polish sociological review 2(154)'06
ISSN 1231 – 1413

TREND REPORT

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Stability and Change in Household Computer Possession in Poland: Analysis of Structural Determinants

Abstract: This article expresses the results from a set of analyses that had the following goals: 1) to describe the nature and process of informatization in Poland from 1988 to 2003; 2) to understand the factors that contribute to the digital divide in Poland; and 3) to contribute to the theoretical discourses on social dynamics and modernization. Studying the development of information and communication technologies (ICTs) in Poland is useful for both theoretical and methodological reasons. In 1989 the penetration of digital technology was low, however in 15 years since then, informatization has progressed to the point where it is on par with the rest of Western Europe and North America. This provides a good opportunity for examining the factors associated with the digital divide. Furthermore, as Poland developed intensely over a short period of time, it is likely to demonstrate a pattern similar to those countries which will go through the digital revolution in coming decades.

Keywords: informational society, personal computers, internet, digital divide, informatization, social change, occupational structure, social stratification, structural determinants.

Theoretical perspectives

Models of sequential social systemic change assume that the Information Society is the next, theoretically expected, stage of the modernization process. Since the information revolution is perceived by many as critically necessary for the advancement of developing societies, studying the diffusion of computers and the Internet is important for understanding present social change and social differentiation (Castells 2001; DiMaggio and Powell 1983). One of the most important aspects of the development of the information society is the process of 'informatisation', which includes the spread of information and communication digital technologies (ICTs) and tools such as the Internet and computers. Informatisation in the contemporary context consists of: a) widespread potential for and real access by individuals and social groups to information technologies and resources; b) changes in communication networks (for

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example the emergence of new structures in information systems, new media, and the intensification of virtual communication); c) changes in preferences for socially desirable goods; and d) a general rise in information resources which results in global and total-reliability economies and societies based on information and communication technologies.

The informatisation of technology has triggered a digital divide—that is, inequality in access to ICTs. The digital divide phenomenon can be analyzed at the micro level (e.g. interpersonal or social group perspective), as well as at the macro level (e.g. cross-national perspective) (Katz 1986). This study presents an analysis from the macro level, in which we focus on structural predictors of the digital divide. At the beginning of the development of the information society, the most popular indicators for the digital divide were ICT availability and usage-intensity indicators (Gardin 2002: 5). Subsequently, when basic digital tools and IT became more popular—the digital divide character has been altered and also researchers have changed the measurement and analysis procedures (Gardin 2002: 5–6). Because the pace of informatisation depends on many additional socio-economic variables, the attributes and functions of the digital divide may vary in different social contexts.

One may distinguish two different perspectives when focusing on the social consequences of the digital divide. From the information-society perspective on social stratification, the digital divide is perceived as crucial and distinctive from other dimensions and factors of socio-economic dissimilarities. This perspective presumes that the digital divide will split social groups into bipolar categories—informational winners or losers—due to the privileged position of the informational innovators whose better position is based on competitiveness, flexibility, and ICT amenability in the new institutional context. For example, Internet users have extensive and easier access to some important and socially desired informational commodities and cultural goods. Therefore, digital technologies may reorganize and stimulate changes in the social action system which will lead to institutional transformation.

From a structural perspective, the digital divide is instead derived from fundamental factors of socio-economic status. One can investigate inequalities in access to the ICTs in relation to people's occupational role, class, or strata positions and particular aspects of social stratification. New technologies can potentially play two different roles in the socio-economic system of inequalities: they can either preserve existing dissimilarities between people and social groups, or transform them into a new system of social hierarchy. In such a new system, digital information technologies could be a strong positive factor for the democratization and *leveling of* social opportunities to achieve socially desirable goods. Thus, investigation of the structural basis for the digital divide is crucial for the description and understanding of the social and economic inequalities in the present day. Access and efficiency in the procedures of ICTs has become a basic condition for standard participation and a successful life in the proceeding informational society (Castells 2001).

