Teelken, Christine; van der Weijden, Inge; Heusinkveld, Stefan

Book Part

Chapter 6 Reimagining Doctorate Holders' Motivations to Make Career Transitions: Exploring Post-PhD Career Prospects Within and Outside Academia

Provided in Cooperation with:
ZBW LIC

This Version is available at:
http://hdl.handle.net/11159/692712

Chapter 6

Reimagining Doctorate Holders' Motivations to Make Career Transitions: Exploring Post-PhD Career Prospects Within and Outside Academia

Christine Teelken[a], Inge van der Weijden[b] and Stefan Heusinkveld[c]

[a]*VU Amsterdam, The Netherlands*
[b]*Leiden University, The Netherlands*
[c]*Radboud University Nijmegen, The Netherlands*

Abstract

Although an increasing number of PhD holders will continue their careers outside academia, we know little about their further career prospects. To develop a better understanding of how this group constructs and justifies a successful career outside academia, we conducted semi-structured interviews with 47 PhD graduates from different disciplines (humanities, social and beta sciences) who have obtained elaborate experience working outside academia.

Drawing on a multi-career perspective, we explored the motivations of the PhD holders when making such career transitions. The findings from the interviews demonstrated how PhD holders' main motivations were associated with their perceived *organizational*, *community* and *cognitive* careers. Our data analysis revealed that these motivations related to PhD holders and can be grouped along four key tensions:

- distanced from real life (academia) versus appreciating the practical impact of their research (currently);
- competition and performance orientation (academia) versus enjoying their current multidisciplinary collaboration towards a common goal (current);

- Individualism and loneliness were typically experienced in academia versus autonomy and intellectual stimulation in their current work; and
- lack of stable career perspectives in academia versus current options for competence-based development and personal growth.

Thus, while discontinuation of an academic career may easily hold a pejorative connotation, the analysis of the PhD holders' motivations revealed important and rewarding opportunities in pursuing a career in other sectors. Overall, from our study, we can conclude that while a major gap may exist between careers in academia and 'the corporate world', shifting careers between these worlds is not as 'unthinkable' as commonly believed.

Introduction

Since 2000, the number of PhD graduates from European universities has increased substantially. Several developments, such as the Bologna process, have resulted in more investments in research and development (European Commission, 2015), which is in line with the international trend to secure the future supply of research talent for the knowledge economy (Enders, 2004; Neumann & Tan, 2011).

The Organisation for Economic Co-operation and Development (OECD, 2020) explained that the traditional academic career path can no longer absorb the increasing number of doctorate holders in many systems, consequently heightening career competitiveness in academia to extreme levels and contributing to greater concern. For example, in the Netherlands, 31% of the doctorate holders work for a university or university hospital; the other 69% are employed in public and private non-academic sectors (CBS, 2020; Rathenau Instituut, 2022).

The European Union (EU) intends to increase the number of PhD graduates to ensure the supply of highly qualified employees to the public as well as the private sectors (ESF, 2010; European Commission, 2016). In other words, public and private firms will demand and hire PhDs as part of an increased orientation towards research and development. This enlarged supply has been accompanied by expectations that PhD graduates to an increasing extent find employment outside of the university sector.

In the years 2009–2015, there has been a general increase in the number of job advertisements requesting a PhD grade in the private sector (OECD, 2012, p. 18). Some PhD graduates, from the humanities and social sciences, compared to other disciplines, are characterized by relatively low frequencies of employment in non-university sectors. These two implications emphasize the

requirement that the universities should make sure that the PhDs achieve more general competences during their PhD study and are prepared for both university and non-university employment (Brown et al., 2003; Golovushkina & Milligan, 2013).

Given the concerns of the academic career mentioned above (also see Chapter 5 about precarious work conditions of early career academics), there is a need to further explore alternative options concerning the further careers of PhD holders outside academia, in both the (semi-)public and private sectors. Prior research on post PhD careers, especially in non-academic settings is scarce. The few available studies remain unclear about possible outside career prospects (e.g. Van der Weijden et al., 2017), in particular why leaving academia could be appealing and how an external career can be considered feasible, and more particularly, what kind of motivations for choosing such career prospects play a role.

Indeed, the OECD sees preparing doctorate holders for diverse careers beyond the traditional academic career path as a possible solution for the future labour market of PhD holders. At the same time, this outflow may lead to the departure of the most talented PhD graduates from academic research, as alternative careers can be considered as more attractive, subsequently deteriorating the long-term quality of science in the longer run (OECD, 2020).

This raises questions as to what extent and for what reasons do the PhD graduates consider the non-academic labour market as a feasible option. There is thus a need to know more about why and how further career steps are being taken and how the PhD holders considered themselves eligible for the non-academic labour market. This leads to our research question: *how do PhD holders construct and justify a successful career outside academia?*

Our chapter explores the key motivations of PhD graduates for pursuing a career outside academia and discusses the reasons for leaving the university. We considered the PhD graduates from the alpha (humanities, social sciences) and beta (science, engineering and technology) disciplines. The remainder of this chapter is structured as follows: In our theoretical framework, we will provide an overview of the extant literature in this field and discuss the three-career model. After explaining our data collection and analysis in our research methods sections, we present our findings and develop conclusions.

Theoretical Framework

In this section, we will first discuss previous studies concerning the changing employment conditions in academia, followed by an overview of previous research findings concerning post-PhDs working inside and outside academia. Subsequently, we present the theoretical lens that we draw upon in our analysis of the post-PhD career motivations.

