

Repositório ISCTE-IUL

Deposited in *Repositório ISCTE-IUL*:

2024-05-31

Deposited version:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Cairns, D. (2022). Mobility, precarity and productivity: The uncertain expansion and migration of science in Portugal. *Portuguese Journal of Social Science*. 21 (1), 95-108

Further information on publisher's website:

[10.1386/pjss_00046_1](https://dx.doi.org/10.1386/pjss_00046_1)

Publisher's copyright statement:

This is the peer reviewed version of the following article: Cairns, D. (2022). Mobility, precarity and productivity: The uncertain expansion and migration of science in Portugal. *Portuguese Journal of Social Science*. 21 (1), 95-108, which has been published in final form at https://dx.doi.org/10.1386/pjss_00046_1. This article may be used for non-commercial purposes in accordance with the Publisher's Terms and Conditions for self-archiving.

Use policy

Creative Commons CC BY 4.0

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a link is made to the metadata record in the Repository
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Mobility, precarity and productivity: The uncertain expansion and migration of science in Portugal

Abstract

This article explores various aspects of the migration of science, including the circulation of scientific knowledge and the productivity of individual scientists. The first part of the article examines concepts that have helped define scientific employment, emphasizing the idea that a scientist's work should align with an episteme. The second part scrutinizes this situation in Portugal, shedding light on two specific developments: the recent expansion of the scientific workforce and the outputs emanating from national research institutions. This includes a brief statistical overview of the levels of expansion in financial terms and an exploration of the success of scientific publishing using data derived from the OECD and national statistics agencies. Data reveals that while the number of works produced has increased at a time during which greater numbers of scientists were being contracted, especially the decade preceding the Covid-19 pandemic, the impact of their work may have declined due to a lack of peer recognition, illustrated by a sharp decline in the number of citations received. This suggests that greater investment in science, specifically in recruiting fixed-term contract researchers, has not necessarily translated into measurable success. It also highlights the additional challenges posed by change in how scientific knowledge and scientists migrate.

Keywords

Migration, Science, Knowledge, Circulation, Portugal, Precarity

Introduction

The articles in this special edition of the *Portuguese Journal of Social Sciences* seek to move the sociological debate on migration beyond some of its traditional boundaries, emphasizing its role as a transformative experience. In engaging with these discussions, we acknowledge the fact that international movement possesses the potential to redefine people and places in new and interesting ways. However, the transient nature of territorial shifts also gives rise to vulnerabilities, often resulting in unpredictable consequences associated with the migration experience. This encompasses not only the physical movement of people but also the global circulation of ideas: a process discussed in this article in the context of what is termed ‘the migration of science’.

Alongside the physical movement of scientists, there exists a global circulation of knowledge. These two processes are often imaginatively and literally interlinked. A shared aspect is the belief that the transfer of individuals and ideas produces a form of cosmopolitan synergy typically expressed in such terms as ‘internationalization’ (Cairns et al. 2017). The underlying idea is that expanding the movement of scientists and scientific ideas yields benefits by increasing knowledge generation and strengthening the reputation of research institutions. Consequently, these institutions become more financially viable by attracting external research funding, reducing their reliance on finite state resources.

To begin with, it is evident that there is a great deal of optimism attached to this expansion, which is instrumental in explaining the creation of opportunities for the recruitment of larger cohorts of researchers. However, it is important to temper these expectations by acknowledging inequalities within the international scientific community. Moreover, the precarious job security often offered to scientists can undermine efforts to achieve greater productivity and financial sustainability.

In the following discussion, the main emphasis will be on the particular context of Portugal, outlining some ideas relating to how scientific knowledge circulates, especially the idea of the episteme. Then, we will look at statistical evidence regarding employment levels and productivity, especially in relation to published works. While there has been some success in expanding the workforce, our concluding remarks will critically examine some of the limitations inherent in recent developments. This assessment will extend to the limitations associated with governance approaches in science rooted in neoliberal principles.

