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A generational divide in the academic profession: A mixed quantitative and qualitative approach to the Polish case

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Abstract
In a recently changing Polish academic environment – following the large-scale higher education reforms of 2009–2012 – different academic generations have to cope with different challenges. Polish academics have been strongly divided generationally, not only in terms of what they think and how they work but also in terms of what is academically expected from them following the reforms. This article explores intra-national cross-generational differences based on a combination of quantitative (surveys, N = 3704) and qualitative (interviews, N = 60) primary empirical evidence used according to the mixed-methods approach methodology and its 'sequential' research design. This article explores the major dimensions of the intergenerational divide between younger and older academic generations (and how they are related to both post-1989 developments and recent reforms). It shows the power of research at a micro-level of individuals, complementing the traditional research at aggregated institutional and national levels. Implications for Central European systems are shown.

Keywords
Academic generations, European universities, Poland, generational conflicts, university governance, internationalization in research

Introduction

The academic profession in every country consists not only of academics from various academic fields and institutions of different types, of males and females of different ranks – all in changing percentages over time – but also of different academic generations (Finkelstein et al., 1998). Higher education systems at different times have employed different proportions of young and

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older academics, of which those in the most prestigious positions (chairs, full professorships, etc.) usually act as role models for new entrants (Brechelmacher et al., 2015; Cole and Cole, 1973; Hagstrom, 1965). This article explores the Polish academic profession through the analytical lenses provided by academic generations and focuses on the power of intergenerational tensions within and across academic institutions and fields. Similar intergenerational tensions occur in other European systems – especially those undergoing structural reforms, based ever more on the competitive logic of (research) performance in academic careers and research funding allocations between academics, their research teams and their institutions (Huang et al., 2014; Stephan, 2012; Yudkevich et al., 2015). Tensions increase, as does the pace of change.

Historically, there have always been intergenerational tensions in academia (Clark, 1983; Stephan and Levin, 1992; Wilson, 1995). In particular, these tensions can be linked to periods of either sustained reforms, or the lack of them, despite a perceived need (Neave and Rhoades, 1987; Rhoades, 1992). Studies of various types of differentiation in the academic profession (Clark, 1983; Enders, 2006; Enders and Musselin, 2008; Huisman, 1998) indicate that cross-generational differentiation may play a fundamental role in times of changing academic rules, especially under sweeping reform programmes (Białecki and Dąbrowa-Szefler, 2009; Antonowicz et al., 2016), which is the case in Poland and also refers to European higher education in transition in more general terms (Kehm and Teichler, 2013).

Younger and older Polish academics are a textbook example of academics born to academic life in different eras, working with different career opportunities and following different academic norms. Marquina and Jones suggested recently (2015: 1349) that different generations of academics may 'experience and understand academic work in quite different ways'. My research seeks to explore these differences following a more general observation that academic cohorts are individuals who:

> [s]hare similar experiences or receive similar exposure to the unique events that characterize their lives. These common experiences may mark each one for life, and as a result, members of different cohorts may exhibit differences in behavior, values, and intellectual abilities (Stephan and Levin, 1992: 115; see Finkelstein et al., 1998; Schuster and Finkelstein, 2006).

The difference between common academic experiences under communism and those of today have already been widely discussed in research literature (e.g. Kwiek, 2014, 2012; Pinheiro and Antonowicz, 2015).

In a recently changing Polish academic environment – following the large-scale higher education reforms of 2009–2012 – different academic generations have had to cope with different challenges, and they have had to use different academic strategies. Polish academics have been strongly divided generationally, not only in terms of what they think and how they work but also in terms of what is academically expected from them following the reforms. This article explores intranational cross-generational differences based on a combination of quantitative (a large-scale survey) and qualitative (semi-structured interviews) primary empirical evidence used according to the mixed-methods approach methodology and its 'sequential' research design.

This article is structured as follows: the next section, 'Theoretical background' has subsections on academic generations in higher education research and on changes in Polish higher education. The section after that is focused on methodology and data. Thereafter, the research findings are presented in three subsections: on internationalization in research; on meritocracy in science; and on perceptions of university governance and management, all three across distinct academic generations. The three guiding research themes are closely linked to a radically changing academic environment following the recent wave of reforms. The final section, 'Discussion and conclusions' concludes the findings.

Theoretical background

Academic generations in higher education research

The research question of this article is as follows: What are the major dimensions of the intergenerational divide between younger and older academic generations and how they are related to post-1989 developments in the higher education sector in general, and to recent higher education reforms in particular.

The idea of designing my research along the lines of academic generations is drawn from Paula Stephan and Sharon Levin's (1992) *Striking the Mother Lode in Science. The Importance of Age, Place, and Time*. They argue that 'many conditions that lead to RPRT [the right place at the right time] are not specific to the individual but, rather, specific to a generation. This means that success in science depends, in part, on things outside the control of the individual scientist' (1992: 4). Stephan returned to the idea of 'cohort effects' again after two decades:

> Some scientists graduate when jobs are plentiful; they have a choice among jobs and have little difficulty obtaining funding for their research. Their career flourish … Others graduate when jobs are considerably less plentiful (Stephan, 2012: 174–175).

So, in the Polish context, as well as in a larger European context, 'the 60-year-old is not only 25 years older than the 35-year-old but was also born in a different era when values and opportunities may have been significantly different' (Stephan and Levin, 1992: 58).

Previous academic profession studies focusing on academic generations, cohorts and career stages include Finkelstein et al. (1998: 103) who studied two different academic generations in American higher education: 'new entrants' (those in the first seven years of their academic careers) and 'seniors'. Their conclusion was that the two cohorts differed not so much in what they did but in who they were. Recently, Shin et al. (2015: 1407) in their study of the 'academic boomers', 'sandwich generation' and 'new generation' (academics hired in different periods since 1981) in Korean higher education suggested that personal and institutional characteristics are limited in explaining differences between academics and that 'academics share similar perceptions and experiences even though they are in different age groups or academic ranks, if they have experienced a similar socio-economic environment'. In a different study, Shin et al. (2014: 185) analysed teaching and research activities, academic role preferences and time budgets by three career stages (academics under 40, aged 41–55 and over 56) and showed increasing research orientation among the younger generation, with negative policy implications for the Korean system. Kyvik and Aksnes (2015: 1451) explained the increase in publication productivity over a period of 30 years among Norwegian academic staff from a generational perspective and concluded that four factors mattered: better qualifications of younger generations, their increased research collaboration, their work in improved research conditions and the introduction of new incentive and reward systems. In her study of research productivity of Korean academics by career stage, Jung (2014: 87–88), following previous literature, categorized academics into 'fledglings', 'maturing academics', 'established academics' and 'patriarchs', and argued that 'academics tend to experience changes in terms of their interests, values, or performance according to their career stage'. Finally, Santiago et al. (2015) studied academics' perceptions of governance and management in Portuguese higher education by 'younger', 'middle' and 'older' academic generations, concluding that there were no differences between them concerning the prevailing preferred management model. Only recently have primary cross-national data on 'generational change and academic work' (Marquina and Jones, 2015) been analysed, following massive work produced within the CAP ('Changing Academic Profession') and the EUROAC ('The Academic Profession in Europe') research projects.

Ulrich Teichler's (2006: 2) description of academic careers fits the Polish case perfectly:

> [b]etween the ages of about 30 and 40 years, when those in other careers are settling, there tends to be a high degree of uncertainty and selectivity in academic careers … Concern is growing that academic careers might lose their attractiveness and that talented individuals might opt out for other careers.

In the Polish academic context until recently, the brightest may have been lost to science because of semi-feudal academic relationships, non-competitive research funding modes, unclear career advancement rules and the lack of objective assessment criteria of individual and institutional research output. Times are changing though, and all Polish academic generations are in the eye of the storm now.

