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# Infrastructure, Modernity, and the Technologies of Everyday Life: Insights from a Collaborative Research Project on the Making of Modern East Asia

Max Hirsh, Angela Ki Che Leung, and Izumi Nakayama

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**Abstract** The article shares key insights gleaned from a multiyear collaborative research project on the role of everyday technologies in the making of modern East Asia from the nineteenth century to the present. It explains the three key concepts that have guided the authors' collective research on technological processes and modernity—East Asia as a region, infrastructure, and the everyday—illustrating each with specific examples drawn from the domains of food, childbirth, pharmaceuticals, transportation, automation, weather forecasting, and telecommunication. In so doing, the project seeks to introduce two innovations into the study of East Asian science and technology. From a conceptual perspective, the authors' emphasis on *infrastructure* introduces new lines of inquiry into the various types of networks through which technical changes are conceived, produced, and disseminated. At the same time, the authors' focus on *the everyday* traces how those technologies have been mixed, modified, and adapted by end users in accordance with culturally specific norms, needs, and aspirations. Moreover, by foregrounding collaborative forms of research, the project advances new methodological strategies into the study of technology and its knowledge, practice, and artifacts that define and redefine East Asia as a region with fluid boundaries.

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In 2017, an interdisciplinary team of historians, anthropologists, sociologists, STS, and urban scholars came together at the Hong Kong Institute for the Humanities and Social Sciences of the University of Hong Kong to launch a collaborative research project that studies the role of everyday technologies in the making of modern East Asia from the nineteenth century to the present.<sup>1</sup> This journal—whose mission has been to decenter the West in favor of a more global perspective on STS—is a major source of inspiration for this initiative. Having mobilized international efforts to study East Asian agency in the development of modern science and technology for more than a decade, *EASTS* has successfully built a productive research field that is open to conversations with STS scholars working across a range of specializations. This fecund regional approach to science and technology study has also encouraged the rethinking of East Asia in dynamic connection to the local and the global, while displacing the centrality of national narratives (Bray 2012). The new Hong Kong collaborative project endeavors to build on these foundations by studying specific technological processes of production and consumption that frame and reframe East Asia as a region from the nineteenth century to the present. By privileging technologies that people encounter in their everyday lives, the project underscores the technological underpinnings of East Asian cultures and societies. The project takes an overtly interdisciplinary approach to the study of contemporary technologies, while at the same time devoting special attention to historical narratives to foreground uniquely East Asian pathways to modernity and postmodernity.

Our project is a collaboration between the Hong Kong Institute for the Humanities and Social Sciences at the University of Hong Kong and the Hong Kong University of Science and Technology. It is coordinated by Angela Ki Che Leung and funded by the Research Grant Council of Hong Kong. The research team is composed of sixteen collaborators based throughout East Asia as well as in Europe, North America, and Australia,<sup>2</sup> and is advised by an international board: Wiebe Bijker (Maastricht University), Francesca Bray (University of Edinburgh), Gregory Clancey (National University of Singapore), Fa-ti Fan (State University of New York at Binghamton), and Suzanne Moon (University of Oklahoma). We also work closely with four institutional partners: the Centre of Transcultural Studies at the University of Heidelberg, the Max Planck Institute for the History of Science, the Needham Research Institute, and *EASTS*.

<sup>1</sup> Making Modernity in East Asia: Technologies of Everyday Life, Nineteenth to Twenty-First Centuries, 2017–20. Collaborative Research Fund grant, Research Grants Council of Hong Kong, Angela Ki Che Leung, principal coordinator.

<sup>2</sup> The collaborators are Francesca Bray (University of Edinburgh), Christian Daniels (Hong Kong University of Science and Technology), K. W. Fung (University of Hong Kong), Suzanne Gottschang (Smith College), Max Hirsh (University of Hong Kong), Tae-Ho Kim (Chonbuk National University), Wen-hua Kuo (National Yang Ming University), Angela Ki Che Leung (University of Hong Kong), Izumi Nakayama (University of Hong Kong), Robert Peckham (University of Hong Kong), Gonçalo Santos (Independent Scholar), Naubahar Shariff (Hong Kong University of Science and Technology), Hallam Stevens (National University of Singapore), Dorothy Tang (Massachusetts Institute of Technology), Daniel Trambaioli (University of Hong Kong), Chaoxiong Zhang (University of Hong Kong), and Lawrence Zhang (Hong Kong University of Science and Technology).

