Traveling Comparisons: Ethnographic Reflections on Science and Technology

Gergely Mohácsi and Atsuro Morita

Abstract This special issue aims to investigate some novel uses of the comparative method at the intersections of STS and anthropology through ethnographic accounts of technoscience in various Asian contexts. In today's globalizing world, knowledge is under constant negotiation and reordering around conflicting ideas of progress and development. Nowhere is it more evident than in the daily practices of living and working with old and new technologies. Scientists, mechanics, physicians, and farmers whom anthropologists encounter in the field see development, uniqueness, or backwardness in their innovations in the midst of complex relations, which connect local innovations and routines with the transnational circulation of people, objects, and information. How do these flows and unexpected connections stimulate innovators and users to make comparisons in their daily engagements with technologies? How should anthropologists and STS scholars reflect on the fact that while comparisons make connections, connections make comparisons as well? This introduction tackles such questions in order to account for the rich traffic between conceptual frameworks and methodological tools in the five articles that follow.

Keywords ethnography · comparative method · mobility · relationality

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Travel and *comparison*—most anthropologists are quite familiar with these two words, but not as a pair. The five articles in this volume share the emphasis placed on their intersection; they treat technoscientific practices as critical sites for rethinking the relationship between comparing and traveling in the hopes of contributing to the dialogue between anthropology, STS, and area studies that has been unfolding on the pages of *EASTS* since its inception.[1]

In his introduction to the *EASTS* special issue "Science and Technology Studies in Southeast Asia," Warwick Anderson draws attention to the necessity of such a conceptual shift when he declares, "Sadly, the *comparisons* that thrive in area studies are often static and typological, lacking the dynamism and specificity that would better illuminate how science and technology *travel*." And he adds: "Thinking about science studies as area studies might help to loosen up our comparative faculties" (2009: 169, emphasis added). We tackle this challenge here through ethnographic means. But mind that we take the call literally. If the relation between comparing and traveling is regarded as one of dynamic flows and intensities, as we believe it should be, then it follows that they both change and transform each other in unexpected ways. It is precisely with such novel dimensions between conceptual and geographical spaces that articles in this issue are concerned, albeit from different points of view. That is to say, "traveling comparison" is used here as an experimental tool.

In particular, we want to argue that the increasing mobility of scientific ideas and technological innovations is generated by practices that accumulate comparisons and contrasts on many levels. Five detailed case studies explore such work of commensuration between cultures and natures through global assemblages of whaling (Blok); between human and animal in bringing robots to life (Kubo); between epidemiological and genetic traits in metabolizing diabetes drugs (Mohácsi); between Thai and Japanese technology in the space created by a technology-transfer project (Morita); and between economic, cultural, and biological values through the harvesting of human organs (Yamazaki).

1 Ethnographic Routes

Anthropological comparisons follow ethnographic routes. This endorses the view that difference and distance go together. Needless to say, since the discipline's inception, much of the anthropological agenda revolved around various forms of *comparison*. Whether viewed as a "method" (the comparative method) or as an "attitude" (reflexivity), comparison turns out to be, to quote Marilyn Strathern (2002a), a "heterogeneous spectrum of middle-range strategies, mainstream and subaltern, that sustained the discipline along numerous lifelines" (xiii). And while it has become something of a reflex, indeed, among anthropologists to ask questions of similarity and difference, such comparative work has also provided an easy target for the critics. From Edmund Leach's (1961) disapproval of the simplifications in the social anthropological tradition to Arjun Appadurai's (1996) self-reflection on area studies, such criticism has, almost unintentionally, turned the comparative method into a ghostly

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[1] See, for example, Chen 2008, Fan 2008, Fu 2007, and Shineha, Ema, and Tsukahara 2010.

tool of reductionism. But, one may ask, aren't there some kinds of inherent comparisons at work in such arguments (between simple and complex, cultural and social, local and global, etc.)? The rather visceral answer to this naive question would be a quick "yes"—but comparing may indeed be more complex than it seems at first glance. And it is our strong conviction that such complexities should not be left unattended.

Anthropology requires empirical data, a problem indicated by those data, and interpretation that links ethnographies to the things designated in them. The politics of interpretation is, of course, important, as we have been alerted for several years. Yet, such critique should be more than a hermeneutic exercise in reading between the lines. As, again, Strathern reminds us, "The act of interpretation is understood as bringing entities, human or abstract, into play with one another" (2002b: 94). This notion of interpretation is problematic for most anthropologists not only because they are more familiar with reading culture as a text but also because such textuality is assigned too easily to the agents of culture. One could argue, however, that people do not always interpret their worlds for the sake of explanation but do so for many other different reasons, comparison being one among them. From religious rituals to eating habits to genetic testing, differences and similarities are contrasted, negotiated, and explored on a daily basis in all walks of life. So, how should we understand this intricate connection between the objects and methods of our research? It is here that some "traveling" may help us, quite literally, to move on.

