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Science of science at Sussex University

Abstract. The aim of this paper is to discuss the history of the Science Policy Research Unit and place it within the broader framework of the University of Sussex and the intellectual context of the period. This brief introduction helps to understand the origins of the Unit and the role played by such figures as Chris Freeman, Geoffrey Oldham, Jackie Fuller, and Roy MacLeod. The description of intellectual context includes the influence of sociological approaches to science which were strong in the second half of the 20th century.

Keywords: SPRU, Science of Science, philosophy of science, sociology of science, science policy

Naukoznawstwo na Uniwersytecie w Sussex

Abstrakt. Celem artykułu jest omówienie historii jednostki badawcze *Science Policy Research Unit*, wskazanie jej miejsca i sposobu funkcjonowania w ramach struktur Uniwersytetu w Sussex oraz przedstawienie kontekstu „intelektualnego" towarzyszącego jej powstaniu. To krótkie wprowadzenie pozwala zrozumieć genezę powstania jednostki oraz rolę jaką odgrywali w niej m.in. Chris Freeman, Geoffrey Oldham, Jackie Fuller, czy Roy MacLeod. Opis kontekstu „intelektualnego" dotyczy głównie wpływu podejść socjologicznych na naukę, które były szczególnie silne w drugiej połowie 20. wieku.

Słowa kluczowe: SPRU, naukoznawstwo, filozofia nauki, socjologia nauki, polityka naukowa

When I received this very welcome invitation, I immediately wondered where I would have to look for material on the history of the Science Policy Research Unit. An hour or so later, I discovered that it had recently produced its own history, tracing its development and research output in considerable detail. Since this material, which includes audio files of interviews, is easily accessible on-line,[1] I shall concentrate here on putting the history of science studies at the University of Sussex into the broader framework of the University and the intellectual context of the period.

Sussex, which opened in 1961 with 52 students and soon moved to a rural campus on the edge of the south coast resort of Brighton, was the first of the UK's 'new' or 'plate-glass' universities set up in the 1960s, with an autonomy in the construction of its curricula which it exploited from the beginning. The first vice-chancellor (rector), John Fulton, appointed the historian Asa Briggs (1921–2016) as pro-vice-chancellor and Dean of the School of Social Studies, one of several schools

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[1] http://www.sussex.ac.uk/spru/about/history. The materials are available for consultation at the University's archive: thekeep.info

in which undergraduates studied their major subject along with interdisciplinary or 'contextual' courses, throughout their programme and on a 50–50 basis. A student of sociology, for example, could be located in one of the two schools focussed on social science and cultural studies or in the three with a geographical focus: European Studies, African and Asian Studies and English and American Studies, which contained roughly equal numbers of staff from social science and humanities subjects. The binary division between the natural sciences and the rest was bridged by an 'Arts/Science' programme in which students in one took some courses from the other. The founder of the philosophy department established it on the zoological principle that it should represent as far as possible the diversity of species of philosophy, and it included colleagues working on, for example, Merleau-Ponty and Santayana. Jerzy Giedymin, who had been Professor of Logic and Philosophy of Science at Poznań, taught from 1971 in the School of Social Sciences and later in the School of Mathematical and Physical Sciences. Having published on Popper in Poland, in an article in 1959, 'Inductivism and Anti-Inductivism', he later brought the work of Ajdukiewicz to the English-speaking world in a book published in 1978, in which he stressed 'how much of the so-called "new empiricism" of today was anticipated by Ajdukiewicz in the early thirties and the early fifties.' (Giedymin 1978: xi; see also Giedymin 1975) He was also interested in the work of Roman Ingarden but did not, as far as I can see, write about it.

Professor Fred Gray, who edited the volume *Making the Future*, published in 2011 to mark the University's 50th anniversary, wrote: "Briggs, with wonderful imagination and intense determination, drove forward the making and development of Sussex." In his essay in *The Sussex Opportunity*, an earlier book that celebrated the University's first 25 years, Briggs, who succeeded Fulton as Vice-Chancellor in 1967. himself wrote: "We felt a sense of privilege in being allowed to build a new university." There is a lecture by Briggs in 2008 on http://www.sussex.ac.uk/newsandevents/sussexlectures/2008?lecture=21&fmt=qt and another, on the sciences at Sussex, in 2012: http://www.sussex.ac.uk/newsandevents/sussexlectures/2012?lecture=96&fmt=qt

This institutional context at Sussex formed the background to the creation in 1966 of the Science Policy Research Unit; Chris Freeman (1921–2010), an economist who had worked in innovation studies using Kondratieff models, was invited by Briggs to direct it, which he did from 1966 to 1982. He also founded in 1971 the journal *Research Policy*, which is still edited from SPRU. The Unit began with Freeman, another economist, Geoffrey Oldham, and an administrator, Jackie Fuller, and quickly acquired the historian of science Roy MacLeod, now Emeritus Professor at the University of Sydney. MacLeod describes its beginnings:

> I arrived at Sussex with the Michaelmas Term, 1965, in the School of Social Studies to work with Asa in fact, he wanted me to help him. He was working at the time on the history of the BBC

and I had worked a lot on science communication, partly in relation to the history of science but also partly in relation to contemporary science and its larger social dimensions and I was particularly keen to see what Asa had in mind to do in the arts/science issue at Sussex. This was the time of CP Snow and 'The Two Cultures' and I was very much taken up with that… And as you may know there was from the very beginning, plans, provision for an Arts/Science Scheme at the university and, although it wasn't put to me in quite so many words, it seemed clear that Asa wanted me to contribute in some way to that. As it happened, fortuitously in my second or third month at Sussex – it must've been the autumn of '65 – Asa helped by Stephen Toulmin, his friend from Leeds, as before conceptualized the notion of a science policy unit, a unit for the study of science policy as it was then called, which took its start about the 1st January, as I recall, 1966. And Asa thought it would be sensible for me to join that group, a group of two at the time, and I did, and that was the beginning of SPRU.

At the SPRU Fiftieth Anniversary launch event Lord Briggs remarked to MacLeod that: "establishing SPRU, with others at the University Sussex, was one of the achievements he was proudest of in his whole academic and public-service life". Of the many other prominent scholars attached to the unit, perhaps the best known in this part of the world were the social psychologist Marie Jahoda (1907–2001), renowned for her earlier work in the early 1930s on the unemployed of Marienthal, and the political economist and peace theorist Mary Kaldor, now at the London School of Economics and working, inter alia, with a Polish colleague there on responses to Brexit on the mainland.

Another journal, *Science Studies* (now *Social Studies of Science*) was established by Roy MacLeod and David Edge, of the Science Studies Unit at Edinburgh, in 1971.[2] The first editorial noted that

Over the past five years, the study of 'science policy' has acquired international importance, and some academic currency… At the same time, the social framework in which the intricate conceptual structures of modern science have developed has begun to attract historians, sociologists and philosophers searching for analytical keys to the study of knowledge, the evolution of the scientific community, and the normative assumptions implicit in different scientific roles.

MacLeod restated this theme in 2011 in a statement when he was a guest at the Lichtenberg-Kolleg at Göttingen:

Recent scholarship has drawn attention to the shifting roles and responsibilities of scientific experts and technical expertise in modern Western society. In a tradition that extends from Max Weber and Karl Mannheim to Florian Znaniecki and Jürgen Habermas, historians and sociologists have discussed the origins and nature of the 'social contract' that has come to exist between producers of new knowledge, the institutions they have created, and the consequences for which they have been held accountable. For the last four decades, the emerging discipline of the 'social studies of science' has set itself the task of illuminating these contingencies and their role in shaping the relations of knowledge and power.

[2] The journal included in 1975 a 'Country Report' on Polish 'science of science' by Bohdan Walentynowicz, editor of Zagadnienia Naukoznawstwa.

MacLeod set up in 1970 another academic unit at Sussex, History and Social Studies of Science, which was located in the School of Mathematical and Physical Sciences and offered both undergraduate courses and an MSc on which I taught from 1974 until some time in the late 1980s. HSSS and SPRU represented in a sense the two main poles of science studies at Sussex, with SPRU (into which HSSS was absorbed in 1983) focussing on externally funded research in the political economy of science, technology, innovation and warfare, and HSSS pursuing more historical and qualitative research and teaching (including provision for SPRU students).[3] As well as MacLeod, the core of HSSS included Brian Easlea, who transferred from physics after a life-transforming visit to Brazil and taught an extremely popular arts/science course. Unlike the much better supported Science Studies Unit at Edinburgh, with David Edge, David Bloor, Barry Barnes and for a time Steve Shapin, HSSS was starved of resources by the University and marginalised in the School. The Arts/Science programme, on which I also taught at least once and my Sociology colleague Kevin McCormick taught a course on The Engineer and Society, also withered, and after the withdrawal of the Arts Schools became little more than a way of enabling science students to develop skills of academic reading and essay-writing. (One group of students arrived expecting me to teach them about *painting*.)

