Understanding student perspectives on the transition from university to work

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Abstract
The transition from studying engineering at university to working as a graduate engineer is not well understood. In particular, although policy discourse in the UK and elsewhere tends to emphasise the role of university study as preparing individuals for work it is not clear how knowledge and skills developed as an undergraduate are used in graduate employment. This research contributes to understanding graduate employability by focusing on the accounts of recent graduates at two engineering firms. Our findings broadly reinforce earlier work in a different industrial sector that highlighted the importance of the dispositions of the individual making the transition from university to graduate work. Similarly, the work a graduate undertakes and the culture of the organisation in which this work is undertaken emerge as important factors in successful graduate transitions. The importance of the interaction between an individual's dispositions and the work and culture into which they are transitioning highlight the deficiencies of understandings of employability that focus only on the attainment of graduate work. Similarly, our findings highlight the deficiencies of understandings of employability that focus on ‘generic’ or ‘transferable’ skills and knowledge.

Keywords: employability; transitions; Bourdieu; habitus; field; capital

Background
Policy discourse in the UK and beyond tends to suggest that university study should prepare graduates for employment (Department for Business, Innovation and Skills, 2011; 2009; Yorke, 2006; Keeley, 2007; Billet, 2009). From this perspective, which is underpinned by human capital theories (Becker, 1975), employability is considered in terms of whether an individual obtains a graduate level job. An alternative perspective construes employability in terms of a set of skills, such as team working, and reasoning and communication skills, that are thought to be transferable between different situations, including between university and work (see, for example, Knight and Yorke, 2006). However, each perspective is insufficient. Labour market conditions including, for example, the demand for graduates in particular industrial sectors and particular geographical locations (Brown and Hesketh, 2004) will have a significant effect upon whether an individual obtains a graduate job. Similarly, people are not merely carriers of skills, knowledge and other attributes; ‘their own unique identity, personality and motivation, going beyond personal attributes … are also likely to be factors’ in an individual’s employability (Rae, 2007, p607). Indeed, social and cognitive capabilities such as communication and reasoning are ‘dispositions of character called forth by the variety of circumstances and challenges of life’ (Beckett and Hager, 2002, p79) rather than skills amenable to performance indicators.

Hodkinson has shown that Bourdieu’s theories can help us to understand individuals and their working and learning (for example, Hager and Hodkinson, 2009; Hodkinson, Biesta and James, 2007; Hodkinson and Hodkinson, 2004). Similarly, Browne (2010) used Bourdieu’s theories to help understand graduate entry and progression in the financial services industry and Clark, Zukas and...
Lent (2011) used Bourdieu’s “thinking tools” – habitus, field and capital – to help understand the transition from studying information technology (IT) in a UK ‘Redbrick’ university to graduate work in the IT industry. Habit is ‘an acquired system of generative schemes objective adjusted to the particular conditions in which it is constituted’ (Bourdieu, 1977, p95) and produces ‘durable and transposable dispositions through which we perceive, judge and act in the world’ (Wacquant, 2008, p267). Habit generates reasonable, ‘common-sense’ behaviours without reference to explicit norms or rules and positions relating to class, gender and ethnicity contribute to the experiences that help to make up an individual’s habitus. The engineering profession can be seen as a Bourdieusian field; a structured social space sufficiently autonomous to establish rules, forms of authority and patterns of normal behaviour (Bourdieu, 1990; 1993). A field can be understood as a force field in which relations between individuals are structured and it can be viewed as a game in which players understand the rules and objectives. An individual’s position in the field is determined by their capital. Bourdieu’s conception of capital differs significantly to that used by human capital theories. In the Bourdieusian sense, capital is any resource that is effective in a given social arena. Thus for graduates entering the engineering profession graduate credentials are a form of capital and a Masters degree might be expected to give an individual an advantage over someone with only a Bachelor’s degree. Similarly, relevant skills, knowledge and abilities would be considered as capital and be expected to enhance an individual’s position. Significantly, dispositions behave in a manner required within a particular field, that is, an appropriate habitus, can be capital in this sense. Further, successful participation in the activities of a particular field, such as the successful completion of engineering activities, results in additional capital.