The circulation of knowledge

Regarding theoretical and empirical focus, other articles in this special edition have examined issues related to integration and the categorization of migrants and their interactions with structures of power. While the focus of this article is somewhat different in thematic terms, there are shared concerns, including the recognition of the vital role played by the spatial dissemination of knowledge for individuals and institutions. In addition to the migration of people, the diffusion of ideas is equally noteworthy because it has become a largely accepted aspect of the knowledge economy. Putting these reflections into more theoretical language, the migration of science encompasses the circulation of ideas and their integration into the global discursive structures that define the value of scientific endeavour. This extends to the idea that various disciplinary epistemes constitute science.

The scientific episteme

While the term can describe a body of knowledge relating to a particular topic consolidated into a coherent discipline, from a more theoretical perspective, an episteme can be defined as

a set of subjective parameters that help define its limits. These parameters determine what constitutes a field of knowledge and sets it apart from others. For example, in the context of 'sociology', it can be said this includes research on social behaviour, relationships and interactions informed by theoretical debates and empirical perspectives. The credibility of new knowledge within this domain is subject to evaluation by recognized experts.

Regarding the process itself, academic work has its traditional means of circulating. For example, it finds its way into appropriate peer-reviewed journals or is presented at international colloquia hosted by prominent disciplinary associations. Often, this occurs only after a prolonged period when the new knowledge is assimilated into existing bodies of work, with its success gauged by the number of citations it receives. Conversely, ideas circulating in traditional and social media lack the opportunity for such canonical recognition as they have not passed through the requisite gatekeeping procedures.

The rationale behind this approach is rooted in concerns with the quality of the ideas generated. This is perhaps most evident regarding publishing in eminent journals like the *Lancet* in the field of medicine. This publication has long been the most influential academic journal in the sciences, where discoveries demand scrutiny by experts to assess their efficacy and originality. This is especially crucial given the potential life-or-death implications of new medical treatments and surgical procedures. The same principle applies when integrating new ideas into other scientific epistemes.

These gatekeeping practices help separate the ideas in the episteme from what must be excluded. The authority acquired through this process becomes a form of governance, a topic that has long interested philosophers and social scientists (Foucault 2002). On a more everyday level, the presence of the episteme underscores the importance for scientists to consider what to publish and where, including the choice of journals and publishing houses. This ensures that the appropriate peers can externally validate their findings. Building upon this point, the work must reach an audience and show signs of integration into their research field. This explains why the most useful indicator of acceptance for scientists is the number of citations received by a specific publication, with success only becoming assessable after a considerable length of time.

Spatial inequality and the episteme

While exploring scientific epistemes is fascinating in its own right and constitutes an integral part of disseminating scientific knowledge, it is important to note that it is not the primary focus of this article. However, it is worth pointing out that while constructing an episteme is theoretically a democratic exercise in the sense that many scientists can make contributions, this does not mean that all scientists are equally well-placed to contribute effectively. The formation of scientific epistemes tends to mirror pre-existing social and spatial inequalities alongside various forms of constrained dissemination.

An important factor in this process pertains to the geographical location of institutions. Historically, the most prominent learning centres were found in the core countries of Europe and the Anglophone world and, more recently, in South East Asia. In these regions, we find not only the universities and research institutes that appear to be generating the most significant and highly regarded knowledge but also the most distinguished scientists, thereby creating the potential to attract a higher concentration of research funding. Consequently, these research hubs wield a centrifugal influence on scientific epistemes, which extends to their ability to attract international talent. This explains why the migration of scientists

deviates from the classical view of human mobility as primarily driven by economic considerations.

Scientific mobility?