Changes in Polish higher education

The Polish case in a nutshell is as follows: for about two decades after the collapse of communism, higher education was largely unreformed, heavily underfunded, teaching-focused at both individual and institutional levels, highly collegial and based on semi-feudal relationships between seniors and juniors, with academics being satisfied with the status quo at the level which precluded any substantial reforms (see Dobbins, 2015). The 2009–2012 wave of reforms (the so-called Kudrycka reforms, termed so after Minister Barbara Kudrycka who was in office in 2007–2013) introduced new funding and governance mechanisms, new buffer bodies between the ministry and academic institutions, and new peer-run national research assessment and research funding institutions. In short, new rules of the academic game were introduced despite heavy public protests by academics from soft sciences – combined with generally silent support of (mostly) younger and predominantly research-focused, internationally oriented academics, usually from the hard sciences (see 'constructing universities as organizations' in Poland (Kwiek, 2016b) as seen through the lenses of institutional theory). Consequently, in the last few years, the Polish academy has become more divided generationally than ever before: divided not so much along a traditional powerless juniors vs. powerful seniors line (based on traditional rigid academic hierarchies, see Clark, 1983; Neave and Rhoades, 1987) but along a new line of contrasting generational approaches to the internationalization of research and its emergent competitive funding modes and to academic promotions based on quantifiable academic output and international publication channels.

Interestingly, as elsewhere in Europe (Kehm and Teichler, 2013; Santos et al., 2016), in the last quarter of a century there has been a tremendous increase in the number of doctoral students, a natural pool of future academics: from fewer than 3000 in 1990 to more than 43,000 in 2014 (GUS, 2015), closely following the pattern of increasing student enrolments. While there are ever more doctoral students, the number of doctorates awarded does not follow this trend, increasing slowly by only 150% between 1970 and 2014 (and by merely 50% between 1980 and 2014, as the growth in numbers was not stable over time). The academic rank pyramids in 1970, 1980, 1990 and 2014 do not differ substantially: the Polish academic profession has been led by a small (5.4%–8.7%) upper stratum of full professors; a lower stratum of assistant professors has systematically consisted of 73%–79% of academics; and there is a middle stratum of 14%–21% who are associate professors (in international terms). Surprisingly, half a century of changes, including a quarter of a century of post-1989 political and economic regime change, have not influenced the Polish rank pyramid, closely linked to the age (and generation) pyramid, as Figure 1 clearly shows. The changes in the composition of the Polish academic profession in the last 50 years are shown in Table 1.

Behind the relatively stable aggregated data, there is a complicated picture of changing intergenerational relationships over time. My assumption was that there would be no single academic

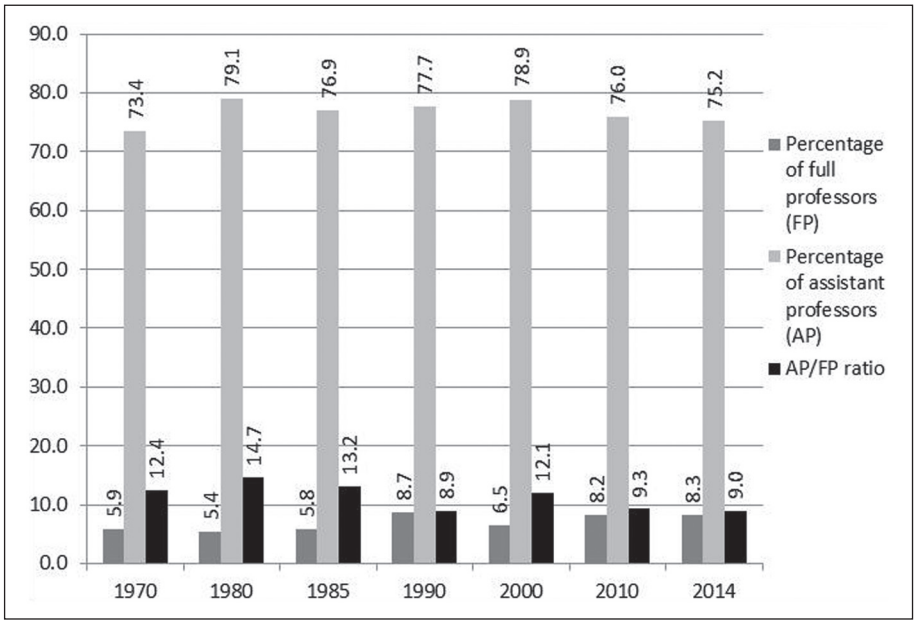

Figure 1. The percentage of full professors, assistant professors and the assistant professors/full professors (AP/FP) ratio in Poland, 1970–2014 (based on GUS, 2015 and previous editions; the category of assistant professors includes all research-involved academics without a habilitation degree).

Table 1. Polish higher education, selected parameters 1970–2014 ('assistant professors': includes all research-involved academics *without* a habilitation degree), based on GUS 2015 and previous editions.

Year	1970	1980	1985	1990	2000	2010	2014
Students	330,789	453,652	340,709	403,824	1,578,241	1,841,251	1,469,386
Doctoral students	3,235	5,844	1,262	2,695	25,622	37,492	43,399
Doctoral students as a percentage of academics	10.3%	10.7%	2.2%	4.2%	31.9%	37.4%	46.6%
Doctoral degrees awarded	2,290	3,737	1,780	2,324	4,138	4,449	5,712
All academics (total)	31,320	54,681	57,280	64,454	80,208	100,151	93,133
Full professors	1,850	2,938	3,341	5,597	5,242	8,200	7,763
Full professors as a percentage of all academics	5.9%	5.4%	5.8%	8.7%	6.5%	8.2%	8.3%
Assistant professors	22,995	43,238	44,076	50,076	63,260	76,086	69,998
Assistant professors as a percentage of all academics	73.4%	79.1%	76.9%	77.7%	78.9%	76.0%	75.2%

profession in Poland, as elsewhere in Europe: there would be increasingly stratified and differentiated 'academic professions' (Enders and Musselin, 2008), with different academic behaviours, attitudes and productivity. This article shows the importance of the differentiation between academic cohorts or generations in Poland: young academics (under 40) and those from older cohorts. Poland in 1989–2015 has been a special case which fits perfectly with Finkelstein et al.'s (1998: 9) general description:

> Higher education tends to change slowly in its aggregate characteristics. From time to time, however, there have been substantial, almost revolutionary changes in the cohorts of entering faculty over even as little as a single generation (in an era of expansion) or over two or three generations (in less dynamic periods).

After 1989, there was a quarter of a century of large-scale structural changes (1990–2015) intended to replace communist-period governance and funding arrangements with new ones, mostly in an incremental manner. No academic revolution occurred – but incremental changes gradually led to an entirely new system based on new governing principles. In the wake of the Kudrycka reforms, the assessment of research output is performed not only at an individual level, with an impact on academic careers – but also at an institutional level. Since 2010, a Polish version of a research assessment exercise has been applied: a newly created (2010) national Committee for the Evaluation of Scientific Units (Komitet Ewaluacji Jednostek Naukowych, KEJN) provides a large-scale, periodical assessment of the research output of all basic academic units (about 1000, usually at the level of faculty), leading to their national categorization. So, increasingly, academic outputs in both teaching and research are being assessed, benchmarked and linked (at an aggregated level of academic units or at an individual level in the case of project-based research funding) to public funding. Detailed bibliometric assessments of individuals and academic units (performed through a system of points and a ranking of academic journals) increasingly matters in financial terms. Overall, Poland is gradually implementing a performance-based research funding system, with funding levels linked either directly (institutional funding for academic units) or indirectly (grant-based funding for academics) to research outputs. The level of public research subsidies is declining, while the level of public competitive research funding is increasing, which lies at the core of ongoing performance-oriented changes. Academics from different generations perceive the changes differently, with younger academics seeing more opportunities than threats in them, and older academics feeling threatened by performance-based rules. Older generations, as elsewhere in Europe, keep working in a system with changing rules of academic promotions, modified hierarchies of prestige in science, evolving institutional norms and, especially, with ever more competitive access to research funding.

