

“There is no formula for life and career”: A commentary on perspectives and experiences of early career quantitative human geographers.

Abstract

Early Career Researchers (ECRs) encounter distinctive opportunities (and challenges) within the neoliberal academy. In this commentary, we reflect on issues common to ECR experiences in quantitative human geography. Our discussion is inspired by and develops conversations from a panel at the Royal Geographical Society Institute of British Geographers (RGS-IBG) postgraduate forum, with panelists from across the subfield. Whilst many aspects of the ECR experience transcend sub-disciplinary boundaries, the quantitative subfield presents unique dynamics for ECRs to navigate. ECRs in quantitative geography are steeped in ‘data science’, which changes relations between academia and industry, with the growth of our field increasing the size and the scope of what ECRs might be expected to know and do. Bringing together reflections from the panel, we highlight the variation in pathways experienced by ECRs, reflecting on opportunities, uncertainties and mentorship, in the hope of offering insights and advice for prospective and current ECRs and their mentors.

Key Words: *Early career research, Quantitative human geography, Panel discussion, Spatial data science.*

Introduction

In this commentary, we discuss experiences of Early Career Researchers (ECRs) in British academia, specifically those pertaining to quantitative human geographers, following a Quantitative Methods Research Group (QMRG) panel session at the 2021 RGS-IBG PGR mid-term conference. The panel aimed to offer advice for postgraduates and reflect on the variety of pathways experienced by ECRs, bringing together contributions from researchers within quantitative human geography, tabling discussions regarding opportunities and skill development, the role of mentorship and the ‘hidden’ uncertainties and ‘turbulences’ that emerge at different

stages of career pathways. In this commentary, the panelists were invited to reflect further to offer insight, solidarity and advice for ECRs and their mentors, recognising the support required at this stage in their academic careers, and encouraging future conversations. We will begin by situating these ideas in the context of relevant literature on the experiences of ECRs in academia, before welcoming our panelists to reflect on their own experiences.

Early career research and quantitative human geography

An ECR is typically someone that has completed their PhD in the last five to ten years; a distinctive stage of a researcher's career. McAlpine et al. (2014) defined this phase as a 'trajectory', where individual agency is developed, whilst also being shaped by work practices within the institution. The ECR phase of a person's career has major impacts on both their academic and personal identities. These trajectories are transformative in that the students 'become' the researchers, creating challenges and uncertainty. This uncertainty affects ECRs in seeking to belong: many, for example, cite imposter syndrome as a daily challenge (Mantai, 2017). Furthermore, the ECR phase of an academic career is acknowledged to be unequal, creating significant intersectional inequalities, for example between different genders and races (Maddrell et al., 2019; Franklin et al., 2021; Tolia-Kelly, 2017). These experiences have been heavily influenced by the neoliberalisation of the academy (Cupples, 2019); academics must shape their research careers within a system that emphasises tangible outcomes such as grant success and publications. These trajectories are anything but linear, with individuals changing disciplines and experiencing discontinuity and insecurity (Hall, 2013). This is particularly pertinent for quantitative human geographers, given increasing links with other disciplines, such as computer science and data science.

This commentary specifically explores the nature of these experiences in the subfield of quantitative human geography; a subfield that is regularly ignored in wider discussions of geography as a subject (Franklin et al., 2021; Johnston et al., 2019). Quantitative human geography offers a breadth of opportunity, particularly with the recent boom in new forms of geographic data, 'spatially-enabled' social sciences and resultant transformations in knowledge production (Singleton and Arribas-Bel, 2019; Wolf et al., 2021), as evidenced by the continued arrival of

younger cohorts of quantitative geographers, and specialised journals to facilitate the dissemination of research (Franklin et al., 2021). However, in combination with wider ‘macro’ trends like academy neoliberalisation and the COVID-19 pandemic, the ECR experience in quantitative human geography remains one of great challenge and diversity. This paper reflects on three key elements of this experience; opportunities and skill development, ‘hidden turbulences’, and mentor networks.