The project is divided into seven subgroups working on gynocentric technologies, pharmacotherapeutic technologies, transport infrastructure, history of automation and the future of work, epidemic intelligence and the future of communication, food technologies, and weather forecasting (instruments and citizen science). Each of the sub-projects includes one or more collaborators who work with other scholars to organize workshops, conferences, and site visits, and to prepare collective publications. Collaborators in Hong Kong meet regularly to update their findings and to discuss the main themes of the project, while the whole team, including the advisors and representatives of the institutional partners, meet annually to monitor progress and plan the next steps. Other than research activities, the project also organizes lecture series and training workshops for young scholars in the field. To showcase the team's research activities, research findings, and knowledge exchange, we are also developing a virtual museum.

Our project has two main goals:

- First, we seek to reframe the notion of East Asia as a region by analyzing it from the perspective of technological change. In so doing, we eschew a rigid geographical understanding of regions in favor of one that traces regional connections from the local to the global through the movement of people, ideas, practices, and things (Tagliacozzo, Siu, and Perdue 2015a, 2015b, 2019; Anderson 2018; Duara 2010, 2018; Smith 2019).
- Second, our project aims to illuminate the relationship between modernity and technology by foregrounding specific examples of technological innovations that have produced profound and lasting shifts in the everyday lives of people living in East Asia (Lefebvre 1958; Highmore 2002).

To achieve these ends, our interdisciplinary team takes an approach that goes beyond the traditional frameworks of national, colonial, and postcolonial histories that have been conveniently used to explain West-East technological transfer and Asian modernity modeled after the West. Moving beyond conventional geopolitical frameworks, we deploy the concept of infrastructure (Larkin 2013) to open up new ways of interpreting the manifold local, transnational, and transregional technological engagements that have made East Asian societies what they are today.

Ultimately, our project aims to introduce two innovations into the study of East Asian science and technology: one conceptual, the other methodological. From a conceptual perspective, our emphasis on *infrastructure* introduces new lines of inquiry into the networks through which technical changes are conceived, produced, and disseminated. At the same time, our focus on *the everyday* traces how those technologies have been mixed, modified, and adapted by end users living in East Asia in accordance with culturally specific norms, needs, and aspirations. From a methodological perspective, our project emphasizes *collaborative* forms of research and dissemination: for example, through intensive workshop series, group fieldwork, exhibitions, and dialogues between scholars and practitioners. In so doing, we seek to introduce new empirical and representational strategies into the study of technology and its knowledge, practice, and artifacts in East Asia.

The essay that follows explains the three key concepts that have guided our collective research on technological processes and modernity—East Asia as a region, infrastructure, and the everyday—illustrating each with specific examples drawn from the domains of food, childbirth, pharmaceuticals, transportation, automation, weather forecasting, and telecommunication.

## 1 East Asia as a Region

Now, more than a decade after the founding of *EASTS*—which put East Asia on the map of STS—it is a good time to revisit the concept of East Asia as a region. In the first position paper of *EASTS*'s inaugural issue, [Daiwie Fu \(2007\)](#) outlined various theories and approaches to STS. East Asia, for him, seemed to be a given, roughly defined by the communities of STS scholars in Japan, South Korea, China, and Taiwan. Ten years later, a recent issue of the journal devoted to Southeast Asia draws the readers' attention to the reconceptualization of the region within the analytical framework of STS ([Graham, Montoya, and Kerr 2018](#)). The focus seems to have shifted from what East Asian scholars can contribute to STS—a field that began in the US and Europe—to how STS and related fields of study, such as history and anthropology of science and technology, can contribute to regional reconceptualization.

Like most named regions, East Asia is at once recognizable and ill-defined. In conventional area study, East Asia is understood as those parts of Asia with certain geographical proximity: China, Japan, Korea, Taiwan, Hong Kong, Singapore, and Vietnam, grouped together conveniently by Confucian cultures, collective social organizations, patriarchal and autocratic government, and shared experiences of colonialism and Cold War confrontations. However, it is unclear how coherent the region is compared to, say, Europe. There is no unifying vision of a common identity like the European Union, however fragile, that would allow us to imagine “inventing East Asia” or “the hidden integration of East Asia,” as was applied by [Thomas J. Misa and Johan Schot \(2005\)](#) to Europe when they launched the Tensions of Europe project. And unlike Southeast Asia, there is no political agenda to integrate East Asian nations into a collective entity similar to the Association of Southeast Asian Nations. Even up till now, studies on economic and technological developments in this region have mostly been conducted at the level of nation-states—especially China, Japan, and, increasingly, Korea—with just a few exceptional surveys on East Asia as a region ([Sugihara 2003](#); [Bray 1986](#); [Ishikawa 1981](#); [Oshima 1987](#)). Meanwhile, the technological agency and dynamism of the fuzzily conceived East Asian region in the twenty-first century seems to know no boundaries.

