321-350 in *Intelligent Data Analysis*, edited by M. R. Berthold and D. J. Hand. Berlin, Heidelberg: Springer-Verlag.
- Blaikie, N. 1977. "The Meaning and Measurement of Occupational Prestige." *Australian and New Zealand Journal of Sociology* 13: 102-115.
- Blau, P. and O.D. Duncan. 1967. *The American Occupational Structure*. New York: Wiley.
- Blishen, R. 1958. "The Construction and Use of an Occupational Class Scale." *Canadian Journal of Economics and Political Science* 24: 519-531.
- Bojanowski, M. 2005. "Algorytm alokacji tytułów zawodowych pomiędzy respondentów w eksperckich badaniach prestiżu zawodów" (Algorithm of allocating occupational titles among respondents in an expert-involved study of occupational prestige). *ASK* 14: 79-91.
- Borucki, A. 1980. *Polska inteligencja współczesna* (Polish Contemporary Intelligentsia). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Borucki, A. 1993. *Inteligencja polska przed transformacją systemową* (Polish Intelligentsia Before the Systemic Change). *Kultura i Społeczeństwo* 1: 99-114.
- Breen, R., ed. 2004. *Social Mobility in Europe*. Oxford-New York: Oxford University Press.
- Breen, R. and D. Rottman. 1995. "Class Analysis and Class Theory." *Sociology* 29: 453-473.
- Brint, S. 1984. "New Class' and Cumulative Trend Explanations of the Liberal Political Attitudes of Professionals." *American Journal of Sociology* 90 (1): 30-71.

- Burgess, R. G., ed. 1985. *Key Variables in Social Investigation*. London: Routledge & Kegan Paul.
- Caplow, T. 1954. *Sociology of Work*. New York: McGraw Hill.
- Cichomski, B. and P. Morawski. 2002. *Polish General Social Surveys: Machine Reliable Data File 1992–1999*. Warsaw: Institute of Social Studies, University of Warsaw.
- Cichomski, B. and Z. Sawiński. 1993. *Polski Generalny Sondaż Społeczny: Struktura skumulowanych danych 1992–1993* (Polish General Social Survey: the Structure of Cumulative Data 1992-1993). Warsaw: Institute of Social Studies, University of Warsaw.
- Cichomski, B. and Z. Sawiński. 1994. *Polski Generalny Sondaż Społeczny: Struktura skumulowanych danych 1992–1994* (Polish General Social Survey: the Structure of Cumulative Data 1992-1994). Warsaw: Institute of Social Studies, University of Warsaw.
- Counts, G. S. 1925. "Social Status of Occupations." *Social Review* 33: 16–27.
- Dahrendorf, R. 1959. *Class and Class Conflict in Industrial Society*. Stanford: Stanford University Press.
- Davis, J. and T. W. Smith. 1991. *The NORC General Social Survey. A User's Guide*. Newbury Park, CA: Sage Publications.
- Davis, K. and W. E. Moore. 1945. "Some Principles of Stratification." *American Sociological Review* 10: 242–249.
- De Graaf, P. M., Harry B. Ganzeboom, and M. Kalmijn. 1989. "Cultural and Economic Dimensions of Occupational Status." Pp. 53-74 in: *Similar or Different? Continuities in Dutch Research on Social Stratification and Social Mobility*, edited by W. Jansen, J. Dronkers, and K. Varrrips. Amsterdam: SISWO.
- Deeg, M. E. and D. G. Peterson. 1947. "Changes in Social Status of Occupations." *Occupations* 25: 205–208.
- Dictionary of Occupational Titles*. 1965. Volume I. Washington, DC: U. S. Government Printing Office.
- Domański, H. 1981. "Prestiż zawodów i jego korelaty" (Occupational Prestige and Its Correlates). Pp. 121–148 in: *Zróżnicowanie społeczne w perspektywie porównawczej*, edited by K. M. Słomczyński and W. Wesołowski. Wrocław: Zakład Narodowy im. Ossolińskich.
- Domański, H. 1985. *Rola klasyfikacji zawodów w analizie struktury społecznej* (Role of classification of occupations in the analysis of social structure). Wrocław: Zakład Narodowy im. Ossolińskich.
- Domański, H. 1987. *Segmentacja rynku pracy a struktura społeczna* (Job market segmentation and social structure). Wrocław: Zakład Narodowy im. Ossolińskich.
- Domański, H. 1994. "Recomposition of Social Stratification in Poland." *Polish Sociological Review* 4: 335–358.

- Domański, H. 1996. *Na progu konwergencji. Stratyfikacja społeczna w krajach Europy Środkowo-Wschodniej* (At the Edge of Convergence. Social Stratification in Central and East-European Countries). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Domański, H. 1997. "Mobilność i hierarchie stratyfikacyjne" (Mobility and Stratification Hierarchies). Pp. 47-79 in: *Elementy nowego ładu* (Elements of the New Social Order), edited by H. Domański and A. Rychard. Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Domański, H. 1999. "Czy w Polsce zanikają klasy? Postawy wyborcze a miejsce w strukturze społecznej w latach 1991-1997" (Are Social Classes Disappearing in Poland? Voting Attitudes and the Location in Social Structure in 1991-1997). *Studia Socjologiczne* 3 (154): 83-113.
- Domański, H. 2000. *Hierarchie i bariery społeczne w latach 90* (Social Hierarchies and Barriers in the 1990s). Warsaw: Wydawnictwo ISP.
- Domański, H. 2002. *Polska klasa średnia* (Polish Middle Class). Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego.
- Domański, H. 2004a. "Selekcja pochodzeniowa do szkoły średniej i na studia" (Background Selection at Entering High School and College). *Studia Socjologiczne* 2 (173): 65-93.
- Domański, H. 2004b. *Struktura społeczna* (Social Structure). Warsaw: Wydawnictwo Naukowe Scholar.
- Domański, H. 2005. "The Polish Transformation: Structural Changes and New Tensions" *European Journal of Social Theory* 7 (4): 453-470.
- Domański, H. and D. Przybysz. 2003. "Analiza przydatności schematu EGP jako wskaźnika pozycji społecznej" (Analysis of Usefulness of EGP Scheme as Social Position Indicator) *ASK* 12: 85-116.
- Domański, H. and D. Przybysz. 2007. *Homogamia małżeńska a hierarchie społeczne* (Marital Homogamy and Social Hierarchies). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Domański, H., A. Rychard and P. Śpiewak. 2005. *Polska jedna czy wiele?* (Poland: One or Many?). Warsaw: Trio.
- Domański, H. and Z. Sawiński. 1987. "Dimensions of Occupational Mobility: the Empirical Invariance." *European Sociological Review* 3: 39-53.
- Domański, H. and Z. Sawiński. 1991. "Krystalizacja barier i podziałów społecznych" (Crystallization of social barriers and social divisions). Pp. 241-253 in: *Pamiętnik VII Ogólnopolskiego Zjazdu Socjologicznego*, edited by A. Sułek and W. Winclawski. Warsaw-Toruń.
- Domański, H. and Z. Sawiński. 1992. "Koherencja płaszczyzn struktury społecznej" (Coherence of the Dimensions of Social Structure). *Studia Socjologiczne* 3-4: 135-151.
- Domański, H. and Z. Sawiński. 1995. "Narzędzia międzykrajowych analiz porównawczych: klasyfikacja zawodów Erikson-Goldthorpe-Portocare-