Methodology and data

The article uses a mixed-methods research design, with extended quantitative and qualitative strands, as I am interested in both narrative and numerical data – assuming that one data source may be insufficient. I follow Creswell and Plano Clark who argue that 'mixed methods research helps answer questions that cannot be answered by qualitative or quantitative approaches alone' (Creswell and Plano Clark, 2011: 12). The mixed-methods approach 'stands in the middle of a qualitative-quantitative continuum' (Teddlie and Tashakkori, 2009: 28). More specifically, I use a 'sequential mixed design' in which the quantitative and qualitative phases of the research programme occur in a chronological order (Teddlie and Tashakkori, 2009: 120). I collected and analysed two independent strands of data in two phases, then merged the results of the two strands.

I analysed the survey data quantitatively (3704 returned usable surveys) and the interview data qualitatively (60 semi-structured in-depth interviews), and then merged the two sets of results, seeking 'to obtain different but complementary data on the same topic to best understand the research problem' (Creswell and Plano Clark, 2011: 77). Semi-structured in-depth interviews, lasting on average between 60 and 90 minutes (and conducted by Dr Dominik Antonowicz) followed the survey by one year (2010 and 2011, respectively) which made it possible to structure them according to preliminary analyses of Polish quantitative data. The Polish interviewees were predominantly junior academics (about 80%) from the university sector (about 80%); half of them

Table 2. Interview statistics.

	N	%
Interviews	60	100
Academic rank		
Junior academics	47	78.4
Senior academics	13	21.6
Age groups		
Under 40	31	51.6
40–49	14	23.3
50–59	10	16.6
60 and more	5	8.3
Academic disciplines		
Humanities and arts	7	11.6
Social and behavioural sciences	23	38.3
Business and administration, economics	10	16.6
Physical sciences, mathematics, computer sciences	7	11.6
Engineering, manufacturing and construction, architecture	2	3.3
Life sciences	8	13.3
Education/teacher training	3	5
Institutional type		
University sector	48	80
Non-university sector	12	20
Gender		
Male	44	74.4
Female	16	26.6

were aged under 40; three-quarters of them were males and they were evenly distributed among all major academic fields (see Table 2). All surveyed and interviewed academics came from the public sector, as in other European CAP and EUROAC project countries, with a total of 17,211 usable cases from 11 countries: Norway, Italy, Germany, the Netherlands, Finland, Ireland, the United Kingdom, Austria, Switzerland, Portugal and Poland. A combination of quantitative and qualitative approaches was assumed to lead to less biased results than using either of them separately.

I used the sampling method of an 'equal probability of selection method' (Hibberts et al., 2012: 55): every Polish academic had an equal chance of being selected for the study, with individualized invitations to participate in the survey sent out to about 39,000 academics, or all academics whose email addresses were available at a national level. In the process of international data coordination, sample weights were made by the Kassel statistical team (and coordinated by Ulrich Teichler); sample values were weighted to reflect the actual parameters of the Polish academic profession, as in the other ten European countries.[1]

Academic age cohorts have been classified into four categories: those aged under 40 (or young academics), aged 40–49, aged 50–59 and aged 60 and more. Young academics are in their 'formative years' and have usually held their PhD degrees for no more than ten years (Teichler, 2006). I have assumed that a contrast between academic cohorts or generations expressed in the four age groups (and between two contrasted academic ranks: 'full professors' and 'new entrants') may work better in the Polish case than either a general bipartite junior-senior split (as in Teichler and Höhle, 2013) or a number of tripartite splits: a junior/middle rank/professors split (Enders and Teichler, 1997), an early-career/mid-career/late-career split (Shin et al., 2014) or a 'novel'/

Table 3. The Polish sample: age cohorts and academic ranks (percentages rounded).

Age cohort/academic rank	under 40	40s	50s	60s and above
Assistant professor I (*asystent*)	84.2	9.5	4.5	1.8
Assistant professor II (*adiunkt*)	50.4	35.8	11.0	2.9
Associate professor (*doctor hab.*)	4.0	25.5	42.8	27.7
Full professor (*tytularny*)	0.0	3.4	27.4	69.1

'intermediate'/ 'consolidated' split (Marquina et al., 2015). 'New entrants' are defined here as those granted their PhD degrees in the ten years preceding the execution of the survey, or in 2001–2010; in most cases, they would be in the 29–39 age bracket, and 'full professors' are academics holding the 'presidential' professorship granted for life, the pinnacle of the profession.

From an international comparative perspective, the Polish case is somehow unique: academic generations to a large extent reflect academic ranks: a generational gap is in fact almost identical to a rank gap. There is a standard national road leading from academic dependence to academic independence (the latter being legally defined as having a habilitation degree). In the university sector studied here, almost all older academics (in their fifties and sixties) are in fact of an associate or full professorial status: 96.8% in the sample. A standard academic career in Polish universities means that academics obligatorily need to have a PhD degree (usually when aged 30–33: on average 32 in the sample), a habilitation degree (usually when aged 40–45: on average 44 in the sample); and some of them receive full professorship (usually when aged 50 and more: on average 51 in the sample). There are almost no newcomers to academia (from other professions), and there are almost no late-bloomers as the system does not tolerate those who are not able to receive their habilitation degree within the maximum 12–15 years after their PhD degree, that is, roughly before they are aged 45. Interestingly, in practical terms, it means that all young cohorts (in their twenties and thirties) are almost exclusively assistant professors (in international terms; 96% in the sample). The same rule applies to interviewees, with a special contrast between younger academics in their twenties and thirties vs. older academics in their fifties and sixties, with vastly different academic ranks. The Polish sample from the perspective of age and rank is presented above in Table 3.

My previous generationally-focused article on Polish academics discussed them from a European cross-national comparative perspective: Poland was contrasted with ten Western European countries in terms of weekly research and teaching time allocation, teaching/research role orientation and academic productivity in a reference period (Kwiek, 2015a). In this article, in contrast, Polish academics are discussed only intra-nationally and the intergenerational gap is studied through the themes figuring most prominently in the Polish case (rather than emerging from cross-European comparative analysis): these are internationalization in research, meritocracy in science (both related to competition for prestige and research funding), and university management and governance. All three themes were at the core of the 2009–2012 reforms and therefore were important components of the initial Polish interview protocol.

Research findings

Internationalization in research across academic generations

From the qualitative material, there emerges a major intergenerational dividing line between the 'internationalists' and the 'locals' in the Polish academic research production. The young academics interviewed tend to believe that their research matters as long it aspires to belong to the ongoing

international scholarly conversation; older academics (almost exclusively in senior ranks, for structural reasons explained above), in contrast, more often seem to believe that research in Polish universities can still be mostly local in scope and orientation – and only extraordinarily be international. These contrasting approaches to research go far beyond the Polish case, though. The traditional cosmopolitan/local tension in academia (Gouldner, 1957) has been all-pervading and it refers to the way research activities are conceived of, to academics' natural reference groups in research, to preferred or expected publication channels, types of conferences being routinely attended, and books and journals being routinely read.

While among both younger and older academics the proportion of locals in research is considerable (which I will discuss further based on quantitative material), it is currently decreasing among younger academics faster because of, inter alia, new academic promotion and research grants' requirements, both with a strong emphasis on international research outputs (as elsewhere across Europe, see Huang et al., 2014; Smeby and Trondal, 2005). The increasing internationalization in research was one of the two founding principles of the Kudrycka's reforms (the other one being competition; see an overview of their criticism in Szadkowski, 2015: 307–325). As an older professor of educational sciences explained the difference between current and past approaches to academic research:

> I had no awareness before that one had to participate in this [research] game at a supranational level. I realized this only recently, in the past few years. We used to be stuck in a milieu in which there were only national-level authorities who were not recognizable beyond Poland (17/Older/Full professor).[2]

The times are changing, though, and especially so for younger generations of academics seeking prestige, research grants, scientific awards and promotion opportunities – which is directly related to internationalization in research and, especially, to publications in top international journals. In the Polish case, the core role of research internationalization in ongoing changes means the increasing competition between academics – and between academic units – based specifically on this dimension of academic work.