East Asia is also one of the very few regions beyond the West with a long and rich historiography, including in science and technology, though mostly written from a national perspective. Bray draws our attention to the importance of non-Western histories of science and technology—notably Joseph Needham's *Science and Civilization in China* series as well as Japanese works on industrialization—as they are reminders of two persistent biases in contemporary STS: Eurocentrism and heavy presentism ([Bray 2019](#)). These national histories highlight East Asian agency and evoke cultural coherence constructed through the regional circulation of technical knowledge and practices already in the premodern periods ([Bray 2012](#)). This makes East Asia a particularly rich context in which to study modern technology not only as something “transferred” from the West but also as cultural heritage. The economic and political complexity within the region likewise invites the exploration of modern technological transformations not simply as a colonial phenomenon, but also as one characterized by long-standing regional interdependencies among Japan, China, Taiwan, and Southeast Asia demonstrated, for example, by the sugar, rice, and textile industries since at least the nineteenth century ([Mazumdar 1998](#); [Bray 2019](#); [Grove 2006](#)). The project's

emphasis on the historical aspects of technological engagement adds a greater spatio-temporal depth to the notion of circulation: one that effectively challenges the conventional view of East Asia as a latecomer to technical and economic development (Lin and Law 2015a).

From the perspective of technological engagement, this research team problematizes East Asia as a region in two ways. First, it tests the assumption that the region can be defined by a shared or core cultural heritage. Second, it questions whether the normative geographic and political boundaries that are generally accepted as the region's frame are valid and sufficient. To demonstrate the importance of tradition and path dependency for a deeper understanding of technological change and of technology policy making in the region (Edquist 1997), several of our research projects unpack the notion of an East Asian shared heritage. While the project on gynocentric technologies finds more commonalities in technologies of childbirth, child-rearing, and care for the sick across East Asia, others find significant regional differences. The pharmacotherapeutic project, for instance, highlights the different boundaries drawn between everyday drugs and drugs taken for "special use" in different parts of the region. It reveals that local and regional medical cultures do not fit well into the categories of "global" biomedicine or the various "national" medicines, requiring more fine-grained studies of variations in local preferences. Similarly, our project on "traditional" East Asian foods—such as soy sauce, rice wines, kimchi, and tea—likewise sheds light on critical regional and local variations. These differences—in technology, management, labor, taste, and form—were crucial in determining the diverging trajectories of these food products with the advent of modern, scientific technologies from the late nineteenth century onward. Modern soy sauces in northern and southern China, Japan, Korea, and Taiwan were and remain very different in substance and value. The diverse histories of traditional foodstuffs as regional or national identity foods, or global industrial commodities, and those of new foods created or appropriated by new technologies (such as beer or whisky) constitute a complex and ever-changing East Asian foodscape that cannot be reduced to being the inheritor of a monolithic cultural tradition. The project's emphasis on local and sub-regional variations in knowledge and practices embedded in their specific socio-technical contexts thus produces a complex and historically layered map of East Asia: one that has been configured more by inter- and intraregional connections and disconnections than by an overarching cultural heritage.

What's more, our research projects on transport infrastructure, epidemics, and weather forecasting reveal how the concept of East Asia cannot be contained by conventional geographical and cultural definitions, but rather needs to be extended much further to understand its full implications. The transport infrastructure group demonstrates, among other things, how and why China's contemporary infrastructural ambitions extend far beyond its own national borders, and even beyond Asia. The study of epidemic intelligence technologies likewise shows the inevitability of looking beyond East Asia to places like Africa for a better grasp of the epidemiological situation in East Asia and appropriate technological responses. Similarly, the weather forecasting project demonstrates how environmental processes and techno-science have continually reconfigured the boundaries of East Asia. Our food technology project also reveals how "traditional" foods traveled far beyond the conventional geographical confines of East Asia, reaching Southeast Asia and even Europe, as they followed the flow of

people, knowledge, materials, capital, and institutions in the modern period. Our approach of framing modern East Asia and its constituent parts by tracing specific technological trajectories thus enables us to advance new explanations of East Asia's quest for modernity not only in comparison with the better studied European experience but also with that of neighboring regions like South and Southeast Asia.

