Introduction: The Dynamics of Epistemic Communities

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Introduction

1.1 Scientific communities matter. The enduring importance of journals, conferences, university departments, peers, discussion lists, museums, as well as the formation of new kinds of collectives around new problems and mediums prove this point. Science is a collective activity. The 'matter' of communities needs, therefore, continuous academic scrutiny. This is what this Special Section within Sociological Research Online sets out to do: to focus on the matter of communities and assess established ways, and propose new ways, to analyse and conceptualise them. Our focus here is on 'epistemic communities', that is, communities concerned with producing and disseminating knowledge. In this introduction we pursue a threefold aim: providing a brief genealogy of the concept and discussing related concepts of community; introducing the papers in this special section; and proposing a more sociological reading of epistemic communities.

1.2 Several versions of the concept of epistemic community exist. Chronologically, the first version developed through the 1960s and 1970s by Holzner and co-authors (Holzner 1968;Holzner and Salmon-Cox 1977;Holzner and Marx 1979). Holzner and Marx (1979:107) defined epistemic communities as 'work communities for whom epistemic criteria [...] have primacy over other interests or orientations'. Members of such epistemic communities have a shared faith in scientific methods as the way to produce truth. In recent years, however, this version has decreased in prominence.

1.3 The term was reintroduced in the global policy/relations literature in several, now highly cited, texts (Adler 1992;Adler and Haas 1992;Haas 1989;Haas 1992). For Haas, an epistemic community denotes 'a network of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge' (Haas 1992:3). An example of such an epistemic community is the community that brought about policy change in relation to CFCs (the Montreal Protocol). Haas (1992:3) further writes that epistemic communities have:

1. a shared set of normative and principled beliefs which provide a value-based rationale for the social action of community members;
2. shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiples linkages between possible policy actions and desired outcomes;
3. shared notions of validity – that is, intersubjective, internally defined criteria for weighting and validating knowledge in the domain of their expertise; and
4. a common policy enterprise – that is, a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence.

1.4 From this perspective, epistemic communities produce knowledge as much as they set to influence politics. Indeed, epistemic communities emerge from a policy demand and the policy receptivity is a crucial issue for these communities. The knowledge they produce has to provide solutions (in response) to specific problems; they have to produce 'usable knowledge'.

1.5 While the way the concept is used in the policy literature rightly points to the political character of epistemic communities, some elements remain untouched. Epistemic communities, in this reading, seem to emerge almost 'naturally' and in a linear way: the policy world has a problem, which calls for the creation of an epistemic community, a community which then provides some solutions. More so, members of epistemic communities quickly share beliefs and notions of validity and they appear rather consensual – the actors' and analysts' focus is on the 'applicability' of knowledge. We would argue, however, that how a community comes to be assembled is at least as relevant for sociological analysis - the work, the politics, the materialities, the identities, the uncertainties that go into the formation and maintenance of a community clearly deserve our attention.

1.6 Elzinga (1993: 141-2) has differentiated between 'hybrid epistemic communities' which receive 'their mandate through political direction or application in the realm of commerce, environmental regulation' (hence, quite close to Haas' definition) and disciplinary epistemic communities which 'follow the more traditional patterns of academic behaviour'. Cain (2002), on the other hand, considered the struggles involved to define a new epistemic community in evolutionary studies and borrows the term 'transition community' when talking of 'an insulated space for acculturation' in which '[i]ntellectual ties are re-negotiated [and] [E]fforts are undertaken to learn/create new languages, conventions, interests, epistemic standards' (Cain 2002: 308). In general though, very few studies have considered the emergence and formation of epistemic communities (i.e.Gingras 1991;Molyneux-Hodgson and Meyer 2009). There remains scope for further analyses of the movements that lead toward the materialization, actualisation and establishment of a community.

Related concepts of community

2.1 The concept of 'epistemic community' is often used in relation to – or expanded by - other concepts. A few of these notions deserve attention here, not least since some have been mobilised by the contributors to this special section. In recent discussions on epistemic communities, in particular about scientific communities, one regularly finds references to Knorr-Cetina's *Epistemic Cultures* (1999), referenced as either the origin of the concept or a text where it is being discussed. However, Knorr-Cetina does not use the term 'epistemic community' nor 'epistemic communities' at all in her book. She is rather concerned with 'epistemic cultures', which she defines as

> those amalgams of arrangements and mechanisms- bonded through affinity, necessity, and historical coincidence- which, in a given field, make up *how we know what we know* . Epistemic cultures are cultures that create and warrant knowledge, and the premier knowledge institution throughout the world is, still, science (Knorr-Cetina 1999:1, emphasis in original).