Comparison makes itself at home in motion: the mobility of people always involves the construction and maintenance of complex infrastructures, which, for the sake of simplicity, we will here call *traveling*. In the field, anthropologists work to recognize differences through continuously contrasting their findings with more commonsensical knowledge brought from home or elsewhere in order to make sense of the links between the particular and the general. They are on the move—either in the geographic or in the ontological sense—expecting to uncover different ways of being.

As postcolonial studies and the postmodern critique of ethnography have demonstrated in detail, the professional practice of anthropology, along with many of its influential ideas, has its historical roots in the colonial encounter between Europe and the rest of the world (Clifford and Marcus 1986; Pratt 1992). What many of these critiques have overlooked, however, is that comparisons also accompany other modes of travel, such as ritual exchange in the highlands of Papua New Guinea or diplomatic and commercial contacts in the Sino-centric tributary system of East Asia (Hamashita 1997; Strathern 1991). Anthropologists and scientific expeditions follow the old paths well beaten by indigenous traders, pilgrims, and other self-made explorers. Inspired by James Clifford's (1997) call for adopting "travel" as a new root metaphor for ethnographic practice, recent work in anthropology and STS has indeed demonstrated the complex interplay between (post)colonial journeys of technoscience and indigenous forms of travel (Raffles 2002; Turnbull 2002), as well as the exchange of wonderment and comparative imaginations between them (Anderson 2008). The expert witnessing of the Other thus has been inevitably embedded in the historical entanglement of human displacements in (post)colonialism, which make up such worlds through comparing and translating different cultures into each other.

But there is a second moment of comparative motion that is generated not by the travel of people but by the travel of objects and (scientific) facts. While human movement has been considerably enhanced by infrastructural development, objects like trains, laboratories, and the postal system travel, too—as part and parcel of such material versatility. The paths that anthropologists and technoscience follow are built upon a complex set of circulating artifacts and technological systems. As a result, ethnographic authority has been relying on the infrastructure of travel, including accommodations, transportation, and immigration procedures, that made fieldwork possible in the first place. Traveling thus invokes composite forms of relatedness that go far beyond the monolithic picture of domination and control that has prevailed in much of the self-criticism of contemporary anthropology.

Here our task is to revisit the mobility of technoscience in order to explore the relationship between traveling objects and comparative modes of ordering the world. Importantly, these two trajectories amplify each other in novel ways, forcing us to rethink the concept of scale that underlies much of the work in anthropology and area studies. Once we acknowledge the joint involvement of people and things in the interpretation of one another's location, the notion that comparisons take place on a singular scale (region, society, village, etc.) no longer holds. On the contrary, as Blok's insightful contribution to this issue highlights, it is the implicit interplay *between different scales of comparison* in technoscientific practices that lies at the center of our argument.

2 Technological Objects

Thinking symmetrically about such links, we would suggest, starts from describing the ways human beings are objectified in their mundane engagements with various artifacts. How do "Japanese whales" or the blades of a rotary cultivator on a Thai farm become objects of concern? Of what are they representative? Rather than trying to answer such questions by pointing to geographical or cultural entities like East Asia, the Pacific, or Buddhism, we will attend to the comparative practices in which scales and contexts are manipulated and folded into each other.

Actor-network theorists like to point to mundane artifacts that make a difference through technosocial practices. A rarely quoted episode by Bruno Latour (2004) offers a case in point.[2] He tells us about the odor kits (*malettes à odeurs*) used in the training of experts in the perfume industry. These kits are arranged in a way that one can go from the sharpest contrast between "sweet" and "fetid" odors to the smallest possible difference between pure fragrances. Novices starting the course with untrained noses learn to discriminate more and more subtle differences through the comparison of chemicals contained in the kit, so that most of them become able to distinguish them even when they are masked by or mixed with others. It is this artificially created setup of linking teachers, chemical taxonomies, pupils' noses, and odor kits that makes previously unrecognizable differences increasingly comparable by articulating them both as experience *and* as scientific fact. As Latour explains, "If I, an untutored

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[2] The example is, in fact, borrowed from Geneviève Teil (1998).

nose, need the odor kit to become sensitive to contrast, chemists need their analytical instruments to render themselves sensitive to differences of one single displaced atom" (209).

Certainly, following technological objects seems tailor made for a "nonsocial" analysis of knowledge practices, but here another problem emerges: How can these mundane objects be related to the intellectual project of comparison in any way other than as mere instruments of difference? In order to answer this question, we need to go beyond the *links between* human and nonhuman elements and instead trace the *movement along* these ties.