- ro (*EGP*)” (Tools for Cross-country Comparative Analysis: the Erikson-Goldthorpe-Portocarero Classification of Occupations *EGP*). *Studia Socjologiczne* 3-4: 41-85.
- Domański, H. and Z. Sawiński. 1995. “Polska Społeczna Klasyfikacja Zawodów – PSKZ 1995. Propozycja badawcza” (Polish Social Classification of Occupations – PSCO 1995. A Research Proposal). *ASK* 2: 77-94.
- Domański, H., Z. Sawiński and K. M. Słomczyński. 2007. *Nowa klasyfikacja i skale zawodów* (New Classification and Occupational Scales.) Warsaw: Wydawnictwo IFiS PAN.
- Domański, H., P. Sztabiński and F. Sztabiński. 1993. “Problemy ilościowych badań akademickich w latach dziewięćdziesiątych” (Problems in Quantitative Academic Research in the 1990s). *Kultura i Społeczeństwo* 3: 127-134.
- Dorfman, R. (1979). “A Formula for the Gini Coefficient.” *The Review of Economics and Statistics* 61: 146-149.
- Duke, V. and S. Edgell. 1987. “The Operationalization of Class in British Sociology: Theoretical and Empirical Considerations.” *British Journal of Sociology* 38 (4).
- Duncan, O. D. 1961a. “A Socio-economic Index for all Occupations.” Pp. 109-138 in: *Occupations and Social Status*, edited by A. J. Reiss, Jr. New York: Free Press.
- Duncan, O. D. 1961b. “Properties and Characteristics of the Socio-economic Index.” Pp. 139-161 in: *Occupations and Social Status*, edited by A. J. Reiss, Jr. New York: Free Press.
- Duncan-Jones, P. 1972. “Social Mobility, Canonical Scoring and Occupational Classification.” Pp. 191-210 in: *The Analysis of Social Mobility Methods and Approaches*, edited by K. Hope. Oxford: Clarendon Press.
- Edwards, A. 1917. “Social-Economic Groups of the United States. Gainful workers of the United States classified by socio-economic groups and strata.” *Publications of the American Statistical Association* 15: 643-661.
- Elias, P. 1997. *Occupational classification: concepts, methods, reliability, validity and cross-national comparability*. Coventry: Institute for Employment Research, University of Warwick.
- Elias, P. 2000. “Status in Employment: a world survey of practices and problems.” *Bulletin of Labour Statistics* 11-21, Geneva: ILO.
- Elias P. and M. Birch. 1994. “ISCO 88 (COM.) A Guide for Users.” Institute for Employment Research, University of Warwick.
- Elias P. and M. Birch. 2005. “The Review of ISCO-88: A European Perspective.” A paper presented at the ESeC Workshop on Application of the Classification.
- Encyklopedyczny Przewodnik: Zawody i Specjalności w Szkolnictwie Zawodowym* (Encyclopedic Guide: Occupations and Specialties in Vocational Training). 1973. Warsaw: PWN.

- Erikson, R. and J. Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford: Clarendon Press.
- Erikson, R., J. H. Goldthorpe and L. Portocararo. 1979. "Intergenerational Class Mobility in Three Western European Societies: England, France and Sweden." *British Journal of Sociology* 30: 415-445.
- ESOMAR. 1997. *Standard Demographic Classification*. Amsterdam (manuscript).
- Evans, G. 1992. "Testing the Validity of the Goldthorpe Class Schema." *European Sociological Review* 8 (3): 211-232.
- Featherman, D. and R. M. Hauser. 1978. *Opportunity and Change*. New York: Academic Press.
- Fine, S. A. and C. A. Heinz. 1958. "The Functional Occupational Classification Structure." *Personnel and Guidance Journal* 37: 180-192.
- GUS. 1970a. *Systematyczny Słownik Zawodów dla potrzeb Narodowego Spisu Powszechnego* (Systematic Dictionary of Occupations for the 1970 National Census). Warsaw: GUS (Central Statistical Office).
- GUS. 1970b. *Alfabetyczny Słownik Zawodów dla potrzeb Narodowego Spisu Powszechnego* (Systematic Dictionary of Occupations for the 1970 National Census). Warsaw: GUS (Central Statistical Office).
- GUS. 1978a. *Systematyczny słownik zawodów (rodzajów wykonywanych czynności) dla potrzeb Narodowego Spisu Powszechnego* (Systematic Dictionary of Occupations (kinds of working tasks) for the National Census). Warsaw: GUS (Central Statistical Office), Census Office.
- GUS. 1978b. *Klasyfikacja grup społeczno-zawodowych. (Narodowy Spis Powszechny - 1978)* (Classification of Socio-occupational Groups. 1978 National Census). Warsaw: GUS (Central Statistical Office). (Mimeo).
- GUS. 1984. *Klasyfikacja Zatrudnionych w Gospodarce Uspołecznionej* (Classification of Working Persons Employed in National Economy). Warsaw: GUS (Central Statistical Office).
- Ganzeboom, H. B. G. and D. J. Treiman. 1996. "Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classification of Occupations." *Social Science Research* 25: 201-239.
- Ganzeboom, H. B. G. and D. J. Treiman. 2003. "Three Internationally Standardised Measures for Comparative Research on Occupational Status." Pp. 159-194 in: *Advances in Cross-National Comparison. A European Working Book for Demographic and Socio-Economic Variables*, edited by J. H. P. Hoffmeyer-Zlotnik and Ch. Wolf. New York: Kluwer Academic/ Plenum Publishers.
- Ganzeboom, H. B., R. Lujikx and D. J. Treiman. 1989. "Intergenerational Class Mobility in Comparative Perspective." *Research in Social Stratification and Mobility* 8: 3-84.

