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Towards the PERIpatetic Approach: Epistemology of Close Encounters Within Contemporary STS

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Abstract

This chapter is outlining key features of an emerging shift in research philosophy within science and technology studies (STS), involving greater proximity to participants through longer-term interaction and embeddedness in various contexts of Participatory Action Research (Darrouzet, Wild and Wilkinson, 2009). Hence, in this chapter, I am outlining the changing nature of social scientific enquiries and the related re-calibration of researchers’ philosophical framework.

Outlining my experience of a multi-level study of innovation processes and practices within the (New) Space Sector in Scotland, I am combining the understanding of abductive epistemology (Blaikie, 2004), best practice in researching professional elites (Mikecz, 2012), and multi-method research design and data collection, it develops the “participatory strategic ethnography of innovation” inspired by the Biographies of Artefacts and Practices (Hyysalo, Pollock and Williams, 2016) and frames the “uninformed insider” positionality as critical advances within STS research.

This is a reflexion on half a decade of engagement with the studied community and resolving critical practical and theoretical challenges. In particular, I have been working on a problem-solving-driven study, as well as conducting it in close cooperation with collaborators in the field, having been embedded within an innovation team at a leading research organisation.

Put together, I argue that the set-up of this work reflects a new methodological framework of the "PERIpatetic Approach" - a Practical Epistemology for Researching Innovation (PERI). The acronym PERI also (sub-)refers to the ambition that the philosophy behind the PERIpatetic Approach is based on re-interpretation of the core tenants of the strong programme in Sociology of Scientific Knowledge (Bloor, 1991) to base the future STS research on Perspectival, Embedded, Responsive and Introspective principles.
Introduction: New Approaches for New Modes of Research

The “common wisdom” on the epistemological, methodological and practical set-up of social-scientific research is fast departing from the “established norms” of 20th-century sociology. Of particular note is the engagement with professional elites in the scientific, policy and business communities and the changing role of the researcher in this environment (Mikecz, 2012). The key notable trends within it are the emergence of abductive/problem-solving epistemologies, in-depth long-term/longitudinal presence, deployment of mixed methods and extensive reflexivity. These changes crucially bring about a different set of requirements on the researchers in terms of their positionality when accessing and investigating such environments, which are critically understudied (Berger, 2015). The PERIpatetic Approach outlined in this chapter has been carefully developed prior to an extensive field study in the Scottish Space Sector, however, its analysis presented in this chapter is also based post-research reflection. This is especially relevant for entering into a dialogue with earlier STS theories, such as the Strong Programme, encouraging application of same methodology to the study of science as well as social science. Though primarily based on my own personal experiences, I believe my reflections and conclusions here apply much more broadly in a variety of social scientific enquiries in professional environments, in particular in contentious or high-stakes areas and in work identified as participatory action research (McIntyre, 2007).

In particular, many authors have noted the (increasing) importance of “insider” status for research within professional elite settings. In fact, even the proponents of the “informed outsider” approach directly acknowledge: “researcher has the insight of an insider but the neutrality of an outsider” (Welch et al., 2002, p. 625). However, my experience and observation tend to contradict this conclusion – the researcher can never really have the exact same insight of an “insider”, nor can they be as neutral as an “outsider”, having committed to a close-quarters longitudinal research project. I argue, that with a new research paradigm(s) emerging, focusing on more detailed and prolonged multi-sited ethnographic studies, the researcher’s positionality is realigning away from the “informed outsider” approach, outlined by Welch et al. (2002) and towards an “uninformed insider” approach, based on meaningful engagement and embeddedness in the studied environment, yet retaining the critical analytical distance. Such closer relationship acknowledges the need for a significant amount of trust required for access to, and maintenance of, prolonged engagement with the professional elite, whilst recognising the inherent knowledge asymmetry in this relationship and accommodates more inductive/abductive information gathering and knowledge co-construction (Morrisey and Morrissey, 1998). My solution to this challenge is to “embrace” the position of an “uninformed insider”, acknowledging a degree of limitation in our insight and a degree of partiality. This researcher position is also much more closely aligned with abductivist epistemology, i.e. the bottom-up problem-solving
approach to build theories, where researchers deliberately ensure that they enter the field with as little prior knowledge as possible, in order to truly recognise all points of contention and hence limit any bias (Blaikie, 2004; Shank, 2008). I further argue that this is a recognition of existing practices, to both further establish the trust between the various stakeholders and increase confidence in research processes and findings.

Specifically, this chapter outlines an open-ended interdisciplinary participatory and problem-driven approach to empirical work. It begins by presenting the foundations of my ontological and epistemological position – the PERIpatetic Approach – and outlines the empirical context in which my research was conducted. Then, it examines, in turn, my reflections on the four key aspects of the PERIpatetic Approach, in particular, the methodological principles behind participatory strategic ethnography of innovation, the “uninformed insider” positionality, abductive analytical work and ethical introspection. Finally, I discuss the three stand-out elements of my experience of deploying the PERIpatetic Approach as an "uninformed insider": a) the importance of becoming an insider by building trust and gaining access to the community, b) the importance of “uninformedness” for deploying the strategic ethnography and using abductive research epistemology, and c) the dynamic and fluid nature of this philosophy and researcher’s position.

My Philosophical Position – The PERIpatetic Approach

Peripatetic philosophy has a strong historical resonance, as it is often used to denote the Aristotelian approach to conceptual development and pedagogy, its direct meaning of “walking about”. However, it is also a very suitable symbolic summary of the break with the “traditional”, more dispassionate and “static” research philosophies deployed in many social science fields in the past, including in Science and Technology Studies (STS). Specifically, often borrowing insights from more close-quarter anthropological studies, a bigger array of ethnographic methods and a move towards situated empirical sites are changing the way in which research is designed and conducted. Through my work analysing innovation processes using STS principles, I have been particularly drawn to examining multiple perspectives and deploying a mix of different methods, all grounded in being in a constant and close relationship with the key participants in the field – in my case a gatekeeper organisation.

