Multi-sited Ethnography

Theory, Praxis and Locality in Contemporary Research

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Chapter 3
Scaling and Visualizing Multi-sited Ethnography

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Think geology. Images of sediment, layer upon layer, continually pressing upon each other. Nuanced terminology for describing both slow and catastrophic change. Techniques for recognizing faultlines – the lines between tectonic plates where earthquakes are likely to happen as the plates move past one another. Historically, the earth sciences have been observational sciences; explanation was their goal. Increasingly, as the threats of natural hazards and environmental problems garner greater attention, the earth sciences are called upon to anticipate the future.[1] Empirical observation of past and present dynamics are relied on to predict earthquakes, hurricanes, rising sea levels, climate change, and so on, and to direct public policy. As historian of science Naomi Oreskes explains, there is now a huge demand for temporal prediction in the earth sciences, and practitioners have had to develop new techniques and technologies (particularly computer models) to respond to it. They also have had to struggle with questions about how (scientific) knowledge production works, questioning different ways of using and extrapolating from observational data, figuring out what role the knowledge they generate can and should have in policy arenas (Oreskes 2000).

This predicament – regarding what can be called the promissory nature of data – is of course familiar to cultural anthropologists and is no doubt why anthropology has recurrently been linked to social reform initiatives (Fischer 2007). Like earth

1 Geological terms and images have been recurrent in anthropological studies of the sciences, in part because of the influence of Gilles Deleuze, in part because geology offers a theory of change resulting from accretion, sedimentation and faultlines, which is particularly important in critical studies of the sciences given conventional narratives about big men, their genius and their revolutions. Note, for example, Mike Fortun's critical conception of 'fissures' and 'volatility' in his book about genomics in Iceland (a geologically fissured and volatile locale) and the global economy, and Sharon Traweeks's suggestion that thinking in terms of 'faultlines' in Science and Technology Studies can help us draw out ways 'knowledge is being defined and made at the edge of times and places called modernity' (Fortun 2008; Traweek 2000). An 'ethical plateau', in Fischer's conception, is a site 'where multiple technologies interact to create a complex terrain or topology of perception and decision making' (Fischer 2003, 36). Ethical plateaux, like geological ones, are created through accretion and sedimentation, and they 'work' by providing grounds, by moulding and by pressing – sometimes cataclysmically – against surrounding formations.

science data, ethnographic data speak, so to speak, beyond what they represent. Yet representation – or at least aspiration to representation – remains key. Researchers strive to know and report on their object of concern – whether a rock or cultural formation – as faithfully to the object as possible, knowing that the meaning of what they observe inevitably exceeds what they in fact observe. And knowledge of the excessive and deferred meaning of 'data' in turn shapes how observation proceeds. New questions come to seem critical, and previously unrecognized causal mechanisms begin to seem significant. There is, then, a funny looping. Observation proceeds iteratively, driven by extrapolative readings of what observations thus far mean and imply. It is this looping, in my experience, that produces multi-sited ethnographic projects, and a sense of ethnography as and of open systems.

Open systems are systems that are continually being reconstituted through the interaction of many scales, variables and forces. Increasingly, such systems are the 'objects' of cultural analysis. Whether the system of concern is the global economy, an organization, or an individual subject, the task is mapping an array of constitutive dynamics – including but not limited to dynamics at the local level. These kinds of project differ in important ways from traditional anthropological projects while preserving in depth engagements with real world situations as a defining methodology. They are often based on complex research designs, involving ethnography at multiple sites, engagement with multiple scholarly literatures and disciplines, and fluency in many languages, technical as well as natural. At their best, these projects result in dense and complicated accounts of how the contemporary world works, which have relevance both to scholarly debates and to practical efforts to respond to social problems.

In this chapter, I discuss the scaling and visualization of open-systems ethnography, drawing out methodological rationales and challenges in interrelating multiple sites and levels of analysis. Thinking geologically, I argue, and in terms of multiple strata – from the nano level where subjects are constituted, though levels where technology, organizations, economics and other forces are in play – helps orients without determining the parameters of open-systems analysis.