- Ganzeboom, H. B. G., P. M. De Graaf and D. J. Treiman. 1992. "A Standard International Socio-Economic Index of Occupational Status." *Social Science Research* 21: 1-56.
- Gardawski, J. 1996. *Przyzwolenie ograniczone. Robotnicy wobec rynku i demokracji.* (Limited Consent: Workers vis-à-vis Democracy and the Market). Warsaw: Polish Scientific Publishers.
- Gardawski, J. 1997. *Między nadzieją i lękiem: społeczne efekty prywatyzacji* (Between Hope and Fear: Social Effects of Privatization). Warsaw: SGH KS.
- Goldthorpe, J. H. 1980. *Social Mobility and Class Structure in Modern Britain.* Oxford: Clarendon.
- Goldthorpe, J. H. 1982. "On the Service Class: Its Formation and Future." Pp. 162-85 in: *Social Class and Division of Labour*, edited by A. Giddens, G. McKenzie. Cambridge: Cambridge University Press.
- Goldthorpe, J. H. 2000. "Social Class and the Differentiation of Employment Contracts." Pp. 206-29 in: *On Sociology: Numbers, Narratives and the Integration of Research and Theory*, edited by J.H. Goldthorpe. Oxford: Oxford University Press.
- Gorlach, K. 2001. *Świat na progu domu: rodzinne gospodarstwa rolne w Polsce w obliczu globalizacji* (World at the Doorstep: Family Farms in Poland in the Face of Globalization). Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.
- Górniak, J. 2000. "Zastosowanie analizy korespondencji w badaniach społecznych i marketingowych" (Using Correspondence Analysis in Social and Marketing Research Studies). *ASK: Społeczeństwo, Badania, Metody* 9: 115-136.
- Grusky D.B. and S.E. Van Rompaey. 1992. "The Vertical Scaling of Occupations: Some Cautionary Comments and Reflections." *American Journal of Sociology* 97: 1712-1728.
- Hall, J. and D. C. Jones. 1950. "The Social Grading of Occupations." *British Journal of Sociology* 1: 31-55.
- Hauser, R. M. and Warren, J. R. 1997. "Socioeconomic Indexes for Occupations: A Review, Update, and Critique." Pp. 177-298 in: *Sociological Methodology*, edited by A. E. Raftery. Cambridge, MA: Basil Blackwell.
- Hodge, R. W., P. M. Siegel and P. H. Rossi. 1964. "Occupational Prestige in the United States, 1925-1963." *American Journal of Sociology* 70: 286-302.
- Hoffman, E. 2003. "International Comparisons of Occupational and Social Structures: Problems, Possibilities and the Role of ISCO-88." Pp. 137-158 in: *Advances in Cross-National Comparison*, edited by J. H. P. Hoffmeyer i Ch.Wolf. New York: Kluwer Academic.
- Hout, M. 1988. "More Universalism, Less Structural Mobility: The American Occupational Structure in the 1980s." *American Journal of Sociology* 93: 1358-1400.

- Inkeles, A. and P. H. Rossi. 1956. "National Comparisons of Occupational Prestige." *American Journal of Sociology* 66: 1-34.
- ILO. 1990. *International Labour Standard Classification of Occupations, ISCO-88*. Geneva: International Labour Office.
- IPiSS. 1983. *Klasyfikacja zawodów i specjalności* (Classification of Occupations and Specialties). Warsaw: Wydawnictwo Akcydensowe.
- ISCO-88 COM. 1994. *A Guide for Users*. University of Warwick, U.K.
- Jackson, E. and R. F. Curtis. 1968. "Conceptualization and Measurement in the Study of Social Stratification." Pp. 1123-1149 in: *Methodology of Social Research*, edited by H. M. Blalock and A. B. Blalock. New York: McGraw-Hill.
- Janicka, K., ed. 1987. *Zróżnicowanie społeczne i jego percepcja w latach 1965-1980* (Social Stratification and Its Perception in Years 1965-1980). Wrocław: Zakład Narodowy im. Ossolińskich.
- Janicka, K. 1997. *Sytuacja pracy a struktura społeczna* (Situation of Work and Social Structure). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Jasiecki K. 2009. *Elita bogactwa w Polsce. Szacunki liczebności według kryterium prywatnych aktywów finansowych* (Elite of Wealth in Poland. Estimations of Size, Based on Private Financial Assets). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences. Unpublished manuscript.
- Jencks, Ch, L. Perman and L. Rainwater. 1988. "What is a good job? A New Measure of Labor-market Success." *American Journal of Sociology* 93: 1322-1357.
- Kahl, J. A. and J. A. Davis. 1955. "A Comparison of Indexes of Socio-economic Status." *American Sociological Review* 20: 317-325.
- Kerbo, H. R. 1996. *Social Stratification and Inequality*. New York-London: McGraw-Hill.
- Kerr, C., J. T. Dunlop, F. H. Harbison and C. A. Myers. 1960. *Industrialism and Industrial Man*. Cambridge: Harvard University Press.
- Kohn, M. L. 1969. *Class and Conformity*. Homewood: Dorsey Press.
- Kohn, M. L. 1977. *Class and Conformity: A Study in Values. Second edition, with Reassessment*. Chicago: Chicago University Press.
- Kohn, M. L. and C. Schooler. 1986. *Struktura społeczna a osobowość* (Social Structure and Personality). Warsaw: Polish Scientific Publishers.
- Kohn, M. L. and K. M. Slomczynski. 1990. *Social Structure and Self-Direction*. Cambridge: Blackwell.
- Krymkowski, D. H., Z. Sawiński and H. Domański. 1996. "Classification Schemes and the Study of Social Mobility: A detailed Examination of the Blau-Duncan Categories." *Quality and Quantity* 30: 301-321.
- Kunst, A., A. J. Roskam and H. van Agt. 2005. *The European Socioeconomic Classification (ESEC): Exploring its Potential to Describe Class Differen-*

- ces in Health Among Middle-aged Men and Women in 11 European Countries*. Rotterdam: Department of Public Health, Erasmus MC.
- Leiulfsrud, H., I. Bison and H. Jensberg. 2005. *Social Class in Europe. European Social Survey 2002/3*. Norwegian University of Technology and Science and University of Trento.
- Lelińska, K., M. Gruza and J. Stahl. 2004. *Nowa Klasyfikacja Zawodów i Specjalności* (New Classification of Occupations and Specialties). Warsaw: Instytut Pracy i Spraw Socjalnych.
- Marshall, G. 1997. *Repositioning Class. Social Inequality in Industrial Societies*. London: Sage.
- Marshall, G., S. Roberts and C. Burgoyne. 1996. "Social Class and Underclass in Britain and the USA." *British Journal of Sociology* 47: 22-23.
- Marshall, G., S. Roberts, C. Burgoyne, A. Swift and D. Routh. 1995. "Class, Gender and the Asymmetry Hypothesis." *European Sociological Review* 11: 1-15.
- Müller, W. and M. Gangl 2003. *Transitions from Education to Work in Europe. The Integration of Youth on EU Labour Markets*. Oxford: Oxford University Press, pp. 107-128.
- Müller, W. 2005. "Education and Youth Integration into European Labour Markets." *International Journal of Comparative Sociology* 46 (5-6): 461-485.
- Nam, Ch. B. and M. G. Powers. 1983. *The Socioeconomic Approach to Status Measurement: with a guide to occupational and socioeconomic status scores*. Houston: Cap and Gown Press.
- NIOSH. 2005. *Standardized occupational & industry coding*. Washington, DC: National Institute for Occupational Safety and Health.
- North, C. C. and P. K. Hatt. 1947. "Jobs and Occupations: A Popular Evaluation." *Opinion News* 9: 3-13.
- Ossiander, E. M. and S. Milham. 2006. "A computer system for coding occupation." *American Journal of Industrial Medicine* 49(10): 854-7.
- Ostby, L. et al. 2000. *Harmonisation of Recommended Core Units: Variables and Classifications*. Luxembourg: Eurostat.
- Parcel, T. and K. Benefo. 1987. "Temporal Change in Occupational Differentiation". *Work and Occupations* 14(4): 514-532.
- Parkin, F. 1979. *Marxism and Class Theory: A Bourgeois Critique*. London: Tavistock. Prince 1961.
- Parsons, T. 1951. *The Social System*. New York: Free Press.
- Pohoski, M., K. M. Słomczyński and K. Milczarek. 1974. *Spoleczna Klasyfikacja Zawodów* (Social Classification of Occupations). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Pohoski, M., K. M. Słomczyński and W. Wesołowski. 1976. "Occupational Prestige in Poland." *Polish Sociological Bulletin* 4: 63-77.