The relationship between the circulation of knowledge and the episteme concerning individuals and ideas is thus somewhat constrained by spatial and social inequalities associated with institutions' geographic location. However, this does not mean that 'outsider' knowledge is automatically excluded; rather, it suggests that authors from such backgrounds may need greater efforts to gain acceptance than their counterparts who benefit from more advantageous geographical positioning. In response to this situation, scientists and their ideas can migrate towards the core to facilitate the validation of their work and legitimization of their careers. They can become part of what might be termed the 'imagined community' of eminent scientists (Anderson 1983). Alternatively, institutions outside the core can choose to invest in expanding their workforce in the hope of competing internationally. As part of this process, they may also aim to enhance the skills and qualifications of their personnel at a national level, reorienting their work towards international audiences. Another strategy may involve recruiting scientists from abroad who already possess the capacity to internationalize their work.

These forms of internationalization are more complicated than they sound. Institutions must recruit scientists, knowing their expertise falls outside national norms, complicating their professional integration. For migrant scientists, it is not a straightforward matter of orientating oneself towards a particular place but also finding a place where one's international experience will be utilized. There is also the practical matter of managing a migration trajectory at a time when such pathways are characterized by risk and uncertainty. As prior studies on this topic have illustrated (Cairns 2022), scientific migration can be hard to sustain due to the piecemeal nature of funding streams and contract work, making a career trajectory fragmented and disorganized. Such conditions are difficult to endure, and the prospect of precariousness is not conducive to attracting the most value-laden scientists from overseas. A major risk is not only that those who do decide to travel fail to settle but also that the recruited people will have less to offer the host country, somewhat undermining the *raison d'être* of scientific migration. Given these concerns, as well as potential resistance from nationalistic interests regarding the importation of talent, it becomes logical for states to focus on internationalizing the existing scientific infrastructure at the national level, helping to explain the recent orientation towards increasing the numbers of contracted scientists within Portugal rather than seeking to recruit from abroad.

The Expansion of Science in Portugal

The preceding discussion has made clear that the circulation of scientific knowledge and the movement of scientists are intricate issues, primarily because of structural inequalities that influence the formation of a scientific episteme and the challenges associated with making impactful investments in national scientific institutions. These concerns complicate the management of science expansion, especially when financial imperatives are linked to this growth and a need to enhance the sustainability of research units. Nonetheless, there is a persistent desire to invest in science and to compete more effectively with other nations, including European neighbours.

Financing Science in Portugal

This helps explain why Portugal is one of the many countries that have sought to expand their scientific workforce in recent decades, positioning itself among the European Union member

states and affiliated nations that compete for funds provided by the European Commission and other international agencies. The motivation behind pursuing such opportunities at international level is quite evident; receiving additional funding from abroad reduces dependence on state finance and brings the prestige of hosting projects that may have political significance. Therefore, this is less about an intention to promote science at national level, focusing on advancing knowledge circulation. However, this may also be a consideration and more a reflection of economic pragmatism.

Such considerations lead us to evaluate the amount of money invested by the Portuguese government in science compared to other EU nations. The statistics on research and development (R&D) from the Organization for Economic Cooperation and Development (OECD), as presented in Table 1, offer an insight into the scale of Portugal's investments compared to its neighbours. These figures highlight the significant disparities in expenditure that exist between countries (please note that at the time of writing, the figures for Bulgaria, Croatia, Cyprus and Malta were not available for 2020).

Insert Table 1 about here

Allowances need to be made regarding differences related to population size and other factors, such as the advantages stemming from the presence of well-established R&D institutions in countries like Germany and France. Additionally, it is worth noting that many of these figures are provisional estimates. However, the impression derived from Table 1 is that certain countries appear to allocate significantly more resources to science than others. The most apparent disparities are seen in the considerable differences between long-time EU member states and the lower levels of investment in relatively recent accession countries, particularly Poland.

Portugal, a member of the European political community since 1985, presents a somewhat more nuanced position. Table 1 reveals significantly lower expenditure compared to a country like Sweden, which has a population of approximately 10 million citizens but slightly more than Greece, with a similar demographic profile. It might be fair to say that, at the time these figures were compiled, Portugal occupies a middle-ranking position regarding levels of investment in R&D within the EU27 context: neither at the top nor at the bottom. Therefore, we should moderate our expectations regarding state investment but remain cautiously optimistic.