Contextualising the ECR experience: opportunities, turbulence and mentorship

Caretta et al (2018) reflected on the expectations for ECRs to be academic ‘superheroes’, with a constant focus on developing and diversifying their skillset, grasping at all available opportunities. At a time where ‘science’, ‘analytics’ and ‘data’ have become commonplace within the sub discipline, the skillsets of quantitative ECRs are vital in securing positions, grants and publications, often shaping the approach to the post-PhD years (Singleton and Arribas-Bel, 2019). Skill development has previously been analysed in the context of doctoral education and interdisciplinarity, but in this commentary, we have invited the panelists to reflect upon the opportunities that shaped their own careers and skill sets, providing useful advice to (quantitative) postgraduate students.

Academic pathways often comprise elements of ‘traditional’ and ‘non-traditional’ routes. With the former, an ECR might finish their PhD, secure a teaching or research contract and eventually a tenured lectureship. However, issues like precariousness can present significant turbulence, often resulting in diverse pathways; ECRs must be “lucky” with their contracts, often making personal sacrifices impacting salaries, family life, and geographic location to further their career (Hughes, 2021), whilst negotiating ever evolving networks for the ultimate opportunity (Caretta et al., 2018). Furthermore, ECRs vary in age and personal circumstances, creating individualised experiences as the personal overlaps with the professional (McAlpine et al., 2014). In addition, the growing emphasis on multidisciplinary within quantitative human geography has only made conventional career pathways more convoluted, with research positions available in other non-geographical departments (e.g., computational social sciences), and support roles such as software development being listed in computer science departments, providing alternative but related opportunities

through which to construct academic pathways. Throughout the PhD and ECR period, the arrival of these obstacles is often unexpected, creating ‘hidden turbulences’ frequently acknowledged by our panelists.

Research mentorship is a valuable part of the ECR experience; the meeting of expectations by PhDs and ECRs is heavily related to the support they receive (Caretta et al., 2018). The PhD and ECR experience is inherently shaped by their relationship with academics, allowing interests and skills to develop, and different career pathways to be followed. This is significant for (quantitative) geography ECRs, helping them to develop the confidence to explore their own geographical interests, learn the ‘rules’ of research, and navigate the transition to employment (Hemmings, 2012). In the following section, we invite our panelists to consider the pertinence of some of these ideas, reflecting on their own ‘pathways’ as quantitative human geographers.

Panelist Reflections

Our commentary assembles the reflections of a panel of ECRs to offer an insight into their experiences within academia, and with that in mind it is important, before hearing these reflections, to reflect on positionality, and its role in shaping the direction of this commentary. The contributions come from nine ECRs, from a diverse range of backgrounds and personal circumstances, comprising a variety of marital statuses, caring responsibilities, genders, ages, ethnicities, institutions and employment circumstances. They were asked to provide reflections on a range of topics that had emerged iteratively within the panel session, based on their own experiences and the issues they felt were of greatest importance. Thus, this commentary is not being presented as a summary of all experiences in academia (and quantitative human geography), and will be informed by the positionality of the researchers – as Rose (1997, p.319) states, “we cannot know everything”. In this sense, many further questions and issues could have been raised, and the topics of conversation may have varied with different participants. Furthermore, it is important to highlight that the panelists are speaking from a point of privilege, experiencing education and/or employment within the Global North, whether in academia or industry. However, we feel that this commentary is of great significance because it is a gathering of experiences

specific to the quantitative subdiscipline of human geography, with the contributors using this commentary to critique power relations in academia by voicing their concerns and offering support across the hierarchies. We are hopeful that their encounters and experiences can provide new insights and advice to other ECRs and readers, and contribute to the achievements of those that have already begun to reflect on the pertinences of these topics.

Opportunities and skills: a fine balance of time, value and personal interests

A PhD program is more than just the prescribed research. One of its greatest advantages is the large variety of opportunities for training and personal development available. These can be advertised through supervisors, research groups, doctoral training partnerships and universities, including those that have been self-created, and can provide a plethora of skills, which postgraduates can add to their arsenal. Our collective experiences have included self-organising coding bootcamps, undertaking placements in government and industry, and pursuing teaching roles to acquire associated experience. Across these examples, core skills included time and project management, leadership, interpersonal skills, and teamwork, which are highly transferable across numerous career paths. By pursuing similar opportunities, ECRs can both build upon existing, and acquire additional skills that are essential to their ongoing doctoral journey and beyond. The key limitation facing ECRs however, is finding the time to pursue these opportunities, whilst balancing them with other commitments.