- Pohoski, M. and K. M. Słomczyński. 1978. *Spoleczna Klasyfikacja Zawodów* (Social Classification of Occupations). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Prandy, K. 1999. "Class, Stratification and Inequalities in Health: a comparison of the Registrar-Generals Social Classes and the Cambridge Scale." *Sociology of Health and Illness* 21: 466-484.
- Robinson, J. P. 1969. *Measures of Occupational Attitudes and Occupational Characteristics*. Ann Arbor: Institute of Social Research.
- Rose, D. and D. J. Pevalin. 2002. "The National Statistics Socio-economic Classification: Unifying Official and Sociological Approaches to the Conceptualisation and Measurement of Social Class in the United Kingdom." *Sociétés Contemporaines* 45/46: 75-106.
- Rose, D. and D. J. Pevalin. 2005. *National Statistics Socio-Economic Classification: Origins, Development and Use*. Basingstoke: Palgrave Macmillan.
- Rose, D. and E. Harrison. 2005. *Validation of the European Socio-Economic Classification for Countries Participating in Round 1 of the European Social Survey*. ISER, University of Essex (unpublished conference paper).
- Rose, D., D. J. Pevalin, P. Elias, and J. Martin. 2001. *Towards a European Socio-economic Classification: Final Report to Eurostat of the Expert Group*. London and Colchester: ONS and ISER, University of Essex.
- Rosenberg, M. 1957. *Occupational and Values*. Glencoe: Free Press.
- Rytina, S. 1992. "Scaling the Intergenerational Continuity of Occupation; is occupational inheritance ascriptive after all." *American Journal of Sociology* 97 (6): 1658-1688.
- Sawiński, Z. 1995. *Klasyfikacje zawodów w badaniach społecznych* (Classifications of Occupations in Social Surveys). *ASK* 2: 53-75.
- Sawiński, Z. 2005. *Proponowane modyfikacje Społecznej Klasyfikacji Zawodów SKZ-78 (93) w świetle wyników kodowania* (Proposal for modifying Social Classification of Occupations SCO-1978(93) in the light of coding results). Report prepared as part of a grant sponsored by Committee for Scientific Research
- Sawiński, Z. and H. Domański. 1986. *Wymiary struktury społecznej. Analiza porównawcza* (Dimensions of Social Structure. A Comparative Analysis.) Wrocław: Zakład Narodowy im. Ossolińskich.
- Sawiński, Z. i H. Domański. 1987. *Socjologiczna klasyfikacja zawodów. Ekspertyza wykonana dla Departamentu Biura Spisów GUS* (Sociological classification of occupations. Expertise for the Office of Census Department, Central Statistical Office). (Manuscript).
- Sawiński, Z. and H. Domański. 1989a. "Dimensions of Social Stratification: A Comparative Analysis." *International Journal of Sociology* 19(1): 1-102.

- Sawiński, Z. i H. Domański. 1989b. "Struktura społeczna w Polsce. Zróżnicowanie w świetle badań. (Social Structure in Poland: Stratification Shown in Research Studies)" *Nowe Drogi* 7 (482): 61-73.
- Schumpeter, J. A. 1951. *Imperialism and Social Classes*. Oxford: Blackwell.
- Scruton, J. 2007. "Introduction of automatic occupation coding in ASHE." *Economic & Labour Market Review* 1(8): 29-32.
- Siegel, P. M. 1971. *Prestige in the American Occupational Structures*. Ph. D. dissertation. University of Chicago (manuscript).
- Sixteenth Census of the United States: 1940. *Population. Occupation Statistics for the United States 1870-1940. 1943*. Washington D. C.: U. S. Government Printing Office.
- Słomczyński, K. M. 1972. *Zróżnicowanie społeczno-zawodowe i jego korelaty* (Socio-occupational Stratification in Poland and Its Correlates). Wrocław: Zakład Narodowy im. Ossolińskich.
- Słomczyński, K. M. 1983. *Pozycja zawodowa i jej związki z wykształceniem* (Occupational Position and Its Relationship with Education). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Słomczyński, K. M., ed. 2000. *Social Patterns of Being Political*. Warszawa: IFiS Publishers.
- Słomczyński, K. M., ed. 2002. *Social Structure: Changes and Linkages*. Warszawa: IFiS Publishers.
- Słomczyński, K. M. and J.-H. Lee. 1993. "The Nomenklatura System in Poland, 1978-1987: A Case of Political Segmentation of the Labor Force." *Polish Sociological Review* 104 (4): 281-291.
- Słomczyński, K. M., W. Zaborowski and B. W. Mach. 1998. "Social Structure and Aversion to Systemic Change: A Comparative Analysis of Poland and Ukraine." *International Journal of Sociology* 28 (2): 91-114.
- Słomczyński K. M. and K. Janicka. 2005. "Pęknięta struktura społeczna." Pp. 162-184 in: *Polska, ale jaka?* (Poland; but what Poland?), edited by M. Jarosz. Warsaw: Oficyna Naukowa.
- Słomczyński, K. M. and G. Kacprowicz. 1979. *Skale zawodów* (Scales of Occupations). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Słomczyński, K. M. and M. L. Kohn (with collaboration of: K. Janicka, J. Koralewicz, J. Miller, C. Schoenbach, R. Schoenberg and A. Zawadzka). 1988. *Sytuacja pracy i jej psychologiczne konsekwencje* (Situation of Work and Its Psychological Consequences). Wrocław: Ossolineum.
- Słomczyński, K. M. and W. Wesółowski. 1973. *Struktura i ruchliwość społeczna* (Social Structure and Mobility). Wrocław: Zakład Narodowy im. Ossolińskich.

- Slomczynski, K. M. and G. Shabad. 1997. "Systemic Transformation and the Salience of Class Structure in East Central Europe." *East European Politics and Societies* 11 (Winter): 155-189.
- Słomczyński, K. M., K. Janicka and W. Wesolowski. 1994. *Badania struktury społecznej Łodzi: doświadczenia i perspektywy* (Research on Social Structure in Łódź: Experience and Perspectives). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Słomczyński, K. M., K. Janicka, B. W. Mach and W. Zaborowski. 1996. *Osobowość a struktura społeczna: psychologiczne funkcjonowanie jednostki w warunkach zmiany społecznej* (Personality and Social Structure: Psychological Functioning of the Individual under Conditions of Social Change). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Smith, M. 1943. "An Empirical Scale of Prestige Status of Occupations." *American Sociological Review* 8: 185-192.
- Sorokin, P. 1959 [1927]. *Social and Cultural Mobility*. New York: The Free Press.
- Spenner, K.I. 1983. "Deciphering Prometheus: Temporal Change in the Skill Level of Work". *American Sociological Review* 48: 824-837.
- Stevens, G. and D. Featherman. 1981. "A Revised Index of Occupational Status". *Social Science Research* 10: 364-395.
- Stevenson, T. H. C. 1928. "The Vital Statistics of Wealth and Poverty." *Journal of the Royal Statistical Society* 91: 207-230.
- Stewart, A., K. Prandy and R. Blackburn. 1980. *Social Stratification and Occupations*. London: Macmillan.
- Sztabiński, P. 2004. "Metodologia badania Europejski Sondaż Społeczny" (Methodology of the European Social Survey). *ASK: Społeczeństwo, Badania, Metody* 13: 27-38.
- Sztabiński, P. B. and F. Sztabiński. 2006. "Europejski Sondaż Społeczny: integracja w dziedzinie badań" (European Social Survey: Integration of Research). Pp. 13-25 in: *W środku Europy? Wyniki Europejskiego Sondażu Społecznego* (In the Middle of Europe? Results of the European Social Survey), edited by H. Domański, A. Ostrowska, and P. Sztabiński. Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.
- Temme, L. 1975. *Occupations: Meaning and Measures*. Washington, DC: Bureau of Social Science Research.
- Treiman, D. J. 1977. *Occupational Prestige in Comparative Perspective*. New York: Academic Press.
- Treiman, D. J. and K. Yip. 1989. "Educational and Occupational Attainment in 21 Countries." Pp. 373-394 in: *Cross-National Research in Sociology*, edited by M. L. Kohn. Newbury Park, CA: Sage.
- Treiman, D. J. and K. Roos. 1983. "Sex and Earnings in Industrial Society: a Nine-nation Comparison." *American Journal of Sociology* 89: 612-650.