Rationale

In their study of IT graduates, Clark et al (2011) used Bourdieu’s thinking tools and argued for a relational approach to employability that emphasised the interaction of an individual’s dispositions with the work to be done and the organisational culture in which it is undertaken. Like IT degrees, engineering degree programmes have an element of ‘vocational intent’. However, Nilson (2010) found that engineering graduates were relatively unprepared for the specifics of professional practice. In contrast, Stiwne and Jungert (2010) found that many engineers in their study found their first graduate job through their university project work. Nevertheless, there is insufficient research into how engineering graduates use their university learning once in graduate roles and into the factors that indicate successful graduate transitions. In particular, the work done by graduates and the organisational cultures in which it is undertaken are under-researched aspects of engineering employability and this is the focus of our research.

The approach

We adopted an iterative, interpretive approach based upon case studies (Stake, 1995; Smith, 1993; Palmer, 1969). We gathered data through semi-structured interviews in which participants were asked about their route into engineering work including details of their choices in relation to university study (including whether they had undertaken an industrial placement as part of their degree); their choice of engineering specialism; the process of acclimatising to graduate work; and their plans for further learning and development with particular reference to becoming a Chartered Engineer. Interviews were fully transcribed and the transcriptions formed our core data. Participants were asked to review the transcripts in order to highlight errors of fact and we took the opportunity offered by the step to seek clarifications where necessary.

As we wanted particularly to focus on aspects of the work undertaken by graduate engineers and the organisational cultures in which this work is undertaken, we worked with two partner firms: a regional water firm (referred to here as firm A); and an engineering consultancy (firm B). Our partners played a leading role in attracting volunteers to participate in the study but we took responsibility for securing informed consent and, in particular, for ensuring that participants understood the nature of the study and that participation was on a voluntary basis. We supplemented our data by interviewing an experienced manager in each firm. These interviews
focused on the graduate recruitment process and on how graduate engineers were supported and deployed in the early stages of their careers.

Analysis of our interview data and our use of Bourdieu’s ‘thinking tools’ followed the approach described by Clark et al (2011). Extensive discussion within the project team through several iterations allowed us to arrive at an understanding of each case. In addition, we looked for themes across the set of case studies. Our approach derives from the position that ‘meaning is not out there awaiting discovery but is brought into being through the act of understanding’ (Palmer, 1969, p178) and, although we seek to understand graduate’s accounts of their transitions into work, the understandings constructed in our research are ours, not theirs. Indeed, as we continue to work with our data our understandings continue to develop.

Discussion

Eleven case studies have been completed, seven from firm A and four from firm B. With one exception, our participants were between one and four years into their graduate careers. Only two of our participants were female. All were engaged in engineering work and they had all completed at least a Bachelor’s degree. Interestingly, each of the participants who did not study engineering had completed further study: one had completed a PhD in Opto-Electronics and the other had both an MChem and a Masters in Environmental and Biological Chemistry. A summary of our case studies is provided in Table 1.

Each of our participants was engaged in ‘real’ work. That is, as graduate recruits they had immediately been assigned to work tasks alongside other professionals: none were engaged in training or extended orientation activities. For participants at firm B this meant delivering engineering solutions for the firm’s clients, while those in firm A were contributing to a five year programme of work agreed in advance with the regulators. For example,

> It’s primarily the chemical biological design of, um, treatment plants … working in design teams … waste water treatment and sludge treatment’ [Brenda]

> I spend half my time out on site running a pilot plant at the moment, um, doing field work. The other is working on projects doing scope optimisation, development of new … new works as such. So very much a … very hands-on and design …’ [Roy]

> I’m a water graduate engineer mostly we’re dealing with the flooding schemes for water companies. Er, most of my time now I’m doing computer modelling, hydraulic modelling using CAD software to verify models, build models …’ [Keith]

