

The Scientific Community: Creating a Language to Deal with the 'Everyday Geopolitics' of Neoliberal 'Transition' in Post-Socialist Serbia

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Abstract

In this article, I focus on the ways in which a particular group of people – astrophysicists in Belgrade, Serbia, alongside whom I conducted a year of ethnographic fieldwork in 2008 and 2009 – responded to the collapse of the Socialist Federal Republic of Yugoslavia. I argue that the conditions and effects of neoliberalising processes occurring in economic centres of the global world system affected scientists in Serbia before neoliberal modes of governmentality surfaced in this state. I pay particular attention to a trope I often came across, namely the reference to a supranational 'scientific community'. I consider how this term was mobilised with reference to the context of scientific and economic isolation during a portion of the 1990s, when a trade embargo and sanctions preventing formal international collaborations shaped scientists' everyday experiences. Yet, I argue, isolation also reflected the uneven distribution of opportunities for scientific endeavours emerging out of global neoliberalisation processes and resistance to them. Opportunities reached scientists in various parts of the former Yugoslavia at different speeds, a situation that was experienced as a hindrance for many scientists committed to living and working in the region. It is against this historical backdrop of isolation that I suggest scientists began to invoke their belonging to a supranational 'scientific community'.

Introduction: A Visit to 'Europe'

At the start of February 2009, whilst conducting field research among astrophysicists in Serbia, a note was posted on one of the observatory notice boards stating that a visiting trip to observatories in Prague and Vienna was being organised. I was excited, as I thought this would be an excellent opportunity to get to know people better. The trip had been planned by a (now) retired Professor, Prof. Marić,¹ who lived, and at the time of writing this article continues to live, on site at the observatory. Her father and son were, or had also been, resident astronomers at the observatory. The process for the trip, organised through a local (Belgrade) tourist agency, was relatively straightforward; a representative from the agency came with a presentation displaying pictures of the various sites we would visit. At this point, visa restrictions were still in place for Serbian citizens who wished to travel in the EU, and so all participants except me had to apply for a visa, which entailed a cost of €35. Partly due to the cost of the trip and existing groupings of friends, it was mainly older researchers who went on the trip. For instance, a PhD student related to me how she could afford one holiday a year and would rather go snowboarding with friends. Besides various researchers, a secretary and the daughter of the director of the observatory attended, which meant that around ten of us went on the trip altogether.

Whilst it turned out that due to time limitations, we did not visit the observatory in Vienna, we did make an excursion to a working observatory when visiting Prague. The observatory is located in the countryside, at a 40-minute drive from the Czech capital.² When we arrived, we were greeted by an attendant who spoke to us in Czech, which none of us understood except for basic sentences and gestures. We were told that we would be received as tourists, rather than as fellow researchers, and that we would have to pay a fee to view the observatory's exhibition. Whilst my knowledge of Serbian was

¹ I use pseudonyms throughout.

² Ondřejov Observatory. See <http://www.asu.cas.cz/history> (accessed 02 May 2012).

limited at that point³, I got a sense that several of us felt a little confused and bemused at being asked to pay a fee to look around a setting with which all except myself had an occupational affinity. Part of the observatory had been converted into a museum, a process which has by the time of writing this article also occurred in Belgrade, as much of the equipment on site is now redundant; at present, most data is obtained via internet sources which draw on a small number of powerful telescopes. Prof. Marić, who had a talent for managing connections (*veze*), had brought photos with her of an earlier visit she made to the same observatory, and left the group to visit the librarian and catch up.

We visited the exhibition and viewed some medium-sized telescopes, before visiting some much larger telescopes - each taking up more space than a squash court - housed in buildings a short walk away from the main site. The telescopes housed in larger buildings, several of which were now disused, were well maintained. Whilst those in Belgrade were not poorly maintained, the Belgrade astrophysicists had less funding for maintenance and there were significant problems with damp inside some of the observatory buildings. We then returned to the library to find Prof. Marić, who was still chatting with the librarian. The library was equipped with well-known journals such as *Science* and *Nature* to which the Belgrade observatory did not subscribe. These publications are expensive to subscribe to and are general scientific journals with papers on all kinds of recent research regarded as notable, rather than solely pertaining to astronomy and astrophysics. Having such journals gave us the impression that the library was well equipped and that the people there had the chance to gain a wider knowledge of the natural sciences. I overheard a comment about this being what we should 'expect' of the Belgrade Observatory, if the EU accession process continued. Overall, people were impressed with the observatory and the facilities such as the library and other well-kept observatory buildings there, despite having a wide variety of opinions on the EU as a political project.