- UNESCO. 1997. *International Standard Classification of Education*. Paris: General Conference, 29th session, November. Also: http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.html.
- US Department of Labor. 1965. *Dictionary of Occupational Titles*. Washington, DC: Department of Labor. Also: <http://www.occupationalinfo.org/contents.html>.
- Van der Werfhorst, H. G. and N. D. de Graaf. 2004. "The Sources of Political Orientations in Post-industrial Society: Social Class and Education Revisited." *British Journal of Sociology* 55 (2): 211-235.
- Warren, J. R., J. T. Sheridan and R. M. Hauser. 1998. "Choosing a Measure of Occupational Standing: How Useful Are Composite Measures in Analyses of Gender Inequality in Occupational Attainment." *Sociological Methods & Research* 27: 3-76.
- Wasilewski, J. 1990. *Spoleczne procesy rekrutacji regionalnej elity władzy* (Social Processes of Recruitment to the Regional Power Elite). Wrocław: Zakład Narodowy im. Ossolińskich.
- Weeden, K. A. and D. B. Grusky. 2005. "The Case for a New Class Map." *American Journal of Sociology* 111 (1): 141-212.
- Wegener, B. 1992. "Concepts and Measurement of Prestige". *Annual Review of Sociology* 18: 252-280.
- Wesołowski, W. 1970. "Teoretyczne i metodologiczne problemy badań nad strukturą klasowo-warstwową" (Theoretical and Methodological Problems in Research on Social Structure and Stratification). Pp. 7-54 in: *Zróżnicowanie społeczne* (Social Stratification), edited by W. Wesołowski. Wrocław: Zakład Narodowy im. Ossolińskich.
- Wesołowski, W. and A. Sarapata. 1961. "The Evaluation of Occupations by Warsaw Inhabitants." *American Journal of Sociology* 66 (6): 581-591.
- Wiley, W. W. 1969. "Six Steps to New Careers." Pp. 1-25 in: *A System Approach to New Careers*, edited by W. W. Wiley and S. A. Fine. Kalamazoo: The Upjohn Institute for Employment Research.
- Wolf, W.C. and N.D. Fliegstein. 1979. "Sex and Authority in the Workplace: The causes of Sex Inequality". *American Sociological Review* 44: 235-252.
- Wright, E. O. 1997. *Class Counts. Comparative Studies in Class Analysis*. London: Verso.
- Zeitlin, M. 1974. "A corporate ownership and control: The large corporation and the capitalist class". *American Journal of Sociology* 79: 1073-1120.
- Zaborowski, W. 1995. *Orientacje egalitarne w społeczeństwie polskim w latach 1988-1993* (Egalitarian Attitudes in the Polish Society in the Years 1988-1993). Warsaw: Institute of Philosophy and Sociology, Polish Academy of Sciences.

INDEX

- A**
administrative workers, 46, 223, 245,
247, 254, 257, 259, 262, 263, 271
aggregating occupations, 8, 19,
239-241, 251
agricultural categories; *see* farmers,
peasants
Agt van, H., 36, 320
American Occupational Structure, 22,
27
Andorka, R., 48, 313
armed forces, 29-30, 58, 75, 79, 90, 113,
117, 153, 157, 162, 168, 174, 200,
203, 243, 246, 275-276, 293
- B**
Bakker, B., 36, 313
barriers, social, 249, 315
basic classification units, 17-19, 47-48,
51-52, 57, 188, 192
Bechhofer, F., 313
Benefo, K., 36, 320
Berthold, M. R., 82, 313
Birch, M., 30, 45, 57, 316
Bison, I., 33, 320
Blackburn, R., 41, 323
Blaikie, N., 38, 313
Blalock, A. B., 319
Blalock, H. M., 319
Blau, P., 22, 27, 313
Blishen, R., 39, 40, 313
Bojanowski, M., 14, 155, 313
Borucki, A., 244, 313
Breen, R., 22, 28, 313
Brint, S., 244, 313
Burgess, R. G., 48, 314
Burgoyne, C., 43, 320
business activity, 17, 131, 133, 208
business owners, 31-34, 166, 178, 183,
223, 239-241, 243, 250, 255, 257,
259-261, 264, 267, 309
- C**
Cambridge Scale, 41
Caplow, T., 26
categories, residual, 7, 182, 185,
190-192, 196, 222, 311
Center for Public Opinion Research, 63,
152
Central Statistical Office (*or* CSO, GUS),
9, 46-48, 51, 63, 152,
Cichomski, B., 56, 57, 59-60, 64, 252,
314
*Classification of Occupations and
Specialties*, 47, 139, 149, 155,
319-320
*Classification of Occupations of
Vocational Training*, 139
clerks, 29, 53, 63, 72, 75, 78-80, 112-13,
162, 173, 246, 283, 292-294
coding occupations, 6-7, 17-18, 45,
55-56, 61, 63, 78, 86, 98, 108, 134,
181-184, 191, 206-207, 209-211,
215, 227, 235-236, 241
complexity of work, scale of, *see* scales
of occupations
computer aided coding, 181
correspondence analysis, 8, 12,
252-254, 269-270, 318
Counts, G. S., 37, 314