The increasing international competition in research, reported to be obvious to young generations, is still often hard to accept for older generations (as is the case globally, see Yudkevich et al., 2015). One of the reasons is the lack of direct academic requirements for older generations and especially for those who are already high on the career ladder. Interviewees believe new requirements to be predominantly applicable to young generations and especially the newcomers to the academic profession. A new general question of whether academics are doing anything relevant for the global 'borderless science' emerges as a new common generational experience. Therefore, in a global context,

> [y]oung people, as the next academic generation, will not have this comfort that I used to have: the comfort that the competition does not exist … There appear new questions: first, are they doing anything scientific, and, second, whether what they are doing matters at all (17/Older/ Full professor).

Such questions were alien to most Polish academics under communism, and they are bothering younger generations much more than older ones. The generational divide clearly shows that age – that is, belonging to different academic generations, entering the system under different conditions – matters for both the research role orientation and for academic productivity (for predictors of becoming 'top performers' or highly productive academics across 11 European systems, see Kwiek, 2016a).

Science needs clear academic reference points and scientists need unmistakable academic reference groups (Cole and Cole, 1973; Crane, 1965; Hagstrom, 1965; Wilson, 1995). For older

generations, a reference point both under communism and in the 1990s was national science, and reference groups were mostly national scholars, even in top public universities. The international dimension of research was largely absent: for structural, ideological and financial reasons (as elsewhere in communist Europe). The political and economic integration of Poland into the European Union meant the increasing cosmopolitanism of science, especially for younger generations, the process usually being referred to as its 'Europeanization' (see Dakowska and Harmsen, 2015: 14). The individual position in science no longer means exclusively the position in Polish science, young interviewees claim, as they observe radical changes in the officially stated rules of the academic game, which started with the Kudrycka reforms, and try to accommodate them. As a young female economist concludes her reflections on international high-impact journals and life stability:

> When I was beginning my academic work, it was a comfortable job with low salary – but OK, there was a trade-off, let us assume, the salary was low, so were the requirements … But all this has been changing in the last 2–3 years. A new path emerges, with the pressure on publications and seeking external funding sources (56/Younger/Assistant professor).

The young generation seems to appreciate – albeit with some reservations – a new competitive mode of allocation of research funds from the National Research Council (NCN, founded in 2011). A new system is believed to be fairer – but at the same time it may be leading to increased job insecurity. A young mathematician summarizes the current situation as follows:

> [s]omeone who is not doing anything and who is not receiving grants – is making small money. But someone who is working, who has got achievements, grants, is making good money. And it is fair. There is a moment of uncertainty, though (38/Younger/Assistant professor).

There is a clear split between older academics who are not in top academic ranks and who are allowed to continue working within a system of limited research requirements – and young academics who, from the very beginning, are required to follow much tougher academic rules. The split is characteristic of major European systems too in which intergenerational tensions are on the rise – as testified by 520 interviews conducted across 7 European systems and not used here (see Kwiek and Antonowicz (2015) on major milestones in academic careers across Europe). While the former group can still have academic stability due to their long-term job contracts, the latter group is very much afraid of working in a new system of short-term renewable contracts. Their feelings of economic stability and academic continuity are often threatened: as a young sociologist explains what he terms an 'intergenerational deal' in his own institution:

> [t]he deal is that they [older academics not in top academic ranks] do not have to make progress, and they can be associate professors for life. But the requirements from us are different. I accept this and I am trying to follow the requirements but I am also thinking about the academic career in terms of continuity, a possibility to advance, and now I am afraid that there is a transformation toward a system from which I had escaped – that of a non-governmental sector. In which if you have no grants, you have nothing to live from … There is no feeling of stability, especially in the context of new two-year employment contracts being proposed today (50/Younger/Assistant professor).

Young academics interviewed believe that Polish degrees and positions are merely the consequence of research achievements and that the system already allows this sequence: research (especially international) first, academic degrees and titles (habilitation and professorship) second. Therefore, for them, international recognition is often more important than Polish academic titles. Fortunately, 'Polish degrees, by half a step, follow international research achievements' (37/

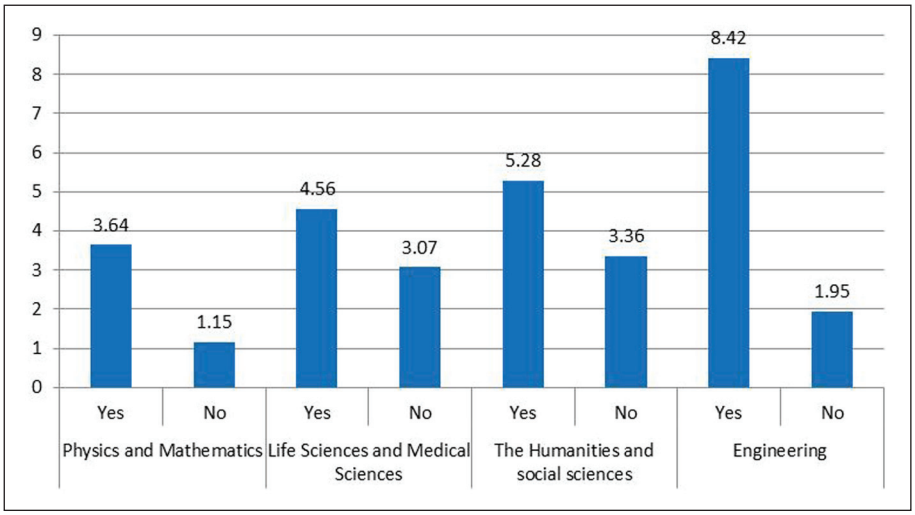

Figure 2. The average *number* of peer-reviewed papers (and book chapters) published by Polish academics in the three-year period studied, by international cooperation in research ('yes' or 'no') and by major clusters of academic fields (results for 'professional sciences' were not statistically significant p-value>0.05).

Younger/Associate professor). Also, academic recognition abroad is being increasingly translated into academic recognition at home, which was not the case prior to the reforms when the international research tracks and national promotions were largely unrelated to each other.

There emerges a new pattern, previously largely unknown, which links international research achievements and national recognition: 'If someone is known, or perhaps not known but recognizable abroad, then somehow by extension he or she is also recognized in Poland' (5/Younger/Assistant professor). Older academics see the core of the current changes to be the increasing internationalization, especially following the emergence of new external funding sources:

> [t]here was nothing like that before, it is much easier today. There appeared international connections. For me an international travel, I remember, was an unbelievable event: one had to save money, and also from an organizational perspective – [you needed] visas, passports and all that. Young people are clearly global today (40/Older/Assistant professor).