³ I had just commenced my first period of fieldwork and had only conversational fluency.

The trip highlighted aspects of what Jansen (2009: 816) refers to as 'everyday geopolitics;' the ways in which wider economic and political processes, such as visa restrictions and exchange rates, impinge on and shape aspects of our everyday routines and experiences. Such factors, as the process of applying for a visa, being treated as fee-paying customers when visiting the museum, and the obvious inequalities concerning journal access, defined a shared situation, which differentiated the people with whom I worked – astrophysicists from Belgrade, Serbia – from the scientists in the Czech Republic, and finally also from me. In this case, they designated a state boundary within which political policy was designed to be enacted. My aim in this paper is to understand 'everyday geopolitics' as reflected in the practice of the Belgrade astronomers, especially their frequent invocations of the trope of 'scientific community.' Indeed, I focus on particular meanings of the trope of 'scientific community' acquired in the context of relatively recent scientific isolation and neoliberal 'transition.' This trip in particular invited comparisons with what scientists might expect, if one collectivity – 'Serbia' – continued along a 'transitional' path towards EU accession. A substantive part of such a transition involved implementing various reforms, many of which were neoliberal in emphasis, including the aim of producing what was referred to as a 'knowledge economy,' that I will explain in detail in the next section.

I explore the trope of 'scientific community' as I noticed it through participant observation, but also as it emerged in interviews I conducted with scientists about their work in Belgrade, Serbia, and in Zagreb, Croatia. I interpret those interviews through the perspective and detailed knowledge of the contexts I acquired through ethnographic immersion working at the Belgrade Astronomical Observatory from September 2008 to August 2009. As concerns this paper, whilst several of the themes investigated by scientists with whom I worked were astronomical, or astrobiological, rather than astrophysical, I use the term astrophysicist as an umbrella term covering all the work completed by scientists at the observatory, as such disciplinary sub-distinctions are irrelevant for the argument I make here.

‘Europe’ and the Knowledge Economy

The ‘knowledge economy’ model, in the form promoted by the EU, and as popularised by Drucker (1992), places an emphasis on scientific and technological innovations as key to securing a competitive advantage in global markets, with a focus on non-tangible products. Whilst this emphasis on competitive advantage is neither new nor solely characteristic of recent political changes, the increased acceleration and importance attached to scientific innovation does relate, as we shall see, to the international debt crisis of the 1970s, which also led to a neoliberal turn in policy making. I understand ‘neoliberalism’ here neither as a system (Dunn 2004) nor as a ‘culture’ (Comaroff 2001), but as a series of economic processes with accompanying new modes of governmentality (Foucault 2004), which as a political reaction to the debt crisis resulted in the ‘*remaking and redeployment of the state* as the core agency that actively fabricates the subjectivities, social relations and collective representations suited to making the fiction of markets real and consequential’ (Wacquant 2012: 68, emphasis in original). However, as we shall see, the establishment of new modes of governmentality does not necessarily occur simply as a result of the local enactment of neoliberal economic reforms.

Precipitated by the falling rates of profit in the US, the 1970s crisis resulted in political decisions emphasising a shift towards flexible accumulation, a mode of accumulation, which Harvey argued was:

characterized by the emergence of entirely new sectors of production, new ways of providing financial services, new markets, and, above all, greatly intensified rates of commercial, technological, and organizational innovation. It has entrained rapid shifts in the patterning of uneven development, both between sectors and between geographical regions, giving rise, for example, to a vast surge in so-called ‘service-sector’

employment as well as to entirely new industrial ensembles in hitherto underdeveloped regions (Harvey 1991: 147).