This approach seemed to resonate with some well-established epistemological positions in sociology, in particular, such as participatory action research (McIntyre, 2007) and abductivism (Blaikie, 2004). However, the predominantly single-sited methodological set up within past enquiries often lacked the multi-perspectival flexibility I required. Here, I was inspired by the Biographies of Artefacts and Practices (BOAP) Approach (Hyysalo, Pollock and Williams, 2016) putting forward a more strategic view on ethnography, by focusing on following subject matter across a multitude of sites (design,
production, use of innovation, etc.), extended over time (from years to decades) and deploying a variety of data collection methods (secondary data/document analysis, participant observation, interviewing, etc.). Combining these two starting points, I argue that a new comprehensive framing is required, formalising the peripatetic nature of contemporary STS innovation research.

Hence, I propose the PERIpatetic Approach as a way forward, combining four elements to bring together a Practical Epistemology for Researching Innovation (PERI), fit to match the advances in the mode(s) of social science research as well as the evolution of the subject-matter fields (see Figure 1). It combines the interest in multi-perspectival knowledge-making, acknowledges embedded researcher’s positionality, applies responsive analytical framework and deploys introspective mechanisms to legitimise its findings (as presented in Table 1). These four elements are in dialogue with the original tenets of the Strong Programme of Sociology of Scientific Knowledge (Bloor, 1991), in particular aiming for causal explanations, impartial position, symmetrical analysis and applying reflexivity to our work.

<table>
<thead>
<tr>
<th>Strong Programme Tenet</th>
<th>Brief Description</th>
<th>Dimensions of the PERIpatetic Approach</th>
<th>Research Theory and Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Causality</strong></td>
<td>it examines the conditions (psychological, social, and cultural) that bring about claims to a certain kind of knowledge</td>
<td>Perspectival</td>
<td>participatory strategic ethnography of innovation</td>
</tr>
<tr>
<td><strong>Impartiality</strong></td>
<td>it examines successful as well as unsuccessful knowledge claims</td>
<td>Embedded</td>
<td>action research as uniformed insider</td>
</tr>
<tr>
<td><strong>Symmetry</strong></td>
<td>the same types of explanations are used for successful and unsuccessful knowledge claims alike</td>
<td>Responsive</td>
<td>abductive epistemology with critical realism</td>
</tr>
<tr>
<td><strong>Reflexivity</strong></td>
<td>it must be applicable to sociology itself</td>
<td>Introspective</td>
<td>ethics-reflection-acknowledgement</td>
</tr>
</tbody>
</table>

*Table 1 - Breakdown of PERIpatetic Approach, built on Strong Programme tenets.*

Firstly, the PERIpatetic research is moving away from producing causal generalisations and towards describing perspectives by recording and analysing narratives, developing concepts and integrating individual accounts into community-wide trends. It is particularly concerned with nested multi-layer contexts and is grounded in researchers’ experiences, rather than a priori intellectual project. This is a significant departure from the past normative interest in causality, which could be attacked either as inherently positivist or when interpreted through relativism/constructivism, it may be seen as lacking in auto-reflexivity (i.e. if scientific knowledge is socially conditioned, then social scientific
knowledge is also socially conditioned, hence correlations are only pertinent to the specific context, rather than truly “causal”).

Secondly, by being closely embedded in the field, a PERIpatetic researcher is an active co-creator of the studied environment and develops a level of presence and interaction akin to a field’s “insider”. The applied and empowering nature of action research is in stark contrast with past notions of researchers’ impartiality, though it is more in line with both the de-facto influence we have in the field as well as the current (political) agenda within social science, including innovation studies, to create meaningful and impactful research. However, in order to obtain legitimate and credible findings, strategies for data collection must reflect intellectual independence of analytical work, perhaps through enacting “uninformedness”.

Thirdly, the epistemological position thus developed combines field insights, in particular, input about challenges and interests of the various participants, with an iteration of a multitude of viewpoints. Hence, the PERIpatetic approach is adopting an abductive epistemological position, i.e. deriving theoretical models from interrogating empirical data through a real-life problem-solving process. Thus, it is less concerned about the traditional measures of theoretical coherence, for instance, the symmetry of explanations, and more focused on being responsive to the effect of the proposed models. This is consistent with the critical realism approach to accept knowledge claims validity through their application rather than derivation.

Fourthly, the PERIpatetic Approach fully adopts and extends the importance of the researcher’s reflexivity through a clear and comprehensive introspective process. Specifically, when working embedded in the field of study as an active participant, applying abductive epistemology and collecting data via participatory methodology, the understanding of positional challenges and intellectual biases is vital. A three-stage solution is suggested here: having a rigorous ethics framework, engaging in constant reflection and (publicly) acknowledging the participatory action nature of such work.
Later, each of these elements will be examined in greater detail but in order to provide some context for the analysis of their deployment, the next section first outlines the empirical environment I encountered through my research of the evolving networks, practices and institutions in the emerging Scottish (New) Space Sector.

My Time with the Scottish (New) Space Sector

The makeup of the Scottish (New) Space Sector is very appropriate for intensive qualitative and quantitative research of innovation processes and associated “culture”, i.e. the social phenomena related to techno-scientific and economic development, which was the subject of my research. This is due to:

1. A good mix of the different types of actors (upstream/downstream, software/hardware, spin-off/start-up)
2. Manageable size for complete study: currently <20 SMEs with <200 employees
3. Strong research base (in particular Dundee, Strathclyde and Edinburgh Universities) and highly educated workforce
4. Strong institutional presence (university tradition, many institutes and research stations)
5. An existing rich historical context in science, technology development and innovation (in particular through Scottish engineering legacy)
6. Significant current political and economic interest, noted in particular in roadmaps adopted by the UK government - 8 Great Technologies (Willetts, 2013), Space Innovation and Growth Strategy (Space IGS, 2011), Health and Size of the UK Space Industry (London Economics, 2019), etc.