- criteria for occupational classification, 63
- cross-national studies; *also* cross-national research and perspectives, 13, 22, 29, 31, 237
- Curtis, R. F., 137, 319
- Czech Republic, 243
- D**
- Dahrendorf, R., 243, 262, 314
- Data - People - Things, 140
- Davis, J., 57, 314
- Davis, J. A., 38, 319
- Davis, K., 22, 37, 314
- Deeg, M. E., 37, 314
- De Graaf, P. M., 15, 33, 41, 57, 314, 317, 318
- desired levels of formal education (*DES*), 139-140
- Dictionary of Occupational Titles*, 138, 141, 144
- differentiation of worker's category, 118
- distinguishing key words, 6, 7, 188, 196, 201
- divisions, social, 18-19, 23, 34, 48, 53, 64, 240, 249, 265, 315
- Domański, H., 13-14, 23-24, 33-34, 38, 43, 46, 56, 59, 152, 154, 185, 190, 211, 236, 241-242, 244-245, 247-249, 252, 314-316, 319, 321-322
- Dorfman, R., 79, 316
- Duke, V., 87, 316
- Duncan, O.D., 22, 27, 36, 40-42, 149, 316
- Duncan's *SEI*, 40, 42
- Duncan-Jones, P., 316
- Dunlop, J. T., 22, 319
- E**
- East Europe (Eastern Europe, East/Eastern European countries and societies), 15-17, 29, 33-34, 44, 48, 85, 315, 323
- Edgell, S., 87, 316
- education, 4, 9, 13, 19, 22-26, 28, 31, 38-41, 58, 62, 75, 80, 88, 91, 97-101, 104, 107, 110, 112, 138-140, 148-149, 157, 161, 168, 172, 209, 216, 218, 240, 242-245, 264-265, 277-278, 282, 289-291, 322
- Edwards, A., 26-27, 316
- EGP* class schema, 16, 24, 30-36, 60, 240, 242, 246-247, 261, 263, 315-316
- elementary codes, 8, 267, 271, 273
- elementary occupational categories; *see* basic classification units
- Elias, P., 30, 34, 45, 57, 316, 321
- Elliot, B., 313
- employed, 24, 27, 30, 32, 34-36, 42, 52, 73, 107, 122-123, 133-134, 208, 217, 243, 246, 250, 266, 274, 308, 317
- entrepreneurs and business owners, 166, 178, 183, 193, 250, 260, 309
- Encyclopedic Guide: Occupations and Specialties in Vocational Training*, 144, 317
- Erikson, R., 16, 22, 31-32, 263-264, 317
- Erikson-Goldthorpe-Portocarero class schema, *see* *EGP* class schema
- ESOMAR Social Grade*, 8, 242, 265, 273
- European Social Survey*, 17, 29, 33, 57, 69, 211, 252, 268-269, 271, 320, 323
- European Socio-economic Classification (ESeC)*, 34-36, 316, 320
- Evans, G., 264, 317
- F**
- factor analysis (factor loadings, factor), 11, 145-146
- family income, 24
- farm owners, 27, 32-33, 71-72, 129, 166, 178, 194, 223, 249-250, 255, 257, 259, 261, 263, 309
- farmers, 6, 10, 27, 31-33, 46, 52-53, 71-72, 76-81, 118, 126, 129-130, 166, 178, 194, 239-241, 249, 255, 257-258, 265-267, 270, 272, 309
- Featherman, D., 22, 27, 36, 317

- Fine, S. A., 140, 317
 Fliegstein, N.D., 36, 324
 foremen, 6, 10, 27-28, 59, 63, 72, 93, 95,
 98, 100-101, 103, 105, 111, 116-118,
 121-122, 134, 139, 163, 175, 223,
 245-249, 255, 257, 263, 270, 271,
 279, 296-297
 fuzzy classification (*Fuzzy Logic*), 82, 313
- G**
 GUS, 15, 46-47, 51, 57, 139, 144, 150-151,
 317, 321
 Gangl, M., 22, 320
 Ganzeboom, H. B., 15, 16, 22, 30, 33, 39,
 41, 57, 156, 314, 317, 318
 Gardawski, J., 248, 318
 gender, 189, 218
General Educational Development -
GED, 138, 140
 general management, 266
General Social Survey, 41, 251
 Germany, 263
 Goldthorpe, J. H., 16, 22-23, 31-32, 35,
 262-264, 317-318
 Gorlach, K., 249, 318
 Górnjak, J., 318
 Grusky, D. B., 36, 251, 318, 324
 Gruza, M., 155, 320
- H**
 Hall, J., 38, 318
 Hand D. J., 313
 Harbison, F. H., 22, 319
 Harrison, E., 36, 321
 Hatt, P. K., 37, 320
 Hauser, R. M., 22, 27, 40, 317, 318, 324
 Heinz, C. A., 140, 317
 hierarchy, of occupations 140, 155
 of organizations or institutions, 59,
 61, 83
 of positions, 183, 240
 of prestige, 38, 39
 social, 17, 30, 35, 146, 245, 247, 258,
 259, 261, 265
 high-level officials and managers, 223,
 241-243, 259-260, 262, 264
 Hodge, R. W., 38, 318
 Hoffman, E., 318
 Hoffmeyer-Zlotnik, J. H. P., 317
 Hope, K., 316
 housewife (housewives), 21, 6, 42, 195,
 266, 273, 274
 Hout, M., 27, 318
 Hungary, 48, 243
- I**
 income (*also* family income), 21, 24, 34,
 38, 43, 149, 194, 243, 247
 income, data, 15
 income and education, 24, 25, 39, 40,
 148, 149, 240, 242
 income inequality, 24
 income, occupational (job), 38, 41, 137,
 149, 151
 income and prestige, 49, 242
 Inkeles, A., 39, 319
 intelligentsia, 29, 107, 239-241,
 243-245, 250, 262, 313; *see also*
 specialists
 Institute of Philosophy and Sociology,
 Polish Academy of Sciences, 2, 13,
 18, 60, 61, 152, 236, 252, 269, 313,
 315, 319, 321-323, 325
 Internet Earnings Studies, 151
International Standard Classification of
Education, 139
International Social Survey Programme
(ISSP), 29, 57
International Socio-Economic Index of
Occupational Status (ISEI), 16, 41, 156
International Standard Classification of
Occupations, 16, 29, 33, 45, 46, 57,
 69, 139
ISCO-88 (also ISCO 1988), 9, 10, 34,
 39, 79-81, 104, 112-117, 119-120,
 127-128
ISCO-88 (COM) or ISCO-88 (COM), 29,
 34, 35, 45, 57

investments (in individual's career),
137, 148

J

Jackson, E., 137, 319
Janicka, K., 14, 50, 51, 319, 322, 323
Jansen, W., 314
Jarosz, M., 322
Jasiecki K., 250, 319
Jencks, Ch., 36, 319
Jensberg, H., 33, 320
jobless (unemployed), 21, 35, 42, 195
job, current (*or last*), 43, 207, 214
 first 56, 69, 207, 209, 214, 232, 233
 main, 21, 42, 211
job market, 15, 21, 45, 85, 86, 108, 119,
130, 134, 248
job (also occupational) title 44, 207, 208,
216, 217, 219, 228
job security, 23, 34, 244
Jol. C., 36, 313
Jones, D. C., 38, 318

K

Kacprowicz, G., 17, 40, 53, 140, 144-145,
148-149, 152, 154-155, 322
Kahl, J. A., 38, 319
Kalmijn, M., 33, 57, 314
Kerbo, H. R., 243, 319
Kerr, C., 22, 319
Kohn, M. L., 140, 141, 145, 244, 247, 319,
322, 324
Kolosi, T., 48, 313
Koralewicz, J., 322
Krymkowski, D. H., 251, 319
Kunst, A., 36, 319

L

labor contract, 34, 35, 263
labor, division of, 21, 30, 33, 45, 48-51,
54, 55, 57, 59, 64, 81, 86, 243, 25, 246
laborers, 27, 128, 129, 166, 178, 189
 in agriculture, 27, 32, 34, 65, 178, 248,