Key to understanding the emphasis on knowledge production and scientific innovation is the fact that flexible accumulation required 'greatly intensified rates of commercial, technological, and organizational innovation' (Harvey 1991: 147). This was because 'such flexible production systems have permitted, and to some degree depended upon, acceleration in the pace of product innovation together with the exploration of highly specialised and small scale market niches' (Harvey 1991: 156). The 'acceleration in the pace of product innovation' created in socialist states from the 1970s onwards a 'massive rupture produced by its [socialism's] collision with capitalism's speedup' (Verdery 1996: 36). For Verdery, capitalism is characterised by a linear, accelerating experience of time, for 'efforts to increase profits by increasing the velocity of capital circulation are at its very heart' (Verdery 1996: 35).

Key to Verdery's argument is the idea, taken from Harvey, that capitalist societies, unlike socialist societies, require a particular temporal logic of increasing speed and circulation of capital, in part necessitated by the tendency of the rate of profit to fall. Neoliberal changes and a rapid 'speed up' encouraged by the conditions of the 1970s debt crisis thus led to a widening division between socialist and capitalist states. These changes had a direct impact on policy and strategy making by states in the EEC (European Economic Community) after the collapse of the Soviet Union at the turn of the 1990s. The EEC, known from 1992 as the European Union (EU), was a grouping of states that signed trade agreements promoting further economic integration and the intended creation of a single market. Following the collapse of socialism, the EEC hoped to expand with the goal of creating new markets in zones that were formerly part of the Soviet Bloc or SFRY.⁴ The common market emphasis in EU policy meant that aspiring EU candidate states were forcefully induced to embrace post-Fordist

⁴ Socialism in the SFRY differed substantially from the Soviet model, the state declaring itself non-aligned and pursuing after 1948 a more decentralised 'market socialism' named self-managing socialism.

principles, although the desire for expansion was influenced by the stability of political and economic conditions in the various post-Socialist regions.

How and when did neoliberal reforms reach Serbia, and what impact did they have on scientists? In 1989, the Prime Minister of Yugoslavia, Ante Marković, attempted to implement a series of free-market reforms including a new *Zakon o preduzećima* (Law on Enterprises), which encouraged privatisation (Allcock 2000). He was informed by the US economist Jeffrey Sachs, one of the leading ideologues of neoliberalism. However, the reforms were barely enacted. During the 1990s, whilst Milošević's government paid lip service to privatisation processes, the embargo situation was hardly conducive to foreign investment and the crisis and war fought in other regions of former Yugoslavia meant that structural adjustment reforms were hardly at the top of the government's list of priorities. By the turn of the millennium, when Milošević's government ended and 'democratic transition' occurred in October 2000, less than 10 per cent of public capital had been privatised (Begović et al. 2000), and, of those firms that indeed had been, private monopolies were often established as members of the former Communist party sold off state enterprises to their friends. The privatisation of state enterprises took place in a series of rounds, its success also being determined by the ability of the firms to attract investors. This means that the process occurred in a drip-fed form in Serbia, where the impact of war and sanctions meant that conditions were deemed too unstable for investment by many firms, particularly during the 1990s and the first few years of the new millennium. Whilst the privatisation process had been completed for many more firms by the time I conducted fieldwork, as concerns the scientists with whom I worked, the institute was state-funded and private investment was only significantly visible in the sponsorship of the science fair (*Festival nauke*), possibilities for applying for certain kinds of funding and projects promoted abroad and encouraged by the private sector, and the promotion of the activities of centres for schoolchildren to work on scientific projects (*Petnica*).⁵

⁵ See <http://www.festivalnauke.rs/> and <http://www.petnica.rs/> (accessed 24 September 2012).