Informatics also provides vital resources – literally and figuratively – for visualizing ethnography as/of open systems.[2] Imagine digital maps that layer different kinds of data and allow readers to drill down to increasingly specific detail. Imagine being able to click through to images of 'the same thing', from different angles, at different scales. Imagine meta-data that describe how data

2 In the preface to the second edition of *Anthropology as Cultural Critique*, Marcus and Fischer (1999) note that many of the metaphors for the 'functionalist' and 'structuralist' vocabulary of earlier social theory derived from the mechanical and physical sciences, and how useful metaphors for understanding and describing contemporary reality can be drawn from the life and information sciences. Scientists' way of describing bacterial and viral action, genetic transmutation and symbiosis, for example, offer ways of thinking about society and culture as emergent from mutations, viral transitivity and rhizomatic growth (ibid., xxvi).

lower down in a system are configured so that they can be found, talked about, and more easily interpreted, shared and compared. Meta-data force things into boxes, which are organized into sets, and linked in multiple ways. They are reductive, to facilitate freer play.

Anthropologists, in my view, need this kind of meta-data. They need more overt ways of talking and thinking about the data they create and use, and about the kinds of knowledge they produce. Such articulation could help us see how different parts of the systems we study corroborate and collide. It could facilitate comparison across locales and anthropological projects. It could facilitate collaboration with researchers from other disciplines. It could facilitate movements of anthropological knowledge into the public sphere.

This is not a call for standardized methodology or a unified research programme. It is an argument for figuring out types of knowledge that result from ethnographic study. Results from one study can, no doubt, orient attention in other studies. But validation is not the goal. Methodological acumen is.

Scaling

What, then, is it that anthropological study of open systems creates knowledge about? I have found it useful to think in terms of scale, to facilitate intertwined cultural and political economic analysis, in particular.[3] It is noteworthy that one needs to add strata to conventional scalar schema in order to articulate what actually goes on in – and often centres – anthropological projects. Adding strata to a conventional scalar schema also helps draw out what it will look like to integrate Science and Technology Studies (STS) – the field I now work in – into anthropology, methodologically rather than topically. The recursivity of it all – the way anthropology itself is scaled as it strives to articulate scale in what it studies – is not insignificant.

Notions of scale themselves of course require ethnographic scrutiny. In STS, we are aware of the many different ways that 'scale' is understood and relied on in different disciplines of the natural and computer sciences (Helmriech 2000, Schienke 2006). Social scientific conceptions of scales also need to be understood as historically and culturally constructed, and as inevitably limited. There is a tendency, for example, to think of 'top-down' as the way power operates oppressively, and of 'bottom-up' as revolutionary. Life – whether biological or social – is not so simple. Scale is a heuristic, which, like all heuristics, provides

3 A challenge laid out by Marcus and Fischer in the mid-1980s, which has oriented much of my work, is 'to find a way to embed richly described local cultural worlds in larger impersonal systems of political-economy' (1999, 77). A key goal is to use empirical work at the local level to reshape 'dominant macro frameworks for the understanding of historic political-economy, such as capitalism, so that they can represent the actual diversity and complexity of local situations for which they try to account in general terms' (ibid., 88).

a way of seeing that frames and orients perspective. At its best, scale provides a way to see many types of action in motion at once, evoking a sense of the system at hand. Scale keeps track of the diversity of forces that animate a given system – whether that 'system' is a subject, an organization, a discourse, or a market.

I have found it useful to think in terms of seven strata, topped by what I think of as the 'meta-level', thinking – as I have already said – in terms of the meta-data used to make sense of complex information systems. Meta-data do not encompass what is stored lower down in the systems, but they do organize what is used, compared and considered of interest. Meta-data recognize some things and not others, at times occluding through in-action – by failing to name, categorize, or link, information, for example.[4] What anthropologists often refer to as a dominant discourse operates on this level, and in this way. Dominant discourses shape without determining thought and behaviour. They can be more, or less, in synch with the real world.

Analysis of dominant discourse allows anthropologists to provide historical perspective on what is considered true, good and worthy of attention, and to reveal ways thought and language are organized to permit some articulations but not others. This can be done through analysis of the binaries that sustain a discourse, or through delineation of ways narrative form and 'thought style' delimit articulation. Understanding of 'discursive gaps' – holes in what it is possible to say – often emerges when the anthropologist is also working at other scales. One figures out a discursive gap by knowing what is going on at other levels. Anthropologists identify such gaps in the discourses constitutive of whatever it is that they study, and also in their own discipline.