Quantitative material on various aspects of internationalization strongly supports the above insights from the interviews. From a quantitative perspective, there is clear correlation between the internationalization of research and academic productivity (although no causal connection can be shown). Polish 'internationals' (defined as academics involved in international collaboration in research) publish on average considerably more across major academic fields. For instance, statistically significant results based on the t-test for the equality of means for physics and mathematics (shown in Figure 2 above) demonstrate that there are on average 3.64 papers published by internationals and 1.15 papers published by locals in the reference period – and 5.28 vs. 3.36 in the case of humanities and social sciences. Internationals also publish more with international co-authors, consistently with research literature (Abramo et al., 2009; Huang et al., 2014; Katz and Martin, 1997; Kwiek, 2015c; Kyvik and Aksnes, 2015). As Figure 3 below shows, without international collaboration in research, joint publications with international co-authors are on average almost

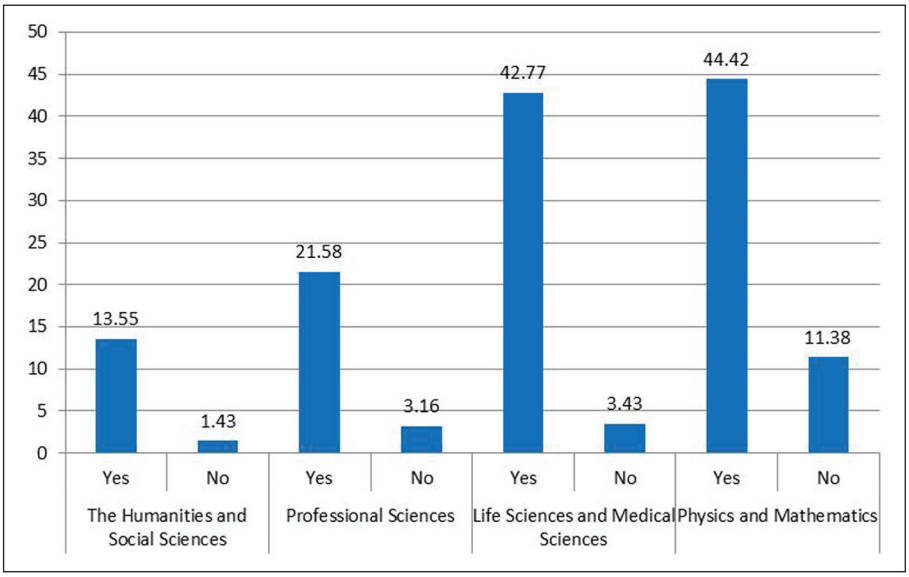

Figure 3. The *percentage* of peer-reviewed papers (and book chapters) co-authored by Polish academics with academics from other countries in the three-year period studied, by international cooperation in research ('yes' or 'no') and by clusters of academic fields (in%) (results for 'engineering' were based on a too small number of observations).

impossible (only 1.43% of Polish internationally non-collaborating academics in the humanities and social sciences, and only 3.43% of them in life sciences and medical sciences report internationally co-authored publications in the three-year reference period, about ten times fewer than their internationally collaborating colleagues). The statistical details, including the 95% confidence interval for mean with lower bound and upper bound, are given in Tables 4 and 5.

As Table 6 below shows, international collaboration in research takes time to develop: the percentage of academics collaborating with international colleagues increases with every age group (from 44.6% for academics under 40 to 59.5% for those in their fifties, and drops for those in their sixties); and it certainly increases by career stages, from less than half (45.0%) in the case of new entrants to three-quarters (75.1%) in the case of full professors.

And as can be seen in Table 7, differences in various aspects of internationalization between new entrants and full professors are much more pronounced than those between subsequent age groups. In particular, full professors are more internationalized in their teaching and their research, and are collaborating internationally much more often and using primarily English in their research. Figure 4 below shows the differences graphically.

Table 8 shows substantial cross-disciplinary differentiation in international research collaboration: physical sciences and mathematics are clearly the most highly internationalized academic field, with almost 80% of new entrants, almost 80% of academics under 40, and more than 90% of full professors collaborating with international colleagues – in contrast to social sciences characterized by the lowest shares of internationals for both career stages and for all age groups (again, consistently with research literature: see Lewis et al., 2012; Smeby and Trondal, 2005). These findings show different working patterns across academic fields – and possibly the continuing power of mentorship and personal academic examples across them. Young academics in the two fields show radically different conceptions of doing research: international in scope vs. local

Table 4. Articles published by Polish academics (full-time employed in universities only) in an academic book or journal by international collaboration ('internationals' – 'yes', and 'locals' – 'no') and academic fields (LB = lower bound, UB = upper bound).

Academic field	International collaboration	N	Mean no. of articles	SE	95% confidence interval for mean		t-test for equality of means	df	p-value
					LB	UB			
Life sciences and medical sciences	Yes	290	4.56	0.37	3.83	5.28	3.06	524.44	0.002
	No	239	3.07	0.32	2.45	3.69			
Physical sciences, mathematics	Yes	123	3.64	0.49	2.67	4.62	4.33	168.14	<0.001
	No	47	1.15	0.30	0.56	1.75			
Engineering	Yes	11	8.42	2.85	2.05	14.78	2.19	11.20	0.050
	No	30	1.95	0.76	0.41	3.5			
Humanities and social sciences	Yes	262	5.28	0.38	4.52	6.03	4.07	480.06	<0.001
	No	290	3.36	0.27	2.83	3.9			
Professional sciences	Yes	57	5.70	0.94	3.82	7.59	1.13	93.37	0.262
	No	92	4.47	0.55	3.39	5.56			

Table 5. Percentage of articles by Polish academics (full-time employed in universities only) published in an academic book or journal co-authored with colleagues located in other (foreign) countries, by international collaboration ('internationals' – 'yes', and 'locals' – 'no') and academic fields.

Academic field	International collaboration	N	Mean percentage of articles	SE	95% confidence interval for mean		t-test for equality of means	df	p-value
					LB	UB			
Life sciences and medical sciences	Yes	174	42.77	2.63	37.61	47.93	13.46	247.87	<0.001
	No	156	3.43	1.27	0.94	5.92			
Physical sciences and mathematics	Yes	72	44.42	4.48	35.64	53.20	4.54	65.54	<0.001
	No	30	11.38	5.74	0.14	22.62			
Engineering	Yes	7	66.07	16.92	32.91	99.23	3.62	6.51	0.010
	No	18	3.12	4.10	−4.91	11.15			
Humanities and social sciences	Yes	174	13.55	2.24	9.16	17.94	5.16	207.08	<0.001
	No	199	1.43	0.71	0.04	2.82			
Professional sciences	Yes	39	21.58	5.30	11.18	31.98	3.23	50.91	0.002
	No	66	3.16	2.11	−0.98	7.30			

in scope – despite belonging to the same academic generation – which casts additional light on intra-generational cross-field variations.

Meritocracy in science across academic generations

Both young and older interviewees acknowledge the existing tensions between subjective and objective, as well as meritocratic and non-meritocratic factors determining individual academic trajectories. Young academics tend not to accept the traditionally important role of personal connections ('being one of us' in a given discipline) in academic promotions and the important role of subjective assessments in both habilitation and professorial procedures.

Table 6. National and international research collaboration (percent stating 'yes'), only academics involved in research, employed full-time, in the university sector, by career stage and age groups.

	Do you collaborate with persons at other institutions in your country?		Do you collaborate with international colleagues?	
	%	n	%	n
New entrants	55.7	345	45.0	275
Full professors	78.0	145	75.1	138
Under 40	53.8	286	44.6	232
40s	61.8	242	50.9	196
50s	67.8	228	59.5	200
60s and above	68.5	174	52.9	131

Table 7. Various international activities, academics employed full-time in universities, Poland (some answers from 1 to 5 on a five-point Likert scale, answers 1 and 2, 'strongly agree' and 'agree', 'very much' and 'much' combined), in percent.