The embracement of neoliberal policies created many opportunities for scientists globally, as the accelerated speed in product innovation required a competitive advantage in global markets, and led to a focus on increased funding for many scientific projects as drivers of innovation in a 'knowledge economy.' This idea of the importance and profitability of 'knowledge' became central to organisations promoting post-Fordist regimes of flexible accumulation. In the case of astrophysics, new information and visual technologies led to several disciplinary innovations often captured by the term 'the information revolution.' Specifically, the increase in time-space compression required under the conditions of neoliberal transformations (Harvey 1991) had serious implications in terms of collecting and processing data for a discipline that is focused on understanding and creating images of objects and processes located far away in space-time. As we shall see, the importance attributed to information and communication technologies, as well as the stress on technological innovation, has completely transformed much of the work conducted by astrophysicists. The obviously larger amount of funding that the observatory near Prague received suggested, given the aforementioned details of the historical context, that steps had been taken there to pursue this particular competitive 'knowledge economy' paradigm, and the expectation that we were to pay an entrance fee suggested increased commercialisation.

For the scientists in Belgrade with whom I worked, these transformations were taking place against the backdrop of scientific isolation due to the aforementioned sanctions placed against science and scientists in Serbia and Montenegro (then the Federal Republic of Yugoslavia – FRY). They were imposed as this region was understood by the UN Security Council as responsible for most of the fighting during the Yugoslav wars. These sanctions came into effect in May 1992 when the UN Security Council passed a resolution calling for the suspension of 'scientific and technical co-operations and cultural exchanges and visits involving persons or groups officially sponsored by

or representing the FRY.⁶ This was part of a much wider series of measures, including the embargo.⁷

Following the ‘democratic transition,’ as mentioned earlier, privatisation of public capital increased, although Serbia was not declared as a potential candidate for EU accession until later, in 2003. As concerns apparent opportunities available to scientists through EU membership, among others also visible on the trip to the observatory near Prague, there was also a distaste experienced by some at that time, caused by a sense of *nadziranje* (monitoring), which was manifested through what Greenberg referred to as a ‘judging Western gaze’ (2010: 44). I, an academic having grown up in a Western European (UK) tradition, was sometimes, especially upon arrival, understood as representing that judging gaze, and on occasion even UK foreign policy, by some of the scientists at the observatory. Differences such as the preferential visa treatment I received on the trip also set me apart from them.⁸ This leads us to the question of how scientists described and interpreted their relationships with other researchers, including those at the observatory in Prague and with myself, against the backdrop of recent conflict, isolation, and political change.

The Scientific Community

I found that on the trip, and frequently both in interviews conducted and participant observation at the observatory, astrophysicists would often define their relations with other researchers the world over in terms of belonging to a ‘scientific community.’ For example, Prof. Marić took photographs of an earlier visit she had made to the observatory near Prague several years before, and spent a portion of her time chatting

⁶ The UN security resolution is available online at: http://www.hm-treasury.gov.uk/fin_sanctions_bosnia.htm (accessed 6 July 2011).

⁷ This followed the beginning of the war in Bosnia after the country’s declaration of independence in April 1992.

⁸ See Jansen (2009) for a discussion of visa regimes.

to members of the observatory and showing them the photographs rather than joining the rest of us in the museum, thus choosing to foster already established, personalised connections rather instead of dropping into the role offered to us as tourists. On a different occasion, when discussing the period of sanctions in the early to mid-1990s, the period in which a number of technological changes were taking place and some, but by no means all academics were beginning to use email, one professor in Belgrade remarked that the isolation meant that 'we lost this initial step in joining the scientific community in that period and this is sad.' This professor's reference to the 'scientific community' was not an isolated case. When visiting Zagreb to conduct interviews with astrophysicists there, another professor commented:

People abroad are very friendly. Science communities are like family. This is why I was always happy, especially in astronomy. You don't have a lot of people. In physics (compared to astrophysics), the physics community is a large community, as in biology or whatever. So I would not expect such cosiness and friendship in them. But in astronomy, astrophysics, you see membership in the International Astronomical Union, which is a professional organisation; I think it is still less than ten thousand members. Membership is by PhD, let's say. So it's less than ten thousand. This is still a small community.

This professor described a feeling of 'being small' that generated a sense of cosiness and familiarity. For him, 'the scientific community' was composed of smaller communities divided by discipline. As such, this feeling of 'being small' was encountered in a disciplinary sense (astrophysics being small compared to physics) into which this scientific community was divided.