Our preliminary empirical findings on various technological engagements in modern East Asia suggest that East Asia can be better understood as a specific site of convergence of historical processes. In that sense, our project draws on the work of scholars who deploy an "Asia as Method" approach to reframe regional history and to deepen our understanding of East Asian agency (Takeuchi 2005; Chen 2010; Lin and Law 2015b; Anderson 2012). Moreover, it is in conversation with scholarship that foregrounds notions of connectedness, flows, infrastructure, and entangled itineraries for a more precise understanding of technological processes by destabilizing the geographical confines of cities and regions (Tagliacozzo, Siu, and Perdue 2015a, 2015b, 2019; Duara 2018; Smith 2019; Hirsh 2016; Mostowlansky 2017).

## 2 Infrastructure

By reframing the concept of East Asia, our project seeks to open up new theoretical approaches for the field of STS, along with new avenues of empirical research. Similar ambitions inform our project's emphasis on the role that infrastructure has played, and continues to play, in the formation of a uniquely East Asian mode of technological modernity. Soy sauce in China, for example, did not become an everyday commodity for city dwellers until the late eighteenth century, when Manchuria—the biggest producer of soybeans—was fully integrated with the Chinese Empire via maritime trade routes (Leung 2018). The circulation of chemical fermentation expertise, via networks of universities, technical schools, and laboratories in Japan, China, Korea, and Taiwan, subsequently transformed soy sauce into a global product. Our project investigates these kinds of social, material, and technical connectivities within and across East Asia through the lens of infrastructure and its attendant technologies of knowledge. In so doing, we engage with the turn to infrastructure as an object of study in the humanities and social sciences (Edwards 2003; Harvey, Jensen, and Morita 2017; van Laak 2004; Larkin 2013). We seek to build on that work by shifting the geographic focus to East Asia, and by extending the conversation across both disciplinary and national boundaries.

An attention to infrastructure is particularly crucial in the case of East Asia, for reasons both historical and contemporary. In the nineteenth and twentieth centuries, European powers devoted considerable financial, intellectual, and manpower resources to the construction of infrastructure in East Asian entrepôts and colonial hinterlands: building railway and telegraph lines, dredging deep sea ports and creating reservoirs, and installing basic sanitation systems throughout the region. As elsewhere, these projects were positioned as both part of a broader civilizing mission as well as an effort to bind the colonies' populations and natural resources more closely to the mother country—geographically, economically, and ideologically. In the twentieth century, these European powers were joined by Japan, who, under the guise of East Asian "coprosperity," transformed Manchuria and Taiwan into laboratories of infrastructural modernity in the domains of transportation, resource extraction, and water

management, among others. That approach persisted after World War II through Japan's export of infrastructural technologies—chiefly in the form of hydroelectric, aviation, and skyscraper projects—to East and Southeast Asia in terms of technical aid and bilateral goodwill. Both in the pre- and postwar era, Japan's infrastructural experiments abroad served as test beds for technical innovations that, when proved successful, were subsequently transferred back to the metropole. Moreover, these projects functioned as both an indispensable diplomatic tool and as a fundamental component of economic policy, opening up markets and spreading technical standards and norms abroad. That strategy, in turn, was instrumental in the spatial and economic development of cities like Hong Kong, Singapore, and Taipei, all of which understood the Japanese approach to infrastructure-led urban and regional development as a model that was both distinct from Western precedents and more appropriate to the high population densities and climatic conditions of East Asian megaregions. Elevated skywalks, high-rise apartment buildings, and railway-oriented, air-conditioned retail environments quickly became essential signifiers of what it meant, in the East Asian context, to be modern. Those ideas, in turn, subsequently filtered into post-Mao China through the transfer of capital and infrastructural expertise originating in Hong Kong, Singapore, and Taiwan.