Academics:	New entrants	Full professors	Under 40	40s	50s	60s and above
Who emphasize international perspectives or content in their courses	58.8	68.0	59.0	57.1	63.6	58.9
Whose most graduate students (i.e. MA) are currently international	1.9	2.4	1.8	2.1	2.7	2.1
Who employ primarily English in teaching	6.5	3.8	6.2	4.2	5.3	3.5
Who teach any courses abroad	18.2	25.2	18.9	15.7	18.2	17.8
Whose primary research is international in scope or orientation	47.9	53.8	50.6	49.6	42.7	44.9
Who collaborate with international colleagues in research	48.5	75.3	50.3	54.2	63.3	62.3
Who employ primarily English in research	36.4	49.1	38.3	37.3	40.4	39.0

They seem to have a dream of meritocracy in science: one's academic output is objectively assessed (in a quantitative way through a carefully weighted allocation of points for publications) and one gets what one (objectively) deserves. Or does not get it. The national points system developed within the framework of an institutional assessment exercise (termed 'parameterization') and applied at an individual level is a major source of complaints among all interviewees, young and old alike – but it is also viewed by a large proportion of them as the only tool available to downplay the role of personal connections and unpredictable, subjective assessments in academic promotions. The points system is viewed as a necessary evil leading to more meritocratic academia. As an older chemist praised the spirit of new reforms under discussion at the time:

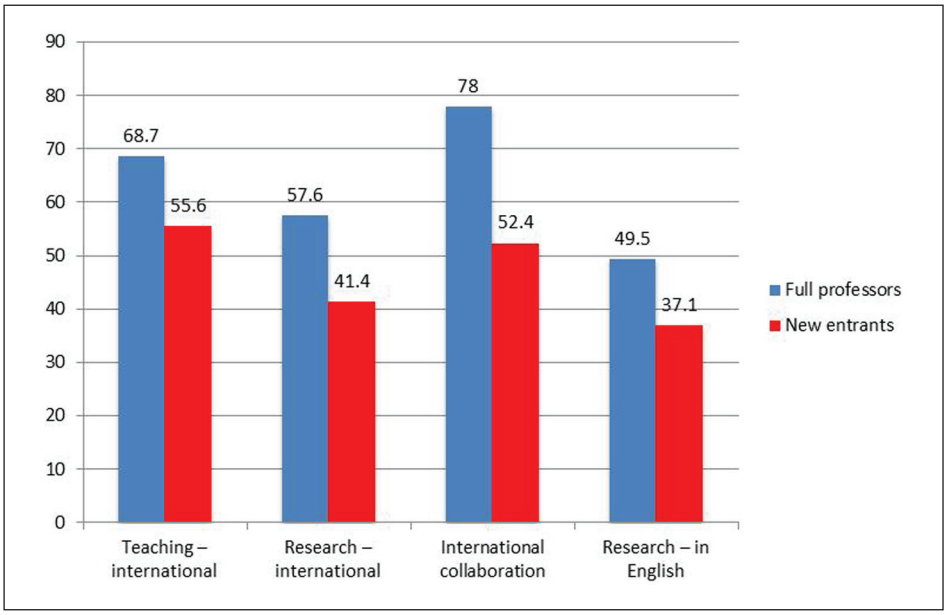

Figure 4. Various international activities, academics employed full-time in universities, Poland, by career stages (some answers from 1 to 5 on a five-point Likert scale, answers 1 and 2, 'strongly agree' and 'agree', 'very much' and 'much' combined); (Academics 'who emphasize international perspectives or content in their courses'; 'whose primary research is international in scope or orientation'; 'collaborating with international colleagues in research'; and 'who employ primarily English in research'), in percent.

Table 8. Percentage of academics collaborating internationally in research, Poland, by academic fields, only research-involved academics (in percent).

	New entrants	Full professors	Under 40	40s	50s	60s and above
Humanities and arts	40.0	61.9	40.5	45.2	50.3	52.1
Social sciences	34.2	52.5	39.3	31.1	37.4	33.4
Physical sciences and mathematics	77.9	90.8	78.0	80.7	59.7	73.3
Life sciences	53.4	84.5	55.3	52.6	77.8	55.0
Engineering and technical sciences	38.5	70.0	42.4	42.0	43.1	44.2
Medical sciences and health related sciences	37.8	76.3	38.7	31.6	45.3	59.6

> What I like about them is that everyone will be assessed on the basis of measurable, documented scientific achievements … If I am doing research, then it is followed by projects, money, publications. And this can be assessed … Someone will assess my achievements. And I will either be awarded a position or a degree, or not (4/Older/Assistant professor).

This new way of measuring individual output in science, through its imagery of objectivity, is viewed as appealing – but also demanding to the younger generation. A previous assessment system in science is viewed as too arbitrary; a new one is described as tough but fairer. The points

system of assessing publications at an individual level is also linked to a national research assessment exercise of research units linked to national research categories and, consequently, linked to institutional-level public subsidies for research. The measures used are crude, as is the link between publications and degrees awarded; but compared with the subjectivity of previous research funding and career models, they are viewed as a move in the right direction: 'previously, there was no need to publish in good journals. And today this is the major expectation' (3/Younger/Assistant professor). Young academics feel that the publishing pressure is linked both to their individual academic futures and to the financial future of their institutions. The formula is simple: publications mean points, which are both their future individual habilitation and professorial titles, and their faculty's research funds.

Academic progress is believed to be increasingly measurable in the future, documented by (preferably international) publications, and determined by their quality. Individual connections, personal likes and dislikes, are expected not to play any role because they can destroy a feeling of stability in science. In a non-meritocratic system, which it is hoped is soon disappearing, while academics with research achievements also climbed up the academic ladder, generally 'achievements were not necessary' (30/Younger/Assistant professor). And promotions based on subjective decisions are widely believed to discourage academics from sustained research activities and possibly bring about their frustration. Subjectivity seems to be damaging the national prestige market in which prestige is believed to be strongly correlated with research output. I term current processes the de-subjectivization of the academic career requirements – meaning the decreasing role of subjective factors, and the increasing role of objective ones. The subjectivity/objectivity and meritocracy/non-meritocracy tensions are strong:

> To give you an example: you can have five books or only two papers published, and if the academic output and the connections are decisive factors, both persons will reach the same step in their professional career. That is to say, they will reach the same academic degree at the same speed, even though one deserves it and the other does not … [that means] a clique character of the environment – acting on the basis of non-meritocratic mechanisms rather than meritocratic ones (30/Younger/Assistant professor).

Therefore, in a highly criticized current academic world of uncertain academic norms, the hope for the future among younger interviewees tends to be a system of objective measurement of individual research outputs: a dream of meritocracy. Clearly formulated academic promotion criteria are viewed as fair, and leaving academic career decisions to the subjective opinions of the older generation is viewed as unfair. The remedy is simple: 'whatever we do, whatever we publish, including our applications and patents, should be assessed' (4/Older/Assistant professor). The system is already believed to be moving towards a previously unknown quantification of the individual research output: 'everything needs to be calculated into some values, and more specifically, into points. This is a fundamental issue' (55/Younger/Assistant professor).

However, measuring academic outputs also means an increasing stratification between academics in top tiers and bottom tiers of academic research production, between those who are active and successful in research – and those who are not. Systematic measurement of individual outputs (and consequently academic productivity) means systematically making known what has generally – until the recent reforms – been unknown. Such new social stratification in science has been unknown to large segments of the Polish academic community. As an older professor of educational studies described the emergent tensions:

> After years of believing in being good, very good, there comes a moment when people are losing their sense of self-esteem … One can be a known, recognized professor because others are saying that one is

> someone important. What I hope is ahead of us will be more measurable, more objective … There is widespread unwillingness to show scientific achievements. There are few departments in which it is said: you are stronger, you are weaker, and you are the weakest so you have to do something about it. Even if it is the case, we are not saying this because it does not make any difference (17/Older/Full professor).

Expectations from the younger generation on the part of their institutions are clear: ever more research papers and ever more external, especially competitive, research funds. As there are few high-impact Polish journals, what increasingly matters in academic careers is publication in international high-impact journals. For older generations, these publication outlets are reported to be mostly beyond reach for several reasons: weak international research contacts, poor English abilities and a general unwillingness to participate in the international research competition, especially in soft research areas, and specifically in social sciences and the humanities. Clearly, while for the young generation interviewed science is increasingly international (and therefore highly competitive), for the older generations, even in top tier academic centres, science can be still local and non-competitive. The pressure to internationalize research does not seem to work for older academics – one of the reasons being that competitive research funding is made available mostly to academics under 40. Certainly, the generational divide concerning research productivity is not a unique Polish phenomenon – but only in Poland does the average academic productivity increase only marginally between younger and older generations (Kwiek, 2015a).