Research Goals

This article has two basic aims: (1) a cross-sectional description of PC owners and (2) an analysis of socio-economic determinants of changes in PC possession over 15 years in Poland. Using panel data conducted in four waves (1988, 1993, 1998 and 2003), we describe the "computerization" process in Polish households. Further, we consider whether structural factors, like education or income, have influenced or supported changes in PC possession in households. Household PC possession increases the probability for use of the PC and the Internet, and, in spite of not having more precise information about the digital divide, through observation and analysis of the history of the computerization process from the beginning of the Polish transformation which started in 1989, we can assess the extent to which some social structural factors are perhaps related to informatisation and, by implication, other social outcomes.

In terms of the analysis of PC ownership and social structural factors, we focus on educational attainment and income. We assume that education and income represent two different cultural and material dimensions that constitute a core of the social stratification system. In looking at the association between education and PC possession, we assess the hypothesis that educational attainment and the acquisition of ICT skills is driving the digital divide. If educational attainment is linked closely with PC possession, we can expect, based on the notion that ICT skills are necessary for success in the information age, that the future social hierarchies will be *transformed* into new ranks defined, at least in part, by mastery of information technology. Consequently, the synergy of knowledge and technological competence (the ability for rational, constructive and effective IT use) could become the main structural criteria of the division of labor, and thus for social structure.

Regarding the association between income and PC possession, we assess the theory that acquisition of ICT skills is a mechanism of *preserving* the current social hierarchy. If it is primarily people who are already well off financially who gain access to PCs, then it is likely that PC ownership will simply be another tool through which the current upper occupational strata maintain their social positions. This is not to say that wealth is only a predictor of technological competence, but rather that wealth can be a result of it. Still, in the early stages of technological innovations, wealth likely raises the possibility of possessing expensive IT tools. The connection between wealth and IT skills may be a reciprocal effect.[1] Because we are analyzing the very beginning of the informatisation process, we are only able to generally assess the intercorrelations between financial position, education, and PC ownership.

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[1] We do not statistically assess any possible reciprocal relationship between wealth and IT use in this paper. It is a relationship that we intend to study in future work.

Analysis and Results

The data for this analysis come from a panel study conducted in four waves (1988, 1993, 1998 and 2003) on nationwide probability samples by the Research Team on Comparative Social Inequality at the Institute of Philosophy and Sociology of Polish Academy of Sciences. This study was coordinated by Professor Kazimierz M. Słomczyński (See Słomczyński et al. 1989; Słomczyński 2000, 2002). The panel study is referred to throughout by the abbreviation "POLPAN." All results presented in this report are derived from the POLPAN data. Table 1 shows the sample sizes from each of the four waves of the panel. The initial wave included 5.817 participants in 1988. Of those original respondents, 2.259 were reinterviewed in 1993. In the last two waves (1998 and 2003), to improve representation, samples were extended to include 21–25 year-old respondents. The 1998 sample size was 2135, 383 of whom were new respondents; in 2003 the sample size was 1699, with 225 new respondents.[2]

Table 1

Sample Sizes of Four Waves of POLPAN

Year	1988	1993	1998	2003
N	5817	2259	2135	1699

In addition to a number of standard demographic indicators, our analysis focuses on the associations between household PC possession, educational attainment, and income. Our broad emphasis is on the digital divide, which has many aspects, however since our data were limited in terms of measurement of these various aspects, we focus on one aspect: household possession of a personal computer. PC possession in the household increases the respondent's probability of using the PC as well as the internet. In our models, education and income are expressed as years of schooling and monthly personal income. Education was coded in the following way: incomplete elementary = 4 years; elementary = 8; basic vocational and incomplete secondary = 10; secondary vocational and general secondary = 12; post-secondary vocational and incomplete higher = 14; university = 17. Income is measured in Polish Złoty (PLN) and includes total salary from all jobs in 1993, 1998, and 2003. For 1988, income includes only money earned from the main job.

