The sticky steps of the career ladder for engineers: the case of first-generation students in Germany

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ABSTRACT
Although governments and higher education institutions across Europe are promoting agendas for widening the educational participation and increasing the social mobility of young people from lower socio-economic groups, very little has been written about the experiences of these individuals when seeking and entering employment. We aim to address this gap. Using a qualitative research approach, we explore the career expectations, experiences and limitations of first-generation university engineering students and graduates in Germany. The article draws upon the work of Pierre Bourdieu to demonstrate how social and cultural capitals instilled by parents and social peers are invaluable in developing personal and professional networks and eventual entry into the engineering professions. A lack of, or underdeveloped, capitals can inhibit career opportunities and ultimately the social mobility and professional choices of graduate engineers. Our research discovered that university graduates from less advantaged backgrounds face a ‘class ceiling’ at university, in obtaining an internship and then when gaining entry to and
working in the engineering profession; they encounter ‘sticky steps’ at each stage of their career ladder.

**KEY WORDS**
careers, engineering, first-generation students, Bourdieu, social capital, class ceiling, Germany

**Introduction**
Throughout Europe, much consideration is currently given to widening the access and social mobility of young people, that is, the ability and/or opportunity of young people from lower socio-economic groups and certain demographic areas to gain entry into elite educational institutions and employment within professional occupations. Access to such institutions, and the social capital which accompanies this, improves job and promotion opportunities for those who are able to name these institutions on their résumés (Randle, Forson & Calveley, 2015; Friedman, O’Brien & Laurison, 2017).

The social capital argument also holds true for workplace internships. Although access to the labour market is strengthened through completing an internship whilst still studying at university, such places are more readily available for those with the ‘right fit’ (Brown et al., 2016), i.e., school or family connections, and more difficult to come by for those without these previously established networks (Randle, Forson & Calveley, 2015) or for those without the financial support to undertake unpaid internships (Higher Education Policy Institute, 2018).

Apart from the obvious disadvantages to businesses that are missing out on recruiting talent (Forson, Calveley & Smith, 2015; Higher Education Policy Institute, 2018), the discussion around social mobility is important for other reasons too: there is evidence to show that the ‘upwardly mobile’ do less well in entering employment and in progressing once in employment. Indeed, they could be said to face what has been described as a ‘class ceiling’ (Friedman, Laurison & Miles, 2015). Not only do they face barriers to entry and promotion (Browne, 2010; Forson, Calveley & Smith, 2015; Friedman, Laurison & Miles, 2015; Randle, Forson & Calveley, 2015) but they also suffer from a class pay gap (Laurison & Friedman, 2016; Friedman & Laurison, 2017).

The widening of access to study is particularly relevant in engineering where an international shortfall of engineers is predicted (Berge, Sihver & Danielsson, 2018; Engineering UK, 2018). At the start of the 21st century, aware of this potential shortfall, Germany instigated a sustained effort to promote engineering to young people. Although the number of graduates in engineering more than tripled, this only alleviated the issue in the short term. The Association of German Engineers (Verein Deutscher Ingenieure (VDI)) found that in the second quarter of 2018 the demand for engineers had reached a new record (VDI, 2018:3), with two-thirds of companies experiencing problems finding qualified personnel (VDI, 2018:5). The VDI suggests that the stable German economy and economic growth expectations make it unlikely that Germany will see an end to this shortage of engineers (2018).
Despite fairly extensive sociological and political research into the relationship between social inequality and education in Germany (see, e.g., Büchler, 2012; Kracke, Buck & Middendorff, 2018; Georg & Bargel, 2016; Middendorff et al., 2016; El-Mafaalani, 2012), there are few scholars who explore how the situation can be improved for socially disadvantaged young people, especially at the university level (Miethe et al., 2014) and the literature seldom goes on to address the post-university careers of these students. In this article, we aim to address this gap by using a qualitative research approach to consider the ‘class ceiling’ from the perspective of ‘socially mobile’ engineering graduates. We do this by exploring the perceptions and career expectations, experiences and limitations, of first-generation university engineering students and graduates in Germany (i.e., those whose parents have not been university educated). This makes a particularly interesting case as in Germany the engineering profession is seen as being the most egalitarian of the professions. Koppel (2011) posits that it is a top professional choice for social climbers; we explore how reality can belie this assertion.