The quality, performance and perseverance of academic staff in shaping academic output are considered as key in a university's academic impact (Thunnissen, 2015). The quantity and quality of published papers are widely seen as the most important measuring rod for the academic impact and excellence of universities and researchers (Hessels, 2010).

As explained in the above, the decline in the number of tenure track positions increases the necessity for people who have obtained their PhD to consider choosing careers outside academia (e.g. Dietz & Bozeman, 2005; Fitzenberger & Leuschner, 2012; Fitzenberger & Schulze, 2014), calling into question the academic and social capital that PhDs and postdocs have gained (Yang & Webber, 2015). Seeing PhD candidates and holders as academic capital refers to the financial relationship of the university with the state: when universities act like profit-making organizations, wanting to market the knowledge that they can give to students. This has reshaped academic employment, with an emphasis on utilization of knowledge and budgets, and receipt of higher extramural funding (Yang & Webber, 2015). A complicating factor is that the role of both PhD researchers and postdocs has been reshaped, and it remains unclear whether they can be considered temporary employees for university research production, without a guaranteed future research career, or as apprentices, learning the academic trade and gaining academic and human capital (Callei & Polka, 2015; Cantwell & Taylor, 2013; Van der Weijden et al., 2015).

Concerning further careers of PhD holders or former postdocs outside academia, whereas up to about 2016, the number of studies available was limited (Teelken & Van der Weijden, 2018), but recently, an increasing number of studies is available. We base ourselves here on the studies carried out by Hayter and Parker (2019), Zollner (2016) and Skakni et al. (2021).

Hayter and Parker (2019) investigated the pursuit of postdocs for non-academic continuation of their careers; they researched factors that influenced the postdocs' transition to a non-academic career. Their paper consequently explores factors that may impact the transition of postdocs in the United States to non-academic employment relative to their own a priori career goals. Given the scarcity of related micro-level data, the paper employs an inductive, qualitative approach to identify these factors among a theoretically relevant sample of university postdocs at five Carnegie-classified Research I universities within the United States. Their research is based on interviews with 97 postdocs, from five high-end universities and all disciplines, most of the postdocs (64%) have an international background, and 35 additional interviews with principal investigators, university administrators and industry employers. Hayter and Parkers' study revealed that the initial percentage of postdocs pursuing an academic career dropped from 87% to 55%, caused by a range of essential individual, organizational and policy factors, but also the influence of their supervisor/principal investigator was crucial. Several elements, such as lack of relevant skills, absence of support and sometimes even opposition of their principal investigators played a role, since they generally wanted to retain their talents. Specially, the poor availability of non-academic career preparation opportunities hindered the postdocs in their further career trajectories and subsequently the utilization of new and innovative knowledge.

Zollner (2016) demonstrated on the basis of interviews with post-PhDs (13 interviews) working outside academia and their managers (6 interviews) that a dual stereotype existed between the post-PhDs and their employers. On

one side, her study confirmed that there was quite a lot of uncertainty about the appreciation for a PhD title outside the university (Stassen et al., 2016). Young scientists expected that their title makes them less attractive in the eyes of the managers through institutionalized prejudices which make scientists less suitable for work in the professional or private sectors. The stereotype of scientists was likely to be shaped by the idea that scientific success inevitably goes hand in hand with remoteness and antisocial behaviour (Zwart, 2005). Most young scientists interviewed (11 of 13) experienced a certain negative image during their application procedure or in their dealings with colleagues. However, on the side of the interviewed managers a similar picture of stereotypes emerged, despite that the managers acknowledged that in practice, when requested to provide real-life examples, their prejudices do not hold. In general, the managers considered young scientists as highly intelligent people that are often less practical and less broadly developed than required. The interviews showed that managers develop their stereotype of young scientists based on (1) the expected strengths and competencies as analytically competent, perseverant, independent and with good writing skills; (2) their own experience with doctorates and workers; and (3) the generally applicable image of scientists.

The work by Skakni et al. (2021), carried out in Switzerland and the United Kingdom, examined the challenges that characterize the passage from academia to non-academic workplaces. The authors analysed 32 semi-structured interviews conducted with PhDs engaged in non-academic careers in private, public or semi-public sectors for 10 years or less. It emerged that, when the PhD holders entered non-academic workplaces, 50% of the participants devoted a large portion of their time and energy to understanding a new organizational culture, including their workplaces' everyday functioning, the values shared within their organizations and the statuses to which they were assigned. The so-called organizational culture shock was specially experienced by those who entered non-academic workplaces directly after the PhD and with little or no work experiences prior to the PhD. The findings of Skakni et al.'s study contribute to the ongoing global conversation about how to prepare PhDs for careers beyond academia.