Changes in PC Possession During 1988–2003

During the period 1988–2003, the percentage of new households that possess a PC has been increasing about 2.4% per year on average. In 1988 only 1.3% of households

[2] Thus, the number of respondents who answer particular questions is different. Moreover, considering "panel attrition," which can influence results of the analyses, in most of the regression models age, education, and sex were controlled. To avoid a sample ageing effect and ensure proper representation, young cohorts have been added in 1998 and 2003 waves. Well educated and self-employed people were over-sampled in 1993. This was intended to account for higher than average respondent attrition in these groups. There are some questions that could be raised about representation of the sample, however we do not believe that the results presented in this study have been affected. This is a question that could be addressed more carefully in a future study by controlling for various aspects of sampling techniques.

in Poland possessed a PC; after fifteen years this rate grew to 36.8%. The most spectacular increase was between 1998 and 2003. Perhaps, that is mostly due to the rapid popularization of the Internet at the end of the millennium. Table 2 shows the distribution of respondents in terms of household PC ownership across all four panel years. Among those respondents represented in all four waves of the study, 65.4% never possessed a PC in their household. Only 0.2% declared household PC ownership in all four waves.

Table 2

Declaration of Household PC Possession during Panel Study

	%	*N*
Never declare PC possession	65.4	274
One declaration	19.3	81
Two declarations	10.5	44
Three declarations	4.5	19
Possess PC during whole panel	0.2	1
Total	100.0	419

Note: Includes only Rs interviewed during whole panel, not including sub-samples of youngsters from waves 1998 and 2003.

We also examined changes and stability in household PC possession by respondents across panel waves. There were several interesting patterns and trends. Of those who had a PC in 1988, 63.6% declare not having a PC in 1993. Of those who did not have a PC in 1988, only 10.6% had one five years later. Of those who did have a PC in 1993, only 4.9% had one previously, meaning that 95.1% of PC owners were "new" owners at that time.

Table 3

Changes and Stability in PC Possession for Each Wave

	Percent of Households that Owned a PC		
	1993	1998	2003
Households had PC in 1988	36.4%	66.7%	100%
Households had PC in 1993		45.5%	75.0%
Households had PC in 1998			82.5%
Total number of Households that owned a PC in particular wave	257	295	621

These results indicate that before the middle 1990s, PC possession was rather randomly distributed across Polish households. There was instability in computer possession; computers were perhaps more thought of as an amusing toy for children rather than as a useful, almost crucial, device for everyday life. Based on later data, our observation is that the process of computerization reached a turning point around

1998, when it became much more common to possess a PC. By 1998, 68.1% of all PC owners had one previously, so by then new PC owners only accounted for 31.9%. In 2003, only 23.7% of PC owners were new owners. Table 3 shows data on the patterns of change and stability in PC possession across waves of the panel.

Socio-Demographic Patterns in Household PC Ownership

During the period from 1988 to 2003, place of residence was an important factor for inequalities in PC possession in Polish households. Table 4 shows the results of a comparison of the relative number of households that possessed a PC in rural and urban areas. In the first three waves of the study, urban households were approximately three times as likely to own a PC as compared to rural households. By 2003, this disparity had slightly declined. In the period between 1998 and 2003, the pace of computerization in rural areas was 2.5 times faster than in urban areas. Thus, urban households were only twice as likely to possess a PC in 2003: 45.8% of urban households possessed a PC, while 23.4% of rural households possessed one. Although there is still a visible informatisation gap between urban and rural households, computers became a very important tool for everyday life issues, work, and children's educational requirements, even in rural areas. In the most recent decade, there were many political and social programs to support buying PCs for schools in countryside; this may have triggered the trend for buying PCs in rural households.

Table 4

Percent of Households that Possess PCs by Place of Residence

	1988	1993	1998	2003
Rural	0.5	5.0	4.7	23.4
Urban	1.8	14.9	18.7	45.8

Household PC ownership also is closely connected to employment status. Table 5 shows a comparison of working and not-working respondents in terms of PC possession. Working respondents are more likely than non-working respondents to possess a PC in all of the waves. In waves 1993 through 2003, working respondents were more than twice as likely to own a PC. In the final wave, 2003, 50.4% of working respondents possessed a PC in their household compared to only 22.9% of non-working respondents.

