



East Asian Science, Technology and Society: An International Journal

ISSN: 1875-2160 (Print) 1875-2152 (Online) Journal homepage: <https://www.tandfonline.com/loi/teas20>

Where Is East Asia in STS?

Wen-yuan Lin & John Law

To cite this article: Wen-yuan Lin & John Law (2019) Where Is East Asia in STS?, East Asian Science, Technology and Society: An International Journal, 13:1, 115-136, DOI: [10.1215/18752160-6995634](https://doi.org/10.1215/18752160-6995634)

To link to this article: <https://doi.org/10.1215/18752160-6995634>



Published online: 01 Oct 2020.



Submit your article to this journal [↗](#)



Article views: 1361



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 6 View citing articles [↗](#)

Where Is East Asia in STS?

Wen-yuan Lin and John Law

Received: 9 May 2017 / Accepted: 17 January 2018
© 2019 Ministry of Science and Technology, Taiwan

Abstract The international spread of STS has reshaped the discipline in many ways, pushing it from its original core focus on technoscience in Euro-America to embrace new and wider agendas in other locations. For the practitioners of STS in East Asia, the complex relations between geographical region and forms of knowledge in technoscience are firmly on the agenda, and they have conceptualized these in a range of different and sometimes contradictory ways. The multiplicity of East Asian STS is also reflexively refracted in different assumptions about the character and location of the discipline in relation to other regional versions of STS. In what follows we simplify the complexities of a large and sophisticated body of writing by exploring a double question. On the one hand, we ask how scholars conceptualize the location of East Asian technoscience in the world. And on the other, a related question, we consider how they imagine the location of East Asian STS in relation to other forms of STS. We suggest that it is possible to identify at least six distinct spatially related strategies for understanding knowledge and technoscience in the East Asian literatures. In this article, we characterize these as diffusion, distortion, circulation, localizing, translation, and mis-translation and argue that East Asian STS may be understood as distinctive in the way it collaborates with other forms of STS not only because it identifies and characterizes other and different East Asian empirical contexts, but also because it makes possible the exploration of alternative and situated methodological approaches.

Keywords East Asia · East Asian STS · one-world world · performativity · translation

Acknowledgment This article is a belated and retitled contribution to the *EASTS* special issue “We Have Never Been Latecomers!?” We are grateful to the journal editors for their patience and advice. We are also grateful to Chi-ling Wu (吳嘉苓), Daiwie Fu (傅大為), and Rur-Bin Yang (楊儒賓) for discussion and advice. Wen-yuan Lin would like to thank Taiwanese Ministry of Science and Technology that funded the research projects for this research. All translations from the Chinese are our own, unless otherwise indicated.

W.-y. Lin
Centre for General Education, National Tsing Hua University, Taiwan
E-mail: wylin1@mx.nthu.edu.tw

J. Law
Department of Sociology, Open University, and Center for Science Studies, Lancaster University, UK
E-mail: john.law@open.ac.uk

Abstract STS 的跨國發展已對此學科產生許多影響，尤其是將其原本專注於歐美科技的核心關懷，拓展到其他區域更廣泛的新議題。對東亞的 STS 學者來說，各種科技的地理區位與知識形式間的複雜關連是長期的核心議題，並已發展出許多不同（甚至彼此衝突的）方式概念化這些關連。其中，東亞 STS 的多樣性也高度反身性地表現在各種界定此地 STS 的特質及位置如何關連於其他區域的 STS 版本的預設中。本文嘗試以一個雙重問題概括眾多且複雜的既有討論。一方面，我們提問：學者們如何概念化東亞科技在世界上的位置？另一方面，與此相關的問題是：這些學者如何想像東亞 STS 相對於其他形式 STS 的位置？由此，我們建議至少可以由我們稱之為：擴散、扭曲、循環、地方化、轉變與誤譯的六種獨特的空間性策略，釐清東亞文獻中的知識與科技。藉此，本文認為東亞 STS 在與其他形式 STS 的合作中之所以是獨特的，不單是因為它指認並探索東亞的不同經驗脈絡，更因為它讓探索另類與在方法論取徑成為可能。

Keywords 東亞 · 東亞 STS · 單一世界的世界 · 展演性 · 轉變

1 Introduction

Though it started in Euro-America, the intervening fifty years has seen the global spread of STS and the creation of thriving national and regional communities including the large and diverse area covered by this journal. Its international spread has reshaped the discipline in many ways, pushing it from its original core focus on technoscience in Euro-America to embrace agendas that include colonial and postcolonial asymmetries; the character of regional, national, and local technoscientific practices; and an increased concern with the importance of space and place in the ordering of science and technology. Though it has been argued that it is impossible to write Asian grounded theory (Dutton 2002), the authors who publish in *EASTS* have explored the possible character of an East Asian STS, asked how it might be distinctive, considered the relations between East Asian STS and East Asian Studies, and critically examined how STS in East Asia might best relate theoretically and substantively to Euro-American STS (Fan 2007; Fu 2007; Chen 2008; Anderson 2009b; Tsukahara 2009; Chen 2012; Fan 2012).

In considering how to put “knowledge in its place” (Livingstone 2004; Seth 2009), some have traced how empires or other forms of asymmetrical global connection impose spatial and temporal frames to generate distinctions between the “local” and the global (Redfield 2002: 793). In addition, many have warned against essentializing spatial and cultural difference and stressed the importance of contingency and the need to explore epistemic violence to reveal “the heterogeneous, haunted, uneven terrain of contemporary power relations” (Anderson 2009b: 169). Sandra Harding (2008) has similarly argued the need to problematize “northern science studies” and the power relations within technoscience and pressed for multiculturalism and the importance of studies from the periphery.

The complex relations between geography and forms of knowledge in technoscience are therefore firmly on the agenda. STS practitioners, including those working in East Asia have conceptualized those complexities in a range of different and sometimes contradictory ways, and that multiplicity is also refracted in different assumptions about the character and location of East Asian technoscience (Abraham 2006). At the same time, it is sometimes difficult to conceptualize these differences clearly

because the issues are also *reflexive*. How we think about the place of technoscience in the world cannot be easily disentangled from how we conceive of the institutional and epistemological relations between different forms of STS. To illustrate the point starkly (we will nuance this below), those who imagine science and technology to be putatively universal tend to be similarly committed to the idea that a single STS is appropriate to both, say, Taipei and Toronto, whereas those who emphasize the importance of cultural difference in technoscience are more likely to argue that STS itself both is and should be culturally multiple.

The argument, then, is that how we practice STS is reflexively related to how we imagine our objects of study and their knowledge practices, and each of these is in turn tied to what are taken to be appropriate institutional arrangements. But the argument can be extended to include what there *is* in the world—that is, ontology. Here the suggestion is that different knowledge practices (help to) enact different objects or realities because practices are *performative* (Mol 2002; Law 2011). The argument is thus that practices generate worlds, so different practices generate different worlds, a proposal that also has important potential implications for East Asia and its STS. To illustrate, an STS committed to scientific, technical, and social science universalism will both emphasize the putative generality of science and technology and *enact* that universality in its own STS practices. That is, it will work in and help to generate what we might think of as a “one-world world” (Law 2015). By contrast, an STS committed to epistemological and ontological difference will both tend to *discover* these in the knowing practices it explores and *enact* these in its version of STS. Our suggestion is thus that whatever their virtues, these alternative epistemic, institutional, and ontological commitments also generate different versions of space. The implication is that these locate technoscience in different ways within different versions of the world. This applies generally (for instance in Euro-America), but in what follows we focus on East Asia, and explore what we take to be six distinct spatially relevant strategies at work in East Asia—modes of knowing what we call *diffusion*, *distortion*, *circulation*, *localizing*, *translation*, and *mistranslation*. The importance of this is that it suggests a range of ways for imagining the character of collaboration between East Asian and other forms of STS, including those of Euro-America. In particular, it suggests that such collaborations might attend not only to important empirical differences between East Asian and other forms of technoscience, but also to the different forms of method at work within technoscience and STS.

Now the health warnings. First, to talk of “East Asian” STS is already to take too much for granted both conceptually and geographically. We are uneasily aware that this is often unsatisfactory, but have found that the use of aggregating geographical and conceptual terms cannot be entirely avoided (Law and Lin 2017a, 2017b). Second, since there are many alternative ways of classifying East Asian STS, we make no special claim for our spatial focus, and alternatives can be easily imagined. Third, STS case studies often, perhaps usually, combine several spatial strategies, so these may be understood as a set of ideal types rather than a direct characterization of particular interventions. And fourth, we have sought so far as possible to be even-handed. Our concern has been to find a way of distinguishing different modes of practice and collaboration rather than offering a comprehensive survey or recommending any particular approach, and we take it that methodological and theoretical diversity are desirable. At the same time, and to state the obvious, we necessarily come to the

topic with our own conceptual bag and baggage. This is not, and neither could it be, a neutral survey of the spaces of East Asian STS.