249, 255, 257, 261-264, 271, 272,
307,308

 outside agriculture, 27, 117, 128, 165,
177, 178, 305, 307, 309
League of Polish Families, 247
Lee, J.-H., 322
Legislators, 29, 79-80, 89, 95, 157, 168,
224, 275, 289
Leiulsfrud, H., 33, 320
Lelińska, K., 155, 320
lower-level managers, 47
Lujikx, R., 22, 317

M

Mach, B. W., 322, 323
major occupational groups, 5, 9, 47, 52,
58, 78, 79, 86, 116, 135
managers, 5, 6, 9, 23, 26, 27, 29, 31-33,
46, 47, 52, 53, 58, 72, 75, 78-81, 85,
87-103, 105-107, 111, 114, 117, 146,
150, 157-160, 168, 169, 172, 183,
190, 223, 224, 241-247, 251, 253,
254, 257, 259-262, 264, 267, 271,
275-280, 288, 291, 293; *see also*
 managerial positions, 6, 10, 47, 49, 85,
97, 99, 100, 104-106, 135, 260, 267
manual workers, 6, 33-35, 46, 53, 54, 80,
81, 105, 123, 239, 241, 246-249, 257,
261, 264, 265, 271, 307
 in elementary occupations, 225, 248,
249, 255, 264
 semiskilled, 53, 54, 78, 127, 165, 305
 skilled, 6, 10, 23, 26, 27, 32, 53, 54, 63,
78, 80, 116, 119-121, 124, 125, 148,
163, 165, 175, 177, 223, 247, 248,
255, 257, 263, 265, 271, 307
 unskilled, 6, 10, 26, 32, 53, 54, 63, 78,
127, 165, 177, 241, 248, 249, 255,
257, 266, 267, 305
 simple-task, 123, 124, 165, 177, 178
marketing and management, 3, 10, 109
marital homogamy, 249, 252, 258, 315
Marshall, G., 43, 320

Martin, J., 34, 321
 material remuneration, scale of, 6, 11,
 15, 149, 150, 221; *see* scales of
 occupations
 meritocratic criteria, 243
 middle management, 266, 274
 Milczarek, K., 320
 Milham, S., 182, 183, 320
 Miller, J., 322
 Moore, W. E., 22, 37, 314
 Morawski, P., 252, 314
 Müller, W., 22, 320
 multidimensional mapping, 253
 Myers, C. A., 22, 319

N

Nam, Ch. B., 39, 40, 320
 National Opinion Research Center
 (NORC), 37
 New Classification of Occupations and
 Specialties, 155
 North, C. C. 37, 320

O

occupational data, 25, 27, 29, 45, 60,
 210, 223
 occupational division of labor 21, 50,
 243, 245
 occupational prestige, *see* scales of
 occupations
 occupational scales, *see* scales of
 occupations
 occupational structure, 16, 28, 45, 193,
 246, 269
 office workers, 46, 52, 100, 105, 111,
 112, 148, 160, 162, 171-174, 223,
 239, 246-247, 251, 254, 257, 263,
 265, 271, 286, 288, 292, 293
 Osslander, E. M., 182, 183, 320
 Ostby, L., 34, 320
 Ostrowska, A., 323
 owners, 6, 10, 23, 26-28, 31-34, 48, 49,
 53, 56, 58, 71, 72, 76, 78, 80, 104, 114,

122, 129-134, 146, 150, 166, 167,
 178, 179
 ownership of the means of production
 (workplace), 30, 49, 51, 58, 59, 70,
 71, 76, 83, 130, 134, 150

P

Parcel, T., 36, 320
 Parkin, F., 23, 320
 Parsons, T., 37, 320
 peasants, 255, 257
 people, complexity of work with, 53,
 145, 146
 people, time of work with, 146
 Perman L., 36, 319
 Peterson, D. G., 37, 314
 Pevalin, D. J., 34, 321
 Pohoski, M., 14, 17, 51-53, 60, 63, 69, 85,
 320, 321
Polish General Social Survey, 23, 57, 59,
 60, 64, 252, 314
*Polish Sociological Classification of
 Occupations (PSCO-94)*, 5, 45,
 59-61, 63
POLPAN (survey), 69
 Portocarero, L., 16, 31, 317
 position, occupational, 17, 21-25, 38,
 42, 137, 156, 184, 243, 249, 266, 267
 Powers, M. G., 39, 40, 320
 Prandy, K., 41, 323
 prestige, 6, 11, 15, 17, 19, 22, 36-42, 49,
 54, 57, 113, 137, 152, 153, 155, 156,
 168-179, 221, 240, 242, 244, 247,
 248, 261, 313, 314, 324
 professionals, 11, 23, 27, 29, 31-33, 35,
 46, 52, 53, 62, 75, 78-80, 97-99, 140,
 158, 170, 174, 204, 205, 223, 224,
 243-245, 251, 258-262, 265-267,
 271, 272, 280, 283, 289, 294
 Przybysz, D., 14, 23, 24, 34, 241, 242,
 249, 252, 315

Q

questions on occupation, 209, 216

R

- Raftery, A. E., 318
 Rainwater, L., 38, 319
 recoding of the *SCO-2009*
 into 14 and 6 categories, 271-272
 into *ESOMAR Social Grade* scale,
 273-274
 Reiss, A. J., 316
 research,
 sociological (academic), 16, 17, 36, 45,
 51, 53, 54, 59-61, 65, 264, 268
 commercial (market), 45, 59, 185, 264,
 265
 residual categories, 7, 182, 185,
 190-192, 196, 222, 311
 respondents (describing occupations),
 25, 27, 37, 67-69, 71, 73-77, 81-82,
 86-87, 130, 134
 retired, *also* retirees, 21, 42, 195, 266,
 273, 274
 rewards, 22, 31, 38, 40, 137, 149, 151,
 242, 263
 Roberts, S., 43, 320
 Robinson, J. P., 141, 321
 Roos, K., 22, 324
 Rose, D., 34, 36, 321
 Rosenberg, M., 141, 321
 Roskam, A. J., 36, 320
 Rossi, P. H., 39, 319
 Rottman, D., 313
 Routh, D., 320
 routinization, 50
 Russia, 243
 Rychard, A., 315
 Rytina, S., 41, 42, 251, 321
- S**
 sales and service workers, 6, 105, 113,
 114, 128, 162, 174, 223, 246, 260,
 261, 264, 265, 294
 Sarapata, A., 37, 324
 Sawiński, Z., 13, 23, 34, 38, 46, 56-57, 59,
 60, 63-64, 74, 76, 87, 96, 100, 102,
 104, 107-110, 115, 118, 119, 133,
 134, 185, 190, 211, 236, 241, 242,
 249, 314-316, 319, 321-322
Scale of Prestige, 152
 scale of socio-economic status, 39, 57,
 148, 149, 151, 221
 scales (indexes) of occupations,
 complexity of work, 6, 11, 140-148,
 157-167, 221, 248
 material remuneration, 6, 11, 15,
 148-151, 168-179, 221
 prestige, 6, 11, 37, 38, 152-156,
 168-179, 221
 skill requirements, 6, 11, 15, 17, 19,
 138-140, 156, 157-17, 221
 Schoenbach, C., 322
 Schoenberg, R., 322
 Schooler, C., 319
 Schumpeter, J. A., 251, 322
 Scruton, J., 182, 183, 322
 Self-Defense, 247
 self-employed, 32, 34, 52, 133, 208, 217,
 243, 250, 266, 274
 service class 27, 32, 33, 262, 263, *see also*
 EGP class scheme
 service relationship 34, 35, 263
 Shabad, G., 323
 Sheridan, J. T., 40, 324
 Siegel, P. M., 22, 36, 38, 42, 318
 size of the workplace, 34, 51, 70
 skill requirements, scale of, *see* scales of
 occupations
 skilled manual workers, 6, 10, 26, 27, 32,
 53, 63, 78, 80, 116, 119-121, 124,
 125, 148, 163, 165, 175, 177, 223,
 247, 248, 255, 257, 263, 265, 266,
 296, 304
 Słomczyński (Słomczynski), K. M., 4,
 13, 17, 40, 50, 51, 53, 56, 60, 63, 69,
 85, 138-140, 144, 145, 148, 149, 152,
 154, 155, 185, 190, 211, 236, 241,
 244, 247, 316, 319, 321-323
 Smith, M., 37, 323
 Smith, T. W., 57, 314