It is worth noting that Germany is one of the most successful countries in attracting external research funds, especially following the decline in the United Kingdom's position within European frameworks following Brexit, which stands out as the country that invests the most in its scientists at a national level.

When examining the evolution of funding patterns, OECD data offers insights into how investment levels in Portugal changed during the decade leading up to the pandemic. This variation becomes more understandable when we consider the country's significant economic challenges following the 2008 financial crisis, which included several years of severe austerity measures and substantial cuts in state expenditure across various sectors. There were also multiple changes in government and state policies related to employment in science during this period. Nonetheless, the overall trend, as shown in Table 2, demonstrates expansion, with increased investment over this timeframe. This investment has grown from a

baseline figure of €2,566 million in 2011 to a peak of just over €3,236 million in 2020, although there were notable fluctuations throughout the decade.

It is important to note that the statistics in Figure 1 pertain to the state's contribution to the overall expenditure on science, with the burden not solely falling upon the Portuguese taxpayer. The primary funding agency, the Fundação para a Ciência e a Tecnologia (FCT – Science and Technology Foundation), is, in fact, jointly financed by the Portuguese state and EU structural funds, a fact that may not always be apparent in public discussions about science investment. Figures for 2019 published on the FCT website confirm that the total funding for science was approximately €5,110 million, with the majority – approximately €3,000 million per year – originating at the national (see Figure 1). This means almost 40 per cent of the 'Portuguese' investment in science is sourced from the EU.¹

Insert Figure 1 around here

A significant portion of this investment is associated with recruiting researchers through a series of funding programmes administered by the FCT. Portuguese readers are likely to be familiar with this agency as it has been the primary source of research funding at the national level since 1997. This funding encompasses doctoral and postdoctoral grants and supports various project work. FCT's approach to funding allocation has been comprehensive in scope, providing opportunities for individuals and research groups, often with a multidisciplinary or an inter-regional focus. It also supports institutions, including dedicated research units in a network of associate laboratories (*laboratórios associados*). At the time of writing, 40 organizations or consortia have been granted this status, covering various disciplines, including engineering, physics, chemistry, medicine, agronomy, social sciences and humanities (FCT 2022). These laboratories have the potential to benefit from state funding and the concentration of talent to generate a critical mass of scientific collaborations. This suggests that they are perceived as possible hubs for knowledge.

While these developments seem promising concerning the recruitment of researchers, the fact that most contracts have been fixed-term and without the prospect of renewal raises questions about the sustainability of investments. This practice also diminishes the attractiveness of opportunities, discouraging many potential candidates from applying. For those who apply and succeed, such a situation contributes to the precarity of their working lives, including their ability to compete with international peers who enjoy higher levels of job security.

This situation has a detrimental impact on researchers' professional lives and personal well-being, culminating in 2023 with the emergence of political activism against precariousness in scientific employment. There has been much debate with the government and among researchers regarding the need for tenured positions. These considerations help explain recent movements towards what the FCT terms 'open-ended' contracts for future recruitment. The impression is that the limitations of precarious working conditions for scientists are now being recognized. Proposed measures under discussion include a tenure track programme for researchers and lecturers. However, the extent of this initiative, regarding the number of positions to be created and eligibility requirements, remains unknown at the time of writing. It is also uncertain whether the programme will come to fruition.²

¹ Statistics available at: <https://www.fct.pt/fct.phtml.pt> [Accessed 21 June 2022].

² In regard to the state of play in respect to the recruitment of researchers at time of finalizing this article, May 2023, data published by the Observatory of Scientific Employment and Teaching (Observatório do Emprego Científico e Docente) provides data on the number of contracts being celebrated each year in Portugal. Looking

Employment and productivity in science

These remarks prompt us to consider the impact of recent recruitment on indicators of scientific productivity in Portugal, taking into account the precarious nature of many researchers' contracts during this time. A report published by the FCT on hiring scientists provides a provisional analysis of existing data sources from the last two decades. One of the findings in the report confirms a substantial increase in the number of doctoral-level researchers working in Portugal after the turn of the century, from a total of 8,725 in 1999 to more than 37,000 in 2018 (Ramos and Fonseca 2020: 13) indicating a significant transformation has occurred.