Attending to the broader historical role that infrastructure has played in East Asia's development is essential to understanding the fixation, in contemporary China, on infrastructure-driven models of socioeconomic development and infrastructure-led diplomatic overtures such as the Belt and Road Initiative. It is also important for framing our research project's emphasis on infrastructure as a key driver of East Asian modernization and as an essential element that informed, and continues to inform, conceptions of modernity throughout the region.

Once applied primarily to describe the systems of substrates-railroad lines, pipes and plumbing, power plants and wires, "infrastructure" has been reconceptualized in STS scholarship into an intellectual approach to studying technological processes and, more broadly, the interface between humans and machines (Anand 2017; Simone 2014; Star 1999). Recent anthropological research highlights how the concept of infrastructures as "built networks that facilitate the flow of people or ideas and allow for their exchange over space" (Larkin 2013: 328) can offer insights into other domains, such as practices of government, religion, or sociality. In contrast to master narratives of infrastructural modernization as progress, anthropological research highlights the contingencies, complexities, and fragilities of modern infrastructures, showing how these increasingly complex networked systems have consequences for political processes (Mitchell 2002, 2011; Barry 2013). Some architectural historians have gone so far as to say that infrastructure is "everywhere and everything—the all-encompassing effects of capital, a litany of institutions, endless, proliferating circuits of technology" (Chattopadhyay 2012: x).

Our project considers infrastructures as forms of material politics with multiple temporalities, operating across and connecting various geographic scales. Historians have demonstrated how modern urban transportation and public health infrastructures operated in tandem with older, traditional technologies in East Asia (Lu 2004; Leung 2008). They have also shown how the work of colonial technological experts can nourish unintended consequences on postcolonial structures (Mrázek 2002). These hybrid formations as the "underlying structure, generally hidden or unnoticed, that



supports something visible and apparent” (Lalande 1925: 236) are the types of infrastructures our project probes to attain a deeper understanding of the role that technology has played in forging modern East Asia as a region. We contend that infrastructure is a particularly useful methodological device to uncover those hitherto invisible aspects of East Asian history and society underlying technological processes because they have so far been taken for granted. It is up to the researcher studying a particular technology, practice, or artifact to decide “what one sees as infrastructural and what one leaves out” (Larkin 2013: 330).

This observation reveals the great potential and flexibility in the use of the concept, which can be either an advantage or a potential pitfall. Indeed, one of the enduring challenges in writing about infrastructure is the slippery nature of the term: what the historian Rosalind Williams (1990) has referred to as its “promiscuity.” Indeed, infrastructure’s denotational malleability accounts on the one hand for its enduring appeal, yet on the other poses a challenge. With that in mind, we have asked our collaborators to articulate a working definition of infrastructure that at once connects their respective modes of inquiry across disciplinary boundaries and is particularly suited to the study of infrastructure in an East Asian context. Some projects, for example, on reproductive labor, foreground the interaction between “intangible” infrastructures of social welfare and the material infrastructures that collectively support the process of childbirth in East Asian societies. By contrast, our project on phones, drones, and disease interrogates how the deployment of digital infrastructures in the monitoring of public health challenges the supremacy of conventional terrestrial technologies, while at the same time problematizing some scholars’ conceptions of infrastructure as inherently social and/or material in nature.

Other projects hew more closely to a narrower conception of infrastructure. That approach is most evident in our project on transport infrastructure, where we apply a normative definition of infrastructure that has broad consensus across a variety of academic disciplines, and that has endured across time, cultural contexts, and intellectual trends: that is, the physical, material infrastructure of transport, energy, and telecommunications. By foregrounding circulations, connectivities, and mobility—this is, after all, what material networks are designed to abet—we encourage our collaborators to move beyond the bounded site as an object of inquiry to examine cross-cultural and cross-regional circulation of knowledge, practices, and artifacts that have taken place in East Asia in the last two centuries. Synergizing a variety of intellectual approaches drawn from the fields of urban design, architectural history, and STS, we locate infrastructure at the intersection of its social, material, and regulatory components, none of which could effectively operate without the others. STS has already drawn our attention to the way in which emerging technologies have often developed in tandem with one another through a process of coproduction and have manifested themselves in the same infrastructural instantiations. A frequently cited example of this can be seen in nineteenth-century Europe, when two novel technologies—the railway and the telegraph—were rolled out simultaneously. Railway lines and telegraph lines were built directly alongside one another, sharing the same physical space. In contemporary East Asian metropolises, we can see parallels in the coproduction of aviation infrastructure and new technologies of personal identification and cross-border migration, such as iris scans and biometric passports.