The ability to navigate these opportunities and skill sets during a PhD is, in itself, a skill to learn. A key aspect is establishing what is considered ‘valuable’ for the candidate’s current research or future career in quantitative geography, or quite simply, their interests and passions. In terms of C.V. development, from our experiences we consider it important to develop a well-rounded skill set by proactively choosing opportunities that can help build both ‘hard’ skills such as technical and analytical skills (e.g. machine learning, data visualisation), and ‘soft’ skills including critical thinking and teamwork. Studying relevant job descriptions of future possible career pathways (whether academic or not) can help postgraduate students in identifying the potential skill sets they are missing. Discussing training or secondment options with peers or interest groups can help when evaluating these opportunities through their prior experience and knowledge. Comparatively, following personal interests can enable more informal connections to be made, and these too can

quickly become useful contacts, or create new avenues and ventures that might not have originally been foreseen, including job notifications and recommendations.

Notably, these strategies do not have to be set in stone. They can be flexible and will adapt and change throughout a PhD journey, as interests are explored, and personal and professional development occurs. However, as a PhD program encompasses a finite period, there will always be a tension between time pressures and the freedom to explore and try out new things. Ultimately, candidates benefit from accepting that they will need to consciously narrow what they pursue over time, to fully curate and craft their experience towards a few preferred career paths. Based on our experiences, it is critical to learn not to diminish or undervalue the skills and experience gained. Activities beyond the core aspects of our PhDs have helped us, as ECRs, in securing employment and further opportunities beyond the PhD, both in academia and beyond. In these scenarios, whilst we did not have every skill and experience listed on the job descriptions, we were able to evidence our interest and willingness to learn through our respective opportunities. Furthermore, whilst we are all susceptible to this, ECRs should not seek to appraise the value of their journey by comparison to others' experiences. Instead, ECRs should focus on what it is they want to do after the PhD and work towards that goal. Ultimately, every PhD journey is unique to the individual that embarks upon it. It is about using your time and taking advantage of the opportunities made available to help navigate to the place you want to be after your PhD.

'Hidden turbulence': A pathway without a map

The PhD journey is a unique period in a person's life, with no 'formula' or set trajectory when undertaking and finishing a PhD in quantitative human geography. As a result, during this stage of a person's career, there are unexpected, or 'hidden turbulences', which present unique problems and challenges, but often go uncaptured. When the PhD degree is conferred, the newly minted Drs usually transition to the post-doctoral academic world or industry. In opting to remain in academia as post-doctoral researchers, teaching fellows, or lecturers, they meet fierce competition, estimated at 'fifteen to one' applications for a single job offer across academia (Notman and Woolston, 2020). Those who secure employment will frequently be greeted with temporary and low paid contracts (6-12 months), job insecurities, and regular relocation, to maintain their academic record

and paid employment (Afonja et al., 2021). These inequalities are often exacerbated for women, minoritised communities, and those with family or caring responsibilities.

The compounded impacts of such instability have severe consequences for our mental health. Over half of academic staff present probable signs of depression (Wray and Kinman, 2021), while the lack of a permanent position is a predictor of depression, anxiety, and stress (Reevy and Deason, 2014). Panel members gave first hand examples of their own experiences of this, whilst trying to juggle thesis writing, job-hunting, and part-time employment. This has been exacerbated by the COVID-19 pandemic, as stress and unhappiness were considerably higher in academia than the national average (Dougall, Weick and Vasiljevic, 2021). Together, this provides a perfect storm of instability for those already predisposed to mental health difficulties. Moving between jobs, and often cities, results in the loss of support networks, coping strategies, and access to mental health resources, creating additional challenges for those reliant upon medication and/or professional support.

An alternative route is to transition to industry or government/third sector positions. This alleviates many of these issues, but new ones arise for PhD students who often lack professional career development (Woolston, 2021), through a lack of exposure to systems and structures of work, such as how best to communicate project findings, as well as new logistical (e.g., timesheets) and conceptual barriers (e.g., lack of freedom). Furthermore, the process of getting a PhD is often only truly understood inside academia. Hiring panel members discussed comments such as “I assumed a PhD was just an extension of an undergraduate degree” leading to “you’re overqualified for this role” in interviews for industry employment (Hankel, 2019), where candidates having a PhD has often been desirable, but not essential nor widely sought. Whilst current doctoral researchers might feel daunted by these employment prospects, based on our experiences there are some adaptations which can support the transition to industry. By structuring a PhD to highlight its significant contributions, skills and diversity of experience, the candidate strengthens their chances of securing the role that they want, although should not overlook the importance of signposting and explaining these to employers with less exposure to postgraduate study.