In short, the relatively small number of prior studies in this field revealed (1) several important distinctions concerning the mutual stereotypes between PhD holders and their employers; (2) the 'organizational cultural' shock when entering the non-academic labour market; (3) the lack of support experienced from academic employers; and (4) poor preparation for non-academic career trajectories. Building on these distinctions derived from our literature review, we seek out to further explore post-PhD careers in the Netherlands by drawing on a theoretical perspective based on the work of Gläser and Laudel (2015) to investigate the mutual interaction between personal agency and social structures. Gläser and Laudel are unique in the way they sought to contribute to the discussions by clarifying the link between research on academic careers and career theory and actually closing the gap between these types of research. Their model explained the peculiarities of academic careers in contrast with general career research by

distinguishing three different types of careers through which academics can move simultaneously (see Fig. 6.1):

● The Community Career refers to status-related experiences and the community career, work roles in communities. This type makes a distinction between four stages (apprentices, colleagues masters and elite). Typical collegial features involve assessing the relevance, validity, reliability of the community's body of knowledge, acquire valid and reliable knowledge that is deemed relevant for their work, identify gaps in such knowledge bases and consequently assess capabilities and opportunities.
● The Cognitive Career refers to the content of their work (research topic). This type of career consists of diachronic structures in research, in other words several subsequent time periods, with different but also overlapping branches. This type of careers refers to individual scientific activity and achievement and involves a continuing development of scientific interests and problem choices and approaches. For example, the range of subsequent themes researchers have addressed during their career.
● The Organizational Career refers to a narrower conceptualization of the academic career and involves typically a sequence of jobs. This type of career differs per nation, such as the chair system (e.g. Germany), tenured systems (the Netherlands) and tenure-track systems (US-American). Purpose of the organizations is to equip researchers with resources, despite that the work roles defined by these organizational positions are rather unspecific.
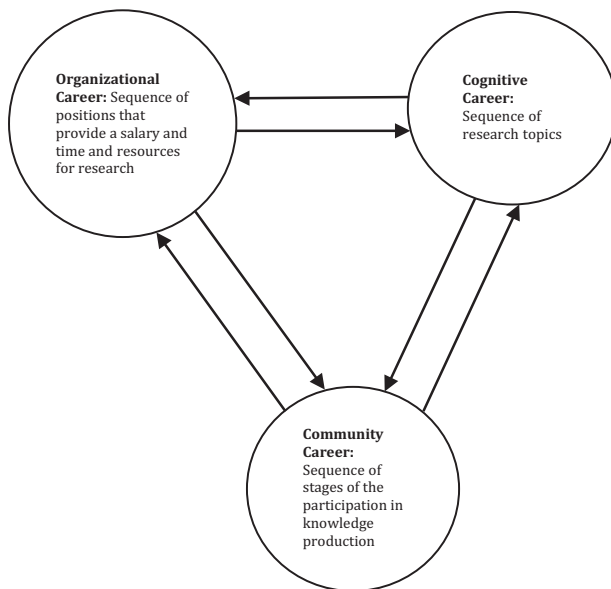

Fig. 6.1.   The Three Career Types and Their Interrelations (Gläser & Laudel, 2015, p. 18).

Gläser and Laudel emphasized the importance of the relationships between these three career types. In line with this, we seek to further explore the three links between the three career types, by relating them to relevant literature on career theory and personal agency (Dietz & Bozeman, 2005; Fitzenberger & Schulze, 2014; Thunnissen, 2015) and our data. We think that this model provides more clarity in explaining and structuring the variety of motivations for the continuation of the respondents' careers. Given our research topic (post-PhD careers outside academia), we shall discuss the current state of literature concerning the link between the Organizational and Community Career as this is the most relevant for the post-PhD employees (Teelken & Van der Weijden, 2018).

When using the model of Gläser and Laudel as a framework for our literature review, an interesting dimension appears between, on the one hand, coincidence as a major factor in (post) academic careers opposed by, on the other hand, an increasing one-dimensional career progress. Van Balen (2010) and Van Arensbergen et al. (2013) have demonstrated that coincidence is a major factor in explaining academic career progress. Their studies showed that initial small differences and 'being in the right place, at the right time' can eventually produce major differences between different individuals' career progress over the long term.

Likewise, the interviewees in the study by Dany et al. (2011) considered external factors rather than individual choices as decisive to their promotions and felt little control over critical events, making the management of their career much more demanding. Personal agency plays an important role regardless of the environment's impact (whether strong or weak), but this agency is directed and restrained by individual perceptions of environmental factors, such as the rules and models for promotion. While Gläser and Laudel (2015) wanted to avoid the so-called overemphasis on personal agency when discussing academic careers, other authors, such as Dany et al. (2011) and Lam and de Campos (2015), used personal agency in a variety of scales and forms to shed new light on developments concerning academic careers. They demonstrate how young scientists proactively shape their careers and distinguish two types of activities in their relationship with professors: collaborative research versus commercial ventures.

On the other hand, several studies (Ates & Brechelmacher, 2013; Baruch & Hall, 2001; Kwiek & Antonowicz, 2015) demonstrated an increased one-dimensionality in the traditional, academic career, as mentioned in the introduction. Ates and Brechelmacher (2013), Gemme and Gingras (2012) and Felisberti and Sear (2014) discussed that the professorship is still considered highly attractive and academics' single most valued career objective. Academic careers tend to be increasingly identical and divided into several similar steps of uniform length, such as in the tenure track system. Whereas such careers were once quite unstructured, they are now sliced into comparable timeframes, must be carried out within a limited timeframe, and consist of doctoral systems, postdoctoral positions or junior functions, followed by employment in lower-level and consequently higher-level senior positions such as a full professorship. For each period, certain output criteria have been formulated, and these criteria are increasingly similar across several countries (e.g. Kwiek & Antonowicz, 2015).