First-generation students and engineering in Germany
In Germany, although 79 out of 100 young people with an academic family background (i.e., those whose parents have been university educated) continue into higher education, only 27 out of 100 from a non-academic background do so (Kracke, Buck & Middendorff, 2018). This is, in part, due to the German educational system which requires parents, and subsequently their children, to make early schooling decisions that determine later educational choices.

Parental educational background is an important factor influencing young peoples’ school (Middendorff et al., 2016) and post-school (Protsch & Solga, 2016) educational choices. Protsch and Solga (2016) voice concerns that social inequality becomes generationally reproduced because often those from a working-class background are ‘channelled’ into the apprenticeship system rather than university. In Germany students are able to gain their Bachelor or Master’s degree at either a university or a university of applied sciences. The former concentrate more on theoretical knowledge, whilst the latter combine theoretical knowledge with practical applications. Middendorff et al. (2016) posit that first-generation students are more likely to choose a university of applied sciences rather than a university and also that there are differences in the choice of study with relatively more likely to study engineering.

Engineering in Germany is characterised as an elite profession, dating back over 600 years (see Kaiser & König, 2006). The academic formalisation of the occupation began in the late 1800s with the creation of polytechnic schools, subsequently transformed in the early 20th century into technical universities or universities of applied sciences; these institutions are the providers of education for contemporary German engineers (Ihsen, 2013).

Unlike in some other countries, for example, the United Kingdom, the use of the title ‘engineer’ in Germany is enshrined in law; only those who have graduated with a degree in engineering are able to identify as an engineer (VDI, 2019). Being ranked in the top ten highly rated professions (GfK-Verein, 2018), engineers in Germany are
among the highest paid professionals (Stepstone, 2018) and engineering graduates, compared with all other graduates, are more likely to earn the highest starting salaries (Bundesagentur für Arbeit, 2018b).

There are approximately 1.1 million engineers in Germany, constituting them as the third largest group of working graduates. However, in 2016 it was estimated that only 73% of those with this designation were actually working as an engineer (Bundesagentur für Arbeit, 2018a, 2018b). Nonetheless, one in two executive board members and directors hold a degree in engineering (Ilg, 2014). Engineering can, therefore, be a lucrative, gratifying and desirable career choice for young people, regardless of family background. The career decisions made and options open to engineering students, however, vary widely.

Notably, the proportion of first-generation students in engineering in Germany is stated as being significantly higher than in all other OECD countries (Autorengruppe Bildungsberichterstattung, 2018:157) and according to Koppel (2011) engineering is viewed as a ‘top job for social climbers’. In this context ‘social climber’ refers to those from less advantaged backgrounds who undertake a degree; no account is taken of their experience of studying nor their post-university career progression, or lack thereof.

Social mobility and the ‘class ceiling’
Social inequality can be considered from a range of different perspectives. In our paper we briefly draw upon the work of Bourdieu (1983, 1986) in order to help frame our discussion. We find his approach particularly useful because Bourdieu attempts to explain the persistence of group-based social inequality with his theory of social and cultural reproduction (Edgerton & Roberts, 2014), while acknowledging that individuals strategise and make choices within the constraints imposed by their own specific context. Bourdieu describes three forms of capital: economic, social and cultural capital. For Bourdieu, ‘economic’ capital can be easily converted into money whilst ‘social’ capital relates to networks and connections. He argues that ‘cultural’ capital can take three broad forms. The first of these is the ‘embodied’ form, manifested as character and way of thinking, how individuals present themselves and how they communicate. The second is the objectified form, which encompasses, for example, the properties of works of art, including the understanding of their cultural meaning, scientific instruments and their use, and technology, including access to media and other digital sources of knowledge and comprehension. Finally, institutionalised cultural capital is reflected in a person’s qualifications, for example, the academic degree (Bourdieu, 1983).