2 Diffusion

On July 8, 1853, American Commodore Matthew Perry led his four ships into the harbor at Tokyo Bay, seeking to re-establish for the first time in over 200 years regular trade and discourse between Japan and the western world. . . . Although Japan opened its ports to modern trade only reluctantly, once it did, it took advantage of the new access to modern technological developments. Japan's opening to the West enabled it to modernize its military, and to rise quickly to the position of the most formidable Asian power in the Pacific. ([Office of the Historian 2015](#))

This comes from the US Department of State's website, under the heading "MILE-STONES: 1830–1860," and it is one of many that appear on those web pages. These are linear histories about progress, centers, peripheries, leaders, and laggards. Such stories take many forms, but in one variant they argue that modern industrialization started in Britain, which subsequently ceded its premier place to the United States. Then Japan turned itself into an industrial superpower, while perhaps China will be the next. It adds that smaller countries such as Taiwan and Korea similarly struggle to move forward.

Linear and/or progressive histories of this kind are widespread. [George Basalla \(1967\)](#) famously argued that modern science diffused from a "Western core" to the "non-Western periphery" in three overlapping stages in which colonies were first a resource for European scientific expeditions before adopting Western institutions and traditions, and finally creating local independent national science. And historian [Morris Low \(1989: 323\)](#) carefully reveals how the dominant discourses of Japanese national and technoscience similarly reproduce linear time together with the centers and peripheries that go with this. Examples include a "butterflies and frigates" narrative in which Japan was regenerated after Perry's visit, rapidly transforming itself into a threatening military power, a narrative that exoticizes Japan, a "teacher and pupil" story in which Japan continues to need to learn from the West, and a narrative about Japan as "unique imitator" in which the Japanese are taken to lack original creativity.

Linear histories come in many more or less sophisticated forms, but they share the assumption that nations are located in a single global space and arrayed on a single progressive economic and technoscientific temporal continuum. Japan or Korea may be laggards in the chase after development, modernization, progress, or indeed civilization, or they may be catching up, and, as we noted above, perhaps in due course China will take the lead. But they all build on the assumption that we live in a "one-world world" ([Chakrabarty 2011](#); [Law 2015](#)), and at least up until the present it has usually been Euro-America that sets the target and acts as yardstick for that world. In the race for development, the moral is clear: if you work harder and learn more quickly you may become the next Asian tiger ([Amsden 2001](#)) or giant ([Amsden 1989](#); [Berger and Lester 2005](#)). If you don't you will lag behind ([Amsden and Chu 2003](#); [Wang 2010](#)). Though few STS scholars would adopt a simple version of this diffusion model, some have critically noted the pattern of Euro-American influence on East Asian STS

as a (novel) form of that subordinate discipline, area studies (Nakajima 2007; Anderson 2009b; Fu 2013). More specifically, Dung-Sheng Chen (2015) has made an important argument about the performative implications for STS in the context of Taiwanese industrial studies. His warning is that research practices that focus on diffusion, following, and catching up generate normative diffusionist realities and agendas; overlook local strengths and specificities; and discourage industrial and research innovation.

We will return to Chen's suggestion later. The message for now is clear: if practices generate worlds, then diffusionist knowing practices generate a one-world world in which East Asian countries that are said to be lagging behind are supposed to catch up. This is an argument with important potential implications for East Asia and its STS.

Diffusion. Here the world is understood and enacted as a *single space*. Knowledges, competences, and institutional forms spread out from the center, so there are global and historical leaders and laggards, while the East Asian problem has historically been how to catch up. The diagnosis of leaders and laggards and strategic concerns about how to move forward thus define a crucial context for STS work, but this progress narrative is also enacted in STS itself. Since in this way of thinking its own scholarship is part of a single STS world, here the concern is, can East Asian STS catch up with the presumptive Euro-American leaders? How might it do so? Does it need to modernize its academic structures so that its scholars are better able to compete with Euro-America? And/or has this already happened?

3 Distortion

If diffusion is the first explanatory pattern, distortion counts as a second. Consider, for instance, the story of Radio Company of America (RCA) in Taiwan (Asia Monitor Resource Centre 2015). This company was accused of dumping carcinogenic toxic chemicals into groundwater starting in the 1970s. After a long delay, court proceedings were initiated in 1994 but a verdict was only reached in 2015, two decades during which hundreds died of cancer (Chen 2016).

My wife started to work in the RCA factory soon after she graduated from high school (for 11 years). . . . It was during the period that we witnessed the take-off of Taiwan's economic miracle. . . . She sacrificed her most precious youth to a society that exploited her while she was still capable of contributing, but then totally forgot her and deemed her useless. RCA deny any negligence or wrongdoing, and said it has never made its workers use groundwater. The Council of Labour Affairs was reluctant to identify the whole situation as a vocational disaster. . . . Nobody would recognize my wife's contribution to Taiwan's economy. My wife and daughter's sacrifices are totally irrelevant in today's world. (Ku 2006: 181–82)

In this second picture, technoscience also operates within a single global space, but now this is exploitative because it distorts the lives of those who live and work on the periphery (Harding 2008).¹ The companies are looking for cheap but capable

¹ There is a further hidden gender politics around establishing scientific links between the cancer of female workers and the company's pollution (Lin 2006).

workforces and lax environmental and health regulations (Smith, Sonnenfeld, and Pellow 2006), and they collude with governments that may be technocratic and are sometimes corrupt because those governments want to take advantage of compressed modernization (Abraham 2006; Greene 2008; Amir 2013; Bak 2014; Chang 2014; Quet and Noel 2014). The result of this interweaving of global and local power is exploitation, suffering, and a division of labor in which innovation and design come from Euro-America, manufacture and assembling are done in Latin America and East Asia, and e-Waste goes to Africa (Smith, Sonnenfeld, and Pellow 2006; BASEL Convention 2015).

Such accounts of distortion may be Marxist inspired, distinguishing between core, semiperiphery, and periphery; between the developed, developing, and underdeveloped worlds; or between the first and third worlds (Cardoso and Faletto 1979; Galeano 1997 [1973]; Wallerstein 2004). But distortion is also epistemic. Here the argument is that the diffusion of homogeneous Eurocentric knowledge is itself a form of hegemonic domination that needs to be resisted. This argument has been vigorously made in Latin America, for instance by Arturo Escobar, who shifts the origins of modernity from the European Enlightenment to the conquest of America, arguing that it was colonialism and the capitalist world system that constituted modernity, and that the latter works in part by subordinating non-European knowledges. In this way of thinking Eurocentrism is modernity/coloniality in epistemic form, a hegemonic mode of knowing that claims universality by confusing “abstract universality . . . [with] the concrete world hegemony derived from Europe’s position as center” (Escobar 2008: 167–68).

As Pheng Cheah (2001) notes, one version of this distortion takes the form of an irreducible Asia that is rendered particular by the assumed universalism of Western conceptual and methodological structures. More specifically, many have explored East Asia’s subordination in terms of dominatory global dynamics, though the region also has local specificities including Japanese imperialism, a topic in need of further STS exploration (Clancey 2007; Fu 2013). However, it is clear that the dynamics of Japanese imperialism helped to shape modern scientific networks in East Asia (Boumsoung Kim 2007; Setoguchi 2007; Zaiki and Tsukahara 2007; Liu 2008). Applied to our own discipline, epistemic distortion implies the need to resist hegemonic forms of (Euro-American) STS in favor of forms of knowledge that grow from underprivileged standpoints (Harding 2016). In this way of thinking, theories of diffusion are thus power-saturated misunderstandings of reality, though any theoretical approach originating in Euro-America is in need of critical scrutiny. An East Asian STS inspired by distortion is thus one that is sensitive to the political, economic, and epistemic agendas that come with a hegemonic one-world world, and its task is to detect, characterize, and resist this exploitation and to articulate counter-hegemonic forms of analysis.

Distortion. As with diffusion, the world is a single space, a one-world world, with a center and a periphery, but distortion attends to the dark side of this divide, treating the global as a space of exploitation. In East Asia, technoscience has inflicted damage to the economic, ecological, and/or personal well-being of those at the periphery, while profiting the Euro-American center. It has also sought to monopolize the available conceptual space, insisting that its forms of knowing are general. An East Asian STS is one that explores these processes of subordination, distortion, and exploitation both in technoscience and in its own ways of knowing.