7. Predicted and part-evidenced rapid growth at a major industry transition

My research (Vidmar, 2019b) has benefited from a specific time context, linking the past and present (and looking into the future). Whilst studies of innovation are by their nature historical, the significant (political) emphasis on technology/knowledge transfer and commercialisation of scientific research is a very contemporary concern (Nutley, Walter and Davies, 2007). This was helpful both in terms of there being a significant appetite for collaboration from different research institutions, an increased openness (due to perceived benefits) on the part of the Space “community of practice” and a generation of a significant amount of documents, events, discourse and literature.

Crucially, the Space Sector is currently undergoing a major transition (Adlen, 2011), which is bringing the issues of innovation and technology transfer, as well as changes to all levels of its socio-political and economic structure, into focus. For an abductivist and participatory action research rationale this proved very fruitful, as problems and questions of understanding are emerging in the field and various stakeholders became increasingly open and interested in working with me to develop both new knowledge and operational solutions. As a way in, I benefited from having studied natural sciences (Physics and Astronomy, with specific interest in technology development for scientific research) in my first degree. In addition, I have developed close ties with the UK Astronomy Technology Centre’s (UK ATC) Innovation team (ATC Innovations), a Science and Technology Facilities Council (STFC) establishment, all of which is now part of the UK Research and Innovation. UK ATC is the national laboratory for development of Astronomy instrumentation, located at the Royal Observatory in Edinburgh (ROE).

Having had a prior interest in science and technology policy and philosophical, socio-political and economic aspects of techno-scientific development, I professionally transitioned into Science, Technology Studies (STS) research, though I retained these previous associations and contacts, as I was particularly interested in working within the fields I already knew and understood. In particular, through both public engagement as well as research activities, I was well embedded in the Astronomy and Space Science work in Edinburgh and in Scotland. Approaching the ATC Innovations with an initial interest to work on a research project in this arena led to a research partnership agreement, which enabled a longitudinal embedding in the field by becoming an informal member of the ATC Innovation’s team and colleagues there became my gatekeepers for further access to stakeholders.
Additionally, my abductivist problem-solving agenda was well met by my research partners, as through the development of the Higgs Centre for Innovation. This is a new building and engagement programme at UK ATC at ROE as UK government’s direct investment into the Scottish New Space sector and its development coincided perfectly with my project’s timeline. As part of this significant undertaking, outside of the innovation’s team “normal operation”, several questions and challenges emerged, with an acute need arising to understand the multi-layered and complex landscape in which this new Centre needs to be successfully introduced. Having so easily found a significant source of interesting starting points for what shaped up to become my active participatory research into innovation culture within the Scottish New Space Sector, I designed a research project to match my overall interests, inspired by problem-solving demand (broad alignment with the PERIpatetic approach elements is summarised in Figure 1).

Figure 2 - Relational positioning of the different frameworks within the empirical work
The first stage of my research project concerned the embedding in the research partner’s team, framing of the enquiry by “abducting” a set of research questions and developing methodological and theoretical framing for my study within a pilot setting. These “prompt questions” spanned three dimensions: “How is the Scottish Space Sector formed?”; and “What can innovation intermediaries do to support (Scottish Space) sector growth?”; as well as a reflective question on “How can we integrate the best insights and practices in research and its application?” (Vidmar, 2019b, p. 17). Crucially at this point, only the micro-level of the analytical approach was being developed, as in abductivist setup, design flexibility must be ensured to be able to respond to early findings and their reception by the study’s participants. In my case, it turned out that the first phase validated methodological standpoint and theoretical framework for this part of the enquiry and pointed towards a second stage roll-out of micro-level data collection, as well as exposed key additional questions (moving from micro- to meso- and macro- levels). Consistent with other modes of research design, working through the first stage also involved an extensive review of the existing literature and an in-depth analysis of the subject-matter (the Space Sector)’s background framing.

In the critical second stage, a detailed qualitative enquiry was undertaken to assess not only the descriptive narratives emerging from the data collected in the first stage, but also to develop a set of new theoretical models and framings. Specifically, these concerned the understanding of micro-level changes to innovation processes and practices, meso-level innovation networks emergence and structures, and macro-level geo-sectoral policy and its translation through innovation intermediation.

In the third stage, these theories were iterated with the help of research partners and were being deployed as key pieces of new understanding in order to solve their real-life problems of establishing a new innovation centre and integrating it into the existing ecosystem. From a participatory action research standpoint, the timing of this study is very conducive to have a really meaningful impact on the researched community as findings are available right from the start of the Higgs Centres of Innovation programme (in Spring 2018), meeting less entrenchment of practice often present in more mature projects (Zeitz, Mittal and McAulay, 1999).

The final, fourth stage is about formalising the insights through (academic) publications and dissemination at events and through smaller meetings and briefings. Importantly, where possible, this

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1 See my publications on development policy (Vidmar, 2020b) and opening up of innovation process (Vidmar, 2019a).
2 See my publications on open innovation and organisational learning (Vidmar et al., 2020) and innovation intermediation (Vidmar, 2020a).
3 See my publication on development of comparable projects in innovation intermediation in Scotland and Slovenia (Vidmar, 2019d).
should include development of toolkits and translational activities whereby theories, insights and frameworks are (re-)deployed in follow-up studies and/or in operational and strategic documents⁴.

Having thus set the scene, in the next four sections I analyse in greater detail my experience with the four research principles of the PERIpatetic Approach - being Perspectival, Embedded, Responsive and Introspective researcher - and highlight the features of the emerging participatory strategic ethnography methodology and my "uninformed insider" positionality.

Perspectival: Participatory Strategic Ethnography of Innovation

Learning from the Biographies of Artefacts and Practices (BoAP)

The Biographies of Artefacts and Practices (BoAP) perspective (Pollock and Williams, 2010) emerged amongst an informal community of scholars seeking to move away from the atomistic perspectives and 'snapshot' studies of particular moments of technology design or use (Hyysalo, 2009; Pollock and Williams, 2010; Williams and Pollock, 2012). The key premise is to go beyond the single-site case-study or actor-centred accounts that prevailed within recent STS research and develop more effective methodological templates based upon a longitudinal and multi-site study in the shape of a "strategic ethnography" (Williams and Pollock, 2012). BoAP’s aim is to evolve a practice more appropriate for effective research of systemic cultural nature (of innovation processes), which can produce findings refuting the field’s recent tendency to accept ‘flat’ ontologies (i.e. lacking temporal and spatial depth and/or analytical clarity of any generalisable phenomenological structure, beyond the apparent descriptive accounts).