This last form of capital can be accrued through the possession of the other capitals. For example, economic capital provides financial resources for study; social capital supplies the networks (family and friends) to advise on which educational qualifications to pursue; and cultural capital, as Lamont & Lareau (1988) explain, helps an individual navigate the intricacies of the use of language (e.g., accents), attitudes and behaviours which can promote both social and cultural inclusion and exclusion. Aligned to this is the societal status this accords a person, which Bourdieu described as symbolic capital – the value placed on a person’s portfolio of capitals. Meanings are
therefore ascribed to the ‘micro-interactional processes whereby individuals’ strategic use of knowledge, skills and competence comes into contact with institutionalised standards of evaluation’ (Lareau & Weininger, 2003:569), for example, knowing what is expected at an interview for a professional position. Bourdieu argues that the portfolio of capitals possessed by groups and individuals leads to a type of disposition (‘habitus’) – a way of thinking and behaving which is produced, internalised and reproduced over time. A middle-class habitus can thus be said to exist, just as a working-class habitus can be found among those who belong to that group.

Bourdieu argued that conceptual framework ‘made it possible to explain unequal scholastic achievement of children from the different social classes by relating academic success i.e. the specific profits which children from the different classes and class fractions can obtain in the academic market, to the distribution of cultural capital between the classes and class fractions’ (1986:243); this arguably holds true for all levels of education.

Engineers in Germany generally follow a generic qualification path before taking their first steps into working life. Therefore, institutionalised capital in the sense of academic qualifications alone would not be able to explain any career opportunity differentials experienced during their study and working lives by those engineers without an academic family background.

With regards to economic capital, although this is not exclusively the case, it is likely that the income of university graduates and professional workers is generally higher than that of people with lower qualifications and that first-generation students therefore grow up in lower income families. In non-academic families, the focus is often on financing family maintenance (Emirbayer & Johnson, 2008), such as housing rents and insurance, and there are few or no spare financial resources for additional educational costs. As a consequence, the focus is more likely to be on getting children prepared for the labour market where they can earn money to support themselves, rather than on embarking on an unknown academic education with uncertain outcomes (Grendel, 2012:46). Likewise, expensive sports, foreign-language skills or experiences in other countries may be either strange or unknown to the parents or beyond their financial means (Rohlfs, 2011:77). The opportunities for extra-curricular experiences and activities of their children are therefore limited, ultimately impacting their accumulation of the social capital which Bourdieu (1986) maintained could be developed through social networks.

Social capital is comprised of the benefits that arise from relationships developed at both group (membership of a family or school) and individual (knowing important people) levels (Bourdieu, 1986). An individual’s social reference group tends to consist of people with the same or comparable qualifications, class background and financial endowment (not mutually exclusive). Friends, relatives and acquaintances form a network that reflects one’s own educational background but rarely encompasses people with other qualifications, other professional positions or other careers (Grendel, 2012:40). Individuals’ social capital can be limited or enhanced depending on their ability to move between social groups.

Vester (2006) provides an example of lack of capitals. He describes how children from families with lower educational backgrounds think less in the abstract and more
figuratively than their peers from more well-educated families. However, teachers expect children not just to have the ability to read but also to take pleasure in reading and they need to think critically and in the abstract in order to obtain a good grade in literature classes. Those from educationally disadvantaged backgrounds do not learn in their childhood years what and how to do certain things that school and university demand of them (Becker & Lauterbach, 2007:12). The so-called matching relation between incorporated and demanded values and norms can be drawn upon to explain different experiences in the education system and also in later working life (Grendel, 2012). University surroundings (libraries, artefacts such as statues and flags or academic gowns) can feel familiar and comfortable for students who have accumulated social and cultural capital from their parents who attended such institutions before them, whereas first-generation students may feel threatened and, rightly or wrongly, fear exposure as the ones who do not belong in this kind of environment; they do not understand the rules of the game.