The intergenerational tensions grow because it is certainly the older generations who make career decisions about the younger one – not the other way around. Subjectivity and personal connections in the context of academic progression are viewed as destructive to science. Therefore, more precise assessment tools are needed. Academic promotions are still believed to be related to what interviewees term 'being well-located' in science (30/Younger/Assistant professor). The subjectivity of career decisions and, consequently, the arbitrariness in, and contingency of, individual academic trajectories, are a major issue: 'the major problem is the lack of clear criteria specified for a given academic discipline', as an older German philologist emphasizes (34/Older/Assistant professor). Young academics believe that scientific achievements will matter more and more, and personal connections will be finally unimportant.

Certainly, not all young academics view the new rules of the academic game favourably; some may feel disappointed, seeing their current professional stability threatened. As a junior sociologist explains his attitude to what he terms the 'total folly' of current publication assessment procedures:

> I am terribly depressed as a person … that everything now has to be so measurable and countable … This is not the way I had imagined it (50/Younger/Assistant professor).

A new order clearly means more individual and institutional competition and a higher role for the accumulation of individual successes in the collective institutional successes of faculties. In all interviews, the increased competition in research (and for research funding) is mentioned, mostly approvingly. There is a growing awareness that academic success in Poland will soon come only through research achievements and good publications. However, academics are worrying that other dimensions of academic life are bound to suffer. The principle of individual competition in research may threaten the principle of cooperation with others, as well as sharing preliminary research results in national-level scholarly conferences, and more intense involvement in teaching. As an older computer scientist explains:

> [t]here is absolute, pure competition … If someone is devoted more than marginally to teaching and wants to do it properly – then he makes harm to himself (41/Older/Assistant professor).

The new academic environment is reported to require new academic attitudes: young academics 'have to be able to fight for money, have to be assertive and aggressive; they have to be like young wolves' (18/Older/Assistant professor). The negative consequences of recent publishing pressures are reported to be manifold. They include a feeling of job insecurity and a newly discovered direct link between one's access to funding (through research grants) and one's individual academic future: 'no funding, no job'; publishing pressures leading to 'huge mental tensions' (21/Older/Associate professor); as well as a growing feeling of being 'on one's own' in academia: 'everyone is working on one's own … Everyone needs to be strong' (12/Younger). The role of cooperation is viewed as heavily decreasing:

> There is no emphasis here on collective work. Everyone is doing what they want; it would be the best if they even could get financed by themselves. The problem is where to get the money from unless you have a grant (7/Younger/Assistant professor).

Thus, young academics feel they are largely being left on their own in academic life, which is beginning to be ruled by new principles – and in which the only way to proceed is to learn by doing. However, the new standards which make intra-generational competition between juniors fairer (and which are based on clearly meritocratic principles) are perceived more as a chance than as a threat, at least by research-oriented academics. An apparently unfair intergenerational (younger-older) treatment is at the same time perceived by interviewees as leading to a fairer intra-generational treatment (younger-younger): the emergent competition for academic recognition, research grants and other scholarly awards among young academics is strongly believed to be fairer under the new organizational principles.

Perceptions of university governance and management across academic generations

One of the strongest dividing lines in Poland, as elsewhere in higher education systems, is between seniors and juniors, or across different academic ranks. The role of the habilitation degree in Poland is fundamental: it is the entry ticket to a lower-level class of senior academics (the entry ticket to its higher-level class being full professorship).

The interviews reveal the existence of what in one of them is termed a virtual 'battlefield' between the 'independent' and the 'subordinate classes' ('there are two estates which are heavily distinguished from each other in a symbolic sense, in a primarily economic sense – but not in the sense of competences', 30/Young/Assistant professor); as a young academic put it metaphorically, 'one becomes a human being only after habilitation. Everyone before it – is a half-human being' (12/Younger/Assistant professor). The young generation of academics is reported to suffer from a 'deep hierarchization' (21/Older/Associate professor). Academic semi-feudalism or feudalism, almost unanimously reported to still dominate in personal and professional relationships between junior and senior academics, is sometimes believed to be caused by a fear of competition on the part of seniors ('they are embedding themselves in their positions to introduce ever new criteria of what young academics need to do', 18/Older/Assistant professor). The emergent picture is one of a generationally divided academia: the split between academics in the two career stages – before and after being granted the habilitation degree – is powerful and holds across all clusters of academic fields.

Poland does not seem to be fundamentally different from other European countries, though: everywhere juniors are not equal partners to seniors, and their voice in university matters is better heard only when their voice in research is stronger. Institutional authority has always

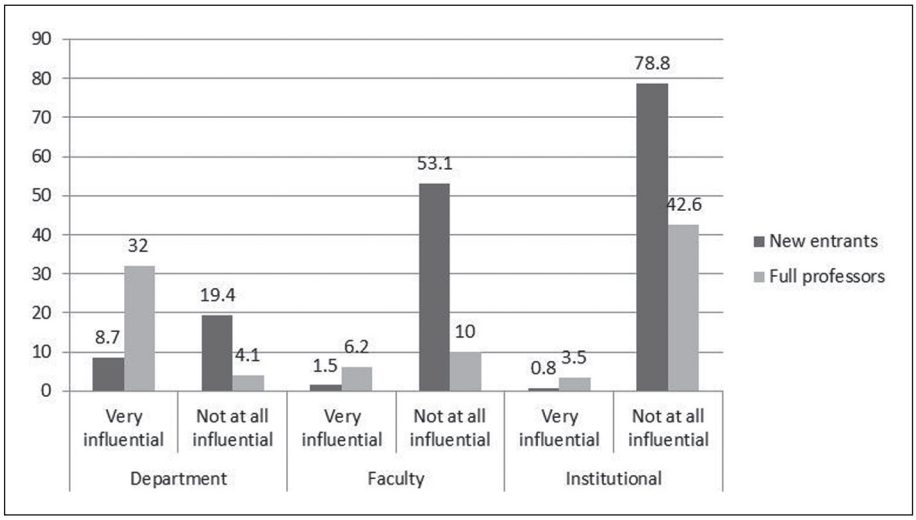

Figure 5. Responses to the question: 'How influential are *you*, personally, in helping to shape key academic policies?' (Question E1), by career stage and age groups, Polish academics (percent).

been related to authority in the system of science. In countries in which institutional promotion is strictly based on the assessment of research achievements, the voice of faculty with higher research prestige is always more important than the voice of faculty with necessarily lower research prestige, i.e. juniors.

In quantitative terms, Polish new entrants showed much lower personal influence than full professors at all three university levels studied: department, faculty and institution. The distribution of their answers to the question 'How influential are *you*, personally, in helping to shape key academic policies?' shows that one-fifth of them report being 'not at all influential' at the department level, more than a half at the faculty level and almost four-fifths at the institutional level (Figure 5 above). The lack of influence of full professors is much less pronounced (below 5% at the first, about 10% at the second, and about 40% at the third level studied).

Differences between the two contrasted career stages (and age groups) are also substantial in selected views on management and administration. In general, new entrants are much more appreciative of current ways in which their institutions are managed, and they seem much more satisfied with the institutional status quo. In particular, surprisingly, a substantially bigger share of them agrees (and strongly agrees) with the view that in their institutions there is good communication between management and academics and collegiality in decision-making processes; a much smaller share of new entrants perceives a top-down management style. A bigger share of them views top-level administration as providing competent leadership and feels they are being kept informed about what is going on at their institutions. The distribution of views across career stages and age groups is given below in Table 9.

There are also substantial generational differences in academic satisfaction, which can be explored through several proxies: in the survey, academics were asked to refer to such statements as 'This is a poor time for any young person to begin an academic career in my field', 'If I had to do it over again, I would not become an academic', and 'My job is a source of considerable personal strain'. More than four in ten (43.9%) of new entrants to Polish universities perceive the time in question as poor and more than four in ten of them (41.6%) are stressed by their job. Less than 20% of them would not become academics again (17.8%). Full professors view the timing in the

Table 9. Views on institutions' management and administration, Polish academics, by career stage and age groups (full professors and new entrants only), full-time academics employed in universities only, on a five-point Likert scale from 1-strongly agree to 5-strongly disagree; responses 1 and 2, 4 and 5 combined) (in percent).