Ground-breaking longitudinal studies within the BoAP perspective detailed the complexity of innovation processes, involving diverse arrays of players (engineers, users, managers) interacting over protracted periods and across many locales. Work conducted within this framework has highlighted the various ways in which users contribute to the development of products and the role of various forms of innovation intermediation which may bridge contexts of technology supply and use (Williams and Pollock, 2012). As BoAP authors recently pointed out:

"Every research design involves choices about where to address research effort. New sites and relations become visible in the course of fieldwork. [...] This calls for flexibility in research design coupled with the willingness to keep on pursuing the..."  

⁴ I have written a series of briefing notes, strategic documents and delivered several high-profile presentations, such as work on Edinburgh Living Lab (Vidmar, 2019c), Citizen Data Exchange, Innovation Caucus, HEinnovate, Data-Driven Innovation, etc.
The Biographical Approach to the Study of Systemic Features of Innovation

Empirical work of this type can only be done in a more "engaged" manner; hence, researchers such as myself have moved away from the “one-way” econometrics and survey-based approach traditionally used to map innovation and business-led organisational behaviour (Markman, Siegel and Wright, 2008). It is important to note that this is not a break from the key methods used in these fields; rather it is adding the depth to (meso- and macro-scale) quantitative data by interpreting it through (micro-scale) qualitative analysis, leading to more holistic mixed methods approach. For instance, my methodological set-up is built around three methods: quantitative and qualitative (secondary) data/document analysis; qualitative data from interviews, observations and surveys; and (auto-)ethnographic reflection (Sedlack and Stanley, 1992; Richards, 1996; Odendahl and Shaw, 2002; Delamont, 2013; Bryman, 2016). Hence, I have labelled this collectively as “participatory strategic ethnography of innovation”, being a systematic longitudinal iterative study of the culture of innovation building on a multi-perspective and multi-level enquiry.

As such, this research project is also moving the BoAP methodology into a new direction – towards understanding systemic practices and artefacts, instead of specific ones. In particular, the aim of this research was to map out a multi-level perspective on the emergence of innovation systems through the prism of open innovation transition. Methodologies for dealing with the study of systemic elements in the macro-level context are well developed (and contested) within the STS literature on innovation. In particular, a very successful paradigm, namely Innovation Systems (IS), has been noted for its limited reach in terms of addressing the social phenomena in innovation (Williams and Velasco, 2016).

For instance, linking those top-level approaches to specific instances of innovation in actual product development is methodologically underdeveloped. To bridge this gap, I proposed that the main unit of empirical data collection (in my study's second phase) was an “innovation project”, i.e a development of a (single) product within a studied SME, and then analytically move to meso-level network of actors well as macro-level policy (Green et al., 1999). This was framed using a sensitising concept of an “innovation moment” (Vidmar et al., 2020), which was developed to combine core theoretical concepts in new product development (Bhuiyan, 2011), knowledge management and organisational learning (Sun and Anderson, 2010), as well as frame the evolutionary nature of the innovation process (Edwards, Delbridge and Munday, 2005).
Epistemologically, this strategy also follows the CEN/TS standard for innovation management (CEN, 2014), which states:

“The organisation should define two main responsibilities in the context of IMS
[innovation management systems]:
— responsibilities for the specific innovation projects;
— responsibilities for the general innovation management.” (CEN, 2014, p. 11)

Thus distinguishing between “specific innovation projects” and “general innovation management”. It is also consistent with the Oslo Manual (OECD, 2007) separating “object” and “subject” approaches: the “object” approach is based on a single business innovation project, e.g. the development of a new product; and the “subject” approach, which looks at a firm in its entirety. Specifically, this enabled me to link SMEs’ behaviour in innovation process management, rooted in specific examples of new product development, and the network interaction, based on acquired practices. To turn an “innovation project” into an understanding of the innovation processes and their dynamics requires a strategic ethnographic methodology, which enables a reasoned selection of several ethnographic research components and mixed-method analysis to perform a longitudinal study of innovation as a socio-technical phenomenon.

Of particular interest is a multi-level understanding of the changes in the development of new products due to network mediated inputs from external partners and ways in which organisations performing new product development responded to the engagement of external sources of knowledge, be those the lead customers, academic researchers, or the wider market. More specifically, recording and analysing the changing structure of new product development processes and the co-creation of collaborations within the innovation networks were the main targets of the second part of the study, though their interpretation hinged on policy-level dynamics, inter-organisational relationships and learning and the operationalisation of innovation intermediation (the latter was examined in the third part of my study).

Beyond the Single Object of Study

This means that in practice, the variety of data collected was organised in a series of case studies, joined together into one broader multi-sited and temporally extended case study (Yin, 2009) - addressing the emergence and evolution of innovation practices and routines. Such research clearly features a multilevel design structure (see breakdown in Figure 3 below) whereby individual accounts (actor’s experiences) are integrated via organisational narratives (companies) further into regional sectoral dynamics, which are of course part of an even wider national and international/global landscape. In these higher-level frames, micro-level social science within professional communities of
practice becomes linked with econometrics, policy and politics and legal frameworks, hence leading to a much more complete picture of the studied environment.

Figure 3 - The ontological underpinning of a multi-level epistemology as applied to my research of the (New) Space Sector in Scotland.

However, studying innovation in SMEs is challenging due to several factors, such as short timeframe, unclear boundaries, the informality of operations and access difficulties. Hence, as noted above, this type of research can only be done in much closer proximity to the studied community. Embeddedness in the field allows the researcher to gain access to all relevant data and informants and develop a longitudinal and multi-sited overview of transformation and change by being present as it (gradually) occurs. However, this impacts the researcher’s position within the studied field, the challenges we might be facing and how to avoid certain major pitfalls. Hence, in the next section I briefly outline the "uninformed insider" positionality as a PERIpatetic researcher.
Embedded: The “Uninformed Insider” Approach and Action Research within a Professional Elite

When researching a niche or small professional environment, it is often the case that most, if not all, of the actors - research subjects - are found to be (inter)connected in some way (Odendahl and Shaw, 2002). From a methodological point of view, this has several benefits, for example, it is easier to find research participants and the needed data. However, there are several downsides, too; a breakdown of trust with one of the participants can have significant repercussions across the whole community, and first impressions are important to gain “admittance”. Hence, when planning and carrying out research, one has to be very mindful of the power structures and “positioning” of the researcher in the context of the studied community (Mikecz, 2012).