2.2 Furthermore, Knorr-Cetina (1999:3) argues that contemporary science is fragmented in terms of its 'different architectures of empirical approaches, specific constructions of the referent, particular ontologies of instruments, and different social machines'. As such, Knorr-Cetina's argument has to be placed in a wider trend that argues that there are multiple kinds of sciences. Science, so the common argument now goes, is not a single thing, but something heterogeneous and multiple; there is a *disunity* of science (Galison and Stump 1996;Dupre 1993).[1] Different epistemic communities would have different epistemic mechanisms, technical and social (Van House 2002). There are differences between sciences and there are differences within sciences. Knorr-Cetina's book, for instance, points to the many differences between high energy physics and molecular biology: the former being 'big' science, defined by post-traditional communitarian structures which erase the individual as epistemic subject; the latter being 'small' science defined by a logic of exchange and centred on the individual as epistemic subject. Moreover, there are differences within singular disciplines, such as sociology. Some hold, for example, that 'Sociology as a discipline is merely an uncoordinated collection of 'sociologies of' this or that" and that there can be "no 'mainstream' of sociological research and the intellectual content of the subject is constantly renewed as it fragments and searches for new ventures' (Scott 2005 1.4).

2.3 Apart from Knorr-Cetina's work on cultures, another concept that is frequently mobilised to analyse scientific communities is the concept of communities of practice (see Amin and Roberts 2008 for an extensive review and excellent discussion of the concept; see alsoAmin and Cohendet 2004). For Lave and Wenger (1991:98) 'A community of practice is a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice'. Learning is at the core of Lave and Wenger's thinking about communities of practice. They further hold that a community of practice is very much a condition for existence of knowledge (1991:98). Wenger, who has further developed the notion in his subsequent work, states that three elements are crucial for communities of practice (1998:72-85). He writes that:

> members are bound together by their collectively developed understanding of what their community is about and they hold each other accountable to this sense of *joint enterprise* […] interact with one another, establishing norms and relationships of *mutuality* that reflect these interactions [...and that such communities] have produced a *shared repertoire* of communal resources – language, routines, sensibilities, artifacts, tools, stories, styles, etc. (Wenger 2000:229, emphasis in original).

2.4 Of course Lave and Wenger did not do work on scientific collectives in the sense being used by Knorr-Cetina and others. Their approach owes much to notions of apprenticeship and collective learning of craft work, so application to the scientific arena is interesting.

2.5 It must be noted that the concept of epistemic community owes much to early texts in the social studies of science, namely notions such as Kuhn's 'paradigm' and Fleck's 'thought collectives' (as noted by Haas himself (1992:3)). Kuhn's notion of paradigm marked a valuable departure from earlier sociological thinking about science (i.e. Merton's norms)). Kuhn's definition of science assumes a clear demarcation around and within the scientific community. For Kuhn to be a member of a scientific community, to be accepted as a scientist, is to accept and to work within a paradigm.[2] The study of these paradigms is what 'mainly prepares the student for membership in the particular scientific community' (Kuhn 1996:11); thus paradigms are revealed in the textbooks, lectures and laboratory exercises of that community (Kuhn 1996:43). Sociological analysis of science textbooks, for instance, has shown that the historical is used to imagine community by providing an 'origin story' for the community; by bounding what counts as community practice; and by articulating identities for community membership (Hodgson 2006).