4 Circulation

Diffusion and distortion assume that we live in a single world with a center and a periphery, though they imagine the relations between these differently. A third approach, which we will call circulation, similarly thinks in terms of a one-world world, but understands this as being made of relations of mutual dependence. Latour (1988: 140) tells us that “to follow the transformation of a society by science, we must look not in the home country but in the colonies”; David Livingstone (2004) similarly notes that technoscience is not simply Euro-American, but distributed and relational; while Warwick Anderson (2006; 2008) talks of interlocal configurations. These are all characterizations of circulation. As an example, consider Patrick Manson’s work on parasitology.²

Originally a practicing physician in Taiwan, Manson started to work on tropical medicine, moved to Xiamen, China, and began to work on filarial research. Treating elephantiasis, he hypothesized that mosquitoes were disease vectors, and with the help of local Chinese assistants went on to demonstrate this by drawing on local clinical, social, textual, and material resources and using his assistants’ skills to dissect mosquitoes. Returning to England, he proposed mosquitoes as the vector for malaria, but had no way of demonstrating this until 1894 when he met Ronald Ross. At first the encounter was awkward. Manson had the laboratory techniques needed to test the theory but no access to clinical cases. Conversely, though Ross had access to clinical materials in India, he did not have the necessary techniques, and he also had his own rival theory. However, a long-distance collaboration grew up between them. Ross learned the appropriate techniques from Manson and gathered clinical materials and observations, sending findings and specimens to Manson from Indian rural hospitals. Manson in return offered Ross theoretical advice, sent him the latest publications, helped to promote the latter’s findings, and organized English research support. Finally their collaboration was to verify the mosquito vector theory.

Despite the problematic division of labor between non-Western data collection and Western theorization (Heryanto 2016), circulation takes place within a global one-world world, but in this way of thinking it is formed in the multisited and situated crafting of practices and links between those practices (Blok 2013) in which all, including so-called latecomers, are necessary and active participants. We are in a world of trading zones (Galison 1997), networks, associations, gift exchanges, or assemblages, in which technoscience is being generated in distributed webs (Strathern 1991; Latour 2005; Ong and Collier 2005; Anderson 2008). The STS focus is therefore on multisited histories of science as it tracks the traffic in objects, people, value, and resources within and between locations. As Anderson (2000: 736) observes: “If we are especially fortunate, these histories will creatively complicate conventional distinctions between center and periphery, modern and traditional, dominant and subordinate, civilized and primitive, global and local.”

It is, therefore, a misunderstanding to say that tropical (malarial) medicine started in England, while India and Taiwan were its beneficiaries. Instead it was the different

² We draw our account from Shang-Jen Li (2012).

local arrangements together with the long distance but reciprocal forms of circulation between sites in these different countries that eventually led to success.

So what does this imply for East Asia? One answer is that East Asia as a whole is unlikely to be the appropriate unit of analysis. Instead it becomes important to trace specific technoscientific trajectories case by case by exploring local settings and the webs that link these together (Fu 2005; Setoguchi 2007; Liu 2008; Mohácsi and Morita 2013). The object is to reveal the geopolitics of internationally contingent microphysics (James Lin 2015; Sabharwal and Varma 2015), together with the contingencies that generate local differences (Kim and Park 2015; Tzung-De Lin 2015). The focus is thus on *co-constitution*, and there are also many instances of such studies in the literatures on East Asian high-tech industry. For instance some have argued that the dramatic pace of Euro-American and Japanese laboratory innovation is related to East Asian manufacturing capability (Amsden 1989; Berger and Lester 2005).

In this way of thinking, circulation, technoscience, and its institutions become an intersecting and co-constituting patchwork, but if we start to think reflexively then STS begins to adopt a similar shape. Particular East Asian and Euro-American STS practices work together within a one-world world. At the same time, East Asian STS does not lag behind because there *are* no centers or peripheries. Instead there are relations of mutual dependence in which different sites work in different ways and specific materials, people, and findings circulate between equally specific locations. For scholars in East Asian STS it thus becomes important to explore what they have to offer to practitioners in other locations, and how they might innovate as part of a process of international division of intellectual labor. This, then, is an STS that comes to value its internal epistemic, institutional, and geographical heterogeneity.

Circulation. Here again we are in a one-world world, but the emphasis is on an intellectual division of labor that erodes center-periphery distinctions in favor of specific relations of reciprocity. East Asian sites of practices are like pieces in a jigsaw puzzle or locations in a network that together make possible the interrelated world of technoscience. The role of STS is thus to understand this division of labor, to articulate the forms of circulation that this implies, and to explore possibly more productive ways of making connections. Reflexively applied to itself, particular sites of practice in East Asian STS become part of a productive global division of labor. East Asian STS practices have their own important and distinctive place within the networks of STS, and it is important both to identify and craft these, and to understand how they might best relate to STS practices in other global locations.

5 Localizing

Diffusion, distortion, and circulation are very different, but they all assume a common world and explore the technoscientific problems and possible solutions relevant to that world. As a part of this, they assume that good knowledge (whether in technoscience or STS) is location-independent: that what counts as validity does not vary between places. In the three approaches to STS that we will now explore, these assumptions are progressively eroded. Epistemological, institutional, and ontological differences start to appear while a “one-world world” disappears. We start with *localizing*, which insists on the significance of epistemological and institutional differences between different locations.

What is the strategy? The answer is that this way of thinking redefines Western universality as a *particular case of the local* in which each local is different. Though this does not necessarily follow, it is also sometimes argued that each counts as a *part* of the universal (Cheah 2001). Examples within STS include Anderson's (2008) account of kuru. This shows how scientists became inextricably entangled with local ideas about reciprocity, menstruation, propitiation, and identity, while some objects of scientific interest were inalienably local and could not be moved beyond the Fore people (Anderson 2000). In other cases scholars have argued that East Asian bioethics is untransportable because it is Confucian (Fan 2002; Tsai 2005; Rasmussen 2010), a factor that has been argued by some to be important in shaping East Asian industrial and technoscientific development (Berger 1992). And in a structurally similar mode, Linsu Kim (1997) has insisted on the importance of the *han* psyche for motivating South Korea to shift from imitation to innovation in technoscience. Kim's account combines a neo-Confucian inflected context of repression with the Korean experience of Japanese invasion and occupation:

The Korean word *han*, . . . means "resentment or grudge." . . . Culturally, . . . children . . . , employees . . . , and people in . . . society are required not only to repress feelings of anger and frustration toward their fathers, superiors, and rulers, but also to maintain a properly respectful attitude toward them regardless of provocation.

On the other hand, . . . Koreans with *han* psyche have an intense need to excel in all aspects of life to win approval from their superiors. That is, *han* is a source of energy that drives Koreans to work with a kind of frenzy, to be tenacious, to sacrifice themselves for the betterment of their families and country. (Kim 1997: 70)³

While it is important to avoid orientalism, what concerns us here is not the role of culture *per se*, but rather the claim that cultures cannot be translated. A famous case is the creation of Japaneseness in Ruth Benedict's *The Chrysanthemum and the Sword* (1946). In this book Benedict collapsed materials from past and present to distinguish, as the title of the book suggests, between the "chrysanthemum" and the "sword," treating these as timeless Japanese cultural values (Robertson 2007). Popular in America, her work also had a huge impact in Japan and on its national reinvention of its ethnic and cultural distinctiveness in versions of *Nihonjinron* (theories of Japaneseness) and exoticism (Doak 1996; Morris-Suzuki 1998), and her influence remains important in the contemporary transnational Human Genome Project (Fujimura 2000: 83–84). Thus, Joan Fujimura, having argued that "essential Japaneseness" and its analogues are cultural inventions in "specific practices located in specific space and time," adds that in genomic science, "scientific objects, technologies, and practices are both producers of society and culture and products of culture and society" (Fujimura 2000: 83–84). And Wen-hua Kuo makes a similar argument about the international harmonization of pharmaceutical regulations, noting that while the issue of race is hotly debated, what is "at stake is not race *per se* but its social representations, cultural transformations, and global circulation. Science, in this sense, is not the ultimate means

³ Others make similar arguments. See, for instance Kim 2008; Nakayama 2012; and Kim 2014.

for racial integration but an arena in which racial tropes travel and interact” (Kuo 2016, author’s translation).

The issue here is localized explanatory validity. In this way of thinking, though there are exchanges between cultures, no overall shared view is possible. This means that separate locations are irreducibly different both geographically and epistemologically—a position symbolized by so-called reassembled cars that change shape as they adapt themselves to a wide range of situations from mountain trails to offshore work (Chung-Hsi Lin 2009). Here the epistemic one-world world has disappeared, and the same is also reflexively happening for STS, where locally practiced cultural frameworks become essentially different and mutually irreducible. While boundaries of the East Asian “local” might vary from the pre-nineteenth-century Chinese empire, through pre-1945 Japanese imperialism, the configurations of Cold War politics, or recent regional coalitions to varying forms of indigeneity (Hwang, Wang, and Huang 2010; Sun 2011; Ge 2011; Wang 2015), the crucial point is always the same: different versions of STS and different criteria of STS validity are appropriate to different locations. In this way of thinking, East Asia therefore becomes a heterogeneous patchwork of locally valid but irreducibly different forms of framing. It also becomes a space of contestation as it resists forms of explanation appropriate to Euro-American STS. To talk of “East Asian STS” is thus to explore its noncoherent multidimensionality rather than to seek an overall explanatory framework.

Localizing. Here the one-world world has been eroded and no longer counts as a single epistemological space. Instead there is insistence on the epistemological and institutional specificity of local ways of knowing. While the “abstract universality” of hegemonic knowing is relocated to its proper place—that is to Euro-America (Escobar 2008)—East Asia is not necessarily part of any general global scheme. The world is made of separate cultures, practices, and institutional forms, each with its own criteria of validity, and those appropriate to one location are not relevant in others. There is not even an East Asia per se. This suggests that the role for STS is to articulate and perhaps to champion local forms of validity. By implication, and applied to itself, STS starts to fragment because what becomes important is the exploration and articulation of appropriate local forms of validity for different STS practices.