Research Methods

To address our research questions, we interviewed 47 post-PhDs, 20 females and 27 males; the average year of PhD graduation was 2008. The respondents are all currently working outside academia, mostly in the private sector. Recruitment of respondents occurred through our own networks by means of a snowball sample. The respondents received their PhD from a range of universities, both in the Netherlands (e.g. the universities of Delft, Utrecht, Leiden) and abroad (e.g. University of Oxford, Berkeley, California). Ultimately, our sample comprised a broad range of informants from a variety of backgrounds. Twelve respondents have a background from the social sciences (soc), 6 are from humanities (hum) and 29 have a science background (sc). The largest subgroup of our respondents involves males with a science background (Msc = 21), and 8 female respondents (Fsc). The other categories are (fe)males with a humanities background (Fhum = 4, Mhum = 2) or from the social sciences (Fsoc = 9, Msoc = 3).

In our study, we asked the post-PhDs to look back upon their previous pre- and post-PhD careers during in-depth interviews, thereby revealing how they retrospectively constructed their motivations. The semi-structured interviews were carried out in between 2016 and 2018. The topic list comprised topics grouped in a number of themes, based on our preliminary research about this topic: previous career steps and future perspective, perception of autonomy during the career, competence development, social cohesion of the organization, external incentives for career choice. Analysis of data involved a three-step process, since we used (1) open and (2) closed coding and (3) selective coding (Boeije, 2005). We combined several data sources; interviews were carried out by three different researchers, each of them had a slightly different perspective but we (re-)analysed all the interviews jointly.

In our initial coding of the interviews, we found a range of different motivations concerning further post-PhD career steps which are visualized in Table 6.1, presented in order of comparative frequency mentioned by the respondents. Then, the codes were joined into 'code trees', hence eventually four dimensions emerged, which will be presented in the findings. These dimensions, that can be considered as core constructs throughout this chapter, are used to interpret and describe the 'motivational tensions' the respondents experienced when looking back at their careers and reflecting on their transfer towards outside academia. To distinguish between individual respondents, labels are used to provide background information: number, gender and discipline (e.g. R20Fsc).

Findings

Analysis of our findings revealed that the PhD holders generally agreed that elements they felt lacking in the academic context were specially appreciated in their current profession 'outside' and vice versa: aspects they felt disagreeable in academia are either differently organized in their current profession or have far less impact. Subsequently, we identified four tensions, along the 'academic' versus 'outside-academic' dimension.

Table 6.1. Overview of the General Motivations.

General Motivations	Percentage
Practical impact/relevance	17
Stability	13
Need for collaboration	12
Academic culture	12
Job offer academic field	8
(More) challenging	8
Postdoc as just intermediate stage	7
Autonomy	5
Publication pressure	3
(Lack of) entrepreneurship	3
Travelling time	3
Ambition private sector	3
Opportunities for development	2
Avoid military service	2
(High level of) flexibility	2

These four tensions involve the following:

- Distance from real life versus practical impact of research (relation to society).
- Competition versus multidisciplinary collaboration (relation to colleagues).
- Individualism and loneliness versus supportive space (relation to work).
- Lack of perspectives versus competence-based development (relation to personal development).

Distanced From Real Life Versus Practical Impact of Research (Relation to Society)

Concerning the academic culture in general, about 10 respondents referred to academia as a 'very special world' or 'the magic world of science' (R37Fsoc) which they consider as quite incomparable with any other work situation: it is a kind of protected environment (R42Fhum) with a distance from reality, a 'bubble' (R37Fsoc) or 'an island' (R19Fsoc). The respondents felt quite isolated from what they consider as the 'real, outside world'. Specially, junior scientists, who are recently graduated, know very little about the outside world: 'When I stepped out of this, rather protective world, a whole new area appeared' (R41Msc). Consequently, when discussing the transfer to their current profession, it was seen as quite final because 'If you leave you are unlikely to get back' (R37Fsoc). At least two respondents were considered as 'crazy' (R3Fhum) for leaving academia.

In contrast, a closer look at the results showed that 27 out of the 47 PhD holders see the application or practical side of the work as a most important factor for continuing their work outside academia. They felt the urge to apply their acquired knowledge and use their analytical and problem-solving skills by continuing to do research but in a broader manner than previously. Motives for continuing their career outside the university involve being able 'to see results immediately' (R4Mhum and R17Fhum) and 'having more direct impact' (R12Msc, R14Msc and R18Fsc). The respondents generally appreciated that in their current profession, they could contribute directly to the solution of practical problems or societal issues, such as improving the lives of people, for example, by setting up a new teaching programme (R5Fhum), retrieving energy from waste (R7Fsc), developing applications for new chirurgical diagnostic tools (R24Msc) or creating a vaccine against HIV (R22Msc). This is further illustrated by the following quotes:

> Yes, it [my current work] has a wider reach and it has a very practical side too. It is what you do is immediately measurable. That is satisfactory, I must say, that you see immediate results that way. (R18Fsc)

> Concerning legislation, the relevant developments occur at the large offices, at the ministry, not in academia. (R46Fhum)

Competition Versus Multidisciplinary Collaboration (Relation to Colleagues)

Fourteen of the respondents stated that there is a lot of competition between researchers, especially concerning obtaining financial sources. This type of competition is generally disliked by the respondents, as it creates insecurity and disagreements. For example, because of the limited supply of funding 'your colleagues are generally not your friends' (R21Msc) and 'everybody has their own interest, their own "shop"' (R25Msc).