It requires time to accumulate the embodied form of cultural capital. The use of language, how to influence the shape of one's body in accordance with the bodily norms appropriate to the class, or cultural skills with rarity value all need to be incorporated by an individual. Cultural capital has to be learned and cannot be delegated. Parents have an influential role here, not only in how and where capital is acquired but also, importantly, in promoting the forms of capital that they foresee their children will require in order to progress in school, society and employment. According to Bourdieu (1983) much is already determined by the primary education acquired within the family. This is either ‘won’ time or ‘double lost’ time because a certain dialect, or behavioural manners, which identify personal origins need time to be ‘corrected’ (Rohlfs, 2011:76). The parents of first-generation students may underestimate the amount of time required to achieve an academic degree and additionally may not be in a position to support the student financially. These students are more likely to have to work to finance their living and study costs and consequently studying time is reduced, as is the time available to accumulate social capitals through extra-curricular activities.

Drawing upon Bourdieu’s concept of capitals (1983, 1986) as an explanatory framework is useful to help understand why the career experiences of socially mobile or first-generation graduates may differ from those of graduates who have been brought up in a household of university educated and professional parents and siblings. The possession of objectified cultural capital in the form of goods such as books, art or machines, is dependent on financial resources (economic capital), understanding (cultural capital) and opportunities (social capital) to use them. The cost of these goods can be prohibitive to lower income families and the technical and sophisticated know-how that is required to understand and use them is often acquired through higher education and social position and passed on to the next generation. It is not only this know-how that socially mobile young people may lack, it is also the intangible assets: the ability to feel comfortable and confident when in the presence of these goods.

Bourdieu’s concept of capitals also helps us to understand how the behaviour and appearance of socially mobile, first-generation students might differ from that of
students from families with parents working in the professions. The latter absorb from their parents, peers and other reference groups such things as a knowledge of how to dress; a refined taste in food, musical tastes and interest in certain cultural events. According to Bourdieu and Passeron (1971), schools and universities are not just focused on skills that are independent of the diversity of students’ origins. They argue that language, behaviour and appearance become increasingly important as the level of education rises, and are individually embodied. Homophilic relationships then develop whereby like people are drawn to like people (McPherson, Smith-Lovin & Cook, 2001); empathy and spontaneous acceptance is much easier between like-minded people who have similar characteristics, education and family background. The ‘natural’ flow of a conversation, the ease of making small talk and the familiarity with common manners depend on a comparable amount of accumulated social, economic and cultural capital. These create entry barriers to those outside these circles (Randle, Forson & Calveley, 2015).

Research shows that people who come from less advantaged backgrounds and who are consequently less likely to accumulate the necessary social and cultural capitals are either underrepresented in certain professions (Friedman, O’Brien & Laurison, 2017) or do less well when they enter them (Randle, Forson & Calveley, 2015; Forson, Calveley & Smith, 2015). Friedman, Laurison and Miles (2015) have coined the phrase ‘class ceiling’ to describe the concept of such social inequality, arguing that this runs alongside the ‘glass ceiling’.