Participants from both firms described how their work was organised through project teams. For example, Charles had completed one placement of six months and had recently begun a second placement: ‘I’m now, um, taking a mechanical engineering role on a pilot plant at, um, off-site at [names location]’. Similarly, Hamish, who described his work as ‘process operations water production’, had completed ‘two six month-ish’ placements previously’ and was currently engaged in a third six month project. This meant participants experienced work as team working:

> ‘It’s very group oriented, er, you know but I think that’s an engineering thing in general, you know. Engineers don’t really work alone. We like to, er, bounce ideas off one-another’ [Georgina]

> ‘You need to know how to work in a team because, er, you don’t work here in … individual. So you have to work in a team all the time’ [Christopher]

To at least some extent, our participants could negotiate the projects and roles to which they are allocated:

> …it’s fairly fluid. So if you want to do something or you’ve heard about a project that you really want to do, um, you can kind of say ‘I want to do that’. And you may or may not get it but it’s … the opportunity is there [Brenda]
I've been very lucky with mine. The first one was they needed sort of an engineer and I'd just started so it made sense ... The rest of them have actually just appeared sort of almost by luck at the right time. The design management appeared as a development opportunity just through the engineering notice board if you like. Looking for this and it was sort of at the right time for me to do something else, and it was the right sort of placement to get these competences that I need. And again, this current placement, the notice came out just before Christmas to say 'looking for this ...' That'll do nicely! So it could have been a bit of luck really.

Participants spoke of their university studies as helping them to learn 'basics' or 'fundamentals' but their observations also tend to confirm Stiwne and Jungert's (2010) findings that the separation of theory and practice in engineering degrees can make the transition into professional practice difficult.

I mean it gives you all the basics and it just gives you confidence with I mean tackling various problems like I might be given a calculation or something to do, which I haven't really got any previous experience with but because I've like had the experience at uni I know how to go about solving it [Charles]

um, from my degree it's almost very ... you have a ... it's very strange, that you have a have the principle foundation of engineering knowledge so you'll use the core skills [Roy]

I always had the sort of impression, or heard from a lot of people, 'What you learn in university is academic. You never really use it again almost. And I thought 'That's a bit weird.' But looking back on it now, there's several aspects of my studies that I use, not specifically now but have used so far. There's fluid mechanics, is a massive part of mechanical engineering in the water industry: pumps; pump flows that sort of ... fluid mechanics and the heat trans ... er, thermal dynamics is very relevant 'cause we have um, heat ... a lot of heat exchangers and heat cycles [Hamish]

it has, yeah. It gives you a broad understanding because I think at university it's all quite theoretical. And I had that sort of background understanding of how it works in ... in the industry, you know it's not all ... it's not quite what it seems in – I mean everything seems .... works perfectly in theory and, you know, things can be fairly straightforward; but when you ... when you start work you understand that, you know it's ... it can differ quite a lot [John]

A further important characteristic of the work undertaken by our participants is the requirement to make progress towards Chartered Engineer status. In each of our partner firms there was a general expectation that this would take approximately four years but the relevant criteria require a Masters degree and this was the immediate obstacle for some participants. Indeed, for some participants Chartership was some way away. For example,

I got a BEng ... so I'm gonna have to do a Masters [Keith]

First of all I'm going to go for incorporated engineer ... because I don't have my Masters right now ... I'm going to go for a Masters later on. In a few years maybe [Christopher]

Although projects, team working, the ways in which university learning is relevant to work and the importance of gaining Chartered status emerge as key work-related factors for participants in both firms, a clearer distinction between the firms emerges from participants' accounts of their organisations and, particularly, the organisational cultures. For example, firm A had moved from the public to the private sector as a result of a government privatisation programme in the 1980s. In addition, the engineering function had been outsourced but had been re-established in-house. This meant that even the more experienced engineers had not necessarily worked continuously for the firm for a long time.

There isn't anyone (that I know anyway) that started when it was a public company and who have stayed in the same position at all times. Because they were sold off and they re-bought it and, er, people have gone to work for other consultancies and come back. So, I don't think there's many people that fall into [an old guard] [Brenda]
However, the age profile of the engineering workforce carried implications both for the recruitment of new graduates and the promotion opportunities of the existing graduates.