Adjusting, adapting and thriving in a PhD to maximise career prospects is in itself a significant challenge, which is enhanced with caring/parenting responsibilities. From our experiences, the

balance of work and parenting responsibilities have been particularly difficult; from changing nappies whilst working, pausing careers due to ill-health in the family, and finding specific hours in the day, night, weekends and/or holidays to continue working. The result of these competing obligations is often that ECRs will be concerned and distressed that their research is falling behind, with even greater consequences for international students and ECRs (Viteri and Lusambili, 2009). Thus, our panel thought it was important to acknowledge that there are many important elements outside work/research, and that it is truly acceptable to ask for support from others in academia, or outside it, for example in the church or nursery, and local neighbourhood (Adrian, 2021). With this recognition, we have become better able to balance research and household commitments; in one case, a panelist's daughter now understands that daddy sometimes needs 'thinking hours' before going to the park.

Contextualising, seeking and benefitting from formal and informal mentor networks

Mentors are vital in shaping an ECR's skill set, research environment, networks, and career prospects (Adams-Hutcheson and Johnston, 2019), facilitating opportunities that the ECR might otherwise not have been able to - or thought to - access. However, individual experiences of mentorship are often uneven between ECRs, as evidenced across the discipline, as well as in our own experiences (Oberhauser and Caretta, 2019).

Postgraduate cohorts, research laboratories, and departments are a collection of diverse trajectories, all of which will interact to shape experiences of mentorship. Mentorship in quantitative human geography will vary from candidate to candidate based on their technical competency and the scientific methods that the student wishes to engage with, in addition to the background and training of the mentor, which carries significant weight in devising and scoping new research projects. For early career quantitative human geographers, this means that there is no defined pathway, but nor should there be. Social science programmes are unique in that they specialise in teaching students how to study and interpret the human world; however, the focus increasingly encompasses techniques from many quantitative disciplines (e.g. geography, statistics, computer science, and economics). Based on our collective experience, this can provide a unique opportunity for mentoring that spans disciplinary and sectoral boundaries, allowing any ECR to develop diverse skills and find the area they want to build a career in. For example, the

shift toward ‘open-access’ in research has meant transparent and replicable research has surged in popularity, allowing code and data hosted in repositories to be bundled with research papers (Singleton and Arribas Bel, 2019). However, software engineering principles of code versioning, management, and hosting is far beyond the training of a typical human geography course, which is where advice and time with trusted mentors and peers is key. However, alongside the benefits it presents for students, multi-disciplinary mentorship can still be difficult to navigate.

Whilst multi-disciplinary mentorship offers significant benefits for students, it can be difficult to navigate, not least when trying to seek suitable mentors, particularly if no formal mentor programmes are in place. The PhD candidate-supervisor relationship can provide an important mentoring component, often well beyond the study period. Yet, in our experience, mentors are not always formally appointed and mentorship can take on a variety of forms, from structured programs to informal peer and colleague networks. Reaching out on an ad hoc basis to other researchers can help, for example, to experts in a specific field that work regularly with a specific machine learning model. Conferences and overseas visits also provide opportunities to network and share best practices with mentors and peers internationally. For others, there is opportunity for establishing peer-mentoring groups. One panelist gave the example of a women’s peer mentoring group, composed of scientists on short-term contracts, that was set up by four postdocs, and later expanded to fifteen members. The group initially met informally for discussions, and later approached their own institution for funding, subsequently organising a series of workshops on topics such as grant writing and leadership skills, creating a space to think about broader aspects of career progression.

There is also an increasing overlap between industry and academic research projects which extends into mentoring opportunities for ECRs in quantitative geography. Industry professionals (e.g. data scientists) are increasingly engaged in the scientific community, applying techniques used in research on much faster cadences. In industry, practitioners have access to considerable resources, so have additional skills of tackling research problems at scale and pace, and we have found it beneficial to extend mentorship experiences (e.g. internships, research visits) beyond academia. Industry job specifications increasingly list a PhD as a desired criterion and many leaders in industry are looking to develop future talent, therefore mentorship from outside of academia is increasingly common.