This leads us to inquire about the potential impact of this expansion on productivity levels, including the contribution to the scientific knowledge base. Fortunately, more recent data published by the national statistics agency's web portal, Pordata, allows us to gain some insight into what has transpired in terms of productivity within Portuguese scientific institutions during the period of growth. Figure 2 illustrates the number of outputs, including scientific publications and contributions to books and peer-reviewed journals, and the number of citations from authors based in Portuguese scientific institutions during this time. The statistics presented in Figure 2 suggest a relatively consistent growth in the number of scientific publications produced in Portugal over the forty-year span of this analysis, rising from a relatively low figure of 3,586 in 1981 to 28,298 in 2020. However, concerning the number of citations received, the picture is less impressive, with an increase in citations until 2013, peaking at 421,887, followed by a notable decline to 131,667 in 2020.

Insert Figure 2 about here

This significant decline in the number of citations is a matter of great concern, especially considering that this drop occurred during a significant quantitative expansion in the scientific workforce in Portugal. This suggests that there are issues within Portuguese science that warrant attention. We must be somewhat alarmed, and policymakers should note that during a time of expansion in scientific employment and the apparent growth in scientific production, there has been a substantial decrease in the contribution to the international knowledge base.

Regardless of the complexities surrounding citation systems and the intricate relationships between researchers, universities, states, publishers and scientific indexation companies, the number of cited works from Portugal serves as a reasonably good proxy indicator of the state of scientific health and a means of comparing the performance of different national and regional territories (Ampudia de Haro 2017).

One of the most apparent explanations for what has occurred within institutions is the relatively low number of permanent contracts awarded to recently recruited researchers. The high level of precariousness is not conducive to producing high-quality work. Researchers often cite this narrative to account for their challenges in publishing and securing grant applications. However, other factors may be at play, such as the reluctance of the most

at the figures for 2022, a total of 215 individuals were recruited as part of the government's 'Stimulation' programme for researchers, 272 via FCT postdoctoral contracts, alongside 152 lecturers, and 176 individuals via other programmes. In total, this meant 815 individual researchers and teachers being contracted. However, only 20.7 per cent of these contracts were permanent (*termo incerto*), meaning that they majority were for fixed-term periods, the vast majority for three years or less (OECD 2022a).

prestigious international journals to accept work related to topics closely associated with Portugal. This issue requires further investigation, particularly at a qualitative level and analysis of statistical trends to determine precisely what has gone wrong.

Internationalization of scientific employment

The discussion of these issues leads us to consider the role of internationalization in the evolution of scientific employment in Portugal, including migratory processes. As noted in the previous section, the migration of scientific knowledge, as reflected in the number of citations received from international scholars, does not appear to be developing healthily at the national level. It seems that knowledge circulation has not grown in proportion to the expansion of the workforce in terms of the number of new contracts awarded. In other words, having more scientists did not necessarily result in better quality or more impactful science.

Apart from considering the circulation of ideas, we should also examine the role played by incoming scientists as potential contributors to the development of Portugal's scientific institutions. Assessing their geographical mobility is challenging due to the lack of robust statistics regarding individuals migrating to Portugal. The scientific workforce is highly fluid in terms of the number of arrivals and departures and changes in nationality among those who have already migrated and become Portuguese citizens. Even though migrant scientists may represent a relatively small population, it is evident that Portuguese research institutions attract a significant number of overseas personnel, which contributes to internationalization processes within universities.