In the aftermath of the Bhopal disaster (Fortun 2001), for example, a number of dominant discourses were in play.[5] The ideals of modernity – science as a means to progress, for example – operated, though in somewhat unexpected ways. It was not governing elites, but activists in the People's Science Movement who had trouble dealing with the Bhopal disaster as an example of science gone wrong. At one point during my fieldwork, these activists declined to participate in demonstrations in support of gas survivors' demands because they could not make Bhopal square with what they felt they stood for, that is science and technology as means to progressive change. Meanwhile, governing elites were shaped by other ideals and dominant discourses. Most significant was their 'investment' in discourses that made progress and prosperity dependent on foreign investment and multinational corporations. This investment dramatically shaped how the Bhopal case was dealt with. When the case was settled out of court for what many considered a ridiculously low sum, for example, a government representative explained to the

4 Consider, for example, Elizabeth Povinelli's (2002) account of ways multicultural liberal discourse recognizes, and fails to recognize, indigenous alterity.

5 The immediate cause of the 1984 Bhopal disaster was an explosion and gas leak at a Union Carbide plant that manufactured the pesticide Sevin. Less proximate causes included investments in the Green Revolution, market logics, and so on.

press that the settlement should be understood as a message to the world that India welcomed foreign investment.

Middle class activists working on behalf of gas victims were also shaped by dominant discourses, from various Left-leaning lineages in particular. Various Marxisms and Feminisms, Gandhianism, Anarchism: all had imprints. One way I tracked how these discourses operated was by talking with these activists about how they came to be activists, and by listening to their motivations and rationales in their day-to-day work. I also read what they read: anarchist tracts sent from Ireland (which, somewhat ironically, preached the value of local determination), novels and poetry. The heroic figure was often cast as one sure of his commitments and the right course of action to realize them. Such a figuration productively animated many activists but also, in my view, confounded them. Work on behalf of gas victims was far from straightforward; daily work was fraught with difficult decisions about legal strategy, about working (or not) with government hospitals, about working (or not) with different survivor organizations. Images of Che Guevara did not seem to me very helpful, indeed more often than not they contributed to burnout and in-fighting among activists.

Nor were iconic anthropological images too helpful. I certainly was not alone in the field with natives dramatically different than myself. Journalists were of course part of the scene; many of the middle-class activists with whom I worked and lived had class, educational and family backgrounds rather like my own; over time, even gas survivors – many of whom endured extraordinary economic and health insecurity – came to seem as much Same as Other, linked into a global system of industrial production and risk that I, too, lived within. Linkage between India and the USA was an obvious part of the Bhopal story from the start because of the role of Union Carbide, but this linkage took a while to register ethnographically. My research addressed the work and logic of activism in Bhopal, albeit focused on how activists' writing practices indexed the ways they understood the worlds – local, national and transnational – that they operated within. It was only later that Bhopal as a geographical location became really de-centred for me.

Over time, I realized that there was an ethnographic response to powerful constructs of 'Bhopal' – by Union Carbide and other corporations, in particular – as an unpredictable, isolated and not likely to be repeated event. More fieldwork would be required, at multiple sites. I needed to look beyond the local, at the way plant design decisions were made at Union Carbide, at plant communities in the USA, at the logic and force of international trade agreements being signed as the Indian Supreme Court decided the Bhopal case.

I certainly did not anticipate at the outset what my study of the Bhopal disaster would become over time. 'Multi-sited ethnography' was not yet in the vernacular, nor even was 'globalization'. My sense of how best to configure the study, and later a book, emerged iteratively, driven by ethico-political implications (the promissory nature of so much of the 'data') and also by awareness that much had already been written about Bhopal, and about the extraordinary, often abusive, power of multinational corporations. It was a challenge to figure out what kind of book needed

to be written in an already rich field. Thinking in terms of dominant discourses helped. With time, I realized that I wanted to talk back to dominant discourses about both activism and an emerging global order. Thus, my book's title: *Advocacy After Bhopal: Environmentalism, Disaster, New World Orders.* One goal was to draw out how progressive advocacy *really* worked on the ground, at odds with many entrenched ideals. Another goal was to show how dominant (and at the time accelerating) discourses about free trade and global 'harmonization' were out of synch with how the world *really* was. Mismatch between dominant discourses and what my ethnographic material demonstrated became the book's organizing logic.