On one hand, in my case, some of these issues were mitigated from the start by opting for a collaborative research project, working closely with a prominent organisation in this sector, namely ATC Innovations. Though this addressed the issue of access, it created new problems in terms of my identity in the field. On the other hand, my past Physics / Astronomy background epitomised the tension traditionally experienced by STS scholars - many of whom are social scientists with a natural science background - studying the very professional elite they have once been (or aspired to become) a member of.

Consequently, this means that the access into the field and the design of the data collection must address two significant challenges within research design: the interviewees are author’s peers (in terms of “shared knowledge and/or understanding”) or even social superiors (hierarchical status) (Platt, 1981) and they represent different types of (professional) elites (Mikecz, 2012). In gaining entry into such an environment, it is useful to mention one’s natural science credentials and association with reputable organisations in the field. This establishes the researcher as the member of the same professional elite – as “one of us” or a “peer”. However, my professional and social standing in this elite is precarious at best, as I was a junior researcher and approaching the subject from a social scientific point of view, including using “alien” social science methodology. Consequently, there was a clear power hierarchy, and I was at the bottom of it!

I propose that this issue is best addressed by a split approach to the interview, whereby I played up my credentials to organise the interview and establish trust with the informant (Welch et al., 2002; Mikecz, 2012), however, I later suggested to the interviewee to enact a “role-play” of a lay interviewer with the peer interviewee (Platt, 1981), ensuring a degree of serendipity and spontaneity afforded by a wholesome “alien” data collection. This also enabled me to give myself an alibi for exposing my true
ignorance of some of the particulars, whilst at the same time subtly demonstrating mastery of the conversation and key topics. Exhibiting the latter quality is particularly important as the interviewee will likely be assessing the “intellectual legitimacy” of the interviewer (Platt, 1981), and by extent the researcher’s collaborating organisation, which could present a reputational risk. Background information about the research (type, format, institutional connections, topic, etc.) has to be provided to the interviewees (to establish intellectual connection) prior to the interview (Platt, 1981), but not the (theoretical) assumptions, predicted outcomes or any provisional results, which will ensure that the respondents do not attempt to “assist” the interviewer in providing the “right” answer (Haidt, 2012). This can be addressed by the interview format, for instance using more open-ended questions, hence preventing codifying any intentions (Harvey, 2014).

Before entering the field, I considered that this positioning was best summed up as the “informed outsider” technique (Welch et al., 2002), whereby the researcher positions themselves as being a well-informed yet non-expert observer of the studied subject (or group). This technique is widely used in journalism, however, it is also an (increasingly) prominent feature in parts of social-science research, particularly in STS (Stephens, 2007). However, the more I reflectively examined the “informed outsider” position, the more I became convinced, that in truth, I was more of an “uninformed insider” than the other way around.

Though the design and the actual experience of the interviews were close to Mikecz’s (2012) own experience which he describes as:

“my positionality has been somewhere in the middle on the “insider–outsider” continuum. Perhaps the term “concerned foreign friend” would describe my position in this research best. I am not perceived as a local but I am not viewed as an outsider either.” (Mikecz, 2012, p. 490)

My overall experience of positionality would be best described as an intern or a new member of staff, who is accepted and trusted as a (new) insider in the professional community. This is backed by my having some relevant background knowledge, though I was assumed largely ignorant of the nuances and details of the goings-on. This experience is also very consistent with my interview strategy of “role-playing” lay uninformedness, to ensure as complete and unbiased as possible data collection, after having established access and trust based on institutional and personal credentials by (insider) association.

This position, however, comes with specific ethical considerations and risks, which have so far not been consistently documented or well understood. In particular, the key considerations are to do with,
on one hand, reputational risks to the researcher and their academic impartiality through bias and conflict of interests, and on the other hand, reputational and other risks to host and partner organisations, by dealing with sensitive information and association with the research project due to the embedded insider context. I turn to strategies to address these issues later, after first exploring abductive critical realism ontology and highlighting additional ethical challenges of potential bias.

Responsive: Abductive Epistemology with Critical Realism

Positioning oneself as a critical realist doing abductive research (Blaikie, 2004; Ong, 2012) implies the following research design. Starting from researchers’ immersion in the field and interaction with a variety of actors in their environment an existing “problem” (of understanding) is identified. Subsequently a theoretical framework is proposed to address such gap, supported by collecting and interrogating empirical data. This is distinct from both (traditional) deductive approach, which is characterized by defining theoretical framework upfront and proving it by empirical research, as well as inductive (grounded theory) approach of focusing entirely on (empirical) theory development from collected data (Thornberg and Charmaz, 2012). The issues found within these two distinct approaches are two-fold. On one hand, deductive modes of research are often out of sync with the needs and realities of the studied field and produce less applicable and impactful findings. On the other hand, the inductive approaches often ascribe too strong a value to specific situated and contested data, leading to either narrowly localist findings or largely descriptive accounts.