For instance, the institution this journal is affiliated with – ISCTE-University Institute of Lisbon – employs researchers and collaborators from 52 countries, representing 16% of its scientific community, with only 36% being full-time staff members. The recruits mainly come from other European countries (47%) and the Americas (33%), with the highest representation from Brazil (24%) and Italy (19%). The institution has also established international cooperation agreements with approximately 450 institutions across the EU, Australia, China, India, Africa and the Americas.³

It is worth noting that, although it is difficult to determine the exact number of foreign scientists currently working in Portugal, in principle, they should be able to integrate into national-level structures. For example, projects funded by the FCT must adhere to the principle that foreign staff have 'exactly the same' conditions as Portuguese researchers.⁴ Other forms of exchange can potentially enhance national institutions. Most notably, internationalization is reinforced by Portuguese scientists who have worked and studied abroad and subsequently returned to invest their academic expertise in their home country (Peixoto 2007; Firmino da Costa et al. 2012; Ramos and Fonseca 2020).

This question of what might drive or inhibit the migration of more scientists to Portugal from other countries, whether they are foreigners or returnees, is important. While Portugal has some attractions for personal and professional reasons, it is essential to consider the factors that could either encourage or deter scientists from moving to the country.

³ See: <https://www.iscte-iul.pt/conteudos/internacional/219/cooperacao-internacional> [Accessed 13 July 2022].

⁴ Further information available at: <https://www.fct.pt/faq/pr.phtml.pt?idFaq=64F6EF81-FBC1-4A32-86EA-C4E3549449B9> [Accessed 13 July 2022].

In doing so, it is important to move beyond the logic that underlies classical or neo-classical migration theories (Castles and Miller 2009: 21–2; Massey et al. 1987), which focus on economic costs and benefits alongside political themes such as global security. Instead, considering the prior discussion about the constitution of scientific epistemes, we should remember that knowledge generation and circulation tend to be concentrated in research hubs in core countries rather than at the geographical periphery. These hubs have a greater potential for generating ‘academic capital’ (Bourdieu 1984). This means that the appeal of Portuguese research institutions is somewhat diminished compared to their counterparts in countries like Germany or France. This is not only in terms of salaries and working conditions but also in the likelihood of gaining recognition. In other words, simply offering more money to attract scientists to Portugal would not be sufficient to attract the best talent.

There is no straightforward answer when considering what institutions in Portugal can do to attract more scientists from abroad. However, improvements in working conditions may make a small difference. Portugal’s appeal as a leisure destination is another selling point. Still, the presence of a large number of tourists can also act as a deterrent for career-oriented researchers, especially when ‘over-tourism’ leads to problems in local communities and housing markets (Milano, Cheer and Novelli 2019; Volo 2020; Malet Calvo and Ramos 2018). It is possible that those who are attracted to the country due to its reputation as a site for international tourism may be less motivated in terms of work or may have an inferior academic calibre. However, this argument is difficult to substantiate. Unlike other aspects of academic life, such as student mobility, which benefits from a well-developed tourism infrastructure in enhancing universities’ appeal (Author xxxx), such status may not necessarily help scientific institutions intensify their internationalization efforts or even hinder them.

A more significant enticement to attract scientists from abroad could be enhancing working conditions, particularly in reducing precarity. This issue is widespread internationally, and many scientists would consider migrating if it meant greater job security. The absence of precarity is highly marketable and an extremely effective inducement.

Future directions

Finally, questions also need to be asked about the evolving nature of scientific migration. This practice is not solely comprised of physical mobility, if it ever was, but incorporates a wide range of exchanges, including virtual and blended formats. The popularity of the digital nomad lifestyle has re-emerged in many countries, including Portugal (Makimoto and Manners 1997; Thompson 2019; Green 2020). While many of these practices have been long-standing features of scientific life, their prominence greatly increased during the Covid-19 pandemic, particularly during lockdown periods (Cairns and Clemente 2023).

The shift towards digital platforms also reflects the long-standing critique of the expansion of mobility, or ‘mobilities’, due to concerns about the negative impact on the environment, particularly related to aviation in particular (Adey 2006; Urry 2007; Cresswell 2011; Sheller and Urry 2006).