The well-known phrase ‘glass ceiling’, coined by Marilyn Loden in 1978 (Loden, 2017), has become synonymous with the limitations in career progression faced by women and other disadvantaged groups. The theory implies that women can look up the hierarchical career ladder they intend to climb, but are often stuck in low or middle management positions (Hymowitz & Schelhardt, 1986). This also relates to workers who are held back because of their race or ethnicity (Lockwood, 2004). More recent research posits that people from non-professional or less privileged family backgrounds, and who consequently have less access to cultural and social capital, face a similar ceiling with regards to career progression. In their research on the British acting profession, Friedman, O’Brien and Laurison (2017:993) argue that in ‘high status occupations’ a ‘class ceiling’ exists ‘with those from working class origins facing a powerful class pay gap’. They go on to say ‘our analysis demonstrates that – at root – it is more about the unequal distribution of cultural, social and economic capital’ (1006). Despite socially mobile people gaining access to more elite professions, they often fail to accumulate the necessary capitals to progress their careers (Friedman, Laurison & Miles, 2015). Browne likewise argues that ‘the allocation of individuals to positions in the occupational structure is still based on differences in power, status and the cultural capital of the individual employees newly recruited to these organisations’ (2010:324) and that ‘cultural and social capital are still the social and educational means for the access to specialist and fast-track recruitment routes’ (325). Choi (2019) also identified the importance of social capital to women trying to progress through their careers.

Randle, Forson & Calveley (2015:594) argue that within organisational cultures a ‘practice-acceptance-internalisation-practice cycle’ exists which, consciously or
unconsciously, maintains the marginalisation of individuals from less advantaged backgrounds. As a result, career progression for such individuals can be constrained. It is with this in mind that we consider the concept of the ‘class ceiling’ for socially mobile German engineers.

Methodology
The research on which this article draws used a qualitative inductive approach. This approach was considered most appropriate for the aim of exploring, in their own words, the work-life expectations and experiences of people from socially disadvantaged backgrounds who were either studying or working as engineers in Germany. The VDI supported our call for first-generation student/graduate engineers, publishing it on their website; 12 people responded and all were interviewed (see Table 1).

The participants came from a variety of locations across Germany and were all fluent in at least two languages (German and English). The in-depth semi-structured interviews were conducted in Germany, in either German or English, in person, by phone or by Skype. Interviews lasted between 60 and 90 minutes, were audio recorded.

<table>
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<tr>
<th>Participant</th>
<th>Male/ Female</th>
<th>Ethnic background</th>
<th>Occupational status</th>
<th>University (U) / University of Applied Sciences (UAS)</th>
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<td>2</td>
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<td>M</td>
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<td>Newly qualified engineer</td>
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<td>6</td>
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<td>Experienced engineer</td>
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<td>7</td>
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<td>11</td>
<td>M</td>
<td>Turkish</td>
<td>Experienced engineer, now teaching</td>
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<td>12</td>
<td>M</td>
<td>Turkish</td>
<td>Experienced engineer, now employment agent</td>
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and fully transcribed; the interviews in German were translated into English. The quotes used in this article are literal transcriptions and reflect the use of English by those participants who were interviewed in English, rather than their native German. The topics explored in the interview questions included parental occupations and educational backgrounds, participants’ educational background, employment and career expectations and experiences.

For data analysis a thematic analysis approach was employed; themes emerged from the participants’ similar experiences with regards to parental views and guidance concerning education, internships, networks, barriers to career entry and progression.

There are very few qualitative studies in Germany exploring class differences in engineering and the analysis that follows explores the experiences of engineers who originate from a non-academic family background. As Forson, Calveley and Smith (2015:6) posit ‘[t]he intersection of culture, ethnicity, gender, age and class coupled with strong family ties and community influences can be seen to shape the choice of engineering as a career’. We will now go on to consider these influences in the German engineering context. The analysis starts at university before moving on to focus on the organisational career ladder of the participants.