Something else, however, also drove what my Bhopal study became. As I discussed in my book, Bhopal was a disaster in more ways than one. It confounded established ways of thinking and doing things. The disaster was complex in many ways, and corrective action never straightforward. Political ill will was part of it, but also well intended but ultimately ineffective effort. Claims about causes, effects and possible futures were usually intensely disputed, and rarely settled. Meanwhile, the overwhelming and enduring tragedy of it was omnipresent. It was extraordinarily humbling to conduct fieldwork in this context. It was this, I think, as much as scholarly theoretical commitments, that drove my sense that I needed to see 'Bhopal' from different angles. That it was many things. That vantage point mattered. A 'multi-sited' approach thus emerged.

The macro level, the level where markets, laws and other translocal institutions work, thus also became a (ethnographic) concern. Often, when anthropologists work at this level, their unique contribution is in detailing how such institutions configure in different ways in different locales. But they also work from another direction, explicating how translocal institutional forces are themselves produced, demonstrating how the macro level is itself an emergent effect.

In the Bhopal case, it was the force of law that dominated my attention. Courts in the USA declined to exercise jurisdiction, citing the doctrine of 'forum non conveniens' [inconvenient forum]. Invoking this principle meant that the judge concurred with the defendant (Union Carbide) that relevant witnesses and evidence could be more conveniently accessed if the case was heard elsewhere (in India). Very early on, then, crucial corporate decisions, about plant design in particular, were excluded from legal scrutiny. I also followed the case in India, where the force of law tangled quite explicitly with the force of markets and efforts to secure the Uruguay Round of trade agreements, which transformed the General Agreement on Tarriffs and Trade (in place since World War II) into the World Trade Organization (WTO). WTO's website describes how, by the end, 123 countries took part in the Uruguay Round, and how it covered 'almost all trade, from toothbrushes to pleasure boats, from banking to telecommunications, from genes of wild rice to AIDS treatments. It was quite simply the largest trade negotiation ever, and probably the largest negotiation of any kind in history'.[6]

6 <http://www.wto.org/english/theWTOe/whatise/tife/fact5e.htm>, accessed 14 July 2008.

The Bhopal case was entangled in this. The case was first settled in 1989. The Indian Supreme Court upheld the settlement in 1991,[7] just as trade agreements were being signed and the Indian rupee became convertible. Extra-local dynamics certainly shaped what Bhopal looked like at the level of law.

The extra-locality of 'Bhopal' was clear from the outset and from Bhopal itself. Making this a matter of method was, nonetheless, far from straightforward, and took time – concretely, a postdoctoral fellowship during which I had time to continue research in the United States. It was through this research that I was able to explore, from the ground up, so-called 'harmonization' – the effort to make product standards and regulatory policies uniform globally to facilitate free trade. Interviews with labour organizers, workers and residents of fence-line communities in the United States were useful. I also learned, from labour organizers, about Congressional hearings (held in 1991) focused on increasing reliance on contract labour and 'near misses' ('almost Bhopals') in the petrochemical industry. In these hearings, industry representatives argued that regulation requiring increased reporting of factors contributing to safety problems would not be useful because hazardous conditions were so site specific that lessons were not generalizable. Labour organizers disagreed, articulating the reality and promise of harmonization quite differently (Bedford 1992).

The meso level – that of social organization and interaction – was also critical. Here, victim and activist organizations and networks operated, alongside various government programmes, to provide compensation, health care, job training, and such. Viewed at this level, Bhopal was an extraordinary organizational challenge and opportunity. Over 600,000 people were affected by the gas. Already-taxed social and health service programmes literally went into crisis mode, and this became subject to an important critique advanced by activists. Years after the gas leak, many programmes still operated with a crisis logic that implicitly disclaimed the need for long term, sustainable programming. Activist organizing around Bhopal was also a challenge, and an opportunity. One activist explained all the conflict amongst activists working on Bhopal as indexing 'the death throes of Marxism' in India. Others worked to use Bhopal to galvanize an emerging grassroots environmental movement. 'Bhopal' acquired a momentum of its own in these circuits, tied to but not determined by what went on in Bhopal itself.[8]

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7 In the early 1990s, pressure on India's economy came from many directions. The first Gulf War caused fuel prices to almost double, exacerbating balance of payments problems; the war also meant that many Indian workers in the Gulf came home, reducing the flow of remittances. Conflict at home – between (some) Hindus and Muslims over the Ayodha mosque, and over reservation of public sector jobs for scheduled castes – also made a difference, shaking confidence in the Indian government both at home and abroad. As it became increasingly difficult to borrow abroad, India made various agreements (with the IMF in particular) that committed the country to economic liberalization.