One respondent even says that:

> Academia is ultracompetitive, very competitive, there are many excellent people around. And I was no more than mediocre, at the university. There are really, very smart, very bright people with a passion for what they are doing, working weekends and late nights. It is not working, more a hobby for them … to get standing you must be very good, a lot of publications, in the right journals, many experiments. (R38Msc)

This competition means that the respondents experienced work pressure at the university and feared for burn-out (R37Fsoc). It is common to work outside office hours, to spend all your time in science (R44Fsoc and R46Fhum). More specifically, when talking about work pressure, 22 respondents refer to the pressure to publish sufficiently and in the right ('in other words high impact' R25Msc) journals. Several interviewees find that this pressure to publish becomes very much a

goal by itself, because 'who will actually read all these publications?' (R3Fhum) and can have negative consequences: 'Several colleagues who had not contributed at all towards a paper, where mentioned as co-authors' (R33Fsc).

> Well, it is true that because output was my only goal, that I thought: 'so and the way I could achieve that was just sitting at my computer'. I thought: 'Well, this is not going to last very long. I don't get any energy from this'. (R19Fsoc)

Some respondents mentioned their relief at not having any publication pressure outside academia (R18Fsc); they considered the pressure of getting grants and publications as a very frustrating cycle, whereas the 'tenure track makes you egoistical' (R11Msc), and for a few, this publication pressure was an important reason to leave academia:

> What really worried me was that your track record, the publications you have written is so incredibly important for the rest of your career, that I really worry for the integrity of the academic world. With such a clear link, this integrity cannot be guaranteed, I find that very dangerous. (R11Msc)

In contrast with the 'hyper' competition in academia, 25 (out of 47) respondents mentioned that they appreciate the nature and extent of collaboration both within and outside their current organization. Eight respondents spoke explicitly of multidisciplinary collaboration, whereas seven refer to working in a team. This type of collaboration is mentioned frequently as a positive characteristic of the current employment situation and a reason for switching from the university to the private sector. Respondents saw multidisciplinary collaborating with colleagues from different backgrounds and disciplines as an important asset in the private sector and as something they are greatly lacking in science; they generally enjoyed the broadness of such collaborations: 'I have to say that working with people at my current company … I really like that. So that you collaborate a lot with other people' (R6Fsc).

The lack of collaboration within their former academic career relates not only to the execution of the work but also to the competences of the PhD holders. Respondents indicated that the competence to collaborate is not learned at the university. 'While you are all officially employed by the same organization, and eh, within that also belong to either an education or research group. But no, I never really experienced that as a group feeling' (R3Fhum).

This concerned not only the ability to work together but also other social skills.

> The social aspect in dealing with teams, dealing with resistance, change processes. Managing multidisciplinary processes, where many of these things also come back. I think that that is really a component that would be enormously improved and that will probably not only benefit PhD-candidates who are going to work outside the university, but also who will work in science. (R3Fhum)

Also important were the possibilities to collaborate on a common goal within the private sector, as mentioned by seven respondents. Concerning performance criteria, 18 respondents refer to ways their performances are being assessed. The respondents clearly revealed that they are generally judged in a much broader manner than in academia, where a range of criteria is applied, and generally in a closer connection with the actual content or operational aspects of their work.

However, there is still some focus on output (e.g. funding, patents, software), as five respondents (R1Msc, R15Msc, R17Fhum, R18Fsc and R19Fsoc) refer to their yearly performance appraisal where more or less clear targets have been established. However, the respondents appreciated that in many cases, process criteria were being used. For example, creativity (R28Msc): 'I feel strongly that there is a lot of space for creativity and trying new things' (R18Fsc). Others refer to more general criteria such as 'if everything goes well' (R33Fsc), the ability to solve problems (R15Msc) or the responses from or interactions with customers (R13Msc, R28Msc and R32Msc). This sort of more process-oriented performance appraisal, for example, based on portfolios is considered as more 'human' and generally valued by the respondents.

Individualism and Loneliness Versus Supportive Space (Relation to Work)

Another aspect disliked by the respondents (mentioned nine times) involves the loneliness they experienced when working in academia, especially during the latter part of their PhD trajectory. As one states: 'in the academic world you are very much lonely' (R21Msc), and this loneliness has increased because 'it seems as if everyone sitting on their own island' (R25Msc and R34Msc). This is further illustrated by the following quotes:

> The (Phd) project is very lonely, you have to continue writing despite feeling discouraged, and at a certain point you can't explain to your parents what you are doing. (R35Mhum)

> Even within the department there are clearly 'islands' (R34Msc), 'everybody is just sitting on their own island, doing their own thing, and that annoyed me. Teamwork is more appealing to me'. (R25Msc)

> And I also thought it was a typical world, science. It is actually quite closed. You really do that research for yourself. I have sometimes wondered for what purpose I actually was doing it. Who reads my work? Yes, the people who also wanted to publish in that magazine or who use your documents. But otherwise, it is a very closed world. (R42Fhum)

> Scientists that you really just have to lock up in a room on their own and close it off, and they very thoroughly explore a problem and work on it. It was a very lonely situation then in [city]. I don't know how it is now. (R40Msc)

As opposed to the aspects of the academic culture they disliked, more attractive sides of the 'outside' emerged. Nonetheless, nine respondents (six female, three male, seven science, two social science) mentioned that they are experiencing less autonomy in their current profession than during their work in academia, as PhD and postdoc. Remarkably, they feel strongly that within certain limitations (quite broadly set, e.g., based on yearly planning R10Fsc), there is sufficient space to carry out their work. They specially enjoy using their creativity to work on new ideas or find solutions for problems raised by their customers (R18FSc and R20Fsc).