European historians of technology have extended the notion of coproduction by pointing to the role that infrastructure has played in integrating social and economic relations first within the borders of the nation-state, and subsequently across territorial boundaries. They thus argue, for example, that the modern French railway and the modern French state emerged through a process of coproduction, just as, a century later, the emergence of a European common market both enabled and was abetted by the expansion of cross-border road, rail, and aviation networks. In East Asia, our collaborators detect similar patterns in the present attempt to use infrastructure as a vehicle, both literal and metaphorical, to drive the integration of urban megaregions. These neologistic constructs offer little in terms of identificatory possibility—ask the average Hongkonger, or Beijinger, how attached he or she feels to the “Greater Bay Area,” or to “Jing-Jin-Ji” 京津冀—but they are potent policy mechanisms that advance broader urban expansion and rural reform goals in the contemporary East Asian context.<sup>3</sup>

Parallel approaches can be detected in Chinese, Japanese, and South Korean policy initiatives—including both the aforementioned Belt and Road Initiative and its intellectual progenitor, the Greater Mekong Subregion—that deploy cross-border infrastructure to actualize regional economic integration and bring forth paradigmatic geopolitical reconfigurations. Our project on transportation and energy investigates these infrastructures “from the ground up” through a variety of case studies that range from Chinese iron ore extraction in the Arctic to airport planning in post-Mao China and colonial Hong Kong (Bennett 2018; Hirsh and Mostowlansky forthcoming; Wong 2018). Drawing on both individual and group fieldwork, our research on infrastructure frequently overlaps and intersects with the theme of everyday technology: interrogating, for example, how ride-hailing apps have altered quotidian patterns of mobility and sociability in contemporary Vietnamese cities (Lockrem 2018). By combining ethnographic and archival approaches from the social sciences with visualization techniques native to the design professions, our collaborators thus endeavor to study technological infrastructures both “from above”—that is, as seen from the perspective of experts and decision makers—and “from below,” as perceived and experienced by middlemen, laborers, and everyday users in East Asian societies.

### 3 The Everyday

The juxtaposition between top-down and bottom-up approaches to STS brings us to the third key concept that guides our research: the everyday. In so doing, we seek to move beyond grand narratives of technical inventions and their inventors, and study instead how specific technological interventions shape sociability, consumption, and spatial practices in the everyday lives of people living in East Asia. Moreover, we investigate how those technologies have been mixed, modified, and adapted by everyday users in accordance with locally specific norms, needs, and aspirations.

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<sup>3</sup> The Greater Bay Area refers to a PRC policy framework, enacted in 2017, that aims to integrate nine cities in Guangdong province with the Hong Kong and Macau Special Administrative Regions. The policy’s goal is to deploy physical and digital infrastructure to create a juridically and socioeconomically integrated urban megaregion. Similar ambitions inform the PRC’s “Jing-Jin-Ji” policy, a regional plan for the coordinated development of Beijing, Tianjin, and Hebei province.

Many of our project members spend inordinate hours in archives deciphering textual sources. Yet collective fieldwork has proved to be a crucial complement for us to study the “everyday” dimensions of technology. One example comes from a research trip to soy sauce producers in central Taiwan. One owner of a small family business invited us to taste his hand-crafted products in a small lot behind his home, by digging our fingers directly into the earthenware containers used for the fermentation process. Several customers walked in during our tour, carrying empty bottles. The owner handed them new ones, filled to the brim, while the empty bottles were taken to the back and crated, waiting to be washed and reused. This was a typical day of “everyday” soy sauce production and consumption in Yunlin, Taiwan, in the year 2018. Across town, we visited another family-run soy sauce business, operated by two brothers. The elder studied business in the UK, while the younger one pursued a degree in Singapore, followed by an MA and PhD in fermentation science in Japan. They operated a fully automated soy sauce factory, with thousands of bottles filled and packaged daily, loaded onto pallets and then onto trucks to be shipped out to consumers. The two brothers also introduced freezing technologies into the production process to create a soy sauce-flavored soft-serve ice cream. This, too, was an example of “everyday” soy sauce practices in Yunlin.