Abductive reasoning has been recently explicitly shown to be compatible with the critical realist position, as optimal mode of research (Schurz, 2018), concluding that

“[…] we can argue that by performing abductive inferences we always take the advantage of explaining and representing our system of experiences by the best available theoretical model, i.e., by the most simple and most unified theory. […] Should some part of our theoretical model be false, one of two cases may obtain. Either we observe this in the form of an incorrect prediction; as soon as this happens we will take steps to correct our theory. In other words, abductive inferences are self-corrective and have an inbuilt learning ability. Or we never observe it (because our experiences are limited); then nothing happens and we continue to operate with an instrumentally optimal theory, although it is false, but in a way that cannot be empirically detected by us and, thus, will not practically harm us. Thus by performing abductive inferences to unifying theoretical models we can only gain but not lose something.” (Schurz, 2018, pp. 3894–3895)
Hence, adopting the abductivist conceptual framing, one is concurrently collecting and analysing data and reviewing the literature, with in-situ validation of the proposed theoretical framing (Ong, 2012). This leads to generalisable, applicable and meaningful answers to real pains relevant for studied field's stakeholders. Many STS scholars have argued for similar epistemologies, for instance, Pickering describes what he terms as “pragmatic realism” (Pickering, 1995, p. 183) as “machinic performances and representational chains, and how they are aligned with one another in time”. In Pickering’s analysis, such approach is the best option for exploring “the mangle” of “resistance” and “accommodation” within the practice of scientific research and technological development, with the aim to expose the “reconfiguration and extension of scientific culture” (Pickering, 1995, p. 21).

This was also a very intuitive mode of research for me, as I previously studied in natural sciences (Physics and Astronomy) and I transitioned into STS primarily to work on deepening the understanding of social, economic and political factors affecting the processes of innovation, knowledge and technology exchange and public engagement. These topics of interest sprung from identifying past and current issues and challenges with the effectiveness of these processes and their valorisation, both within science as well as in wider society. Such motives and questions already set me on a path towards abductive research, with further research design considerations only reinforcing its suitability, in particular with respect to longitudinal study and access to field.

Furthermore, in contrast to "fully-inductive" approaches, such as grounded theory (Thornberg and Charmaz, 2012), abductive epistemology does not presume that there is an unbiased "naive" researcher, which makes it very suitable for theorising participatory action research with obvious vested interests. However, it is also not fully normative. A deductive approach would in a similar programmatic research context likely work to reinforce the researcher's bias by a priori limiting the scope of the study, reducing the richness of the collected data and narrowing the theoretical toolbox available. By advocating an immersive bottom-up analysis of the field to identify the research questions and then moving to a discursive theorisation and data collection, abductive epistemology is also much more flexible and iterative.

It is important to note, however, that such research philosophy leads to very close co-dependence and symbiosis between the researcher and the studied community. This way of conducting social science is often referred to as Participatory Action Research since it is based on extensive and active participation within the studied community (McIntyre, 2007). Such study design often contains a prolonged relationship with key partners, building trust and great depth of insight and (in line with abductivism) adopting a detailed understanding of the present issues/challenges. Though Sociology (and in particular Anthropology) scholars often consider immersive, active and participatory research
a “mainstream” research position, STS relationship with this type of research is uncomfortable due to our core experience with science being socially and politically biased, identified, for example, in the seminal work of Gieryn (1983).

The key problem for the researcher in this situation is the (degree of) compromising of objectivity in the face of going “native” in the field (i.e. adopting an inherent bias shared by the researched community). I propose to tackle this possibility in three ways:

1. **Appeal to professionalism within the community.** The researched community is a professional one, hence it is an imperative of their professional integrity to be objective in their interaction with the researcher.

2. **My Reflexivity.** Whilst some forms of bias and even “boundary work” (Gieryn, 1983) might be present in this community, I, as a researcher, have to recognise it and address it openly in my writing.

3. **Embracing the bias.** Any subconsciously remaining bias (Platt, 1981), should be, in my opinion, embraced. As this is an instance of active participatory research, I do not want to hide the fact that my research has an agenda. However, this agenda is not incompatible with my ethical and scientific values, as though the research is there to describe the world in order to influence it, the potentially political decisions about the “influencing” are not taken as part of the research itself.

I believe that such an approach, to immerse oneself in the field, engage with stakeholders for a prolonged period of time and abductively develop understanding of their practices - by actively participating in dealing with their challenges - combines the best of scientific rigour and pragmatism with producing applicable, relevant and meaningful insight from social scientific point of view. Reflexive and analytical accounts of the experiences in the field based on these premises will be analysed in the discussion section, as I now turn to addressing ethical considerations of the PERIpatetic Approach.

**Introspection: Ethics of Being on the Inside**

The position as a participant researcher and the elite nature of the studied community bring about ethical considerations due to the potentially problematic positioning of the researcher as a participant.

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5 This approach was guided by the University of Edinburgh Research Ethics framework, including Policy on Conflict of Interest (The University of Edinbrugh, 2002) and the School of Social and Political Science ethics self-audit procedures. The research project obtained Level 1 Ethical Review Approval from the University of Edinburgh.
in a (politically) business development operations and collaboration with key partner(s) in the field, and as a peer/insider researcher. This carries significant reputational risks due to:

1. possible perceived conflicts of interest, which could be damaging researcher’s academic integrity through bias and conflict of interests, and
2. potential damage to the collaborating organisation by researcher’s conduct to third parties in the course of the affiliation.

My (partial) “embeddedness” in a key player in the sector meant access to (high-profile) actors was relatively easy, however engaging them and maintaining their trust was an even more precarious task, as any potential misstep on my part may damage the reputation of my collaborating partners. This includes maintaining good personal relationships in the face of asking challenging questions and scrutinising individuals’ expertise and work practices, which can prove difficult (Ostrander, 1993). In my opinion, these considerations can be resolved with a constant careful situating of me, as the researcher, and my project with respect to the collaborating partner and (home) academic institution. The uninformed insider approach allows for this by enabling the role-play of gaining access to the field via my research partners/gatekeepers (becoming an insider), but conducting it as an (uninformed) academic. Importantly, this approach requires careful interaction with the other actors and constant revisions and improvements to researcher’s strategic positioning.

However, my collaboration with ATC Innovations could be perceived as both potentially creating a conflict of interests as well as introducing bias in my work. For instance, given my close association with the collaborating partner, it might not be unreasonable to assume a conflict of interest on my part, however, closer examination renders such concern unfounded. The key reasons for the dismissal of these concerns are, foremost, the nature of the collaboration is significantly different from a commercial investment into a research programme, as this project is part of a mutually beneficial research partnership without any stipulated outcomes nor any restrictions outside general confidentiality of sensitive data and respective policies regarding ethics and intellectual property.