The story of the Ford Model T in rural America offers an instructive example of how traveling objects become related through comparison (Kline and Pinch 1996). Mobility played a crucial role in making the Model T the first successful mass product in its category: one might argue that it traveled farther than any other car before it. While most cars in the early twentieth century were used by the urban upper class for private leisure, the Model T moved beyond this limited circle of automobile users, reaching out to the urban working class, as well as farmers in rural America. It was in the countryside that the Model T went through a considerable transformation. Farmers not only found the car a good substitute for horse wagons but used it as a power source for threshers and washing machines as well as a replacement for plow horses. Significantly, they started to alter the original Model T according to these new needs, thereby evoking the divide between rural and urban areas. Such differences were before long recognized by the Ford Motor Company itself, which soon started cautioning against unconventional uses of the Model T and, at last, developed the Fordson tractor to meet farmers' needs for improved agricultural machinery.

In this small episode, comparison was made not by calculated human intervention but by a complex setting generated by traveling automobiles. Although most actors in this technological coming-of-age story had no clear intention to compare urban and rural lifestyles, the movement of the Model T to the countryside made comparison inevitable. The subsequent transformation of the Model T provided the Ford Motor Company with a strong impetus to contrast rural and urban settings in order to develop other artifacts, such as tractors and station engines, that were capable of absorbing the newly found needs of rural America.

As seen from these two examples, comparison is made possible by endless human and material movement and the mundane practices in which things and people form new links so as to separate again in the mediation between continuously transforming differences. Morita's lateral analysis of the comparative practices—of Japanese and Thai engineers, farmers, and anthropologists—that are generated by secondhand farming machineries and cut through mechanical and cultural differences is a case in point in this regard. A strong motivation behind bringing to light simple artifacts that generate new forms of difference and similarity can be found in their ability to reveal the daily routines of comparing that link people, things, and facts either in usual or in surprising ways.

Comparison is thus also about making relations.

3 Comparison, Reconnected

The five articles that follow this introduction explore the methodological richness of comparing that, as we have tried to stress above, lies in the embracing and extension of its conceptual possibilities. Writing from different ethnographic vantage points, the articles share a common interest in inquiring how science, technology, and medicine participate in everyday human experiences. They "help us to understand better how we all, in effect, live as scientists" (Downey and Dumit 1997: 8) by drawing our attention to the striking interfaces between ethnographic methods and scientific knowledge practices.

Atsuro Morita reflects upon the intersection between anthropology and engineering found in the travel of technology from Japan to Thailand in a technology-transfer project. What Morita encountered at the initial stage of his fieldwork in Thailand was the Japanese engineers' ardent interest in the influence of Thai culture on technology development. The fact that the engineers' discourse was under the clear influence of Japanese anthropology and Southeast Asian studies posed a tricky question for his ethnographic endeavor. How can one analyze informants' practices that have already incorporated the analyst's conceptual device? As we have indicated, the resonance between anthropological and technoscientific comparisons opens up a rich field for exploration, but it also involves a methodological challenge. Morita follows the recent attempt of anthropology to deal with such recursivity by constructing lateral inter-connections between the ethnographic analysis and informants' knowledge practices. Rather than taking critical distance from the engineers' comparison, he became an extension of the engineers' comparative interest and traveled to local factories, which were seen as the target of the project and the local source of cultural influence. What he found in the local factories was, however, another set of human and nonhuman travel that has constituted the development of the industry since its inception in the mid-nineteenth century. The industry was founded at the intersection of Chinese artisans' travel in the Sino-centric tributary system and the European travel to expand modern capitalism in the late nineteenth century. Since then, the industry has been entangled with the constant journeying of mechanics and artifacts. Morita's ethnographic enterprise thus turned out to be itself an act of connecting the travel of the technology-transfer project and the indigenous journeys in the local industry. In addition, he also found peculiar comparisons among local mechanics who formed their knowledge about Japanese technology and its use environment through their material engagement with the secondhand machines and parts that serve as staples of the industry. This comparison embedded in the machines encourages Morita to shed light on comparison and materiality.

Whereas Morita shows how associations between places emerge from the circulation of technological artifacts, Akinori Kubo demonstrates that artifacts shape and are shaped by what he calls *plastic comparisons*. He analyzes the development and reception of a pet-type robot known as AIBO to explore the conjunctions between epistemological and ontological operations involved in technological comparisons. In its development and reception, AIBO's meaning was constantly fluctuating: it was a technologically sophisticated machine, a kind of pet, a new form of computer game, and then a kind of family member. Kubo illuminates how comparisons—which play a pivotal role in constructing meaning and designing artifacts—rested

on the robot's compatibility, its ability to work with heterogeneous entities while traveling from the lab to the marketing office and to users' homes. Through these analyses, he explores the boundaries between the epistemological and the ontological and reassesses predominant arguments in STS such as the social construction of technology and actor-network theory.