Table 5

Percent of Households that Possess PCs by Employment Status

	1988	1993	1998	2003
Not working at present	1.1	3.9	7.5	22.9
Working	1.3	12.8	18.6	50.4

Looking more closely at employment, we see clear differences in terms of PC possession and use when comparing respondents from different occupational strata. Tables 6 and 7 show patterns in PC ownership and use among respondents of different occupational strata. Table 6 shows the percentage of respondents in each of several occupational categories who possessed a PC in their household, as well as the average rate of growth in household PC possession across the four waves of the study. Managers, professionals, technicians, clerical and service workers are consistently more likely to possess a PC in their household, as compared to agricultural workers, craft and trade workers, and elementary operators. In more recent waves, managers and professionals are the most likely to possess a PC (74.4% in 2003), while farmers and agricultural workers are consistently the least likely to possess one. But, after 1998 there was a huge rise in PC possession, even among farmers—up from 1.7% to 25.8% in 2003—and elementary occupations—up from 5% to 40.9% in 2003!

PC possession does not necessarily imply actual PC use. Although many people may have a PC, the actual use of a PC is closely tied to occupational position. Table 7 compares respondents from different occupational categories in terms of PC possession and use in 2003 along the lines of the following four possibilities: 1) respondent *neither had nor used* a PC, 2) respondent *had but had not used* a PC, 3) respondent *had used a PC but did not have* one, and 4) respondent *both had and used* a PC. The results show that managers and professionals (6.9%) and technicians (13.2%) were least likely to report neither having nor using a PC. Similarly those groups were most likely to report both having and using a PC (managers and professionals 69.4%; technicians 61.4%). A large number of operators/elementary workers (18.2%) reported having but not using a PC. According to these results, it seems clear that informational workers (or white collar workers) are more used to working with PCs, whether they own one or not. In comparison, we see relatively large percentages of agricultural workers (16.7%), craft and trade workers (11.9%), and elementary operators (18.2%) whose contact with PCs is rather "inactive;" they possessed but not use a PC. Clerical workers are on they opposite end of the spectrum: they are the most likely to report using (probably at their office), but not owning a PC (20.5%).

Table 6

Percentage Distribution of Household PC Possession by Occupational Strata across Four Waves of the Panel

Occupational strata in 2003	1988	1993	1998	2003	Average growth per year (%)
Managers and professionals	4.7	30.6	40.8	73.4	4.58
Technicians	7.4	28.6	32.0	71.1	4.24
Clerks and services workers	3.7	26.8	21.9	50.9	3.14
Farmers and skilled agricultural workers	0	3.2	1.7	25.8	2.26
Craft and trade workers	0	17.2	10.8	35.0	1.78
Operator and elementary occupations	0	11.8	5.0	40.9	2.91

Table 7

PC Access and Use in 2003 by Occupational Strata
(Values represent percentages within each occupational category)

Occupational strata in 2003	Not had/not used PC	Had but not used PC	Used but not had PC	Had and used PC
Managers and professionals	6.9	4.0	19.7	69.4
Technicians	13.2	9.6	15.8	61.4
Clerks and services workers	28.7	12.3	20.5	38.6
Farmers/skilled agricultural workers	69.2	16.7	5.0	9.2
Craft and trade workers	53.8	11.9	11.2	23.1
Operator and elementary occupations	52.3	18.2	6.8	22.7
Total	305	100	118	330

Connections between Education and Income and Household PC Possession

Logistic regression analysis was applied to test the association between years of schooling and income and PC possession across the five year time intervals of the panels. Tables 8, 9, and 10 display the results of these analyses. The results presented in Table 8 show three models, in each of which PC possession was regressed on years of schooling, monthly income, sex and age, as well as a control variable indicating PC possession in the previous wave. For example, Model 1 includes the measure of PC possession in 1993 while controlling for PC possession in 1988. Years of schooling and income are also measured from the previous wave. This analysis provides some interesting results. In each of the models, years of schooling is a significant predictor of PC possession ($p < 0.01$), even when controlling for income: those with more education are more likely to possess a PC. Age is also a significant and negative predictor in all three models: younger respondents are more likely to possess a PC.[3] PC possession in 1998 and 2003 is strongly correlated with possession of a PC at the previous wave, which indicates the trend towards stabilization of PC possession. Surprisingly, monthly job income measured during the previous wave of the panel is not significantly associated with current PC possession in any of the models, when controlling for the other factors. Gender is not significantly association with PC possession in any of the models.