> There is really a lot of room for creativity. So I am really very positive about that, because if you see opportunities, you can create them yourself as long as it fits. The position that I have now means that I can also decide how much space there is. (…) I can think of how it goes, gather the arguments and make choices. (R19Fsoc)

They highly value this autonomy and freedom and consider that it is one of the essential parts of their work. Respondents generally appreciate the lack of steering they experience (e.g. R15Msc). Only one respondent (R17Fhum) states that she experiences more freedom in her current job, as she feels no longer bound by the quite narrow research topics of the postdoc period:

> From front to back, I can decide how things are carried out, collect arguments, make choices. Of course, it should be accountable, but these can be my own ideas, so much better than an operational position, as my postdoc was. It was really just carrying it out. (R17Fhum)

> [as a postdoc] I did not get the space to work on my own research issues, the actual space to develop my own ideas …. However, currently, within my scope, I can develop my own ideas, collect arguments, make my own choices …. This is so much better than just an operational position, like my postdoc was before. (R17Fhum)

Lack of Perspectives Versus Competence-Based Development (Relation to Personal Development)

The lack of career perspectives in academia contrasts plainly with the focus on personal development of their individual competences, within their current profession, which we call here competence-based development. The sequence of temporary contracts and the lack of future perspective towards a tenured contract resulted in a search for clarity and security concerning further career perspectives in academia, which are clearly an issue for 24 (20xsc, 2xhum and 2xsoc) out of 47 respondents.

> […] during that period, it was difficult to find a job as a PhD. A regular job. But a permanent appointment at the university was also very difficult. You were usually hired as a postdoc, and these were mostly temporary contracts. (R1Msoc)

One respondent stated explicitly that 'her limit to sacrifice herself for an academic career' had been exceeded (R20Fsc). More specifically, given the pyramid structure at the universities, only few can be promoted to full professor. Specially, when working as a postdoc (e.g. R18Fsc and R20Fsc), the respondents were dependent on the small likeness to obtain external grants to finance their continuation. They generally disliked the inadequate employership demonstrated in universities, for example, the weak organization concerning performance appraisal. Many respondents find that the private sector provides them with more security especially when it concerns tenured contracts.

There is little substantial and continual support for personal development as demonstrated by the following respondent:

> Question: And could you further develop your competences in academia? R: No. (Laughter) No, there's no guidance there. Q: Not a mentor or coach or anything or a professor who? R: Yes, exactly. There are no coaches who have time for that. A professor has no role in that at all, no. (R24Msc)

In contrast, when working outside academia, the respondents (18 out of 47) felt greatly encouraged to develop their own competences, many were offered a personalized introductory programme and possibilities to follow training programmes and courses. Most of them feel that their current employer is much more professionally organized (R17Fhum and R38Msc) and more 'human' (R17Fhum); something they clearly felt was lacking in academia (R24Msc).

> This company is very good at developing the competences of staff. We have a whole department for staff development, so to speak, offering training, education, and everything you can think of. Last year we had a 'learning and development day', a complete day dedicated to your own development. (R19Fsoc)

However, a few respondents mentioned that despite the options for further development, they find the offering of courses in their current profession quite 'superficial' (R27, 28, 29, 30 all Msc) and explain that they can select and follow these courses only at their own initiative (R34Msc) and in their own time (R31Msc and R34Msc).

Synthesis

When taking all the four tensions into account, we can see that these can be fruitfully interpreted in terms of the academic career model (Fig. 6.1). In our data analysis, we identified the following four motivational tensions in relation to the three different career types (Gläser & Laudel, 2015):

- Concerning the community career, we saw this emerging in two main ways: in relation to society, on the one hand, and colleagues, on the other hand. The

community career distinguishes four stages (apprentices, colleagues, masters, elite) in career development. The respondents appreciated a closer link with society in their work, especially in a further mature stage of their career. In their relationships with their colleagues, it became clear that the respondent felt that competition had been replaced by collaboration, team-based and across disciplines.

- Cognitive career refers to the actual content of their work and emerges from the tension on relation to work. Our main findings involve that concerning their work activities, the respondents generally experience less but an acceptable amount of autonomy to carry out their work in a sufficient manner. They specially appreciate the extent they can use their creativity to find solutions for problems or develop new ideas.
- Organizational career refers to a typical sequence of jobs and is related to the tension on personal development, concerning professional autonomy and competence-based development. The respondents greatly appreciated the professional manner where they were offered options for further personal development.

Discussion

Our analysis of the interviews with PhD holders reveals several important developments that may contribute to our current understanding of PhD holders' careers outside academia. In our study, the PhD holders perceived important and rewarding opportunities in pursuing a career elsewhere. This is highly remarkable given that discontinuation of an academic career may easily hold a pejorative connotation. Rather our findings show how much the respondents generally enjoyed and appreciated their current work outside academia. They especially liked their contribution to society, their permanent contracts and multidisciplinary collaborations.

Our research reveals the different aspects of their current work and shows how and why the respondents have constructed several features of their work as feasible and attractive opportunities. Certain typical features of academic culture, which were previously disliked, have been reframed into an opportunity and one that fits their current situation outside academia. Other aspects such as the content of their work, the possibility to use their analytical skills or problem-solving capacities have remained, but put in a different perspective, highlighting their opportunities in a different setting.

It is emphasized that, in moving outside academia, loneliness and hyper competition have been replaced by multidisciplinary or team-based collaboration; output-based performance indicators are substituted by process or portfolio type of assessment, temporary contracts and insecure prospects by a tenured contract with ample attention for competence-based learning. In general, the respondents sacrifice their professional autonomy easily and readily for more job security, clearer perspectives and meaningful work, with a clear societal and practical contribution.