2.6 Recent theorising also sees communities of scientists intrinsically as 'communities of hope' or 'communities of promise' (Brown 2003; Brown 2006). 'Within communities of promise, expectations structure and organise a whole network of mutually binding obligations between innovators, investors, consumers, regulators and so on' (Brown 2003:6). This line of thinking sees communities of scientists as structured around the future, their present actions being shaped by, and built upon, an imagined future. Communities of promise are highly complex and multi-authored enterprises, its participants 'conspire' and 'collaborate' in the authorship of the future (Brown 2006:10). Importantly within communities of promise, expectations are performative: they attract the interest of allies; they define roles; they build obligations; they produce agendas; they guide activities; they provide structure and legitimating; and they foster investment (Borup et al. 2006). In this sense, epistemic communities revolve around a manifest absence of potentially useful knowledge, epistemic communities are, here, 'communities of opportunities'.[3]

2.7 We suggest that the notion of epistemic community proves most fruitful when combined with other concepts, such as communities of practice or communities of promise. Rather than reifying and sticking to a singular notion of epistemic community, we believe that cross-linking between different ways of accounting for collectives is needed. Describing the many kinds, forms and dynamics of communities means to widen, rather than restrict, our understanding of what the terms epistemic and community might come to denote. And instead of supposing that epistemic communities exist *a priori*, we have to examine how they come into being, *how they are made and materialised* ; which requires exploration of the practices, metaphors, instruments, and discourses that performed and maintain communities.

The papers

3.1 Our original aim in bringing the papers together was our interest in exploring a wide range of newly-emerging, as well as longstanding, aspects of the study of scientific activity, including: how we might theorise the emergence and reproduction, the stabilities and dynamics of epistemic communities; the devices that 'make community' (whether face-to-face, institutional, or 'networked'); how epistemic communities are represented and governed; the differences between epistemic communities, and how they are different from other types of community; the gendered nature and the politics of epistemic communities; the relation between epistemic communities and different modes of ordering.

3.2 Lorenz-Meyer's paper asks whether laboratories can be considered as epistemic communities. Her answer: 'The life times of laboratories, or their experimental and publication cycles are not the life times of epistemic communities: in short, laboratories are only partial sites to trace the histories, dynamics, genderings and interrelations of epistemic communities with other knowledge projects'. The methodological consequences of this point – that, as she writes, the 'distributions and textures of an epistemic community cannot be studied at a single analytical site' – is a call for researchers to follow communities across multiple locations, sites and occurrences.

3.3 Akrich's paper examines discussion lists that form online communities of practice around health issues. It is their opposition to professional epistemic communities that leads these communities to formalise knowledge and to create a corpus of knowledge. Yet, according to Akrich, the 'minimum 'production' unit of these online communities is not the message, but the discussion'; the community she examines 'only exists through the production of a collective discursive object'. She describes in detail the 'tipping point' between communities of practice and epistemic communities, where knowledge becomes a form of political action.

3.4 Garforth and Kerr's paper contrasts cultures that feminise work, characterised as 'collective, materially oriented, ongoing and supportive', to highly valued masculine work 'associated with outputs, reputation, publications, individual excellence, and linearity'. They also point to an interesting double strategy of relating to, but at the same time also disconnecting from, a community: they argue that reputation, visibility, in short, 'gaining a name' is 'built in and out of particular communities of practice' but also that

highlighting individual excellence 'means dissociating oneself from a community'.

3.5 Poutanen and Kovalainen highlight issues of longstanding sociological interest; in particular, analysing some of the gaps that open up between policy intent and the structure and practice of institutions. Taking recent – and ongoing – policy change in Finland as a case, they turn the lenses of 'agora' (Nowotny et al. 2001) and 'epistemic community' (Haas) onto the rhetoric and initial stages of implementation of new regimes for knowledge production.

3.6 Meyer's article is concerned with a community that does not hold together well: amateur scientists. It examines the interrelationships between amateurs and professionals in a museum of natural history by examining two 'community-making devices' through which they meet (a conference and a journal). These devices, he argues, are devices that nurture weak ties and bring together an 'epistemic collective', that is 'a rather fragile collective that is only ever temporarily and partially stabilised around devices and events that produce and publicise knowledge'.

3.7 The theme of 'care' runs through most of the papers. Garforth and Kerr have extended Knorr-Cetina's notion of laboratory caretaking (1999:38) - activities in play to reproduce and maintain a laboratory (with its materials and equipment) - to what they call 'housekeeping', that is the 'work of maintaining the epistemic community itself and its ongoing knowledge projects'. Akrich's article is concerned with the way people mobilise around health care issues through the Internet. People's experiences of such issues, especially the *sharing* of these experiences, is what forms the setting upon which further exchanges are built and allows for a 'community of experience' to come together. Meyer's paper shows that the partial and fragile links that unite amateurs and professionals have to be nurtured and cultivated with care and that the 'texture' of this caretaking - a process with indistinct boundaries that moves in-between amateurs and professionals - seems fit for helping a heterogeneous group of people produce knowledge together. Care, then, appears to have a role that is not usually highlighted in relation to scientific knowledge work.