Considering that the effects of education and income on PC possession may be more proximal, we also ran a series of regression in which current PC possession is regressed on current educational attainment and current income, along with other control variables. Table 9 shows the results of these analyses. These models were analyzed to discover the concurrent relationships among these variables and to compare the relative strength of correlation between the predictors and the de-

[3] This is an interesting finding because, even if we are using a very basic indicator (PC possession at the household level, which does not take into account the person who is in fact using the PC), we still consistently find a negative association between age and digital divide. This finding holds across all waves, including later waves when PC possession became more common.

Table 8

Logistic Regression Results. PC Possession in 1993–2003 Regressed on Education, Income, Previous PC Possession, Sex, and Age

Model 1. PC possession in 1993 by education, income, PC possession, sex and age in 1988			
Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 1988	.249	.000	1.282
Income 1988	.000	.959	1.000
PC possession 1988	.318	.673	1.375
Sex (male = 0; female = 1)	.334	.233	1.397
Age	–.056	.001	.945
Model Chi-Square 50.33 (df 5) (.0000)			
Model 2. PC possession in 1998 by education, income, PC possession, sex and age in 1993			
Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 1993	.276	.000	1.318
Income 1993	.000	.890	1.000
PC possession 1993	1.463	.000	4.913
Sex (male = 0; female = 1)	–.145	.437	.865
Age	–.042	.000	.959
Model Chi-Square 192.21 (df 5) (.0000)			
Model 3. PC possession in 2003 by education, income, PC possession, sex and age in 1998			
Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 1998	.186	.000	1.204
Income 1998	.000	.296	1.000
PC possession 1998	2.203	.000	9.053
Sex (male = 0; female = 1)	–.016	.925	.984
Age	–.025	.001	.975
Model Chi-Square 177.02 (df 5) (.0000)			

pendent variable. We used standardized scores to compare the predictive power of education and income across and within each wave. Again, there are three models, one each regressing PC possession in 1993, 1998, and 2003 on the predictor variables. When income is measured concurrently, it is significantly associated with PC possession ($p < 0.01$) in the 1998 and 2003 waves. Years of schooling remains a significant predictor of PC possession in all three waves. Age no longer has a statistically significant coefficient when education and income are measured concurrently with PC possession. Gender remains uncorrelated with PC possession, a surprising finding given that males are thought to be more computer/tech oriented than women. According to our findings in this analysis, only education was predictive of PC possession in 1993. By 1998 education and previous PC possession were the strongest predictors, but income also became a meaningful predictor. In 2003, income was a stronger correlate of current PC possession than educational attainment.

Table 9

Logistic Regression Results. PC Possession in 1993–2003 Regressed on Concurrently Measured Education and Income, Previous PC Possession, Sex, and Age

Model 4. PC possession by education, income, sex and age in 1993—controlled by PC possession in 1988			
Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 1993 (standardized score)	.671	.000	1.957
Income 1993 (standardized score)	.021	.790	1.021
PC possession in 1988	.489	.463	1.630
Sex (male = 0; female = 1)	.342	.217	1.408
Age	–.032	.054	.968
Model Chi-Square 33.60 (df 5) (.0000)			
Model 5. PC possession by education, income, sex and age in 1998—controlled by PC possession in 1993			
Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 1998 (standardized score)	.730	.000	2.076
Income 1998 (standardized score)	.217	.015	1.243
PC possession in 1993	1.523	.000	4.587
Sex (male = 0; female = 1)	–.035	.859	.966
Age	–.020	.114	.980
Model Chi-Square 155.01 (df 5) (.0000)			
Model 6. PC possession by education, income, sex and age in 2003—controlled by PC possession in 1998			
Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 2003 (standardized score)	.565	.000	1.759
Income 2003 (standardized score)	.665	.000	1.945
PC possession in 1998	2.138	.000	8.482
Sex (male = 0; female = 1)	–.064	.718	.938
Age	–.016	.054	.984
Model Chi-Square 193.19 (df 5) (.0000)			