In short, the transfer from academia towards other sectors have been constructed as resulting in a better balance between the cognitive and community career (Gläser & Laudel, 2015), whereas several of the elements of academia (organizational career) have been replaced by a more constructive and favourable framing, thereby making their current work situation more attractive. The model constructed by Gläser and Laudel (2015) provides assistance in a better understanding of these developments and makes clear that especially the organizational career is most eligible for the creation of more attractive career paths and a better application of talent management policies.

When relating our findings to the current discussions concerning talent and talent management, we see an interesting development emerging. Whereas the talent focus within academia is traditionally quite narrowly defined, this conceptualization has been slowly broadened in recent years. In line with this, our findings reveal that respondents generally appreciate a broader set of competences than those typically associated with successful academics and feel better able to practice and further develop their talents and potential.

Additionally, the motivations and needs of the people who end up outside academia seem different than those inside. We found that people consider the lack of possibilities for making a societal impact and working in a team as important motivations for leaving academia. As a result, given these preferences working with people who do enjoy working in academia may be considered as even less appealing to those with a broader orientation. This emphasizes the need for a changing main focus in current practices of talent management, that is, one without the primary performance orientation that currently prevails within science, which the respondents associate with loneliness and hyper competition.

Rather, to stimulate a smooth transfer outside academia or to assist people in their further career progress within academia, more development-oriented talent management policies are required. To preserve talented staff on different levels (junior, mediocre and senior), talent management should develop a different, broader career orientation, with less focus on the 'up-or-out' principle, and more options for horizontal careers. Also, by providing a smoother transfer towards outside academia, exit management could lead to a more fruitful starting point for PhD holders and at the same time lay the basis for productive networks and collaborations for universities with external stakeholders.

Suggestions for Further Research

Internationally, substantial data about the careers of PhD holders are available; in the Netherlands, the CBS (2020) keeps track of the employment of PhD holders. This provides a vast potential for further data analysis and comparison, in order to obtain more detailed overviews of careers patterns and make comparisons, for example, in terms of background, gender, discipline or the nature of the PhD constellations (e.g. external, as employee, as student, etc.). More detailed information could help develop the PhD trajectory more precisely and lower the dropout and delays of PhD candidates.

Practical Implications

Finally, some general recommendations for further development of talent management in PhD trajectories at universities are:

- Graduate schools should integrate a broader social focus into PhD programmes from the earliest stages, for example, by organizing visits to companies working in relevant fields or by offering joint research projects in which PhD candidates work together with business and industry.
- In addition, when recruiting, selecting and hiring PhD candidates, awareness concerning their further professional perspectives could be addressed more explicitly.
- HR departments, both at central and decentral levels can invest more directly in their PhD candidates, for example, by helping them to develop a broader range of skills. Instead of just emphasizing on intellectual ability and academic achievements, the development of transferable social and commercial skills can be more encouraged.
- At faculty, department or graduate school level, external networking should be encouraged more actively. This holds for both the PhD candidates and their supervisors, and awareness concerning their talents and potential could be raised more explicitly. Graduate schools should stay actively in touch with alumni PhD holders who have made successful careers for themselves outside of academia. This creates a larger understanding of why and how PhD holders in your field of research continued their careers outside academia or outside the 'traditional academic hierarchy'.

References

Ates, G., & Brechelmacher, A. (2013). Academic career paths. In U. Teichler & E. A. Höhle (Eds.), *The work situation of the academic profession in Europe: Findings of a survey in twelve countries, the changing academy* (pp. 1–11). Springer Science + Business Media.

Baruch, Y., & Hall, D. (2001). The academic career: A model for future careers in other sectors? *Journal of Vocational Behavior*, *64*, 241–262.

Boeije, H. (2005). *Analyseren in kwalitatief onderzoek*. Boom Lemma.

Brown, P., Hesketh, A., & Williams, S. (2003). Employability in a knowledge-driven economy. *Journal of Education & Work*, *16*(2), 107–126.

Callei, V., & Polka, J. (2015). Fellowships are the future. *Nature*, *528*(7580), 155–156.

Cantwell, B., & Taylor, B. J. (2013). Internationalization of the postdoctorate in the United States: Analyzing the demand for international postdoc labor. *Higher Education*, *66*(5), 551–567.

CBS. (2020). *Gepromoveerden op de arbeidsmarkt*. https://www.cbs.nl/nl-nl/longread/statistische-trends/2020/gepromoveerden-op-de-arbeidsmarkt?onepage=true

Dany, F., Louvel, S., & Valette, A. (2011). Academic careers: The limits of the 'boundaryless approach' and the power of promotion scripts. *Human Relations*, *64*(7), 971–996.

Dietz, J., & Bozeman, B. (2005). Academic careers, patents & productivity: Industry experience as scientific and technical human capital. *Research Policy*, *34*(3), 349–367.

Enders, J. (2004). Research training and careers in transition: A European perspective on the many faces of the Ph.D. *Studies in Continuing Education*, *26*(3), 419–429.

European Commission. (2015). *EU legislation in the European research and innovation area? Policy brief by the research, innovation, and science policy experts (RISE)*. European Commission.

European Commission. (2016). *A new skills agenda for Europe*. European Commission.