6 Translation

But are differences really irreconcilable? Does the world necessarily dissolve into a set of irreducibly different epistemological patches? Does East Asia end up in—or as—an endless differentiation of difference? The final two STS approaches that we want to characterize recognize and wrestle with difference by noting that practices in both technoscience and STS reach out to intersect one another. This they have in common with circulation, but unlike the latter they assume not only epistemological and institutional, but also *ontological*, difference.

In STS the first of these, *translation*, is most closely associated with actor-network theory. Drawing on the work of Michel Serres (1974), actor-network theory (ANT) argues that actors precariously incorporate other actors by *translating* the latter. In everyday English, translation implies equivalence: a word in one language means the

same as a word in another. However the argument is also that there is never total equivalence, and in ANT translation becomes a metaphor for *incorporating* something (a word, an object, a subject, a finding, a version of reality) in the attempt to build a different word, object, subject, finding, or reality. But such incorporation only works because it misunderstands, ignores, or distorts whatever it is translating. And this is also a way of emphasizing insecurity, since whatever is translated may rebel by resuming its original form. Translation, then, is a method that is sensitive to the precarious processes of misrecognizing and suppressing difference for the purpose of strategic assimilation (Callon 1986).

Early ANT excelled at studies of strategic growth involving European long distance (and sometimes imperialist) control (Law 1986; Latour 1988) in which technologies, natural forces, people, and texts were all (mis)translated for European strategic ends. But there have also been many case studies of East Asian translation. Take the case of medical guidelines (Wen-yuan Lin 2012):

In 2003 clinical guidelines for diagnosing chronic kidney disease (CKD) and a formula for measuring the deterioration of kidney function were introduced in Taiwan. The experience of “advanced” countries and “world-leading” scholarship was mobilized in support of this transformation. For instance, the “advanced” US formula was used in a Taiwanese epidemiological survey and published by the *Lancet*, an “internationally leading” journal in 2008. The result was a widely promoted claim that at 11.93% the incidence of chronic kidney disease was so high that there was an immediate urgent need to create a national prevention program. However, what was not noted was that the formula and its variables were developed for American populations. International physiological differences meant that the global community of nephrologists was in debate about the utility of the formula, with the US team that created it indeed still tinkering with the measure. Neither did its local proponents mention that the guidelines had not been adopted as US national policy, that other countries had adapted the formula using local data, and that the widely cited *Lancet* paper was controversial.

More generally, though clinical guidelines are often transferred between countries, differences between areas, standards, and forms of knowledge are usually explored as a part of that process (Ong and Collier 2005). Indeed, the CKD case is a particularly instrumental example of translation: it is a (misleading?) claim that events, processes, and objects in one place are equivalent to those in another. Using this case, Chen (2015) undoes diffusionist STS Taiwanese industrial studies (we touched on this earlier) using similar tactics to argue that local practices are specific. Here he draws on Wen-yuan Lin's (2013, 2014) reworking of ANT and medicalization theory. As we have seen, Lin argues that Taiwan is not a “latecomer,” but that its medical and policy entrepreneurs use this status to manipulate local debates. Using this argument, Chen suggests that if we make use of Western dominated STS approaches without being aware that we are doing so, then the unintended consequence is that “local” (for instance Taiwanese) cases become special and exceptional. Here, then, a reflexive use of knowing as translation reveals the hidden and performative ontological implications of epistemological circulation and localizing.

East Asian specificity is therefore constantly made and remade in translation, and there are many cases of this in East Asian history and other disciplines close to STS.

Rur-bin Yang (2014) shows how “things” in the traditional Chinese world were turned into modern “materials,” within physics, while the Western disciplinary term *physics* was translated by Japanese into the Chinese characters 物理 (*wù lǐ*; principles of things, hereafter *wuli*) in the nineteenth century before being adopted by the Chinese themselves. And analogous arguments have been made about the translation of terms such as *ethics* into Chinese 倫理 (*lún lǐ*; principles of human order), and the translation of the psy-disciplines into Chinese, which was entangled with the desire to emulate the national success of the Japanese Meiji restoration (Platt 2007; Liu 2011). And, a final example, Michael Keevak (2011) probes the historical construction of the idea that East Asians are yellow. Originally classified as white by Westerners (those who could be converted to Christianity qualified as white), Asians became yellow in the eighteenth century with the scientific taxonomies of Carl Linnaeus and Johann Friedrich Blumenbach, which were standardized in the emerging medical and anthropological measurements of human skin color and “Mongolism” of the nineteenth century and subsequently popularized in “yellow peril” discourses of the early twentieth century.

In this way of thinking, East Asia becomes a precarious and less than perfect process of literal and metaphorical translation. Terms, objects, and that which is “local” are all betrayed by being partially shorn of their significance as they are moved from their place of origin, reshaped, and incorporated into other practices. All this implies that epistemologies, institutions, and ontologies (or realities) are made different or similar in a range of different ways. A focus on translation thus adds a twist to—indeed it dissolves—the one-world world of diffusion, distortion, and circulation and the modified expression of this in localizing. It highlights the *methodologically performative* character of translation because what there is in the word is *also* being enacted (Law 2004). This means that it differs from circulation, both because it assumes ontological difference that then has to be translated into a communicable order, but also because in translation practices overlap in a weave as they borrow from one another.

What does this imply for East Asian STS? One response is that if the latter has translated Euro-American STS both literally and methodologically into local forms of practice, then there is need to explore the resulting variations case by case: East Asian STS is not, nor will it ever be, a single entity. A second response is that as we become reflexively aware of the practices in those translations, it should also become possible to explore the ways in which the sensibilities, identities, and realities that inform these are made and remade. This is because translation is uncertain and works in different ways in different locations. Unlike diffusion and localizing, it leads neither to homogeneity nor to heterogeneity. And a third is that since practices are performative—they help to generate the realities that they describe—East Asian STS practitioners will need to reflect on the worlds and the realities that the discipline is—or should be—*enacting*. Here there lie important potential postcolonial possibilities.

Translation. As with localizing, the idea that the world is a single space is washed away to be replaced by a world—or worlds—of irreducible difference. However, since translation is about the attempted incorporation of other objects and meanings, these worlds also overlap. To translate and assemble is also to reshape whatever is being assembled in the enactment of more or less precarious realities. Here, then, difference and sameness are epistemological, institutional, and ontological. *How* to make East Asia real—how to *realize* it—is also at stake. East Asian technoscience practices therefore relate to, but also depart from, those of Euro-America. There are locally specific attempts to assemble

fragile but workable practices that will hold together for contingent purposes. One of the tasks of East Asian STS thus becomes to reflect on its Euro-American lineage, and then to craft practices that reflect and enact alternative East Asian–relevant realities. It will be important to relate to, collaborate with, and incorporate elements from other forms of STS and other STS strategies without either mimicking these, or seeking to eliminate geographical and conceptual difference.

7 Mistranslation

In *localizing*, forms of knowledge are situated and specific, and in *translation* as knowledges and objects move they overwrite and rework whatever they translate. We have by now moved far from the one-world world assumed by *diffusion*, *distortion*, and *circulation*. In the heterogeneous worlds of translation, forms of knowledge, institutions, and realities are all enacted differently in different locations. The struggle is to incorporate difference by translating and so subduing it. But if translation is one strategy for handling heterogeneity, an alternative possibility also suggests itself—that of *mistranslation*. Unlike translation, this works by making differences explicit. It notes that there is no such thing as a perfect translation. But then it ponders the merits, or otherwise, of particular *mistranslations*. So here is the issue: Should we mistranslate whatever we might want to incorporate, and so assimilate it to our own reality? Such is the logic of translation. Or should we instead mistranslate our *own* practices and allow these to change as they intersect with others? This is mistranslation.

In practice the two are probably most often melded together in most practices. Consider [Sean Hsiang-Lin Lei's \(2014\)](#) analysis of the encounter between Chinese Medicine and biomedicine.

Chinese medicine (CM) and biomedicine coexisted from the late nineteenth century in the Qing dynasty without directly competing with one other. However, in the search for national survival in the early 20th century Republican China embraced Western science and technology. In 1929 the government sought to abolish CM. CM practitioners responded by creating the National Medicine Movement. This pressed professional CM interests and its institutional infrastructure, and sought government recognition that had previously been granted only to Western medicine. As part of this CM practitioners tried to ally themselves with the state in an attempt to turn CM into a “national medicine” and started to embrace the discourses of modernity and the standards of biomedicine. This led to a radical transformation in CM theory, practice, pedagogy, and social networks. CM was subsequently criticized for turning itself into a hybrid that was “neither horse nor donkey.” At the same time, it was the historical contingency of these struggles that paved the way for the later full-scale creation of standardized Traditional Chinese Medicine (TCM) in 1950s’ Communist China.⁴

⁴ Though we cannot do justice to this here, Lei’s story is both empirically sophisticated and theoretically challenging. One of his major points is that the entangled trajectory of CM’s modernization converges with [Latourian \(1993\)](#) “nonmodern” hybridity.