The final regression analysis includes place of residence and occupational group categories in the model, using data from 2003. Occupational groups are included in the model as a series of dummy variables, with farmers as the reference category. The results (presented in Table 10) show that current income remains a significant predictor of current PC possession, even when controlling for occupational categories. Age and place of residence are significant predictors as well, with younger and urban respondents more likely to possess a PC. Years of schooling is not a significant predictor at the 0.01 alpha level, however the Exponent (B) value indicates that it is likely associated with current PC possession. Within the occupational groups, technicians are significantly more likely to possess a PC compared to farm workers. Craft workers are less likely to possess a PC than farmers. Managers/Professionals, Clerks/Service workers, and Operators are not significantly more or less likely to possess a PC compared to farmers, when controlling for the other variables in the model. The overall results from this model appear to show a bit of leveling out in terms of PC ownership.

Because possessing a PC is more common throughout all segments of society in recent years, we see decreased importance of education and type of job. The most important predictors of current PC possession are: income, age, place of residence, technician worker status (on the positive side compared to farmers) and craft worker status (on the negative side compared to farmers).

Table 10

Logistic Regression of PC Possession by Education, Income, Sex, Age, Place of Residence and Occupational Group in 2003

Variables	*B*	*Sig*	*Exp(B)*
Years of schooling 2003 (Standardized score)	.422	.035	1.525
Income 2003 (Standardized score)	.657	.000	1.929
Sex (male = 0; female = 1)	–.106	.529	.899
Age	–.021	.002	.979
Place of residence (Rural = 0; Urban = 1)	.537	.005	1.712
Occupational group (farmers=ref.):		.004	
Managers and professionals	.390	.102	1.476
Technicians	.713	.000	2.040
Clerks and services workers	–.020	.901	.980
Crafts	–.512	.007	.599
Operators and elementary occupations	–.166	.371	.847
Model Chi-Square 178.866 (df 10) (.0000)			

Conclusions

Summary of Results

The PC diffusion in Poland has been significantly determined by basic structural factors. From the beginning of the computerization process in Poland, previous education and age have been related to the probability of possessing a PC in the household. Analysis shows that previous income did not influence future chances of having a PC five years later. But if we analyze the situation in a particular year (1993, 1998 or 2003), respondent's current economic situation is a significant factor for a PC possession, especially in the last investigated period, 2003 year. In the last wave of the study, we observe a tendency of decreasing influence for the education and age factors. Nevertheless, we conclude that education, age, income, place of residence, and socio-occupational position (particularly manual versus non-manual) apparently still diversify the possibility of having a PC in household. Considering the relatively short period and rapid pace of the computerization process, we may expect that personal computers will soon become a common commodity in Polish households, even in rural areas.

Implications for Social Stratification and Suggestions regarding the Digital Divide Approach

The results of this study have interesting implications for theory on social stratification and the digital divide. The question was asked: will the informatisation of society in its various forms result in a digital divide that *transforms* social structures, in effect providing social opportunities for individuals who acquire human capital through IT proficiency, or will it result in the *preservation* of social hierarchy structures, allowing those who can "buy in" to the IT revolution to maintain their privileged positions by being ahead of the curve on technological innovations? By analyzing the connections between educational attainment and income and PC possession, this study sheds some light on this question. If educational attainment is more strongly associated with technology acquisition in the form of PC possession, this could imply that those who are at the forefront of learning and skill acquisition will ultimately gain an edge in the social ladder. This could result in a transformation of the social stratification system, effectively democratizing or leveling opportunities to the extent that those who acquire skills will get ahead. If income is more strongly associated with technology acquisition in the form of PC possession, this could imply simply that those who have more resources are more likely to acquire technological skills first due to those resources. If this is the case, then the digital divide would not imply a change in the social stratification system, but rather a preservation of its current structure.