8 The meso level has renewed importance in many anthropological studies today given interest in the way people distributed around the world are interlinked – through migration,

The micro level is, among other things, the level of practice. Here, my focus in the Bhopal study was on writing – on what and how activists, in particular, wrote. As I described earlier, my interest was in the ways writing practices were a means by which activists made sense of the discursive terrain in which they aimed to be effective. Talking about how to cast a legal argument – for journalists or the courts, for example – was an opportunity to consider how the courts or journalists were functioning, and could be addressed. Ethnographic consideration of how activists wrote gave me insight into how advocacy really worked on the ground, while also providing me with activists' own readings of the other scales that I came to be interested in.

Subjectivity, or 'subject formation' – the focus of many anthropological projects today – operates at what I think of as the nano level: below, so to speak, levels where dominant discourse, organizations and markets operate, shaped by but also constitutive of practice. Subjectivity is akin to what has been called 'personhood' or world view, but more overtly acknowledges the weight of history, the strange loopings of the unconscious and the way space and practice come to inhabit the body. Images of sedimentation – of subjects formed through processes of accretion, sometimes harbouring faults – are particularly useful.

In Bhopal, I was particularly interested in the subject formation of middle-class activists – in the ways caste and class backgrounds, different Leftist lineages, educational and practical experience, and so on, came together to make particular things seem good or bad, possible or untenable, obligatory or optional. I was also interested, in a less concentrated way, in how and why corporate actors experienced the good, bad and ugly. Understanding the latter was clearly important in trying to understand what seemed to me to be gross corporate negligence. Trying to understand corporate actors as subjects was also called for in efforts to explicate the strategy and sincerity of corporate greening, which emerged in full force in quite direct response to the Bhopal disaster.

Operations on the technological level – which includes prosthetics of knowing (from censuses to phones to Earth Observation Systems) as well as modes of transport and production – are also critical. Technological infrastructure, like other kinds of structure, compel some things and limit others, function and dysfunction. Ethnographic examination of technological infrastructure can reveal how caste, class and other hierarchical orders are produced – 'enumerated', in Cohn's (1987) classic formulation – and how some problems and people are visible and attended to, and others are not. The medical categorization scheme relied on by the Government of India in their dealings with Bhopal gas survivors, for example,

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capital flows, and media circulations, for example. In some ways, work to understand meso level phenomena builds on earlier anthropological studies of kinship, political and economic networks. The difference in an open-systems analysis is in the attention given to runaway reactions and blockages – to disjuncture as well as function. Recall, for example, Appadurai's emphasis on disorienting 'disjunctures' between economy, politics, and culture, which older approaches had discounted (Appadurai 1990).

was a prosthetic of knowing that determined who and what received care, and did not. Ethnographic examination of technological dysfunction – 'runaway reaction', as happened in the Union Carbide chemical plant in Bhopal, for example – is also critical. Often, an initial challenge is to map the many ways that potential for technological dysfunction is disavowed – tracking, in other words, the many ways that functionalism operates as powerfully among corporate and government planners as it does among anthropologists. Another challenge is to understand how technological infrastructure can be thought about and built with possibilities for both function and dysfunction in mind, recognizing that change *will happen*, and at times should be encouraged. Chemical plants, for example, can be understood as having inbuilt potential for 'normal accidents' (Perrow 1984) because of the vast number of linkages and pressure points that hold them together as systems. Chemical plants can also be understood, and built, as subject, or not, to change. Union Carbide USA engineers, for example, did not design for Indian conditions, exacerbating risks of disaster in Bhopal. Chemical company engineers have also denied potential to change the design of plants when confronted with local community and regulatory demands to reduce risk potential. Ethnographic analysis can thus draw out how technological infrastructure literally materializes particular theories of change.[9]