The migration of science may indeed be undergoing an evolution of its own, moving away from traditional physical migration towards less travel-dependent models. This shift could open up greater possibilities for recruiting foreign talent in Portugal without requiring these individuals to move to the country. The impact of developments such as the dematerialization of mobility on the migration of science and scientists remains to be seen. However, suppose

fragmented and partial methods of ‘migrating’ became the norm. In that case, the circulation of knowledge may also change, giving rise to new questions about the nationality of science and the ongoing need for physical infrastructure located in specific geographical locations.

Concluding remarks

When reflecting on migration in science and the development of scientific careers in Portugal, this discussion can be accommodated within existing debates on mobility and migration that acknowledge the challenges of transferring knowledge and people from relatively peripheral locations to the centre. It is also important to integrate the discussion of mobility among scientists into the debate and consider the consequences of what may be relatively low levels of incoming migration. This may partially explain the apparent under-performance of scientists based in Portugal concerning the citation of their published works. However, questions also need to be raised about how the expansion of the scientific workforce at the national level was managed.

Another important development is the shift from physical mobility towards virtual modes of exchange, with the Covid-19 accelerating the dematerialization of mobility. Digitalization is an issue that has already had a significant impact on the materiality of higher education institutions and may become even more commonplace in scientific work (Brooks and Waters 2018).

These reflections suggest that the migration of science is in a state of flux in the Portuguese context. Considering the evolving scientific landscape, efforts to expand and potentially ‘catch up’ with European neighbours regarding productivity and profitability must be managed carefully, with realistic expectations. This includes addressing the need for greater stability for both national and international scientists based in Portugal. The insecurity of tenure is widely seen as an obstacle to developing productive scientific careers and mainstreaming virtual working modes introduces additional uncertainties. The fact that some of these issues are already under discussion is promising, and a more thorough assessment of their effectiveness is needed before they are widely implemented.

In more theoretical terms, a specific form of governmentality is required regarding science. This entails having a greater degree of confidence in scientists and redefining universities and research centres not solely in terms of their teaching function but also their knowledge production. This, in turn, requires reconsidering funding models that currently encourage the enrolment of ever-increasing numbers of undergraduate students – an unsustainable practice – while failing to provide similar incentives for recruiting and retaining research staff.

Individual scientists also need to move away from a micro-level neo-liberal mindset. Instead of a somewhat narcissistic orientation towards an ‘entrepreneurial’ and ‘self-constructive’ approach to their careers (Dardot and Laval 2014: 123), towards producing knowledge that holds greater value for their host institutions and society. The neoliberal approach may have reduced the costs of investing in science for the state. However, it has also eliminated the imperative to produce knowledge that extends beyond satisfying the immediate needs of researchers. This has placed scientists in an epistemological hand-to-mouth existence, reliant on precarious contracts.