In terms of answering this question, our results are mixed. When current PC possession is regressed on income five years ago, there is no statistically significant association when controlling for other factors. Educational attainment is, however, consistently associated with PC possession in those models. Considering that social class position tends to remain relatively stable over time, these results lead us to conclude that acquisition of information and communication technologies is more closely linked with education rather than financial position in social structure. This conclusion provides evidence that the IT revolution could transform social stratification structures—particularly in economic dimensions. When current PC possession is regressed on current income, however, the results are somewhat different. Along with education, current income does have a significant association with PC possession. This finding leads us to rethink this initial conclusion and speculate that there is a serious likelihood that the revolution in informational and communication technologies will do not much more than preserve existing social hierarchy structures. The final analysis further supports this conclusion, as years of schooling became less strongly associated with PC possession, and there were significant differences between workers in advanced occupational categories as compared to workers in basic occupations.

In the context of the welfare state debate and inequality reduction policies, it is necessary to pay more attention to the digital divide consequences. ICTs are very important tools for active participation in the labour market, culture, and democracy. There is a clear need for members of the lower strata to acquire access to IT resources if they are going to be likely to get ahead. In an informal interview with a social services provider in the United States, we discovered the seriousness of this need. The social services coordinator we spoke with, who works primarily with poor African-Americans

living in public-assistance housing, mentioned that in her attempts (in 2005) to help her clients find work she discovered that nearly all of them did not have a personal computer, most had never used e-mail, many did not know how to operate a PC, and few of them had any idea how to electronically submit a résumé, for example. As the digitalization of society proceeds, people without these skills will be left even further behind.[4]

We can make several suggestions for future sociological work on the digital divide. First of all, studying socio-economic inequalities among social groups requires accurate and current information about the digital divide between people. Clearly, the differentiation of people in terms of their access to and proficiency with digitally oriented information and communication technologies is relevant in contemporary analyses of social structure. Second, there is a need for a standardized "digitalization index" based on quantitative (readiness and frequency), as well as qualitative (functions, aims, and dispositions) indicators of the digital divide. This digitalization index should be included in analyses of work situations and in the construction of new classifications of occupations and types of economic activity (see Porat, 1974, 1977). Finally, the digital divide approach should be applied to the conceptualization of the "informational work force," which will characterize a new component of economic social structure analysis.

References

Castells, M. 1998. *End of Millennium*. Padstow, Cornwall: T.J. International Limited

Castells, M 2000 (second edition). *The Rise of Network Society*. Padstow, Cornwall: T.J. International Limited.

Castells, M. 2001. *The Internet Galaxy*. Oxford: Oxford University Press.

DiMaggio, P. J., and Powell, W. W. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48: 147–160.

Gardin, O. 2002. *The New Economy—New challenges for the statistical system*. London: International Association for Official Statisticians Conference, Eurostat.

Katz, R. L. 1986. "Measurement and Cross-National Comparisons of the Information Workforce." *The Information Society* 4(4): 231–277.

Porat, M. U. 1974. "Defining an Information Sector in the U.S. Economy." *Information Reports and Bibliographies*, Vol. 5(5). Institute for Communication Research, Stanford University, Stanford CA.

Porat, M. U. 1977. *The Information Economy: Definition and Measurement*. Washington:

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., Białecki, I., Domański, H., Janicka, K., Mach, B., Sawiński, Z., Sikorska, J., Zaborowski, W. 1989. *Struktura społeczna: schemat teoretyczny i warsztat badawczy* [Social Structure]. Warszawa: IFiS PAN.

[4] An interview with Nicole Conneally (2005)—social services at Louis Manor Apartments, Port Artur, coordinator Texas.