I now turn to the broader intellectual context. At the beginning of the 1970s, the sociology of scientific knowledge was in its infancy (Shapin 1995), and Hermínio Martins (1973) pointed to the gap between the 'sociology of knowledge' – itself a rather marginal activity in sociology and the more institutional sociology of science, which was really a sociology of 'scientific communities' – though Robert Merton covered both, as in his 1945 'Paradigm' essay (Merton 1945). Martins was concerned to head off a tendency in the social sciences to pursue notions of paradigm and epistemic consensus, shaped by positivism and the growth of technical methodology, arguing instead for the study of controversy, 'cognitive agonistics', in both natural and social science.[4]

The variations noted by Duhem (1906: 100) in what Ludwik Fleck (1936) was to call 'thought styles' are relevant both to the reception of physics[5] and of the social sciences – the latter torn between the imitation of natural science and alternative antinaturalistic approaches.[6] Kuhn's intervention in 1962 was rightly perceived as a threat to what had come to be called the 'standard view' in the philosophy of science: a Vienna Circle empiricist model, more or less modified with Popperian

[3] David Edge was a close friend of Keith Pavitt, another leading scholar at SPRU.

[4] See Castro, Fowler and Gomes 2017.

[5] Paul Forman (1970) suggested that quantum theory was welcomed in part in Weimar Germany because it counted against popular critiques of scientific determinism. In the German-language discussion, the key term was the perceptual accessibility (*Anschaulichkeit*) of physics – particularly that of quantum theory.

[6] On the disjunction between philosophy of science and historical and sociological studies of scientific knowledge, see, for example, Golinsky 2011.

epicycles. Although it was possible for Popper and his followers to claim that puzzle-solving normal science was simply not good science by the standards of critical rationalism,[7] this conception of philosophy as a slightly weltfremd judge pronouncing on a massively expanding and stupendously successful social practice was not very convincing. A broadly Kuhnian or Lakatosian account of scientific practice therefore fitted into the gradual process of modification and unravelling of the positivist model which began as soon as it was articulated. Like Stalinist economic planning, or the latest innovation by Microsoft, it was no sooner in place than there were suggestions for what we would now call updates to make it more sophisticated and sensitive. As Peter Halfpenny (1982) brilliantly summarised the process, positivism tends to mutate into conventionalism or realism.

Nevetheless, as Steven Shapin (1995) pointed out, 'scientistic North American sociological traditions and, to a lesser extent, traditions in Britain and Europe continue actively to disseminate a picture of scientific "method" and scientific knowledge radically at variance with those offered by SSK [sociology of scientific knowledge].' This latter field seems in retrospect one of the most innovative and impressive features of English-language, and particularly British sociology, yet one which remains marginal in the profession, and even within the interdisciplinary area of science and technology studies. Like Hermínio Martins, in the passage quoted earlier, Shapin (1995: 301–2) points to a paradox:

> From a sociological point of view, Kuhnian SSK is at once conservative and radical. On the one hand, it seeks inter alia to answer traditional questions about the grounds of a communal order, and it does so by pointing to the regulative role of norms. While the regulatory relevance of social maxims ("Be sceptical", "Be disinterested") is doubted, the significance of norms for ensuring order and for marking the boundaries of communities is vigorously respecified and reaffirmed in a new idiom. The solidarity of specialist communities – or such solidarity as is found to exist – is coordinated through their specialist knowledge. Good and bad, proper and improper, interesting and banal scientific behaviour is recognized and sanctioned by members' knowledge of the natural world. On the other hand, by arguing that the relevant norms are made of the same stuff as the community's technical knowledge, the Kuhnian move overturns the existing sociology-of-knowledge scheme that asks how "society might influence knowledge"…[Thus] SSK's insistence upon a quite elementary feature of the sociological sensibility has seemed to acquire a shockingly radical, even subversive, character.'

This may partly explain why mainstream sociology in the UK and US was unwelcoming to the sociology of scientific knowledge, though other factors, such as the marginality of the sociology of knowledge as a whole and the entry costs of acquiring even a minimal reading knowledge of the relevant areas of natural science provide a more obvious explanation. More significant is the wider social hostility to any social insight into or oversight of scientific progress. Whereas

[7] As Popper (1970: 57) put it, 'to me the idea of turning for enlightenment concerning the aims of science, and its possible progress, to sociology or to psychology (or… to the history of science), is surprising and disappointing.'

a historian or sociologist of religion would be laughed at for suggesting that Judaism was succeeded by Christianity and in turn by Islam because that was what God wanted, any social explanation of scientific advance was suspected of 'explaining it away', as if the social explanation somehow undermined an alternative and perhaps complementary explanation in terms of 'internal' criteria of success.[8]