... the average age is probably well over forty and everyone’s getting near to retiring, or getting that way. And there’s a big gap between sort of over forties and the under thirties, if you like. There’s nowhere in the middle. It’s really top heavy, but old heavy! ... there’s more graduates coming in and we’ve got to get all the knowledge off these people ... before they retire ... its very ‘someone’s got to wait for someone to die before you get promotion’ almost ... but if no one leaves you’re waiting aren’t you?... so it could take a long time to get there, which is why I’ve always thought about maybe branching out into a different department. Getting out of engineering. [Hamish]

Similarly,

It is an aging population which has certain baggage which comes with that; so something that the company’s really trying to push is innovation, for example. So we perhaps struggle with some of the existing population group to push new ideas. So new graduates will join and be full of new ideas ... well the older generation I ... I find they’re sometimes quite protective if they see that a graduate is, for example, accelerated into a senior position ... there’s a natural issue here because the company sells a graduate scheme as an accelerated programme into an industry. And all graduate schemes sell that point. And then the reality of it when you come in you’re only accelerated if you’re good enough to be accelerated. Which is fine. It’s common sense that; if you’re not actually as good as it seems then what happens is you become a normal engineer that churns work out and stays there. [Steven]

However, our participants found firm A to be a relatively friendly and relaxed place to work.

You don’t come across a lot of people working stupid hours, unless they’re in some sort of senior role ... a lot of the people I work with are, yeah, just, um, like a normal working day really ... I mean everyone’s prepared to put in extra work if its required for a project; but, yeah, they’re all very friendly people and happy to help [Charles]

... I’ve seen what’s out there and I’m quite satisfied where I am. I’ve a fantastic balance now between my work-life and home-life ... I can go home at five o’clock if I want; forget everything; my work phone is turned-off and nothing is gonna bother me. Whereas with other industries I know, you pay … you get paid a little bit more but you have to sacrifice a little bit more. So I think I’ve got the best of everything there is … [Roy]

In contrast, our participants from firm B, who work regularly with the firm’s clients, emphasised the importance in their organisation of being confident. For example,

You need to be very confident at what you are doing … I got some confidence but, er, it seems not enough … I got some confidence doing my year-out and I’m still getting confidence here … [Christopher]

… I also learnt that … well you’ve got to take some sort of confidence in what you do. It’s not just about sort of presenting well and having pride in it; you’ve got to be able to stand up and say ‘yes it’s like that and I’ll tell you why it’s like that’ … [Georgiana]

Mostly it’s all communication and the manner of dealing with the customer … [Keith]

Similarly, John, who was exceptional among our case studies due to having combined studying with working as an engineering technician during vacations, summed up the firm’s culture as follows:

Yeah, yeah, there’s lots of emphasis on … on client and [firm B] relationships [John]

And again:

I think you need to be a good people person because you’re always liaising with clients, contractors, other people within [firm B]. You need to have good people skills. And, as well because sometimes there can be a lot of conflict between ideas or designs and things like
that. I think you just need to be someone who doesn’t take things too personally; you know it’s work; it’s not your personal life. And someone that can come to work; get on with what they’re doing; like what they do and be passionate about what they do. And take pride – take pride in what they do. Yeah, that’s it. [John]

Indeed, our case studies lead us to hypothesise that the organisational cultures of consultants, clients and contractors may reflect their different business models and the different aspects of engineering upon which they tend to focus. For example,

I’ve always felt more closer to a contractor than consultant. But I like doing work for a consultant but I really enjoy being part of, er, working with a contractor closely … I like getting muddy boots and being on site … [Keith]

Before this I worked for a contractor … as a graduate engineer … working for a contractor again you see a different side of engineering and its very much the sort of you get in and you get on and that’s it [Georgina]

We see the work undertaken and the culture of the employing organisation as key field characteristics but our argument emphasises the interaction of field, capital and habitus as fundamental to understanding employability and transitions into graduate work. Thus, for example, Christopher’s lack of confidence, some of which, at least, derives from the fact that English is his second language, tends to suggest that he would experience difficulties in making the transition into engineering consultancy. Georgiana had similar difficulties, which may have been related to being a female in a largely male environment.