- Social Classification of Occupations*
1974 (SCO-1974), 51, 52, 144, 148, 152
- Social Classification of Occupations*
1978 (SCO-1978), 10, 17, 18, 45, 53, 54, 56, 60, 63, 69, 78, 85–87, 107, 108, 113, 114, 125, 127, 128, 132–135, 139, 184, 236
- Social Classification of Occupations 2009*
(SCO-2009), 10, 13, 15, 18, 19, 44, 45, 67, 68, 81, 85, 114, 116, 125, 127, 128, 134, 135, 139, 140, 145, 146, 148–151, 155–179, 181–186, 188, 190, 191–198, 207, 222, 225, 228, 230, 231, 236, 237, 239–244, 246, 247, 248, 250–252, 256, 258–261, 265, 267–269, 273, 275–311
- Socio-economic Index (SEI)*, 40, 54
- Social Grade*, see *ESOMAR Social Grade*
- social hierarchy, see hierarchy, social
- social mobility, 12, 16, 31, 41, 239, 249, 251, 253, 254, 258–260, 263
- sociological (social) classifications, 5, 18, 29, 45, 48, 50, 57, 58, 60, 64, 182, 183
- Sociological Research Center, 60, 61, see also Institute of Philosophy and Sociology, Polish Academy of Sciences
- Sorokin, P., 251, 323
- Special Vocational Training – SVT*, 138
- specialists, 6, 10, 11, 15, 17, 26, 46, 47, 63, 72, 97, 99–101, 107–110, 112, 113, 140, 144, 158–161, 169–173, 186, 187, 204, 205, 223, 243–245, 254, 257, 259, 261–264, 271, 278–289, 291, 292, 295
- Spenner, K.I., 36, 323
- Stahl, J., 155, 320
- Standard International Occupational Prestige Scale (SIOPS)*, 16, 39, 156
- Standard Occupational Classification (SOC)*, 29
- Stevens, G., 36, 323
- Stevenson, T. H. C., 26, 323
- Stewart, A., 41, 323
- supervisors, 24, 32, 33, 52, 53, 55, 78, 80, 93, 103, 111, 118, 163, 175, 247, 266, 279, 296, 297
- Swift, A., 320
- Symmetric Scaling of Intergenerational Continuity (SSIC)*, 41
- systematic (formal) classifications, 6, 45, 48, 57, 60, 64, 69, 81, 182, 183
- Systematic Dictionary of Occupations*, 46, 144, 317
- Sztabiński, F., 14, 57, 252, 316, 323
- Sztabiński, P. B., 14, 57, 152, 252, 316, 323
- Śpiewak, P., 315
- T**
- Temme, L., 139, 323
- Terminal Educational Age, 265–266
- technical specialists, 100, 223, 244–245, 259, 262, 287
- technicians, 6, 10, 29, 32, 33, 53, 63, 78–80, 100, 104, 105, 111, 113, 117, 150, 160, 161, 171–173, 223, 239, 241, 245, 247, 254, 257, 259, 262, 270, 271, 286–292
- top management, 88, 90–92, 96, 97, 100, 157, 168, 242, 250, 260, 266, 274–278
- Treiman, D. J., 15, 16, 22, 30, 33, 36, 39, 41, 57, 156, 317–318, 323
- two-dimensional CA map, 256, 258
- U**
- UK Registrar-General's Class Scheme*, 26
- unemployed (unemployment) 21, 35, 42, 195, 266, 273, 274
- unskilled workers, 62, 63, 72, 78, 122–127, 140, 189, 194, 223, 249, 255, 257, 261, 262, 272, 305, 306
- V**
- Van der Werfhorst, H. G., 244, 324
- Van Rompaey, S.E., 36, 318
- Varrips, K., 314

W

- Warren, J. R., 40, 318, 324
Wasilewski, J., 243, 324
Weeden, K. A., 251, 324
Wegener, B., 39, 324
Wesołowski, W., 14, 34, 50, 51, 140,
323-324
Wiley, W. W., 140, 324
Wolf, Ch., 317-318
Wolf, W.C., 36, 324
workers, skilled vs. unskilled, 126-129
working with *data*, 49, 53, 140-142,
144-146, 148
working with *people*, 53, 140-142,
144-146, 148

- working with *things*, 49, 53, 140-141,
143-146, 148
Wright, E. O., 16, 240, 324

Y

- years of education, *see* education
Yip, K., 22, 323
youth organizations, 89, 90, 96, 276

Z

- Zaborowski, W., 322, 324
Zawadzka, A., 322
Zeitlin, M., 242, 324



P.83131



1908313100000

Seven Reasons for

SOCIAL CLASSIFICATION OF OCCUPATIONS SCO-2009

in Your Future Research Projects

SCO-2009 is:

1. Relevant for theory

Our perspective explicitly focuses on occupation as an indicator of social position and builds a theoretical argument on the dynamics of social structure (see Chapter 1).

2. Based on experience

Social classifications of occupations have a long tradition in social research in Poland. SCO-2009 takes into account main features of this tradition and places them in international context (see Chapter 2).

3. Empirically tested

While developing SCO-2009 we analyzed 14,600 respondents' stories on their jobs. This yielded rich information on peoples' perception of their work situation that allowed for reliable coding of occupational categories (see Chapter 3).

4. Capturing social divisions

We recommend using SCO-2009 in Central and Eastern Europe as a valid tool for capturing social divisions. Is it also applicable for other countries? We invite arguments for and against (see Chapter 4).

5. Enriched by numerical scales

SCO-2009 is accompanied by scales of Skill Requirements, Complexity of Work, Material Remuneration, and Prestige. All scales are based on empirical research that guarantees their reliability and validity (see Chapter 5).

6. Computer supported

With this book we offer two computer applications:

(a) a job title searching system that can be used in any language once SCO-2009 – as provided in the Appendix – has been translated; and (b) a coding system of occupational categories on the basis of respondents' job descriptions (see Chapter 6).

7. Easily convertible into social classes

We provide recodes of the 260 basic units of SCO-2009 into various aggregate categories that correspond to social classes and other concepts of social structure (see Chapter 7).

ISBN 978-83-7388-177-8



http://788373-883778.pl