If the painstaking work of assembling parts into robots keeps human and nonhuman animals apart—and therefore comparable—as Kubo demonstrates, the transplantation of organs from one person to another illuminates some significant differences *among* human bodies. Goro Yamazaki's article shows that historical circumstances and political contingencies determine the mode of comparison that proves to be legitimate. He traces the controversies that surrounded the transformation from a culturalist mode to what he calls the bioeconomy of organs in Japan between the enactment of the Organ Transplant Law in 1997 and its revision in 2009. In the latter frame, bodies are compared in their multitude: How many heart transplantations are annually carried out in Japan versus the United States? How many Japanese patients travel to the Philippines for a new kidney? Such statistical and epidemiological numbers have generated a discourse on the "shortage of organs" in Japan during the past decade that informs medical practices and the experience of death in important ways. Yamazaki, however, does not direct his critique at the commodification of body parts but calls for the necessity "to understand how nonmarket transactions of organs work along with the market economy." What we see here is that the global control mechanism of organ trafficking, and its comparative apparatus in particular, comes to justify a kind of economic discourse over life and death.

Anders Blok's analysis of the whaling controversies between Japan and the West similarly draws attention to how the mobility of comparisons generates new modes—or in this case, rather, scales—of justifying science. He draws upon empirical studies of pro- and antiwhaling activists to explore how such work of scientific justification plays out in transnational contexts. The issue Blok picks up on involves practices on different scales—ranging from international politics to a local whale-meat restaurant—which unfold on different but interconnected levels of analysis. The first is local "whaling culture" that emerges as a relativist imaginary of multiculturalism based on the comparative endeavors of anthropologists and other experts of cultural difference. Commenting on the fact that such research involves a lot of traveling, Blok extends his methodological focus to the *assemblages* through which whaling cultures and natures are co-constructed. This emphasis on relatedness, however, we are warned, renders whales and whaling practically noncomparable. Blok here begins to wonder how to align the comparisons and relations in his rich material. Working through a topological inquiry influenced by the work of Annemarie Mol and John Law, the principal contribution of his article is epitomized in the figure of the Super-Whale. According to Japanese whale scientists, Western environmentalism rests on sentiments and emotion, while Japanese cognitive science takes a more rational (and, ironically, less transportable) approach by comparing the brain sizes of this, the argument goes, fairly unintelligent animal with those of other species. In sum, the technoscientific object of the Super-Whale helps us to think comparatively about global connections on the move.

In the last article of this issue, Gergely Mohácsi follows a hormone called adiponectin through the comparative practices of epidemiology and genetics to find out how

ethnic, gender, and pathological variations come to stand for each other. He studied a Japanese project that targeted the adiponectin hormone as one possible candidate for the pharmacogenomic treatment of diabetes. Borrowing insights from the work of Donna Haraway, Mohácsi draws our attention to the interference between disparate kinds of differences through the biopolitical work of comparison in three different locales: (1) between ethnic differences in adiponectin expression levels in the laboratory, (2) between individual and group differences in pharmacogenomics models, and (3) between diabetes and heart disease in a clinical trial of an already approved and marketed drug. These seemingly unrelated events act on each other in the molecular structure of adiponectin, enabling diabetes and cardiovascular risks to be compared in ways that can travel among laboratories, clinical settings, and public domains. Taking seriously the effect of such transportability on comparative work, Mohácsi suggests, allows us to see difference as a kind of material relatedness that facilitates new forms of knowing.

What we can see in these five articles is the mutual connectedness of anthropology and technoscience in our contemporary world. The anthropologist's strategies of aligning her interest in human experiences and material mediation with technoscientific practices cuts across those of the scientist and the engineers who venture into the anthropological realm on their way to understanding the quantifiable aspects of human difference. This, then, is the point of questioning comparison on the move. The act of comparing, we may say, is a form of anthropology as well as its content, both an explanatory resource and an achievement to be explained. The metaphor of "traveling comparisons" is designed to call attention to such relations as they manifest in the scientist's practices of comparing the outcomes of experiments and observations of distant places or in the engineer's assessment of technical problems by contrasting them with past experience and others' solutions as they travel with mundane artifacts.

It is at this point that facts and artifacts become matters of concern in the unexpected connections that emerge around the interplay of comparative knowledge practices. If we are to apprehend and account for cultural and other variations—which we think are still at the heart of the anthropological enterprise—we need to follow the connections that are being made and unmade in mundane movements between difference and similarity. Such an ethnographic quest is made easier once we learn how *not* to take comparison for granted but to appreciate it both as a method and as an object of inquiry that together, we hope, will inspire readers of *EASTS* to do more comparative traveling within East Asia and beyond.

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