Conclusions

Undertaking and completing a PhD can be overwhelming; the expectations on PhD candidates grow higher, and each stage involves its own uncertainties that need to be negotiated. Nevertheless, from our reflections and experiences presented here, there is optimism and motivation that can be taken, particularly for quantitative human geographers. Quantitative human geography continues to be an exciting place to do research, as advancements in data and computational capacity continue to facilitate engagement with ‘trickier’ questions (Franklin, 2022), and, as a result, the number of PhD and postdoc positions as well as links with industry are likely to continue to increase. It is our hope that the reflections presented in this commentary, which highlight some of the major obstacles and opportunities, can offer useful advice and solidarity for PhD students and ECRs in quantitative human geography.

In traversing the early years of their career, the contemporary quantitative human geographer develops a diverse skill set; they are a data scientist, a social scientist, a programmer, a presenter, a thinker, falling into no distinct researcher ‘category’, due to the diversity of opportunities and relationships available to them. These relationships, as we have shown, comprise both the formal and informal, all contributing differently to shaping the overall experiences of ECRs. Whilst this commentary only reflects the perspectives of a selection of ECRs, whom we felt comprise a diverse set of experiences, backgrounds and career trajectories, it contributes new knowledge about the pathways undertaken by quantitative human geographers as they move into the next stage of their career, whether inside or outside of academia.

As such, there is no clear formula. By opening conversations about some of the ‘hidden’ aspects of life beyond the PhD, such as parenting/caring responsibilities, job insecurities, mental health concerns, and the untold ‘truths’ of securing employment, this has become particularly evident. The contemporary relevance of this commentary has increased further, as the COVID-19 pandemic and growing cost-of-living has presented new forms of ‘turbulence’ for geographers, and will no doubt continue to do so. As working from home became the ‘new normal’, and academic conferences and supervision moved online, opportunities for PhD students and early career researchers have been severely restricted. The pandemic has compounded many of the issues faced collectively, for instance when trying to balance home-working and parenting responsibilities, building mentorship networks and meeting new colleagues in an ‘online’ sphere,

and finding training and skill development opportunities that are both useful and feasible to engage with at home. Consequently, the formula for the life and career trajectory of an ECR has never been so obtuse, and, given that we have presented our ideas at a particular time, provides scope for further thinking within the academic community as the world continues to change.

As we move forward, this commentary is situated in the moment, written to reflect the current British academic environment which, when accounting for the current political and economic context, is increasingly neoliberal (Cupples, 2019), whilst also drawing parallels to other similar discussions about the present-day academic environment. However, the social environment of academia will be continuously changing, both from the short and longer-term impacts of the pandemic and from the actions of academics both past and present, and in that sense is something that is continually changing or 'turbulent'. By using this commentary as a space to voice concerns and experiences, it can offer insights as to how the social environment of academia could be changed to improve the experience for ECRs, rather than expecting them to adapt to it. It acknowledges the existence of power relations across hierarchies, and that opportunities often depend on luck, personal circumstances, control, an individual's capacity to cope, and the support received from mentors. The ECRs that have contributed have hence undertaken a process in which they acknowledged an ethics of responsibility to show their situated experiences and voice the difficulties they were faced with to encourage support for the next generation of researchers and their mentors. There is hope that future generations of (quantitative) geography ECRs could undertake similar processes, whether formally or informally, reflecting upon their own belief systems and positionality, as the lack of formula for the ECR experience creates diverse and exciting possibilities for all involved; a conclusion that has been notably absent from discussions about the quantitative sub-discipline of human geography.

Acknowledgements

This paper is written in association with the Quantitative Methods Research Group (QMRG) of the RGS-IBG. The authors would particularly like to thank Levi Wolf and Qunshan Zhao of the QMRG committee for their thoughtful and encouraging comments on this commentary. We would also like to thank S.M Labib and Nick Hood for their involvement in the original panel session. A final thanks to Phil Emmerson, Ben Anderson and Darren Smith at the Geographical Journal and

our anonymous reviewer for a highly positive peer review process, and for providing a medium through which to have this conversation in a written format. Patrick Ballantyne and Rachael Sanderson are joint first authors (with alphabetical ordering used for convenience), and the remaining nine co-authors are joint second authors (with alphabetical ordering used for convenience).

Data Availability Statement

No data was used in this commentary.

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