Lei's study suggests that the modernization and scientization of CM neither discarded tradition nor reduced CM to biomedicine, but productively reinvented CM as a hybrid set of practices. The study is also reflexive because Lei frames his study in similar terms, drawing on a contingent mix of traditional intellectual practices and modern academic categories. In other words, like the CM that it describes, his account is also hybrid. Others in or close to STS (Lei 1999; Scheid 2002; Kim 2006; Jongyoung Kim 2007; Zhan 2009; Ma and Lynch 2014), like the practitioners who mobilized "national medicine" while adapting to biomedical standards, have also made explicit use of mistranslation (Law and Lin 2017a). The issues, then, are what to mistranslate? What to betray? What kind of framing to assemble? Which kinds of realities to enact? And *how*?⁵

There are large anthropological literatures on mistranslation. For instance, Eduardo Vivieros de Castro talks of translation as *equivocation*. (To equivocate is to use a single term, a homonym, to describe different objects.) He defines "controlled equivocation" as the attempt to make explicit whatever is being lost in translation. At his hands a good translation is one that betrays the destination language rather than the source language. What is important is to decide *what* and *how* to (mis)describe and (mis)theorize such that "alien concepts . . . deform and subvert the translator's conceptual toolbox so that the *intentio* of the original language can be expressed within the new one" (2004: 4).

This is a radical position, but explicit mistranslation has also been explored in East Asian contexts including CM. Thus Volker Scheid (2002) uses STS language (Pickering 1995) to describe CM practices, noting that such binary distinctions as human versus nonhuman, nature versus culture, and ontology as opposed to epistemology are all absent in CM. He also shows that CM differs from biomedicine because its clinical practice takes the form of subtle manipulation by reading the direction of movement of disease *propensities* rather than attending to the disease itself (Scheid 2008).

Mei Zhan (2009) also mistranslates anthropology and STS, arguing that CM works by hybridizing rather than purifying, and that experimental science and biomedical theories undermine CM's epistemic legitimacy by turning these into "experiential medicine." She adds that if CM cannot be fully accounted for by bioscience, STS, and anthropology, then this tells us that relativism has not gone far enough. Thus, experiential CM unsettles the relations between empirical and conceptual, concrete and abstract, and contingent and universal, but if (as she puts it) we treat "experiential CM as conceptual," then it becomes possible to analyze the specific, the contingent, and the experiential in ways that work by metaphor and analogy rather than deduction and induction (Zhan 2014: 241). Here, then, in using *CM as method*, anthropology and STS are being mistranslated into the categories of CM. And we (Lin and Law 2014) have similarly explored CM's correlative mode to reimagine an STS of CM, and used the notion of *shi* to rethink STS theory for a Euro-American case (Law and Lin 2018; Lin 2017).

We cite these instances of mistranslation to offer a flavor of the very different ways in which explicit attention to translation and mistranslation might work. For, as is obvious, an STS that starts to mistranslate itself with CM will become an STS that is conceptually and empirically diverse. It will look different in Euro-America and East

⁵ On controlled mistranslations between forms of generalizing in the "postcolonial moment" of encounters, see Verran 2002; Jensen et al. 2011; Mohácsi and Morita 2013; Jensen 2014; and Mol 2014. This is also a feature of "theoretical creolization" in East Asian STS (Chen 2012; Fan 2012; Fu 2013; Chen 2014).

Asia. But it will almost certainly also look different within each of these areas. That said, in East Asia it is likely that the STSs of mistranslation will align themselves with “postcolonial” approaches without essentializing or oversimplifying cultural difference (Anderson 2009a, 2009b), for it will no longer be a priority to sustain the ways of knowing, methodological forms, or realities favored in Euro-American practices. And it will no longer be important to distinguish between STS and other ways of knowing and being. All of these will be made into realities—they will be real-ized—in different strategies for exploring possible East Asian mistranslations of STS. And the practices of CM that we have touched on above are just illustrations: there are many possibilities.

Mistranslation. As with localizing and translation, there is no one-world world in mistranslation. Instead there is (mis)translation between difference, together with a focus on making the character of particular mistranslations explicit and exploring their relative merits. The possible implication is that knowledge boundaries blur as they hybridize with their objects of study, so transforming themselves in ways that cannot be predicted. An STS of mistranslation is therefore an STS that might begin to dissolve itself, but how it did so would depend on the context-specific strategies and the realities that it encountered. Thus, the uses of *CM as method* that we have touched on above are simply illustrative, and there are many alternative possible methods for mistranslating. At the same time, given what we know of these STS/CM methodologies, it seems likely that STS mistranslations relevant to East Asian practices might often reflect and enact nonbinary, experiential, and propensity-inflected ways of knowing. It also seems probable that they would often reveal a distinct and sophisticated postcolonial understanding of the world.

8 Conclusion

Over several decades East Asian STS scholars have used a range of STS resources to ask whether or how East Asian technoscience is, or should be, distinctive. They have also reflexively debated the appropriate character of East Asian STS in analogous terms. Though most empirical case studies are complex and there are many other ways of understanding them, in this article we have mapped a series of approaches to these questions by identifying what we take to be the operation of six spatially related strategies within those case studies. Our double question thus has been: How do scholars imagine the *location of East Asian technoscience*? And then, reflexively, *How do they imagine the location of STS itself*?

We have argued that at least three and perhaps four of these forms of STS explanation work on the assumption that technoscience and STS are located within a *one-world world*, or a single world space-time reality (Law 2015). As we have seen, the first strategy, *diffusion*, explores the global spread of technoscience, identifies leaders and laggards, and worries about underdevelopment. An STS in diffusion mode is an STS that looks for ways in which East Asian laggards might catch up with the center. The second, *distortion*, similarly imagines a one-world world but explores how technoscience outsources its human, economic, and environmental costs to the periphery while imposing hegemonic forms of knowledge that conceal this exploitation by claiming universality. Here the task for East Asian STS is to articulate those costs and create alternative and better ways of knowing locally specific forms of exploitation. The third strategy, *circulation*, again assumes a one-world world, and describes the long-distance

divisions of labor of technoscience. Applied reflexively to STS, this is an approach that stresses the significance of developing specialist forms of East Asian STS. It also undoes the idea that there are centers and peripheries, working instead in terms of complementarities. The fourth spatial strategy, *localizing*, assumes that the natural world is a unity, but suggests that there are irreducible social and cultural differences within that world. The implication is that technoscience and STS are both place-bound, and that what counts as valid knowledge in one cultural location cannot be satisfactorily moved elsewhere. The inference for STS is that its forms will be irreducibly culture-specific, need to be developed contextually in their different ways, and may have relatively little validity or relevance beyond the locales in which they have been created.

These, then, are four strategies that assume a one-world world. To characterize the other two strategies, *translation* and *mistranslation*, it is helpful to draw on the notion of *performativity*. Originating in Euro-American philosophy, this suggests that words, actions, and practices may *perform corresponding realities into being*.⁶ This is a claim that has crucial implications for our argument because it also suggests that different *practices* enact not simply different social but also *different material and spatial realities*. The reason for this is that if practices differ, then rather than aligning to generate a one-world world, reality becomes a complex, multiple, and overlapping set of partially connected and spatially complex worlds: reality in the singular becomes realities in the plural.⁷ And it is here that we find the strategies of *translation* and *mistranslation*.

Translation, as we suggested above, is about incorporating by ignoring or misunderstanding difference. It is performative because it works to build a reality together with the representations, the subjectivities, the objects, the times, and the places that go with that reality. And it does this by squeezing the other realities that it seeks to incorporate. Applied reflexively to STS it asks what is being real-ized, made real, or alternatively excluded, in particular STS practices, and how this is being done. These questions about translation have matching questions in the last strategy, that of *mistranslation*. As a focus, this is less imperial. Rather than absorbing differences, it is more concerned with highlighting these. Here the guiding question is to what extent and how STS should allow itself to be mistranslated and so absorbed into the realities and methods that it encounters—for instance those of CM. The issue is not domination but how best it might mistranslate itself.

As is obvious, diffusion and distortion resonate with the historical context of East Asia. But the same is true for the grand divisions of labor explored in circulation, while localization, translation, and mistranslation also insist in different ways on the significance of East Asian difference. But, as we have just implied, there is also a divide between these different strategies that runs along the fault line of ontological performativity. This is because translation and mistranslation assume that realities and their spatial frames are *enacted into being*. In the other strategies, realities and their one-world spatial frames are natural, given, and immutable, but for performativity these become the effects or consequences of practices. Here a one-world world is something that is enacted into being, and might in principle be eroded if its practices were to

⁶ See Hacking 1992; Mol 2002; and Law 2004.