The commitment that scientists expressed through reference to a supranational 'scientific community' was especially interesting because it contrasted with the more individual and dynamic focus of a neoliberal 'knowledge economy' in the policy literature. Namely, the concept of a 'scientific community' emphasised a group

solidarity that could help overcome the effects of scientific isolation, whereas the policy literature promoting the knowledge economy painted a different picture of scientists in a more liberal cosmopolitan vein emphasising the importance of mobility, innovation, and autonomous actions of individuals maximising their potential as bearers of 'human capital.' Indeed, the scientists' use of the term community here resonated with the wider sense of the term as used by Anderson (2006: 7) in his discussion of nationalism who denoted it as a sense of 'deep horizontal comradeship' across non-contiguous areas of space-time, even though, unlike in Anderson's example, scientists in Serbia were deeply aware of the existence of hierarchies. For instance, they had to publish and present their work at conferences in English. Anderson's and the scientists' use of the term 'community' contrasts sharply with the 'traditionalist' definition of community as an emergent social dynamic characteristic of small-scale, face-to-face environments, as the concept was understood by Tönnies (2011) and Durkheim (1984). Whilst there is a large anthropological literature on the topic of 'community' (see Cohen 1985; Green 1997; Joseph 2002; Turner 1995; Wenger 1998), rather than surveying the anthropological literature, my interest in this article, in an ethnographic vein, is to focus on how and why the trope of the 'scientific community' was mobilised in this particular historical and political context.

One key aspect defining the ideal of 'the scientific community' as mobilised by astrophysicists in Belgrade, was that political and cultural differences were put aside for the purpose of advancing science. This vision is expressed below in a statement issued by the ICSU (International Council for Science) that one professor read out to me:

Non-discrimination, in pursuing its objectives in respects to the rights and responsibilities of scientists, ICSU, as an international non-governmental body, shall observe and actively uphold the principle of the universality of science. This principle entails freedom of association, expression, information, communication and movements, in connection with international scientific activities without any discrimination on the

basis of such factors as citizenship, religion, creed, political stance, ethnic origin, race/colour, language, age or sex. ICSU shall recognize and respect the independence of the internal science policies of its national members, ICSU shall not permit any of its activities to be disturbed by statements of actions of a political nature.⁹

This universal, enlightenment vision was also observed by anthropologist Traweek, who argued that, for the particle physicists with whom she worked, 'culture [was] not an issue' (Traweek 1992: 78). What she meant by this was that whilst the scientists with whom she worked unhesitatingly understood themselves and others as belonging to a 'nation,' the importance of those 'national differences' was minimal and, as far as communicating science was concerned, non-existent. One professor at the observatory, Prof. Sandić, made this connection explicit in my interview with him. He described the familiar objects he would find in observatories the world over, and implicated knowledge of a common way of engaging with them, as inculcated through disciplinary training:

My opinion is that science must be completely international and I believe astronomy is a good example of this because every astronomical observatory in the world is my house, and I can find my books, articles, friends, colleagues, and start working immediately.

References to 'scientific community' were particularly pertinent in the context of isolation, when scientists were acutely aware that a huge number of changes concerning the collection and management of data were taking place in the discipline. Nevertheless, I found that whilst the scientific community as *ideal* was often invoked, in reality the situation was far more complex.

⁹ For an updated version, see the section *Universality of Science* on the ICSU website which explicitly cites the intention of building an international scientific community. Available online at: http://www.icsu.org/what-we-do/@category_search?path=/icsu/what-we-do&Subject:list=Universality%20of%20Science (accessed 06 July 2011).

Tensions

The intention inherent in the ideal of a ‘scientific community’ was that the shared occupational focus would override political concerns. This was made clear in an assertion the director of the Belgrade observatory made in an interview I conducted with him. He made the following comment whilst recounting steps taken by the International Astronomical Union during the 1990s to sidestep the sanctions placed against science and scientists from the FRY, so that he could attend a conference in Germany: ‘They were people who just don’t like politics; you know how the scientific environment is different from the political.’