3.8 All the papers also show that epistemic communities are, in fact, *transepistemic* (see Knorr-Cetina 1982), in that they involve scientist as well as non-scientists; in that they are concerned with the political and the epistemic; and with the social and the technical. In other words, we see that the boundaries of epistemic communities are never stable, nor that they delimit an epistemic realm from other realms. The boundaries of epistemic communities are crossed, open to debate and dynamic.

Connections

4.1 The prefix 'trans' reinforces a sense of linking and of connection. Connectivity in scientific communities is in some senses obvious e.g. knowledge is constituted and made 'robust' through collective processes. Connections are also explicitly made, e.g. success stories are told and continuously circulate; communities are narrated, and alliances are made and entertained. Importantly, many scientific practices 'make concrete the telling and performing of connectivity' (Whatmore and Thorne 1997:299). This performance of connectivity happens in many places: whether scientists produce, present, publish or assess knowledge, they do this via specific forums and spaces – such as journals, conferences, websites, CVs, [0]committees, meetings, etc. In these places epistemic communities are made explicit, identities created and demarcated, and the politics of belonging and connectivity brought to the fore.

4.2 The most fruitful way of exploring epistemic communities then, is perhaps not so much to look for what unites collectives and what they share *per se*. It is not to posit epistemic communities as stable and bounded entities, built upon the communality of knowledge production and the unity of knowledge producers. A richer way, we would argue, is to consider epistemic communities as 'moving targets': to recognise that communities are rarely fixed entities and that they are not to be found in, and bound to, any single location; to follow the discourses and practices of scientists that *aim for* the building, ordering or change of their communities; and to examine how these communities become the locus of political work, how they are designed to *make things move*. Seeing epistemic communities as such moving targets means leaving behind a search for an 'essence of community', for what they would share and 'hold in common', but calls for exploring the dynamics and the various 'modes of ordering', 'modes of existence', and 'modes of assembling' through which they are made.

4.3 Epistemic communities, in the papers collected here, are characterised by at least four sets of characteristics: epistemic communities are communities that 'act with' knowledge; they are produced, reproduced and explicated; yet they are also inherently dynamic and do change; and, apart from producing knowledge, they also produce identities and trajectories. Here, then, is a summary of what we see as needing to be traced in/through the study of epistemic communities.

1. Epistemic communities produce and 'act with' knowledge. They produce, publicise and police knowledge; they communicate and distribute knowledge; they create repositories of multiple forms

to accumulate and store knowledge.

2. Epistemic communities are stabilised and made. They are produced, reproduced and ordered through community-making devices or events; they are explicated, performed and cared for at the same time as knowledge is produced.

3. Epistemic communities are dynamic. They change and are situated on trajectories and thus articulate histories, futures and possibilities; they differentiate, shift and transform; they might become sites for political work; they are variable in terms of the temporalities, intensities of interaction, and strength of ties that bind them together.

4. Apart from producing knowledge objects, they also produce knowledge producers: they shape, demarcate, and articulate the identities of present and future knowledge producers; and they shape individual and collective trajectories on which the latter navigate.

4.4 Epistemic communities work through connectivity, perhaps not so much by connecting people, but by connecting objects and subjects, people and places, production and distribution, individuals and collectives, histories and futures, the virtual and the concrete. An analysis of where and how these connections are made and remade and the epistemic and political consequences of these processes is, we believe, a way to further our understanding of the matter and the texture of epistemic communities.

Acknowledgements

Notes

[1] Early in the 1980s several authors have argued for a doing away with concepts of community (Knorr-Cetina 1982,Whitley 1983). Knorr-Cetina herself argued that [0]'scientific communities as sociological constructs […] appear to be largely irrelevant to scientific work' (Knorr-Cetina 1982:101).

[2] Kuhn defines a paradigm as accepted scientific practice - which includes law, theory, application, and instrumentation together - that provides models from which spring particular coherent traditions of scientific research (Kuhn 1996:10).

[3] The term 'community of opportunities' has been developed by our colleague Veronika Repikova.

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