I found that really difficult when I first started especially when, you know, you’re in a meeting with, sort of, management and stuff like that. And it’s quite difficult sort of ‘yes, I’ve been here for three months but I’m going to tell you you’re wrong, and this is why …’ [Georgina]

In contrast, Steven’s apparently entrepreneurial dispositions might be somewhat misplaced in the formerly nationalised industry.

You’ve got to be careful because there are some times when I have self-promoted and people will just turn away in disgust ‘cause you’ve over egged it and they just know there’s no substance, no experience; you can’t possibly be talking about yourself in such high regard [Steven]

Similarly,

Obviously I’m always looking forwards … the problem is that climbing the ladder is … is slow … I’ve had moments over the last four years where you’re like ‘where’s the next promotion coming and how long can you wait? [Steven]

Significantly, perhaps, Steven had gained experience in a unit set up by firm A to ‘win work from other water companies’:

So for example, we were winning bids from municipal solid waste plants, recycling centres. So I worked in more of a business um, sort of a bid winning team but very much with a technical role in there because we had to sell ourselves to potential clients. So that was very interesting for six months [Steven]

In contrast to Steven’s apparent frustration, Charles seems to be more of a ‘fish in water’ (Bourdieu and Wacquant, 1992) working at firm A. That is, there seems to be more compatibility between his habitus and the field in which he is engaged. For example, where Steven seems to be highly career focused and entrepreneurial, Charles appears content to focus on more immediate goals and to take his time before deciding on a particular career direction.

Well my first career goal is Chartership. I haven’t really looked much beyond that, to be honest [Charles].

… I mean, I don’t know how far I had looked really. I was just focusing on my degree while I was doing that really [Charles]
Well I mean we should get chances to do roles outside engineering or more senior roles like design management or something like that. So I don’t know if I want to try out some management role and see what it’s like ’cause there’s … there’s no way of knowing exactly what you should go into if you haven’t tried out the various options. And I should get a chance to do that here … what I’m interested in and weigh the benefits [Charles]

We argue, therefore, that our findings support the proposition that the work to be done and the organisational culture in which it is undertaken are important factors in the transition into graduate employment and in understanding the employability of engineering graduates. Further, our research supports the argument that graduate transitions can be understood in terms of the interaction between an individual’s habitus and the field to which they transition. That is, while engineering skills and knowledge learnt at university can be important capital for transitioning graduates, the dispositions that began to form long before they because university students are an important factor in the success, or otherwise, of an individual’s transition into graduate employment.

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Table 1: Summary of participants
Evaluation
This research aimed to contribute to understanding the work undertaken by recent engineering graduates and the organisational culture in which this work is undertaken. We have done this through a series of case studies each of which stands alone as an example of the experiences of one individual. In addition, we have identified over-arching themes that support our premise that work and culture need to be recognised as being important aspects of employability. We argue that our findings show the value of case studies of this type.

As discussed above, our interpretations are not designed to reveal objective truths: ‘meaning is not out there awaiting discovery’ (Palmer, 1969). It is possible, of course, that others may arrive at different interpretations but this would not invalidate our findings.

Further development
Our research has shown the value of case studies to understanding employability and the transition into graduate work and we see a case for further case studies to be undertaken. In particular, it would be interesting to research further the differences that we perceive between the organisational culture of consultancies and client firms. Further, we hypothesise that research focusing on contractors would demonstrate a third engineering culture in which some graduates could feel more ‘at home’.

In addition, the emphasis placed by many of our participants on the learning of engineering fundamentals suggests the value of further research to understand this concept more clearly. In particular, is this a polite way of highlighting the lack of ‘practice’ in engineering degrees or a more positive recognition of the value of underpinning theory?

References


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