⁷ For similar arguments, see Blaser 2009 and de la Cadena 2010.

change. This opens novel analytical and political possibilities. In particular, it suggests the possibility of alternative practical and spatial arrangements for technoscience in East Asia.

But attention to spatial performativity also points to a methodological shift for STS. The latter begins to move from a focus on *where* East Asia, or East Asias, is/are to *how* its/their locations(s) is/are being *done in practice*. This suggests the significance of attending to the range of strategies available for locating—or relocating—East Asia. Or, to put it differently, it suggests that we might attend not only to the richness of empirical case studies, but also to the kinds of methods available in our different strategies for handling difference. Thus, and in addition to its attention to regional empirical and historical specificities and differences, East Asia STS might also collaborate with other forms of STS to explore alternative—and sometimes radically different—methodological approaches. The object would be to enrich debate within East Asian STS as it enacts its distinctiveness and its place in the world.

References

- Abraham, Itty (2006). "The Contradictory Spaces of Postcolonial Techno-Science." *Economic and Political Weekly* 41, no. 3: 210–17.
- Amir, Sulfikar (2013). *The Technological State in Indonesia: The Co-constitution of High Technology and Authoritarian Politics*. Milton Park, Abingdon, Oxon: Routledge.
- Amsden, Alice (1989). *Asia's Next Giant: South Korea and Late Industrialization*. New York: Oxford University Press.
- Amsden, Alice (2001). *The Rise of "The Rest": Challenges to the West from Late-Industrializing Economies*. New York: Oxford University Press.
- Amsden, Alice and Wan-Wen, Chu (2003). *Beyond Late Development: Taiwan's Upgrading Policies*. Translated by Dao-Kai, Zhu. Taipei: Linking.
- Anderson, Warwick (2000). "The Possession of Kuru: Medical Science and Biocolonial Exchange." *Comparative Studies in Society and History* 42, no. 4: 713–44.
- Anderson, Warwick (2006). *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines*. Durham: Duke University Press.
- Anderson, Warwick (2008). *The Collectors of Lost Souls: Turning Kuru Scientists into Whitemen*. Baltimore, MD: Johns Hopkins University Press.
- Anderson, Warwick (2009a). "From Subjugated Knowledge to Conjugated Subjects: Science and Globalisation, or Postcolonial Studies of Science?" *Postcolonial Studies* 12, no. 4: 389–400.
- Anderson, Warwick (2009b). "Re-orienting STS: Emergent Studies of Science, Technology, and Medicine in Southeast Asia." *East Asian Science, Technology and Society: An International Journal* 3, nos. 2–3: 163–71.
- Asia Monitor Resource Centre (2015). "Search Resources." Asia Monitor Resource Centre (<http://www.amrc.org.hk/topic/search?country=&topic=&type=&keyword=electronics/>, accessed 20 March 2015).
- Bak, Hee-Je (2014). "The Politics of Technoscience in Korea: From State Policy to Social Movement." *East Asian Science, Technology and Society: An International Journal* 8, no. 2: 159–74.
- Basalla, George (1967). "The Spread of Western Science: A Three-stage Model Describes the Introduction of Modern Science into Any Non-European Nation." *Science* 156, no. 3775: 611–22.
- BASEL Convention. "E-waste Africa Program." Basel Convention (<http://www.basel.int/Implementation/Ewaste/EwasteinAfrica/Overview/tabid/2546/Default.aspx/>, accessed 20 March 2015).
- Benedict, Ruth (1946). *The Chrysanthemum and the Sword: Patterns of Japanese Culture*. Boston: Houghton Mifflin.
- Berger, Peter (1992). *The Capitalist Revolution*. New York: Basic Books.
- Berger, Suzanne, and K. Richard Lester, ed. (2005). *Global Taiwan: Building Competitive Strengths in a New International Economy*. Armonk, NY: M. E. Sharp.
- Blaser, Mario (2009). "The Threat of the Yrmo: The Political Ontology of a Sustainable Hunting Program." *American Anthropologist* 111, no. 1: 10–20.

- Blok, Anders (2013). "Comparative Globalities: Actor-Network Theory and the Topologies of Japanese 'Research' Whales." *East Asian Science, Technology and Society: An International Journal* 7, no. 2: 185–204.
- Callon, Michel (1986). "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay." In *Power, Action, and Belief: A New Sociology of Knowledge?* Edited by John Law, 196–223. London: Routledge & Kegan Paul.
- Cardoso, Fernando Henrique, and Enzo Faletto (1979). *Dependency and Development in Latin America*. Translated by Marjory Mattingly Urquidí. Berkeley: University of California Press.
- Chakrabarty, Dipesh (2011). "The Muddle of Modernity." *American Historical Review* 116, no. 3: 663–75.
- Chang, Kyung-Sup, ed. (2014). *South Korea in Transition: Politics and Culture of Citizenship*. New York: Routledge.
- Cheah, Pheng (2001). "Universal Areas: Asian Studies in a World in Motion." In *Traces 1: Specters of the West and the Politics of Translation*, edited by Naoki Sakai and Yukiko Hanawa, 37–70. Hong Kong: University of Hong Kong Press.
- Chen, Dung-Sheng (2008). "STS and Area Studies: A Social Network Perspective." *East Asian Science, Technology and Society: An International Journal* 2, no. 3: 439–44.
- Chen, Dung-Sheng (2015). "We Have Never Been Latecomers: A Critical Review of High-Tech Industry and Social Studies of Technology in Taiwan." *East Asian Science, Technology and Society: An International Journal* 9, no. 4: 381–96.
- Chen, Hsin-Hsing 陳信行 (2016). *Kanjian bujie zhi wu: Gongye shehui zhong zhishi quanwei de wenhua shizuo* 看見不潔之物: 工業社會中知識權威的文化實作 (*Bad Stuff in Your Food and Other Pressing Matters: Cultural Practices in Institutionalized Epistemic Authorities in Industrial Society*). In *Taiwan shehui yanjiu congkan* 台灣社會研究叢刊 (*Academic Books Series of Taiwan: A Radical Quarterly in Social Studies*). Taipei: Taiwan A Radical Quarterly in Social Studies.
- Chen, Ruey-Lin (2012). "A Voyage to East Asian STS Theories; or, What Might Make an STS Theory East Asian." *East Asian Science, Technology and Society: An International Journal* 6, no. 4: 465–85.
- Chen, Ruey-Lin 陳瑞麟 (2014). "Revolution, Evolution, and Reassemblage: From HPS to STS and from Euro-America to Taiwan." *Keji, yiliao yu shehui* 科技、醫療與社會 (*Taiwanese Journal for Studies of Science, Technology, and Medicine*) 18: 281–334.
- Clancey, Gregory (2007). "Japanese Colonialism and Its Science: A Commentary." *East Asian Science, Technology and Society: An International Journal* 1, no. 2: 205–11.
- de la Cadena, Marisol (2010). "Indigenous Cosmopolitics in the Andes: Conceptual Reflections Beyond 'Politics.'" *Cultural Anthropology* 25, no. 2: 334–70.
- Doak, Kevin M. (1996). "Ethnic Nationalism and Romanticism in Early Twentieth-Century Japan." *Journal of Japanese Studies* 22, no. 1: 77–103.
- Dutton, Michael (2002). "Lead Us Not into Translation: Notes Toward a Theoretical Foundation for Asian Studies." *Nepantla: Views from South* 3, no. 3: 495–537.
- Escobar, Arturo (2008). *Territories of Difference: Place, Movements, Life, Redes*. Durham: Duke University Press.
- Fan, Fa-Ti (2007). "East Asian STS: Fox or Hedgehog?" *East Asian Science, Technology and Society: An International Journal* 1, no. 2: 243–47.
- Fan, Fa-Ti (2012). "Doing East Asian STS Is Like Feeling an Elephant, and That Is a Good Thing." *East Asian Science, Technology and Society: An International Journal* 6, no. 4: 487–91.
- Fan, Ruiping, ed. (2002). *Confucian Bioethics Philosophy and Medicine: Special Issue of Philosophy and Medicine Vol. 61*. London: Kluwer Academic Publishers.
- Fu, Daiwie 傅大為 (2005). *Yaxiya de xin shenti: Xingbie, Yiliao yu jindai Taiwan* 亞細亞的新身體: 性別、醫療與近代台灣 (*Assembling the New Body: Gender/ Sexuality, Medicine, and Modern Taiwan*). Taipei: Socio Publishing.
- Fu, Daiwie (2007). "How Far Can East Asian STS Go? A Position Paper." *East Asian Science, Technology and Society: An International Journal* 1, no. 1: 1–14.
- Fu, Daiwie (2013). "What Are the Identities and Positionings in East Asian STS?—A View from EASTS Journal (2007–2012)." A keynote speech presented in Asia-Pacific Science, Technology and Society Network (APSTSN) Biennial Conference, National University of Singapore, 15–17 July.
- Fujimura, Joan H. (2000). "Transnational Genomics: Transgressing the Boundary between the 'Modern/ West' and the 'Premodern/East.'" In *Roddey Reid and Sharon Traweek (Doing Science and Culture)*, 71–92. New York: Routledge.
- Galeano, Eduardo H. (1997 [1973]). *Open Veins of Latin America: Five Centuries of the Pillage of a Continent*. Translated by Cedric Belfrage. New York: Monthly Review Press.