Furthermore, the research partner and gatekeeper I was embedded with, ATC Innovations, are in themselves part of a public body, UK ATC, which is a subsidia of the Science and Technology Facilities Council (STFC), themselves part of the UK Research and Innovation (UKRI). This means that they are bound by the same high ethical standards and accountability as myself, through my funding from Economic and Social Research Council (ESRC) – another UKRI council. As public bodies are mandated to be in pursuit of benefits to the society without any profit arising to any individual (save from intellectual property), no relative advantage should be gained by any party in this process, eliminating the possibility of an interest-based bias.
On the subject of introducing bias, a further challenge in all interviewing is to contextually recognise how competing interests influence the informants’ points of view, both during the interview itself, as well as in data analysis. This is to ensure, with as much rigour as possible, soundness and validity of the obtained information. As such an “insider” interviewer has to be even more considerate of the smallest nuances in the tone of voice, hesitation, evasion of the question, using a specific turn of phrase, sarcasm, or statements with double meaning when answers are given (Knapp, Hart and Dennis, 1974). However, such issues are not unique to “insider” positionality, it is a feature in all social-scientific research and is always a complex and challenging balancing act of examining, extracting and assessing obtained data. As outlined earlier and explored further in the discussion, using the positionality of “uninformedness” was a great asset here. By engaging in a role-play, I tried to abstract my “insider” status from the data collection exercise, and hence encourage as much as possible the expression of a un-altered point of view by the participants. I have then used iterative abductive epistemology approaches to analyse the data through narrative examination, in particular by contextualised trend analysis. This, however, does not remove all bias, in particular as related to overarching framing of the inquiry, due to embeddedness in the field. Hence, proponents of participatory action research approach sometimes suggest the acceptance and acknowledgement of such partiality as a means to effect change (Lundy and McGovern, 2006).

In parallel to addressing the concerns regarding academic (im)partiality, due to the nature of the data collection environment (i.e. a very competitive business sector), special care was taken to ensure this project protects commercial sensitive data collected from informants as well as from collaborating partners. I considered this as my ethical obligation towards the interviewees, as my research should create any undue advantage or disadvantage to the informant. Though there were no questions asked about any specific intellectual property or product feature, some information about specific products and their development and the companies’ business partners was being collected. This issue was discussed at length with the informants prior to the interview, to ensure the informants were comfortable with the steps taken to protect the sensitive information. The two key steps were:

1. After the interview, data was carefully extracted from the data matrix with the removal of any identifiable features of products, companies or people (which could trace the information supplied back to the company or person who supplied it).

2. Additionally, all other parties mentioned in the conversation were also anonymised, with the exception of some key players due to their unique position. (There is, after all, only one national (UK) and one European Space Agency.)
Even for a very immersive research mode, like the one outlined in this paper, I believe informed participant’s consent is vital. As per standard University of Edinburgh procedure, an information and consent form has been issued to all participants, read and signed by them, counter-signed by the researcher and deposited in my personal archive. The form also offered an option of choice of the level of anonymity - general anonymity of participants was ensured as standard, however, in case a quote of significant importance would arise from the interview, the researcher reserved the right to use it when presenting research findings. Participants were offered to opt-out of this arrangement (by ticking a box) and be granted complete anonymity. Very few informants selected this option, which indicated that they were happy to “be on the record” with their answers. This further confirmed my belief about their participation being professional in its nature, agreeing with my previous assumptions about their answers being full and honest, and all relevant substantive data being provided verbally.

Discussion: “Not all who wander are lost!”

In the above auto-reflexive and analytical account of my initial conceptualisation and in-the-field experience of abductivist participatory action research of professional elites with the Biographies of Artefacts and Practices-inspired participatory strategic ethnography, I have been guided by and/or have noticed three key elements which underpin my application of the PERIpatetic Approach as an uninformed insider. These three key elements are:

1. The crucial role of building trust and a meaningful relationship with the studied community to gain access to data and a level of a comprehensive and holistic understanding of the environment, to enable abductivist epistemology - i.e. the need to be an “insider”.

2. In order to deploy participatory action research practices in a neutral and inclusively helpful way, one needs to be as intellectually flexible, open-minded and unbiased as possible, hence the need to be “uninformed”.

3. Being an “uninformed insider” is a dynamic relationship with the field, requiring role-play, careful interaction with stakeholders and constant re-evaluation and repositioning in order to maintain the inside-outside and informed-uninformed balance.

Starting from the bottom of the list, it is self-evident that researcher’s positionality is tied in with very dynamic positions and processes and only constant reflexive (re)evaluation and (re)configuration can enable a researcher to keep within the boundaries they set and reap their benefits. As noted by Mikecz:
“positionality is not solely determined externally in the context of an insider/outsider dichotomy but is on a continuum that can be proactively influenced by the researcher” (Mikecz, 2012, p. 482)

Of particular importance is the everyday work that a researcher needs to do to maintain this balance and it is in this context that the aforementioned ethical and practical challenges of uninformed insider approach come to the fore. Rhetoric and communication is the sole most important factor here, as well as setting up a clear framework of rules and behaviours, which is being constantly updated. Though the outsider-insider and informed-uninformed might at a first glance look like dichotomous relationships, they are, of course very spectral in nature. This makes the role-play and interaction more broadly very fluid, as in certain cases the uninformedness and insiderness need to be played up (or down) more than in others. The experience with the project outlined here was such that rhetorically crossing these two divisions was not too difficult or uncommon, but the overall the balance of my positioning in interactions was firmly on the side of being an insider and uninformed.