The class ceiling in engineering – becoming ‘socially mobile’: first step – university

It is now widely recognised that gaining a university or professional qualification helps facilitate the social mobility of young people from less advantaged backgrounds, a view that most of our respondents reported was upheld by their parents, who also saw status and related social capital attached to the engineering profession:

*My father was a craftsman, he was very proud that I started studying* (Int. 7, German, male, experienced engineer)

*My parents said that my job future is better as an engineer. . . They want me to achieve more* (Int. 3, German, male, student)

*My parents wanted me to study what I wish, where I am happy. But of course when I decided by myself to be an engineer, I guess they were much more happy because engineering has a good image* (Int. 5, German with migrant background, male, newly qualified engineer)

What does not seem to be considered in any depth by academics and policy makers is the fact that young people who are the first generation in their family to study at university lack parental or family guidance when it comes to university and career choices and also what to expect when entering an institution of higher education. The intangible assets that some parents are able to pass on to their children are not available for all students. For example:

*With parents you can’t talk about the complicated names or details. Just generally about maths, physics, marketing and so on* (Int. 5: German with migrant background, male, newly qualified engineer)
It’s harder for me because my parents can’t help me, they can’t tell me anything about the subject I study. They can’t say this is the way it works. And if you’ve got already older brothers or sisters, or father they could support you better I think, and this is something I’m missing (Int. 1, German, female, student)

The intangible assets passed on by parents are not only their own knowledge and qualifications but also their understanding of the environment that their children are moving into, that is, the social and cultural capitals that will be required to navigate the systems. The academic habitus shapes the behaviour of the actors, whether they are students or tutors. In higher education institutions, there are working methods and everyday situations, from being required to speak in seminars to making contact with professors, which can be intimidating for some students. Those who have parents able to advise about this, who are already aware of the rules of the game, may well be more at ease than those who cannot draw upon parental experience. For example:

Other students can ask their parents how to behave, how to write the academic papers and they can even correct them. But I need friends and others to help me (Int. 3: German, male, student)

Gaining the knowledge to navigate the systems is ‘double lost’ time (Rohlfs, 2011:76), incurring a hidden cost:

I had to get to know everything [about university] by myself. I think that costs a little time. It would have been much easier if I had some advice from other people (Int. 2: German, male, student)

Parental advice (or lack of it) is important for getting the most out of university life, for moving up the career ladder once in an organisation and likewise for navigating the social strata within organisations.

Women throughout society are likely to suffer from a multitude of complex hidden discriminations and this may well occur at the intersection of class and gender. Women in this study, while recognising that their family background was a disadvantage were, however, able to tell a different story with regards to their gender. With the promotion of STEM (Science, Technology, Engineering, and Mathematics) subjects and careers to girls and women at the forefront of much political and social discourse, choosing engineering as a career was seen as having an unexpected advantage for some female participants:

Out of 150 [students] we are five women . . . Sometimes it is easier sometimes it is more difficult. You can use your charm, sometimes professors seem to be more friendly towards women (Int. 4, German, female, student)

At my university we have got an organisation for women mentoring. So I’ve got an older woman, like a sister, and she did tell me a lot and helped me, like where to find rooms, how to pay in the Mensa. I was sorry for the boys that they don’t have this. With the first academic piece of writing I could go to my mentor and she helped me. That really helped me. I am a mentor myself now (Int. 4, German, female, student)
For this student, being a woman in a male-dominated environment and therefore having a mentor who already had, or who had acquired, the necessary social capital to ‘fit in’ at university helped her to overcome the actual or perceived structural barriers she faced due to her own lack of social capital. It would appear that, whilst the establishment may recognise, and attempt to alleviate, problems for women studying STEM subjects, they fail to recognise other issues associated with class background and the lack of cultural and social capitals for male STEM students.

**The class ceiling in engineering – becoming ‘socially mobile’: the sticky steps of the career ladder**

For many students, particularly for those who follow a vocational career path, the first career steps are made through internships in companies. This allows for the development of practical work experience on the one hand and the establishment of professional networks and their associated social capital on the other. Previous research has shown how important internships are for career development (Higher Education Policy Institute, 2018) and also how those from less advantaged backgrounds struggle to gain internships, or are not in a position to take unpaid internships (Randle, Forson & Calveley, 2015). Students from professional families are, through their familial networks, more likely to have access to relevant contacts working in, or with links to, the engineering professions. These contacts are able to provide valuable (formal and informal) entry information and interesting internship opportunities, especially in large international companies. Students from a non-academic or non-engineering family background, where there is a scarcity of these significant cultural and social capitals from which they can draw, often lack access to important networks, as students in our study explained:

*The problem to find internships was the so-called ‘Vitamin B’ [connections, nepotism]. I didn’t know anyone. Another student supported me and she asked her boss and after the interview I got an offer. I wrote 15 applications to different companies but I didn’t get any reactions . . . it is about the contacts* (Int. 3: German, male, student)

Networks are known to promote homophily within organisations, where people recruit other people like themselves (Lamont & Lareau, 1988), therefore those without access to such networks find it more difficult to gain entry to the organisation in the first place and indeed once in an organisation, to progress their careers (Randle, Forson & Calveley, 2015). Lack of the ‘correct’ social and cultural capitals can severely constrain the employment opportunities for socially mobile people. In order to accumulate these capitals, it is necessary to develop them within the workplace environment and this can be a difficult and stressful process for some. Once they have navigated their way into the organisation, career progression may also be hampered as they strive to accrue and cultivate these capitals.

The students we interviewed were all ambitious and determined to gain their engineering qualification. The lack of a qualification was, in their view, the only obstacle to overcome in achieving their desire to embark on a career in engineering;
they had not appreciated that the first barrier they would encounter would be gaining an internship with an engineering company. They expected that they would be treated fairly both in gaining access to, and in progressing through, an organisation and that they would be appraised on the basis of their performance and personal merit, not on the invisible capitals that enshrine class difference. The reality they faced was, however, somewhat different, as this engineer succinctly explained:

*At that time I didn’t recognise it as a problem, but later I realised that it is easier for other people to find a good job. The other students – we were three groups, one with parents in a good position, they could find a good job because their father knew what they had to do for a good job. The other group worked in something different to their parents, but they knew how to show themselves, what they can do and how to behave. And the third group, we all came from parents with lower jobs, they couldn’t teach us how or what to learn (Int. 7: German, male, experienced engineer)*

Students who were unable to get permanent work had to seek it through temporary employment agencies, despite good exam results, whilst others were disheartened by the lack of job opportunities and moved into other jobs:

*I worked in a start-up [small engineering company] as a student and started there as an engineer. The project was just for a short time, so after two years my contract was finished. And after that I never found a job in engineering again (Int. 11: German with migration background, male, engineer, teacher of mathematics)*

Once in an organisation, participants experienced further difficulties in moving their careers forward, even when they had good performance records, and they related this to family background:

*In the first organisation I worked for I quit after ten years, there was no chance to make a career . . . I was quite successful, but I had no chance. I was left out, so I decided to leave (Int. 8: German, female, experienced engineer)*

Discriminatory workplace practices are complex and often hidden and what we cannot know on the basis of these two quotes is the extent to which the intersection of social background with ethnicity, in the case of Interviewee 11, or gender in the case of Interviewee 8, played a part in limiting their careers. The case of Interviewee 10 below brings this into sharper focus. Some engineers felt that the lack of domestic market opportunities forced them to move abroad in order to gain experience and become more valued. This had been the case for this interviewee who appeared to be doubly disadvantaged when looking for work at the intersection of his non-ethnic German and socially disadvantaged background:

*Especially in the leadership positions the Germans want to be with Germans. Not only performance counts . . . I wouldn’t recommend an ambitious person to come to Germany. If you want to make a career you have to go abroad and then you come back, and you can work on this level but you can’t climb higher (Int. 10: German with migration background, male, experienced engineer)*
A number of the engineers described how social capital can create homophily in organisations, expressed in terms of not having the ‘right’ networks and the ‘right’ contacts which constituted a key barrier to career progression. One commented that:

I experienced that someone with the same qualifications immediately stepped into management. I had to stay on my level. I feel that he was introduced from someone behind into management. He was connected (Int. 7: German, male, experienced engineer)

Similarly, another respondent said she had continuously experienced career suppression while others, despite lacking experience, moved forward:

I didn’t have the important contacts. Younger colleagues just went the straight career path. You need someone pulling you, otherwise it is very hard (Int. 8: German, female, experienced engineer)

These results help to identify how the acquisition of capitals (in the form of knowledge and understanding of how to ‘fit in’ in organisations) is important not just to gain entry to the organisation but also to progress up the career ladder. At each stage of their career progression participants encountered the same difficulties: they became stuck at that level and had to negotiate obstacles in order to move forward from each sticky step. The hidden barriers created by the ‘class ceiling’ are so entrenched in their organisations that these engineers had difficulty advancing their careers as they aspired to do. Consequently, although this was not vocalised by the participants, this implies that they were subjected to a class pay gap (Laurison & Friedman, 2016; Friedman & Laurison, 2017) as their careers were slowed down and limited in comparison to their peers who were equipped with the correct social and cultural capitals.

Although not initially aware of the importance of networks and contacts, these respondents quickly gained an understanding of their necessity through their lived experience.

Conclusions

Despite the fact that governments and educational institutions across Europe are putting greater emphasis on widening the participation in education of young people from socially disadvantaged backgrounds, there is a dearth of qualitative research exploring the experiences of these people in their employment journey. To contribute to rectifying this situation, this research set out to consider the social mobility experiences of German engineers who are first-generation university graduates, with a view to gaining an understanding of their entry into, and progression through, their profession.

Social mobility is important in the development of career opportunities and experiences as well as in life more generally. The literature tells us that those from more advantaged backgrounds have a greater likelihood of obtaining a degree from a ‘prestigious’ university, gaining preferential access to internships – and ultimately employment – and earning more. There is evidence of a ‘class ceiling’ (Friedman, Laurison & Miles, 2015) and a corresponding ‘class pay gap’ (Laurison & Friedman, 2016).
In this paper, we follow Randle, Forson and Calveley (2015) in arguing that lack of social mobility can be linked to a lack of, or underdeveloped, social and cultural capitals (Bourdieu, 1983, 1986).

From our research, it was evident that, from a very early stage in their careers, first-generation student participants realised that they lacked the capitals that students from professional family backgrounds possessed. At university they found themselves in an environment requiring an academic habitus unfamiliar to them. They did not lack school qualifications, ambition or ability to perform so much as the more tacit knowledge that is absorbed within the family setting: the social and cultural capitals imparted by family. Fitting in at university requires understanding the informal rules, expected behaviours and the academic culture. Students must adapt to a system with easy-to-follow but fairly limited formalised rules and regulations, underpinned by many informal values, guidelines and standards. The intangible assets which aid the ability to fit in can be imparted by parents to their offspring but tend not to be available to first-generation students who have to discover and develop them unaided. This learning takes time, and in some cases remains incomplete at the end of the study process, and this can lead to consequences such as limited career options and a class pay gap.

Although our research did not set out to explore social and cultural capitals our diverse participant group constantly referred to issues relating to the lack of access to these. We recognise that intersectionality between gender, ethnic origin and disadvantaged background may be at play here; nonetheless, all our interviewees shared the same non-academic family background pertaining to the scarcity of capitals.

Before entering university, our participants were aware neither of the social and cultural capitals they were lacking, nor how the absence of these would help determine their future careers. It is particularly salient that all the participants commented on the value of different kinds of networks (e.g., family-related, social and professional) for getting into and progressing their careers in engineering organisations. It appears from these results that homophily is still rife when it comes to internal selection processes, where the structural barriers created by social networks are often in play.

In effect, as Randle, Forson and Calveley (2015:594) argue, a ‘practice-acceptance-internalisation-practice cycle’ is created within organisations and, as our data have demonstrated, those who do not understand the rules of the game become constrained in their career development. It is evident from this research that the career ladder for first-generation engineering students in Germany will have very sticky steps, making it difficult if not impossible to climb.

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REFERENCES

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