References

- Adey, P. (2006), 'If mobility is everything then it is nothing: Towards a relational politics of (im)mobilities', *Mobilities* 1(1), pp. 75–94.
- Ampudia de Haro, F. (2017), 'O impacto de (não) ter impacto: Para uma sociologia críticas das publicações científicas' ('The impact of (not) having an impact: Towards a critical sociology of scientific publications'), *Revista Crítica de Ciências Sociais* 113, pp. 83–106.
- Anderson, B. (1983), *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, London: Verso.
- Bourdieu, P. (1984), *Distinction: A Social Critique of the Judgement of Taste*, Cambridge, MA: Harvard University Press.
- Brooks, R. and Waters, J. (2018), *Materialities and Mobilities in Education*, Abingdon: Routledge.
- Cairns, D. (2022), 'Migration decision-making, mobility capital and reflexive learning', in D. Cairns (ed.), *The Palgrave Handbook of Youth Mobility and Educational Migration*, Cham: Palgrave Macmillan, pp. 25–34.
- Cairns, D. and Clemente, M. (2023), *The Immobility Turn: Mobility, Migration and the COVID-19 Pandemic*, Bristol: Bristol University Press.
- Cairns, D., Cuzzocrea, V., Briggs, D. and Veloso, L. (2017), *The Consequences of Mobility: Reflexivity, Social Inequality and the Reproduction of Precariousness in Highly Qualified Migration*, Basingstoke: Palgrave Macmillan.
- Castles, S. and Miller, M. J. (2009), *The Age of Migration: International Population Movements in the Modern World*, 4th ed., Basingstoke: Palgrave Macmillan.
- Cresswell, T. (2011), 'Mobilities I: Catching up', *Progress in Human Geography* 35 (4), pp. 550–8.
- Dardot, P. and Lévy, C. (2014), *The New Way of the World: Neoliberal Society*, London: Verso.
- FCT (Fundação para a Ciência e a Tecnologia) (2022), *Portuguese Atlas of Research Units*. Lisbon: Fundação para a Ciência e a Tecnologia.
- Firmino da Costa, A., Ávila, P., da Silva, B. and Ramos, P. (2012), *Inserção Profissional de Investigadores Doutorados: Condições de Acolhimento, Formas de Inserção, Perspetivas de Futuro (Professional Insertion of Doctoral Researchers: Conditions of Reception, Forms of Insertion, Prospects for the Future)*, Lisbon: CIES-IUL-Instituto Universitário de Lisboa.
- Foucault, M. (2002), *The Order of Things: An Archaeology of the Human Sciences*, London: Routledge.
- Green, P. (2020), 'Disruptions of self, place and mobility: Digital nomads in Chiang Mai, Thailand', *Mobilities* 15 (3), pp. 431–45.

- Makimoto, T. and Manners, D. (1997), *Digital Nomad*. Chichester: Wiley.
- Malet Calvo, D. and Ramos, M. J. (2018), ‘Suddenly last summer: How the tourist tsunami hit Lisbon’, *Revista Andaluza de Antropología* 15, pp. 47–73.
- Massey, D. S., Alarcón, R., Durand, J. and González, H. (1987), *Return to Aztlan: The Social Process of International Migration from Western Mexico*, Berkeley: University of California Press.
- Milano, C., Cheer, J.M. and Novelli, M. (eds) (2019) *Overtourism: Excesses, Discontents and Measures in Travel and Tourism*. New York: CABI.
- OECD (Observatório do Emprego Científico e Docente) (2022a) *Contratos Celebrados com Doutorados. Docentes e Investigadores. Após Início do Programa Estímulo ao Emprego Científico (Contracts signed with Doctorates. Teachers and Researchers. After the Start of the Scientific Employment Stimulus Programme)*. Available online at bit.ly/oecd-2022. Accessed 22 October 2023.
- OECD (2022b), *Welcome to OECD.Stat*. Available at stats.oecd.org. Accessed 21 June 2022.
- Peixoto, J. (2007), ‘Dinâmicas e regimes migratórios: O caso das migrações internacionais em Portugal’ (‘Migratory dynamics and regimes: The case of international migration in Portugal’), *Análise Social XLII* (183), pp. 445–69.
- Pordata (2022), *Statistics About Portugal and Europe*. Available at portdata.pt/en/Portugal. Accessed 21 June 2022.
- Ramos, A. and Fonseca, I. L. da (2020), *Instrumentos de Apoio à Contratação de Doutorados por Entidades do SCTN (Instruments to Support the Hiring of Doctorates by SCTN Entities)*, Lisbon: Gabinete de Estudos e Estratégia, FCT.
- Sheller, M. and Urry, J. (2006), ‘The new mobilities paradigm’, *Environment and Planning A* 38 (2), pp. 207–26.
- Thompson, B. Y. (2019), ‘The digital nomad lifestyle: (Remote) work/leisure balance, privilege, and constructed community’, *International Journal of the Sociology of Leisure* 2, pp. 27–42.
- Urry, J. (ed.) (2007), *Mobilities*, Cambridge: Polity.
- Volo, S. (2020), ‘Overtourism: Definitions, enablers, impacts and managerial challenges’, in H. Séraphin, T. Gladkikh and T. Vo Thanh (eds), *Overtourism*, Cham: Palgrave Macmillan, pp. 11–26.