Finally, at the metaphoric ground, is what can be called the bio-material level. Here, anthropology accounts for the persistence of the body and the ecological – the 'natural', that is. Despite the breadth and depth of work in cultural anthropology and STS on the body and other constructs of 'nature', this level of analysis is often ignored, partly as a result of critical commitments to 'de-naturalize' and understand how things are 'socially constructed'. Feminists were at the forefront of earlier efforts to de-naturalize and de-biologize, and now (in an admirable reflexive loop) are at the forefront of efforts to bring material bodies back into view. Viruses and toxins in bloodstreams, contaminated water supplies and exhausted soils need to be attended to. They weight and animate the systems they are part of. Consider, for example, the toxins incorporated into the bodies of gas survivors in Bhopal, and the toxins that continue to leach into water supplies from the factory's sludge ponds.

All of these levels are constitutive of 'Bhopal'. Analytically, I find it useful to differentiate them, imagining the multicoloured layers of complex geologic formations, some layers thicker than others, some with fissures, all subject to change, even if slowly.[10]

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9 Designing for 'vulnerability' has become a goal of many activists and researchers focused on climate change (see Krauss, this volume). The critique of functionalism that I begin to articulate here is relevant to this challenge.

10 I also build here on critical race theorist Kimberly Crenshaw's conception of 'intersectional sensibility'. Crenshaw criticises identity politics for asking people to be either raced, woman or queer, and for ignoring intragroup differences – which makes it difficult to deal with domestic violence in black communities, for example, and limits the standing women, in particular, have before the law. Intersectional sensibilities involve

Ethnography of/at the Limit

A scalar schema is but one portal into what multi-sited ethnographic projects do and produce, and it is critical to recognize this. Thinking in terms of scale draws some things out, and obscures others. Recognition of this kind of limit is also critical in thinking about the practice of multi-sited ethnography. Multi-sited ethnography pieces together a picture of an 'object' with material from many (sometimes unexpected) places. Creativity and analysis is required to do this well; aspiration to be comprehensive is naïve and lacks critical purchase.[11] Even so, however, multi-sited ethnography is not merely aggregative, a matter of putting the right pebbles in the bucket.[12] Rather, it also leverages the way any take on an object is specific to the time and location of the taking. Material gathered at the varied sites of multi-sited ethnography thus provides multiple angles on an 'object'; the 'object' is seen through different frames of reference. The impossibility of absolute observation, space and time is thus turned to the ethnographer's advantage. Relativity becomes a tool; a sense of ethnography as a double game – both inductive and theoretical, observational and extrapolative, representational and constructive, of and at limits – begins to make sense.

Many imperatives drive such a conception of multi-sited ethnography. One can be considered ontological and materialist, emergent from recognition of the ways objects, context and knowledge are mutually constitutive, and from recognition of

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recognition of multiplicity: the simultaneous examination of race, ethnicity, sex, class, national origin, sexual orientation, and so on (Crenshaw 1989). Toxicologists would call this 'cumulative effect', and recognize that both scientific and legal/regulatory worlds have great difficulty dealing with it.

11 Multi-sited ethnography is sometimes understood as being without design, method, even theory – as somehow emergent organically without friction. Such a tendency, in my view, works against the critical potential of ethnography, and of multi-sited ethnography in particular. It is also important to recognize that multi-sited ethnography does not promise anthropological projects that do all things, comprehensively. Figuring out which scales to focus on, for how long, is a critical part of research design, for example. A scalar sensibility can help orient this figuring out.

12 Karl Popper sardonically described an inductive, Baconian vision of scientific knowledge production as the 'bucket method' – in which facts are gathered like stones and only thereafter do hypotheses emerge. Popper argued that this was absurd, insisting that science must proceed through a series of conjectures that could be refuted with facts. For Popper, hypotheses came first, then the facts were chosen accordingly (1959). Oreskes reviews this history of science in her discussion of the rise of temporal prediction (which is different than the kind of logical prediction Popper insisted upon) in her description of changes in the earth sciences, which I drew on earlier in this essay (Oreskes 2000, 33). Oreskes's point is that what counts as good science is historically conditioned. This is worth recalling in anthropology. It is also noteworthy that critical anthropological practice today – historically attuned, striving for 'cultural critique' (Marcus and Fischer 1999) – does not fit the simple binary that Popper sets up.

possibilities for producing new knowledge by shifting one's frame of reference. In other words: one pursues multi-sited ethnography because one knows, so to speak, that knowledge practices and objects are entangled, and that being differently positioned produces different perspectives.