- Galisson, Peter Louis (1997). *Image and Logic: A Material Culture of Microphysics*. Chicago: University of Chicago Press.
- Ge, Zhaoguang 葛兆光 (2011). *Zhai zi Zhongguo: Chongjian youguan 'Zhongguo' de lishi lunshu* 宅茲中國:重建有關「中國」的歷史論述 (*Living in the Celestial State: Reconstruction of the Historical Argumentation and Narration on 'Zhongguo'*). Taipei: Linking Publishing.
- Greene, Megan (2008). *The Origins of the Developmental State in Taiwan: Science Policy and the Quest for Modernization*. Cambridge, MA: Harvard University Press.
- Hacking, Ian (1992). "The Self-Vindication of the Laboratory Sciences." In *Science as Practice and Culture*, edited by Andrew Pickering, 29–64. Chicago: University of Chicago Press.
- Harding, Sandra (2008). *Sciences from Below: Feminisms, Postcolonialities, and Modernities*. Durham, NC: Duke University Press.
- Harding, Sandra (2016). "Latin American Decolonial Social Studies of Scientific Knowledge: Alliances and Tensions." *Science, Technology, and Human Values* 41, no. 6: 1063–87.
- Heryanto, Ariel (2016). "Benedict Anderson: A Great Inspiration." *Philippine Studies: Historical and Ethnographic Viewpoints* 64, no. 1: 159–66.
- Hwang, Jim-lin 黃金麟, Horng-luen Wang 汪宏倫, and Chung-hsien Huang 黃崇憲, eds. (2010). *Diguo bianyuan: Taiwan xiangdai xing de kaocha* 帝國邊緣:台灣現代性的考察 (*At the Edge of Empires: Examining Modernity in Taiwan*). Taipei: Socio Publishing.
- Jensen, Casper Bruun (2014). "Continuous Variations: The Conceptual and the Empirical in STS." *Science, Technology, and Human Values* 39, no. 2: 192–213.
- Jensen, Casper Bruun, et al. (2011). "Comparative Relativism: Symposium on an Impossibility." *Common Knowledge* 17, no. 1: 1–12.
- Keevak, Michael (2011). *Becoming Yellow: A Short History of Racial Thinking*. Princeton, NJ: Princeton University Press.
- Kim, Bounsoong (2007). "Seismicity within and beyond the Empire: Japanese Seismological Investigation in Taiwan and Its Global Deployment, 1895–1909." *East Asian Science, Technology and Society: An International Journal* 1, no. 2: 153–62.
- Kim, Jongyoung (2006). "Beyond Paradigm: Making Transcultural Connections in a Scientific Translation of Acupuncture." *Social Science and Medicine* 62, no. 12: 2960–72.
- Kim, Jongyoung (2007). "Alternative Medicine's Encounter with Laboratory Science: The Scientific Construction of Korean Medicine in a Global Age." *Social Studies of Science* 37, no. 6: 855–80.
- Kim, Leo, and Han Woo Park (2015). "Diagnosing 'Collaborative Culture' of Biomedical Science in South Korea: Misoriented Knowledge, Competition, and Failing Collaboration." *East Asian Science, Technology and Society: An International Journal* 9, no. 3: 233–52.
- Kim, Linsu (1997). *Imitation to Innovation: The Dynamics of Korea's Technological Learning*. Boston: Harvard Business School.
- Kim, Sung Won (2014). "Korean Prometheus? Mythifying Benjamin Whiso Lee." *East Asian Science, Technology and Society: An International Journal* 8, no. 2: 195–208.
- Kim, Tae-Ho (2008). "How Could a Scientist Become a National Celebrity?: Nationalism and Hwang Woo-Suk Scandal." *East Asian Science, Technology and Society: An International Journal* 2, no. 1: 27–45.
- Ku, Yu-Ling (2006). "Human Lives Valued Less than Dirt: Former RCA Workers Contaminated by Pollution Fighting Worldwide for Justice (Taiwan)." In *Challenging the Chip: Labor Rights and Environmental Justice in the Global Electronics Industry*, edited by Ted Smith, David A. Sonnenfeld, and David Naguib Pellow, 181–90. Philadelphia: Temple University Press.
- Kuo, Wen-Hua 郭文華 (2016). "Iyakuhiin kisei no saizennsenn ni okeru jinnshu do so no hyoushou" 医薬品規制の最前線における人種とその表象 (Race and Its Representations in Regulatory Frontier: Japan's Encounter with Global Pharmaceuticals at the ICH). In *Sakano Toru and Takezawa Yasuko ed. 人種神話を解体する (Knowledge—Between Science and Society)*, 243–72. Tokyo: University of Tokyo Press.
- Latour, Bruno (1988). *The Pasteurization of France*. Translated by Alan Sheridan and John Law. Cambridge, MA: Harvard University Press.
- Latour, Bruno (1993). *We Have Never Been Modern*. Translated by Catherine Porter. Cambridge, MA: Harvard University Press.
- Latour, Bruno (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. New York: Oxford University Press.
- Law, John (1986). "On the Method of Long Distance Control: Vessels, Navigation, and the Portuguese Route to India." In *Power, Action, and Belief: A New Sociology of Knowledge?* edited by John Law, 234–63. London: Routledge & Kegan Paul.
- Law, John (2004). *After Method: Mess in Social Science Research*. New York: Routledge.

- Law, John (2011). "Collateral Realities." In *The Politics of Knowledge*, edited by Fernando Dominguez Rubio and Patrick Baert, 156–78. London: Routledge.
- Law, John (2015). "What's Wrong with a One-World World?" *Distinktion: Journal of Social Theory* 16, no. 1: 126–39.
- Law, John, and Wen-yuan Lin (2017a). "Provincializing STS: Postcoloniality, Symmetry, and Method." *East Asian Science, Technology and Society: An International Journal* 11, no. 2: 1–17.
- Law, John, and Wen-yuan Lin (2017b). "The Stickiness of Knowing: Translation, Postcoloniality, and STS." *East Asian Science, Technology and Society: An International Journal* 11, no. 2: 257–69.
- Law, John, and Wen-yuan Lin (2018). "Tidescapes: Notes on a Shi(勢)-Inflected STS." *Journal of World Philosophies* 3, no. 1: 1–16.
- Lei, Sean Hsiang-Lin (1999). "From Changshan to a New Anti-malarial Drug: Re-networking Chinese Drugs and Excluding Chinese Doctors." *Social Studies of Science* 29, no. 3: 323–58.
- Lei, Sean Hsiang-Lin (2014). *Neither Donkey nor Horse: Medicine in the Struggle Over China's Modernity*. Chicago: University of Chicago Press.
- Li, Shang-Jen 李尚仁 (2012). *Diguo de yishi: Wanbade yu yingguo redai yixue de chuangjian* 帝國的醫師: 萬巴德與英國熱帶醫學的創建 (*A Physician to Empire: Patrick Manson and the Founding of British Tropical Medicine*). Taipei: Asian Culture Publishing.
- Lin, Chung-Hsi (2009). "The Silenced Technology—The Beauty and Sorrow of Reassembled Cars." *East Asian Science, Technology and Society: An International Journal* 3, no. 1: 91–131.
- Lin, James (2015). "Sowing Seeds and Knowledge: Agricultural Development in Taiwan and the World, 1925–1975." *East Asian Science, Technology and Society: An International Journal* 9, no. 2: 127–49.
- Lin, Tzung-De (2015). "Theater as a Site for Technology Demonstration and Knowledge Production: Theatrical Robots in Japan and Taiwan." *East Asian Science, Technology and Society: An International Journal* 9, no. 2: 187–211.
- Lin, Wen-yuan 林文源 (2012). The Medicalization of a Latecomer Society: A Critique Based on the Case of Knowledge, Profession, and Transformation of a Medical Regime in Taiwanese Chronic Kidney Disease Governance. *Taiwan shehuixue* 台灣社會學 (*Taiwanese Sociology*) 24: 1–53.
- Lin, Wen-yuan (2013). "Displacement of Agency: The Enactment of Patients Agency in and beyond Haemodialysis Practices." *Science, Technology, and Human Values* 38, no. 3: 421–43.
- Lin, Wen-yuan 林文源 (2014). *Kanbujian de shingdungnengli: Tsung shingdungje wangluo dau weiyililuen* 看不見的行動能力: 從行動者網絡到位移理論 (*Invisible Agency: A Theory of Displacement for Subalterns*). Taipei: Academia Sinica.
- Lin, Wen-yuan (2017). "Shi (勢), STS, and Theory: Or What Can We Learn from Chinese Medicine?" *Science, Technology, and Human Values* 42, no. 3: 405–28.
- Lin, Wen-yuan, and John Law (2014). "A Correlative STS: Lessons from a Chinese Medical Practice." *Social Studies of Science* 44, no. 6: 801–24.
- Lin, Yi-Ping 林宜平 (2006). Women and Water: An Analysis of RCA Health Effect Studies from a Feminist Perspective. *Nuxue xuezhì: Fumu yu xingbie yanjiu* 女學學誌: 婦女與性別研究 (*Journal of Women's and Gender Studies*) 21: 185–211.
- Liu, Joyce Chi-Hui 劉紀蕙 (2011). *Xin zhi tuopu: 1895 shijian hou de lunli zhonggou* 心之拓樸: 1895 事件後的倫理重構 (*The Topology of the Psyche: The Post-1895 Reconstruction of Ethics*). Taipei: Flaneur Culture Lab.
- Liu, Shiyung (2008). "The Ripples of Rivalry: The Spread of Modern Medicine from Japan to Its Colonies." *East Asian Science, Technology and Society: An International Journal* 2, no. 1: 47–71.
- Livingstone, David (2004). *Putting Science in Its Place: Geographies of Scientific Knowledge*. Chicago: University of Chicago Press.
- Low, Morris Fraser (1989). "The Butterfly and the Frigate: Social Studies of Science in Japan." *Social Studies of Science* 19, no. 2: 313–42.
- Ma, Eunjeong, and Michael Lynch (2014). "Constructing the East-West Boundary: The Contested Place of a Modern Imaging Technology in South Korea's Dual Medical System." *Science, Technology, and Human Values* 39, no. 5: 1–27.
- Mohács, Gergely, and Atsuro Morita (2013). "Traveling Comparisons: Ethnographic Reflections on Science and Technology." *East Asian Science, Technology and Society: An International Journal* 7, no. 2: 175–83.
- Mol, Annemarie (2002). *The Body Multiple: Ontology in Medical Practice, Science, and Cultural Theory*. Durham, NC: Duke University Press.
- Mol, Annemarie (2014). "Language Trails: 'Lekker' and Its Pleasures." *Theory, Culture, and Society* 31, no. 2–3: 93–119.
- Morris-Suzuki, Tessa (1998). *Re-inventing Japan: Time, Space, Nation*. Armonk, NY: M. E. Sharpe.