		Career stage		Age group			
		New entrants	Full professors	Under 40	40s	50s	60s and above
Good communication between management and academics	Agree	56.8	36.4	55.2	52.7	42.7	33.7
	Neither agree, nor disagree	26.2	32.6	28.6	28.9	32.4	32.0
	Disagree	17.0	30.9	16.1	18.4	24.9	34.3
A top-down management style	Agree	21.5	34.1	19.1	21.3	30.7	29.6
	Neither agree, nor disagree	22.2	28.0	23.3	22.8	23.5	31.7
	Disagree	56.4	37.9	57.7	56.0	45.8	38.7
Collegiality in decision-making processes	Agree	50.1	27.7	50.0	41.0	34.6	21.3
	Neither agree, nor disagree	29.9	31.8	27.9	38.5	32.8	38.9
	Disagree	20.0	40.5	22.1	20.4	32.7	39.8
Top-level administrators are providing competent leadership	Agree	48.9	39.8	52.5	44.4	42.2	28.1
	Neither agree, nor disagree	31.4	31.7	29.8	31.7	34.5	30.7
	Disagree	19.7	28.5	17.7	23.9	23.3	41.2
I am kept informed about what is going on at this institution	Agree	43.1	25.4	42.2	38.0	27.5	25.2
	Neither agree, nor disagree	28.7	26.9	25.1	28.1	31.0	24.0
	Disagree	28.2	47.7	32.7	33.8	41.6	50.8

Table 10. Perceptions of academic staff: academic satisfaction (proxies), by academic stage and age groups.

	Career stage		Age group			
	Full professors	New entrants	Under 40	40s	50s	60s
This is a poor time for any young person to begin an academic career in my field	36.5	43.9	43.4	41.7	41.0	38.2
If I had it to do it over again, I would not become an academic	14.6	17.8	17.5	18.0	16.8	18.1
My job is a source of considerable personal strain	26.9	41.6	40.3	43.4	38.3	26.0

question as poor less often, find their jobs less stressful, and would not choose an academic career less often, as shown in Table 10 below. These findings are fully confirmed in interviews: young academics interviewed often feel more stressed, overworked and frustrated than their older colleagues (see Kwiek, 2015b on the 'unfading power of collegiality' in Polish universities and the 'index of collegiality' across 11 European systems).

Discussion and conclusions

Different generations of academics exhibit different academic behaviours and attitudes – and react differently to ongoing structural reforms in higher education. The qualitative material reveals a picture in which there are two types of (Polish) academics today. One type comprises older generations, mostly from soft academic fields, predominantly unable to be as productive, as internationalized in research and in publication channels, and as internationally mobile as required in new policy discourses (and, increasingly, in new recruitment and career advancement requirements). Their major feature is the lack of understanding of – and sometimes even hostility to – new competitive mechanisms used in research funding distribution, a general distrust of objective, measurable criteria of assessment of individual research achievements, and a general dislike of the emergent competitive academic order. And the other type of academics comprises mostly young academics, predominantly from hard sciences, working under mounting competitive pressures, beginning to understand that the rivalry in seeking research funding and publishing research results internationally is a constitutive element of the academic profession employed in top segments of national systems. This dichotomy goes far beyond the special case of Poland and pervades numerous European systems, Central Europe and beyond, and including, to varying degrees, Western European systems.

The Polish academy, to a larger extent than its Western European counterparts but certainly not uniquely, is torn between an old ideal of doing research at a somewhat leisurely pace, without tough external pressures related to promotion and funding, and a new ideal in which (ever more externally funded) research is at the core of the academic profession's activities in top tiers of the system. While the former ideal also encompassed semi-feudal academic relationships based on seniority and highly subjective criteria for academic advancement, the emergent ideal is that of heavily quantified, objective criteria of career assessment and research funding distribution.

Young academics are increasingly aware of a new academic order and of being somehow on their own, with ever more competition between individuals and institutions around – combined with ever more professional uncertainty and financial instability. They increasingly share these uncertainties and instabilities with their European (see Teichler and Höhle, 2013) and international (Yudkevich et al., 2015) colleagues. Research into the academic profession by academic generations – as developed here – shows academic generations as yet another line of differentiation, following widely discussed differentiations of the academic profession by gender, institutional type, institutional rank and academic field. Intra-national differences between generations can often be higher than cross-national differences between the same generations: the Polish case study may not differ much from parallel European case studies. In most European systems, recent performance-oriented changes in academic rules of promotions and research funds' distribution are driven by structurally similar factors, which may tear apart the cross-generational homogeneity of the academic profession. In some systems, and Poland is a good example, a generational gap overlaps a rank gap, while in others it is not the case.

The findings presented here have wider implications for Central Europe. National academic recruitment and promotion policies increasingly matter for less research-oriented national systems – like those in Central Europe – wishing to catch up with more research-oriented Western European ones: who gets recruited and who is retained in academia (and especially what their research attitudes, behaviours and productivity rates are) may define the future distribution of research production across Europe, which is highly unfavourable to Central Europe at the moment.

In the long run, the research competition between systems of young academics with high research orientation (and high research focus), as represented by major Western European countries, and systems of young academics with low research orientation (and high teaching focus) as represented by Poland (and other Central European countries) seems fundamentally difficult. On

an individual level, the growing gap can be seen in the marginal number of European Research Council grants awarded in the region (1.6% of all in 2007–2016, or 103 out of 6621 grants); and on an institutional level, in the marginal presence of Central European institutions in the World Top 500 Universities of the Shanghai ranking.

Poland since 2009 has been undergoing a transition from a severely underfunded and non-competitive academic research system – to a slightly better funded and highly competitive system. The changes reported in this article from quantitative and qualitative perspectives indicate an ongoing conflict of basic values in the academy, with reform-inclined policymakers being more strongly supported by the younger generation of academics, predominantly from hard academic fields, and being opposed by the majority of the Polish academic profession, and especially by academics from soft academic fields. There emerges a deep generational divide, with younger and older generations having contrasting academic dreams about the future. New policy mechanisms and recently created research funding institutions – based on the twin principles of 'competition' and 'internationalization in research' – seem to find more support among the former; but to get them embedded in the dominant academic culture, certainly more time is needed.

A generational approach to the academic profession used in this research, especially in mixed-methods research designs, highlights new policy dilemmas from a new angle for all countries currently reforming their higher education and science systems. The lessons learnt for public policy go far beyond Poland. The winners and losers of university funding and governance reforms – as well as their supporters and opponents – need to be differentiated to a much greater degree along their academic cohort affiliation (that is, age). Consequently, the political economy of reforms emerges from this research to be heavily linked to different patterns of academic generations in different countries.

Declaration of Conflicting Interest

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Notes

1. The Polish sample was as follows: by gender − 54.8% male and 45.2% female; by age – aged under 40 31.4%, aged 40–49 24%, aged 50–59 24.2%, aged 60 years and older 20.4%; by academic degree − 4.1% MA, 67.9% PhD, 16.5% PhD with habilitation and 11.5% full professors; by academic fields, only those of 3% and more − 22.7% humanities, 21.3% technical sciences, 8.7% economics, 6.9% chemistry, 6.0% biology, 5.7% agriculture and 3.3% Earth sciences; by type of employment − 98% full-time, 1.3% part-time, 0.3% contracts; by sector – only public institutions; by institutional type – university 48.2%, technical university 6.2%, other universities (of economics, of medicine, etc.) 10.6%, polytechnics 17.6%, academy 9.6%, higher vocational school 6.5%, other 1.3%; by academic duties − 98.8% provided teaching and were involved in research (the Polish CAP/EUROAC database 2016).
2. The interview material is quoted as follows: interview number/age bracket/rank (younger, i.e. under 40, or older, i.e. aged 40 or more; rank: assistant, associate or full professor).

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