European Science Foundation (ESF). (2010). *Research careers in Europe landscape and horizons* [Report]. ESF Member Organisation Forum on Research Careers. Retrieved July 12, 2023, from http://archives.esf.org/fileadmin/Public_documents/Publications/moforum_research_careers.pdf

Felisberti, F. M., & Sear, R. (2014). Postdoctoral researchers in the UK: A snapshot at factors affecting their research output. *PloS One*, *9*(4), e93890.

Fitzenberger, B., & Leuschner, U. (2012). *Up or out: Research incentives and career prospects of postdocs in Germany* [Discussion Paper 12-020]. ESPE – UCL Department of Economics. http://ftp.zew.de/pub/zew-docs/dp/dp12020.pdf

Fitzenberger, B., & Schulze, U. (2014). Up or out: Research incentives and career prospects of postdocs in Germany. *German Economic Review*, *15*(2), 287–328.

Gemme, B., & Gingras, Y. (2012). Academic careers for graduate students: A strong attractor in a changed environment. *Higher Education*, *63*(6), 667–683.

Gläser, J., & Laudel, G. (2015). *The three careers of academic* [Discussion Paper 35/09]. Zentrum Technik and Gesellschaft, Technische Universität Berlin.

Golovushkina, E., & Milligan, C. (2013). Employability development in the context of doctoral studies: Systemic tensions and the views of key stakeholders. *International Journal of Training and Development*, *17*(3), 194–209.

Hayter, C. S., & Parker, M. A. (2019). Factors that influence the transition of university postdocs to non-academic scientific careers: An exploratory study. *Research Policy*, *48*(3), 556–570. https://doi.org/10.1016/j.respol.2018.09.009.

Hessels, L. K. (2010). *Science and the struggle for relevance*. Utrecht University.

Kwiek, M., & Antonowicz, D. (2015). The changing paths in academic careers in European universities: minor steps and major milestones. In T. Fumasoli, G. Goastellec, & B. M. Kehm (Eds.), *Academic work and careers in Europe: Trends, challenges, perspectives. The changing academy – The changing academic profession in international comparative perspective* (Vol. 12, pp. 41–68). Springer Link.

Lam, A., & de Campos, A. (2015). Content to be 'sad' or 'runaway apprentice'? The psychological contract and career agency of young scientists in the entrepreneurial university. *Human Relations*, *68*(5), 811–841.

Neumann, R., & Tan, K. K. (2011). From PhD to initial employment: The doctorate in a knowledge economy. *Studies in Higher Education*, *36*(5), 601–614. https://doi.org/10.1080/03075079.2011.594596.

OECD. (2012). *Transferable skills training for researchers: supporting career development and research*. OECD Publishing. http://dx.doi.org.zorac.aub.aau.dk/10.1787/9789264179721-en

OECD. (2020). *The precarity of research careers*. http://www.oecd.org/sti/science-technology-innovation-outlook/research-precariat/

Rathenau Instituut. (2022). *Number of doctorate degrees (PhD degrees) compared internationally*. Science in Figures. https://www.rathenau.nl/en/science-figures/output/phd-and-master-degrees/number-doctorate-degrees-phd-degrees-compared

Skakni, I., Inouye, K., & McAlpine, L. (2021) PhD-holders entering non-academic workplaces: Organisational culture shock. *Studies in Higher Education*, *47*(6), 1271–1283. https://doi.org/10.1080/03075079.2021.1876650

Stassen, L., Levecque, K., & Anseel, F. (2016). *PhDs in transitie: Wat is de waarde van een doctoraat buiten de universiteit?* ECOOM, Universiteit Gent.

Thunnissen, M. (2015). *Talent management in academia: An exploratory study in Dutch universities using a multi-dimensional approach*. University of Utrecht.

Teelken, J. C., & der Weijden, I. C. M. (2018). The employment situations and career prospects of postdoctoral researchers. *Employee Relations*, *40*(2), 396–411.

Van Arensbergen, P., Hessels, L., & Van der Meulen, B. (2013). *Talent centraal. Ontwikkeling en selectie van wetenschappers in Nederland*. Den Haag: Rathenau Instituut.

Van Balen, B., Van Arensbergen, P., Van der Weijden, I., & Van den Besselaar, P. (2010). Determinants of success in academic careers. *Higher Education Policy*, *25*(3), 313–334.

Van der Weijden, I. C. M., de Gelder, E. J., Teelken, J. C., & Thunnissen, M. (2017). *Which Grass is Greener? Personal stories from PhDs about their careers within and outside of academia*. Universiteit Leiden. http://en.phdcentre.eu/portraits/

van der Weijden, I., Teelken, C., de Boer, M., & Drost, M. (2015). Career satisfaction of postdoctoral researchers in relation to their expectations for the future. *Higher Education*, *72*(1), 1–16.

Yang, L., & Webber, K. L. (2015). A decade beyond the doctorate: the influence of a US postdoctoral appointment on faculty career, productivity, and salary. *Higher Education*, *70*(4), 667–687.

Zollner, K. (2016). *Jonge wetenschappers op de niet-wetenschappelijke arbeidsmarkt: Geweldige academische aanvulling of een irritante kostenpost?* [Master thesis, Vrije Universiteit van Amsterdam].

Zwart, H. (2005). Zichtbare wetenschappers. In M. Drenthen, J. Willems, & H. Zwart (Eds.), *Ethiek van wetenschapscommunicatie* (pp. 19–30) [Reeks: Wetenschap, techniek en communicatie]. Boom. Retrieved July 4, 2023, from https://docplayer.nl/51146596-Zichtbare-wetenschappers.html