This assertion warrants further investigation, as it contradicts the view I consider as anthropological common sense that where there are people there are politics.¹⁰ The view of the ‘scientific community’ as above or outside of political processes evidently did not hold, as the following examples make clear. First, we encountered several differences at the observatory in Prague and on the trip more generally, which were expressly political. For instance, I, understood and treated as a UK citizen, experienced privileged visa treatment throughout the EU. Also, when we visited the observatory in Prague, it was clear that the scientists there had more income to spend on subscriptions to magazines such as *Science* and *Nature*, and despite our best intentions, we were received as paying customers, a fact which bemused several of us. Such differences in resources available to the observatories in Belgrade and Prague problematised any possible horizontality to the comradeship observed among members who understood themselves as part of distinct national communities of scientists in a global scientific community.

¹⁰ See Candea (2011) for a discussion of this view and a novel account of a space for the ‘non-political’ in the anthropology of politics.

As mentioned earlier, the scientists with whom I spoke largely regarded themselves as *Serbian* scientists, in a *larger community* of astrophysicists and astronomers the world over. Publications such as the *Serbian Astronomical Journal*¹¹ and the series of conferences titled *Development of Astronomy among Serbs*¹², which uses an explicitly national frame, are testament to this view. Furthermore, in the case of former Yugoslavia, this perceived cultural belonging *was* a concern for some of them, due to the recent context of war. There were very few 'Croatian' scientists working in Belgrade and very few 'Serbian' scientists in Zagreb. For instance, one professor whom I interviewed in Zagreb had a recognisably Macedonian surname. He related how it was very unlikely that he would ever be accepted to join HAZU¹³ (the Croatian Academy of Arts and Sciences) because of the ethnicity marked by his surname. Finally, a PhD student recounted to me how a scientific meeting had been organised in Bosnia and Herzegovina. According to her, the meeting took place in a hotel at which the conference organisers, who identified as Serbs, slept. Attendees who identified as Bosnian Muslims chose to sleep in another hotel and walk a mile to the conference hotel each day, and the student described the atmosphere at the conference as 'strained.'

If the reality was, as shown in this section, that political differences could not be removed from interactions between scientists, then why did many scientists invoke 'the scientific community' as an ideal? Also, how were such references shaped by the relatively recent scientific isolation and specificities of neoliberal policy making in global economic centres, which in turn affected science and scientific environments in Serbia? In order to formulate possible answers to these questions, it is worth probing anthropological perspectives on what it means to 'belong' to a community and the effects of recent scientific and technological changes on the situation in Serbia.

¹¹ See <http://saj.matf.bg.ac.rs/> (accessed 9 January 2012).

¹² See http://aquila.skyarchive.org/6_DAAS/html/index-e.html (accessed 9 January 2012).

¹³ In Croatian: *Hrvatska Akademija Znanosti i Umjetnosti*.

Time-Space Compression and the Effects of 'Catch-Up'

Anthropologist Joseph's (2002) study of invocations of community amongst people involved in the running of a gay/lesbian theatre, *Rhinoceros*, in San Francisco is particularly revealing here as, like 'scientific community,' it concerns invocations of 'community' amongst people who had previously never met, yet who supposed had some kind of affinity.¹⁴ Reference to 'community' by research participants/interlocutors in Joseph's study served the purpose, she argued, of maintaining particular inclusions and exclusions, a theme Green (1997) also explored in her study of lesbian feminists' contestations of identity in London, and which clearly applies to national 'community' in the examples I gave above. In Joseph's view, and implicit in Green's understanding of how the term 'community' was mobilised, 'community' was a dangerous word, for one was typically 'in' or 'out' of the community, and reference to such a community functioned as a distancing or solidarity-giving strategy.

In the case of astrophysics, being understood as a community member depends upon professionalisation and disciplining. Such membership was necessary for scientists both to travel and to access resources in relatively far-off locations. In turn, such maintenance of contacts would enable scientists working on similar themes to have a continued shared sense of mission. Reference to a global scientific community was thus a discursive means by which differences manifest between researchers working in different states were brushed aside on the basis of a commonality. This commonality could only be maintained through drawing on a roughly equivalent set of practices, a set of practices that were rapidly changing under the conditions of new technological innovation, as referenced by the now obsolete telescopes being transformed into museums. In order to maintain a feeling of shared mission, both collaboration and technological 'catch-up' were necessary. This is because practices depend

¹⁴ Her analysis, however, takes a case on a sub-state level in a state making liberal, multiculturalist claims.

fundamentally on access to technological innovations, such as computers and telescopes. The pace of change concerning such innovations was particularly pronounced under the pressure of increased product-innovation characteristic of flexible accumulation, which led to the production of many new technologies, often in economic centres of the global world system.