A particularly striking example of hostility to social approaches to science was a controversy in West Germany in the late 1970s around the 'finalisation thesis'. This concerned the practical applications of mature science and was developed by a team of young researchers at the Max-Planck Institute for the Study of Life in Social-Technical World at Starnberg, just south of Munich. working with the physicist Friedrich von Weizsäcker. The thesis was presented in two articles in the *Zeitschrift für Soziologie* (Böhme, van den Daele and Krohn 1972, 1973), at a conference I attended in 1974, at Roy Macleod's invitation, which brought together researchers from Paris and Sussex as well as elsewhere in Germany.[9] Another article a little later (van den Daele and Weingart 1975) and a subsequent book publication in German (van den Daele et al 1978) and English (Schäfer 1983) drew on the history of science to suggest a three-stage model of scientific development. The first two stages are familiar from Kuhn: a pre-paradigmatic phase and a phase of 'normal science' after consolidation around a paradigm or 'disciplinary matrix'. The third phase, the authors suggested, is a phase of application or 'finalisation' in, for example, environmental science or process engineering.

This apparently innocent thesis in the history of science ran into a blizzard of criticism from the right-wing academics in the Bund Freiheit der Wissenschaft, which had been founded in 1970 in response to the excesses of the student movement of the late 1960s. A conference on 'science in danger' (*Gefährdete Wissenschaft*), to which the Starnberg group were not invited, was held in Munich in 1976, followed by a book, *Die politische Herausforderung der Wissenschaft. Gegen eine ideologisch geplante Forschung*, in the same year. (See also the book resulting from a more pluralistic counter-conference, bringing together both camps as well as a number of other contributors, *Konsequenzen kritischer Wissenschaftstheorie*, edited by Christoph Hubig, Wolfert von Rahden (Berlin: De Gruyter, 1977). Partly because of this controversy, the Institute was closed after von Weizsäcker's retirement, and Habermas returned to Frankfurt in 1981 (see Leendertz 2010).

SPRU has so far not, I think, encountered such violent criticism, despite the extremely controversial areas in which it worked. The oral history which it conducted records a number of tributes by past and former associates to Freeman

[8] Kuhn addressed this issue in a number of places, for example in a contribution to symposium on Hempel in 1983 and published that year in *The Journal of Philosophy* (Kuhn 2000: 208–15).

[9] Habermas was co-director of the Institute. Having been invited to comment on the finalisation thesis, we tried to earn our keep by making critical comments, to an extent which rather upset the researchers. Don't worry, Habermas said to them, as I recall the discussion. Stick to your guns and say what you want; it doesn't matter if it's wrong – if it's criticised, that's how scholarly progress happens.

and Jahoda. 'They were described not only as impeccable, brilliant scholars but as generous human beings able to instil in SPRU a culture of openness, dialogue, supportive debate, and democratic practice.' (Campos 2016: 9) SPRU survived the Thatcher years, when the UK's Social Science Research Council was narrowly rescued from abolition at the price of changing its name to the Economic and Social Research Council, and thrived under the premiership of the economically literate Gordon Brown. It did however suffer from what seems like a typically crass managerial intervention in 2012 by the University to incorporate it into a newly concocted School of Business, Management and Economics, with the result that its very substantial library was dispersed. After some reflection, SPRU decided not to leave Sussex, where it remains one of its star elements.

SPRU was of its time and place; it was set up at Sussex after the philosopher and historian of science Stephen Toulmin had looked for other universities which might host such an institute, and found a ready welcome from Asa Briggs. It undoubtedly benefited from the flexible and innovative intellectual and institutional environment of the University's early decades and has survived the retreat into a more managerial and discipline-oriented culture. There is perhaps a lesson for academic planners: the importance of institutions with a physical space in which to develop an esprit de corps, and also the fragility of small academic entities such as HSSS. Another research centre at Sussex, devoted to European Studies and directed by François Duchêne, was abolished in the early 1980s (and also absorbed into SPRU), only to be reincarnated in 1992 as the now thriving Sussex European Institute. Yet another, for urban studies, was also abolished, to the surprise of one of its associates returning from a period of leave abroad: 'when I left, he said to me, 'it was a world centre of excellence, and when I came back it had gone.' A final example from another university: Birmingham, which was perhaps best known to the outside world for its legendary Centre for Contemporary Cultural Studies, set up in 1964 and headed by Stuart Hall, managed to close it down in 2002. http://www.birmingham.ac.uk/schools/historycultures/departments/history/research/projects/cccs/archive.aspx

As Sussex grew, there remained a hard core of faculty who had been there at the beginning and spoke nostalgically of the Gründerjahre. (Sociology, for example, began with a staff of two: the Romanian Zevedei Barbu, whose centenary was recently commemorated in Cluj, and an earlier exile, the German Helmut Pappe, who later transferred into Intellectual History.) Fifty years later, something of that early enthusiasm remains, and the very impressive SPRU History Project is one of the recent activities which document it.[10]

[10] My thanks also to Roy MacLeod for helpful comments on an earlier draft.

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