Moving to the trust-building and access, I found that being embedded in the field meant contacts with professional elite informants were not difficult to establish, but they had to be approached carefully. In particular, this relates to a personal introduction to (new) contacts and specifically noting affiliation status (with the University, research partners, project funders, etc.) and research type (i.e. academic). In my view, it is important to be honest and not omit or deny the entirety of the context/situation, but to frame its presentation to stress those credentials, associations and features of the research, which are assumed to be most trustworthy to a particular informant. As an example, studying a business community, early and proactive highlighting of care and concern for protecting sensitive information is critical. This often spills over in explanation of required information into a justification of research as a whole and more specifically the themes and questions in the interview. Here, like with the personal introduction, I argue that an honest but carefully framed approach works best and is the only ethically acceptable and practically available solution. In my case, this meant stressing the applied and developmental nature of my project, whilst being very clear there are also theoretical (academic) interests involved.

I found that it was a deeper relationship and investment I had in the community that enabled me to develop a holistic understanding of the field needed for abductivist knowledge-making process. It led to the identification of real-world issues and pains, and made possible continuous iterative dialogue with a multitude of actors (through formal data gathering and informal discussions) to develop theoretical understanding and applied solutions. Upon gaining access, I usually encountered no issues or challenges of being able to develop and maintain a longitudinal relationship with the studied
community, though that does require work in itself (presence at industry events, supporting various stakeholders’ projects, etc.). In addition, as the continuous physical presence (a desk at the research partners office, attendance and participation in events, visiting firms I interviewed instead of telephone or electronic communication) and virtual/social engagement (writing and publishing information, social media interactions, being “known”) made me a true insider, so, when data collection was taking place, it became even more vital to assume, enact and internalise uninformedness.

As discussed previously, the uninformedness as part of this approach is conceptualised as both an acknowledgement of the true state of the knowledge asymmetry, as well as an epistemological necessity to remove as much bias and pre-conceptions as is possible. The latter is particularly important for two reasons, on one hand, to establish academic impartiality and associated integrity (an important condition of participatory action research), and on the other hand, to enable a holistic perspective on the field in order to successfully deploy abductivist research design. The considerations related to the role of uninformedness within the established epistemic regime are particularly interesting, as this is a deliberate act of researcher’s positioning.

The activities behind the exposition and enactment of the uninformedness of the insider researcher are structured in two ways - the upfront positioning through a personal introduction and in the design and deployment of interview/data collection questions. In the positioning part, these are simple substantive moves of identification as a non-expert or acknowledgement of knowledge asymmetry in some other way. In the data collection part, however, the action of the researcher is more complex, within the suggested framework of “role-play”, which includes co-option and cooperation of the informant/interviewee. In the case of my project, the co-option and cooperation were obtained by an up-front explanation of the epistemic requirement for such procedure and behaviour, which was well-received by all informants/interviewees. In a similar way, my uninformedness was overall well-received in all informal interaction with the field and was harmonised well with my developed insider status.

Conclusion

All in all, I argue that the PERIpatetic Approach, based on participatory strategic ethnography of innovation and the “uninformed insider” position, provides an epistemologically optimal context for a social science researcher. As noted across this chapter, this type of positionality for close-quarters research within professional elites has already de facto been established in many fields of social science, but here I argue that it is equally applicable to STS research on innovation (and business
communities) of practice. This was illustrated with an example of researching the Space Sector in Scotland, outlining facets of research design, experience in the field, and reflexive analysis.

In addition, I argue that the adoption of such an approach leads to a greater scientific quality of our empirical work, through strengthening our reflexivity and allowing greater attention to nuances and details. This has been recognised in many settings and has been labelled by many researchers in different ways, needs more coherent and firmer systematic analysis in order to establish its scientific validity, hence the acute need for the type of analysis such as the one presented in this paper.

Hence, I would like to conclude with a few observations (and possible limitations) and put forward some suggestions for the future development of similar reflexive accounts and analysis.

First and foremost, I have to highlight my appreciation for the degree of acceptance and support of my research ideas and eventually data collection by my research partners and gatekeepers, whose extraordinary readiness to assist me and engage with my work may not be universally applicable. Secondly, I have to note the crucial and outstanding intellectual openness and academic support within my department, which accepted and enabled this somewhat exotic mode of research. I believe it is possible that in this respect, I have been one of the lucky ones.

However, it is important to note the limitations of the past and present understanding of the PERIpatetic Approach and how it relates to other contemporary observations. First and foremost, its deployment so far has been limited to a single comprehensive study and though its component elements are well articulated and documented elsewhere, further deployment and its analysis is sorely needed. In addition, due to longer time-scaled of impact with innovation (eco)system development, the particular impact and success of the participatory and abductive research is yet to be fully captured. Though anecdotal evidence of the critical contribution my PERIpatetic project made to the consolidation of the Scottish Space Industry (for instance through use in strategic documents, intermediary’s programme development and planning and through the reach of awareness-raising), the longer term effects of a PERIpatetic researcher’s input into development policy has not been looked at. These are specifically interesting questions, as seen by the work on the “challenge function” of social scientists providing tacit and gradual knowledge transfer in policy-making process (Kattirtzi, 2016) to subordinate (even instrumental) use of social scientist within emerging science fields (Szerszynski and Galarraga, 2013). It is hoped that novel paradigms of more participatory and collaborative integration of knowledge-making, such as the Responsible Research and Innovation (RRI), will:
“allow for new and more fruitful science–society relations [...] and for the sake of collectively imagining better sociotechnical futures and directing action towards achieving them. [...] RRI requires an integration of the natural sciences and SSH [Social Science and Humanities] disciplines and that the nature of that integration must be researched as an empirical question” (Delgado and Åm, 2018, p. 8)

Hence, in terms of further reflexive engagement with this theme, I would like to encourage other descriptive and analytical accounts of research philosophy and its relationship to positionality, which are currently by and large still a rarity in the STS literature. I hope that my honest and as complete as possible documentation of my experience in this respect attracts constructive feedback and (re)opens the discussion regarding the often falsely dichotomised and ignored issues of our presence in the arenas we study. I think of particular interest would be accounts of contention and rejection of researcher’s position, which have so far been seen as “negative outcomes” and, hence, shared a similar fate to inconclusive or negative scientific findings. However, it is precisely these instances of inability to form these research relationships or their breakdowns, that might start to illuminate which of the many elements involved in constructing one’s research approach and position with respect to the studied environment are critical for successful trust-building and acceptance and which are (merely) individual preferences.

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