In the case of astronomy and astrophysics, data collection being historically biased in the Northern Hemisphere, recent changes have meant that, 'in the last quarter of a century, the increasing speed and economy of modern air travel and ease of communication have permitted the development of southern sites with facilities at least equal to those in the north' (Hoskin and Gingerich 1999: 307). Information technologies, such as the development of photosensitive charge-coupled devices (CCDs), have meant that modern telescopes capture many more photons which hit the photographic plates, with the result that a '30-inch telescope in 1990 could record more photons than the 200-inch could in 1960' (Hoskin and Gingerich 1999: 309). In addition, telescopes that encompass a much wider region of the electromagnetic spectrum have been developed and researchers now have access to observations from telescopes located above the atmosphere, like Hubble. In terms of disciplinary advancement, such innovations had a largely positive effect on advancing knowledge through the increased accuracy, precision and range of telescopic observation, and information management. The internet and increasingly fast computer processing also led to radical transformations in disciplinary practices, from requiring craft skills and large on-site telescopes to requiring skills in computer programming and simulation.¹⁵

To be continually recognised as a legitimate member of 'the scientific community' thus required maintaining and fostering links with state-of-the-art techniques, which relied on funding and the import of new technologies. During periods of relative isolation like

¹⁵ I am not suggesting here a technological determinist argument, that practices were/are determined by new technologies. They were, however, shaped in an important way by the new technologies, and equally by new forms of organisation that were developed surrounding them; to have continued input into disciplinary discussion meant that astrophysicists had to, more or less, keep up with the state of the art.

the recent period of war, and especially under the sanctions placed on Serbia for a portion of the 1990s, I speculate, on the basis of the interviews conducted with scientists, that repeated reference to ‘the scientific community’ may have promoted continued interaction and filled a gap created by a lack of access to the latest equipment or a feeling of ‘lagging behind.’ This lagging was produced by the ‘epistemological gap’ created by difficulties in accessing the latest publications and state-of-the-art techniques. This presented neoliberal changes as potentially hindering the ability of the observatory in Belgrade to continue being a global player. The options involved either a (potentially costly) attempt to catch up, or ‘falling behind’ technologically and recognising a new niche for research conducted at the observatory – such as focusing on theoretical problems, or manipulating internet-gained data collected in other locations that could afford expensive telescopes.

This condition of playing technological catch-up constituted an important dimension of what Blagojević (2006) described as the semi-periphery. In economic terms, this is constituted by a relative lack of funds compared to the ‘centre,’ entailing what she termed ‘slow’ or ‘impeded’ modernisation. This condition, a fact of the current historical moment, is according to the same author characterised by its instability, ‘because it is open to two different possibilities at the same time: to catch up with the centre, or to be pushed further into the periphery’ (ibid. 2006: 165). The opportunities neoliberal changes offered were thus unevenly distributed to scientists working across the globe and even hindered scientists working (and hoping to continue working) in some locations, an illustration of what Smith and Harvey (2010) refer to as ‘uneven development.’

Post-Fordist changes in governmentality also arrived at different speeds. Whilst the collapse of the SFRY can be understood as relating to the effects of neoliberal policy making, the organisational techniques characteristic of neoliberalism were not in general use. Namely, ‘audit cultures’ (Strathern 2000) – one of the cornerstones of neoliberal governmentality consisting of bureaucratic procedures of accountability put in place in institutions across the world and legitimised by the goal of ensuring

'efficient' allocation of resources – were not performed when I conducted fieldwork at the observatory. Instead, scientists continued to receive funding from the government and work on projects defined in conjunction with discussions taking place at the Ministry of Science and Technology. Only with the arrival of an FP7 grant – an EU funding project for sciences – after I had left, did extensive 'checking procedures' and resultant large amount of uploading information to the FP7 website become a feature of some scientists' work.