- Nakajima, Hideto (2007). "Differences in East Asian STS: European Origin or American Origin?" *East Asian Science, Technology and Society: An International Journal* 1, no. 2: 237–41.
- Nakayama, Shigeru (2012). "Techno-Nationalism versus Techno-Globalism." *East Asian Science, Technology and Society: An International Journal* 6, no. 1: 9–15.
- Office of the Historian (2015). "The United States and the Opening to Japan, 1853." Office of the Historian (<https://history.state.gov/milestones/1830-1860/opening-to-japan/>, accessed 24 May 2015).
- Ong, Aihwa, and Stephen J. Collier (2005). *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*. Malden, MA: Blackwell.
- Pickering, Andrew (1995). *The Mangle of Practice: Time, Agency, and Science*. Chicago: University of Chicago Press.
- Platt, Stephen (2007). *Provincial Patriots: The Hunanese and Modern China*. Cambridge, MA: Harvard University Press.
- Quet, Mathieu, and Marianne Noel (2014). "From Politics to Academics: Political Activism and the Emergence of Science and Technology Studies in South Korea." *East Asian Science, Technology and Society: An International Journal* 8, no. 2: 175–93.
- Rasmussen, Lisa M. (2010). "Confucianism's Challenge to Western Bioethics." *American Journal of Bioethics* 10, no. 4: 73–74.
- Redfield, Peter (2002). "The Half-Life of Empire in Outer Space." *Social Studies of Science* 32, no. 5–6: 791–825.
- Robertson, Jennifer (2007). "Introduction: Putting and Keeping Japan in Anthropology." In *A Companion to the Anthropology of Japan*, edited by Jennifer Robertson, 3–16. Oxford: Blackwell Publishing.
- Sabharwal, Meghna, and Roli Varma (2015). "Transnational Research Collaboration: Expatriate Indian Faculty in the United States Connecting with Peers in India." *East Asian Science, Technology and Society: An International Journal* 9, no. 3: 275–93.
- Scheid, Volker (2002). *Chinese Medicine in Contemporary China: Plurality and Synthesis, Science, and Cultural Theory*. Durham, NC: Duke University Press.
- Scheid, Volker (2008). "The Mangle of Practice and the Practice of Chinese Medicine: A Case Study from Nineteenth-Century China." In *The Mangle in Practice: Science, Society, and Becoming*, edited by Andrew Pickering and Keith Guzik, 111–28. Durham, NC: Duke University Press.
- Serres, Michel (1974). *La Traduction, Hermès III*. Paris: Les Éditions de Minuit.
- Seth, Suman (2009). "Putting Knowledge in Its Place: Science, Colonialism, and the Postcolonial." *Postcolonial Studies* 12, no. 4: 373–88.
- Setoguchi, Akihisa. 2007. "Control of Insect Vectors in the Japanese Empire: Transformation of the Colonial/Metropolitan Environment, 1920–1945." *East Asian Science, Technology and Society: An International Journal* 1, no. 2: 167–81.
- Smith, Ted, David A. Sonnenfeld, and David Naguib Pellow, eds. (2006). *Challenging the Chip: Labor Rights and Environmental Justice in the Global Electronics Industry*. Philadelphia: Temple University Press.
- Strathern, Marilyn (1991). *Partial Connections*. New York: Rowman and Littlefield.
- Sun, Ge 孫歌 (2011). *Women weishenme yao tan dongya: Zhuangkuang zhong de zhengzhi yu lishi 我們為什麼要談東亞: 狀況中的政治與歷史 (Why Do We Discuss East Asia: Politics and History in Confusion)*. Beijing: Joint Publishing.
- Tsai, Daniel Fu-Chang (2005). "The Bioethical Principles and Confucius' Moral Philosophy." *Journal of Medical Ethics* 31, no. 3: 159–63.
- Tsukahara, Togo (2009). "Introduction: Japanese STS in Global, East Asian, and Local Contexts." *East Asian Science, Technology and Society: An International Journal* 3, no. 4: 505–09.
- Verran, Helen (2002). "A Postcolonial Moment in Science Studies: Alternative Firing Regimes of Environmental Scientists and Aboriginal Landowners." *Social Studies of Science* 32, no. 5–6: 729–62.
- Viveiros de Castro, Eduardo (2004). "Perspectival Anthropology and the Method of Controlled Equivocation." *Tipiti: Journal of the Society for the Anthropology of Lowland South America* 2, no. 1: 3–22.
- Wallerstein, Immanuel (2004). *World-Systems Analysis: An Introduction*. Durham, NC: Duke University Press.
- Wang, Hui 汪暉 (2015). *Xiandai zhongguo sixiang de xingqi 現代中國思想的興起 (The Rise of Modern Chinese Thought)*. Beijing: Joint Publishing. http://www.srscs.nctu.edu.tw/srscs/teachers_cv_18.htm.
- Wang, Jenn-Hwan 王振寰 (2010). *Zhuigan de jixian: Taiwan de jingji zhuanxing yu chuangxin 追趕的極限: 台灣的經濟轉型與創新 (The Limits of the Fast Follower: Taiwan's Economic Transition and Innovation)*. Taipei: Chuliu Book Company.
- Yang, Rur-Bin 楊儒賓 (2014). Original Physics. *Dongya guannianshi ji kan 東亞觀念史集刊 (Journal of the History of Ideas in East Asia)* 7: 255–97.

- Zaiki, Masumi, and Togo Tsukahara (2007). "Meteorology on the Southern Frontier of Japan's Empire: Ogasawara Kazuo at Taihoku Imperial University." *East Asian Science, Technology and Society: An International Journal* 1, no. 2: 183–203.
- Zhan, Mei (2009). *Other-Worldly: Making Chinese Medicine Through Transnational Frames*. Durham: Duke University Press.
- Zhan, Mei (2014). "The Empirical as Conceptual: Transdisciplinary Engagements with an 'Experiential Medicine.'" *Science, Technology, and Human Values* 39, no. 2: 236–63.

Wen-yuan Lin is professor at the National Tsing Hua University, Taiwan. He uses empirical metaphysics approaches to explore emerging alternative knowing spaces and the politics of medical practices. He is currently working on two projects. In the first he is tracing the transformation of regimes of chronic illness in contemporary Taiwan and exploring their situated disease-scapes and politics. In the second he is exploring the possibility of mobilizing alternative modes of knowing in Chinese medical practices to provincialize the methods of Euro-American social sciences.

John Law is professor emeritus at the Open University, UK, and holds visiting and honorary appointments respectively at the Sámi Allaskuvla in Norway, and Lancaster University, UK. He works collaboratively on mis/translation to explore possible "non-Western" and non-English language academic ways of knowing with the aim of both provincializing and enriching social science. In collaboration with Sámi colleagues he also uses material semiotic methods to explore power-saturated postcolonial environmental clashes between science and policy on the one hand, and indigenous knowledges of land in Sápmi on the other. His website is at www.heterogeneities.net.