Another imperative can be thought of as epistemological, emerging from an awareness of the way scholarly disciplines sustain critical edge through attunement to the historical context in which they operate.[13] Cultural anthropology, in my view, has been exemplary in this regard, reliably recognizing that the 'right' focus, analysis or book to write at a given moment is literally subject to the discursive field in which it takes shapes and will circulate. Multi-sited ethnography allows a researcher to (often slowly) figure out what the discursive field(s) at issue are, and then to pursue an 'object' of concern to it. The contours of this object may take a while to become visible; figure and ground are not obvious, but something the multi-sited ethnographer must figure out.[14] The right configuration is a matter of timing.

Finally, and significantly, there are ethico-political imperatives. Working across scale in multi-sited ethnography can produce understanding of the multiple pressure points where systems are subject to change, even if slowly or in ways hard to track. Points of entry light up, so to speak, through multi-sited, open-systems analysis.[15] In analysing the Bhopal case, for example, I learned, through an interview in California with a former Union Carbide engineer, that the pay structure for Carbide engineers in the years leading up to the disaster rewarded the design of big projects. This, according to my interviewee, shaped the decision to design the Bhopal plant with larger rather than smaller tank storage – dramatically increasing the risk of disaster. If a small tank of toxic material had blown up, the consequences would not have been as catastrophic. Other forces also affected the magnitude of the disaster, of

13 Consider, for example, how calls for prediction from the earth sciences were responded to, and in turn led to extraordinary developments of new techniques (particularly computational) for earth science analysis. The development of multi-sited ethnography amongst cultural anthropologists can be seen as analogous.

14 I write about oscillations between figure and ground in ethnographic work in 'Figuring out Ethnography', (Faubion and Marcus 2009). Here, it is important to note that allowing, even cultivating, this oscillation between figure and ground, context and scholarship, is, in some ways, at odds with a disciplined approach. But it is one way that scholarly disciplines can do something more than merely reproduce themselves, aggregating cases that confirm what they already know. The latter is important; testing knowledge across cases is critical to scholarly work, and often generates critical methodological reflexivity. Disciplinarity sets important limits. So, too, though, does the world and its temporal horizons. A temporal horizon – 'the contemporary', for example – can create a delimited space of work structured by something other than disciplinarity, yet leveraging what a specific discipline brings to its object of concern.

15 Not completely unlike what happens in gene expression analysis. Lights on the gene chip do not necessarily signal a problem, much less specify a corrective course of action. The lights do signal a need to pay attention to what is happening in a particular area.

course, but this information reinforced my belief in ethnography's capacity to identify subterranean forces that can have dramatic effects.

Understanding how scalar differences can signal disjuncture and discursive gaps can also drive multi-sited ethnography. Dominant discourse about justice or about corporate power, for example, may be inadequate for actors of all sorts on the ground, signalling a need for word work – the creation of what Michael Fischer calls 'lively languages' (2003) – at the local level, responsive to what the world looks like from that vantage point. I took on this kind of work at the site of the Bhopal disaster, helping writing press releases and missives to the courts on behalf of gas victims. Multi-sited ethnography opens up these kinds of possibilities.

Striating such imperatives – rendering them ontological, epistemological and ethico-political – is itself a constructive move, with critical intent. It signals, once again, the need for and advantage of persistent recognition of the limits – and possibilities – of any analytical mode. Recognition of such limits, and possibilities, is true to the way knowledge really works (sic). As important is the way it compels movements to and explanation with different analytical angles and modes, leveraging rather than trying to manage away differences of perspective. Multi-sited ethnography calls for and enables this.

Again, informatics and the earth sciences are suggestive. Few practitioners in these fields would say that a given (often computational) model for understanding a system of concern is sufficient in itself. People invest heavily in particular models, striving to make them as true to what they claim to represent as possible. But there is also play and engagement with different models, and ready languages for explaining the limits of particular models and of modeling in general. This does not prevent poor or unintended use of model results by policy makers or journalists, among others. Methodological language and acumen does, however, prepare informatics and earth sciences practitioners to enter the fray, sharing the knowledge they know best how to create, aware that there will be a continual need to interpret what it means. Anthropologists should consider their example, and borrow their images.

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