Rather than manipulating expensive equipment, I found that scientists at the Belgrade Astronomical Observatory spent most of their time working on computers and occasionally travelling to other locations, chiefly in Europe, to use telescopes. Some scientists ran theoretical simulations whilst others drew on databases of observations from telescopes located in other parts of the world to make their own observations. This shows how the set of common practices on which they drew, and how they experienced a perceived membership to a common, supranational 'scientific community,' were affected by the geopolitical position in which they found themselves. The economic situation and the political sanctions that had been placed against them in the 1990s constituted two central dimensions to this geopolitical positioning.

Whilst the augmenting reliance on increasingly expensive technologies may have proved a hindrance for some scientists, certain changes had a positive democratising effect. The availability of international data banks of observations from observatories throughout the world via the internet is a prime example, when no subscription charges are levied. One of my interlocutors, Prof. Aleksić, related to me how small observatories such as the one in Belgrade have been able to capitalise on this by, for example, making observations when the centres, that is, large observatories, are on leave (for example, on 25 December). Semi-peripheral positioning thus necessitated, on the part of science policy, careful consideration of the kinds of projects in which it is worth investing time and energy, and questions of with whom one collaborates. It also created, as we have seen, an environment in which scientists were forced to 'take a

position' on the centre, with some feeling resentment and cynicism towards 'catch-up,' whilst others pressed for closer alliances.¹⁶

Some scientists with whom I spoke tempered recent technological innovations with viewpoints stressing how such innovations had come at a great human cost, citing the levels of poverty and extensive class differentiation typical of the UK and US. They felt that a dependence on following the fashions of the centre, or of striving to be like the centre (conceived in the region as Western Europe/the US) would lead to a permanent state of being 'second best' and that instead, scientists ought to focus more on taking research in different directions. In the face of a lack of shared practices compared with states in Western Europe in this period, and under the conditions of an imposed 'catch-up,' I suggest that the use of the phrase 'the scientific community' was particularly pronounced as a means of building bridges and emphasising collaboration with other research groups.

Conclusion

In this article, I have described the context and conditions under which neoliberal transformations affected a group of astrophysicists in Belgrade, Serbia, in a number of different ways. The collapse of socialism in Eastern Europe affected scientists through changes that led to war, isolation in some parts of former Yugoslavia, and reduced ability to take advantage of the opportunities opened up by neoliberalisation. For scientists in the Federal Republic of Yugoslavia, these changes led to a feeling of 'lagging behind' in a wider global context in which technological changes were occurring swiftly. I have suggested that the invocation of a supranational 'scientific community' took on particular salience for scientists working under such conditions in Serbia. To conclude, then, whilst specific organisational models and techniques typical of neoliberalism, such as audit cultures, only began to arrive several years after the

¹⁶ See Janković (2004) for a historical account of a semi-peripheral niche in meteorology.

'democratic revolution' in the year 2000, and are only now increasing in importance with the possibility of FP7 funding, the conditions that scientists found themselves in in Serbia after the end of the war were in turn shaped by the advance of neoliberal policy making in other junctures of the global world system. These changes proved to be a hindrance in terms of remaining at the centre of the discipline for scientists conducting research in former Yugoslavia.

About the Author

Andrew Hodges holds a PhD in Social Anthropology from the University of Manchester. He has conducted ethnographic fieldwork over eighteen months in 2008–9 with scientists in Belgrade, Serbia, and Zagreb, Croatia, analysing their experiences of post-socialist 'transition' and economic crisis. He also has a strong interest in social activism and the relationship anthropology has with activist involvements of various kinds, participating in antifascist initiatives in Serbia and Croatia.

Acknowledgments

Thanks to Stef Jansen, Paul Stubbs, Sharon MacDonald, Čarna Brković and the *Institut za filozofiju i društvenu teoriju* at the University of Belgrade for comments on earlier versions of this paper, and the insightful comments from the reviewers. This work was supported by the Economic and Social Research Council [grant number ES/F022727/1].

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