Our intervention into the everyday is not motivated by a desire to definitively define it. The term *everyday* is potentially all-embracing, essentializing, and universalizing. But it is above all malleable, and we see the utility of the “everyday” as a means to draw attention to a diversity of actors and technological practices, often widespread, that are often overshadowed by more elite or by more “advanced” equivalents. The use of the “everyday” as a key analytical category enables us to give voice to a fuller spectrum of technologies in East Asia, both past and present.

We take the absence of a singular “everyday” as a given, as our collaborators draw on a wide range of intellectual antecedents to conceptualize the relationship between everyday technologies and the complexity of technological modernity. Some of us may be inspired by the work of Georg Simmel, Henri Lefebvre, Walter Benjamin, Antonio Gramsci, Michel Foucault, and Michel de Certeau—to name but a few—who have explored the intervention of modernity into the cyclical structure of time, space, identity, practices, aesthetics, and norms that collectively constitute the “everyday” (Simmel 1994; Lefebvre 1958; Benjamin 1996–2003; Gramsci 1982; Foucault 1980; Certeau 1984). In a similar vein, practitioners of the German school of *Alltagsgeschichte* foregrounded everyday experiences as both a site and an index of social and political transformation, in opposition to a purely structural approach to understanding history (Lüdtke 1989, 1995). Certainly, these European writers do not have a monopoly on the inquiry into the everyday. We likewise draw inspiration from Asian scholarly traditions: for example, the folklore studies (*minzokugaku* 民俗学) of Yanagita Kunio (1989–91), who critiqued historical narratives focusing on elite individuals and institutions, and looked to the everyday—habits, practices, and rituals—for a more comprehensive understanding of Japan.

The flexibility of the “everyday” can be seen in the diverse forms of “technology” examined in our project. Some technologies appear, at first glance, to be not at all “everyday” due to their complexity—drone technology, industrial automation, transport infrastructure—and due to their scope. The Phones, Drones, and Diseases project explores cutting-edge technologies applied to epidemic surveillance, highlighting how these new digital networks are eroding terrestrial infrastructures, yet at the same time

also reinforcing community identities. Once these surveillance and digital monitoring devices become “everyday” in the twenty-first century, as the popularity of drones, GPS functional smartphones, and fitness trackers spreads, what are the countervailing implications and benefits, and how do concerns about privacy, surveillance, and public health balance out with these newly “everyday” technologies?

In the Weather, Climate, and Everyday Life project, scholars examined technologies of environmental monitoring and management in modern East Asia. Undoubtedly, weather was experienced on a daily basis, yet its monitoring and management technologies were largely propelled by colonial and commercial interests. In colonial Hong Kong, where water shortages were rampant, the British government commissioned the Royal Air Force to explore and implement “rainmaking” technologies, using airplanes to sprinkle the clouds with powdered kaolin, which was readily available in Hong Kong. Yet, while such “technologies” were still the stuff of science fiction, it is significant to note that these “technological” efforts were inspired by local Chinese practices and ceremonies for “rain making,” viewed as harmless curiosities, but also recorded by British officers for their limited success. In this particular case, everyday technology was not only about chemical reactions and producing condensation but also about long-standing rituals that allowed locals to manage water shortages (Williamson 2019).

The ways in which end users exploit such technologies made “everyday” are both spontaneous and unexpected. In South Korea, middle-class mothers often choose to enter postpartum care centers that, using a combination of traditional medicine and biomedical technologies, provide care for both women and their babies. Creating a sterile environment, using the most advanced systems of atmospheric vaporization sterilizer, was of utmost importance for keeping mothers safe who were “depleted,” in a traditional sense, from giving birth. Yet this sterilization technology and rationale can be used by mothers for unexpected purposes. An example provided by a recent study shows that a mother used the technology to quarantine herself away from unwanted visitors, such as her mother-in-law. This example demonstrates how users can turn high-tech systems into an instrument for regulating everyday family relations (Lee 2019).

Food technologies, as seen in industrialized production methods, machineries, and factories, may appear removed from the daily experience of the imagined average consumer. Yet, “traditional” foodstuffs, such as soy sauce, miso, and kimchi were, until the recent past, made and consumed in individual households and communities. Furthermore, the mass production of these food items allows them to be even more “everyday” in the modern period, reaching new markets through, in the case of the Empire of Japan, military expansion. At the same time, these items’ availability and widespread circulation also served to construct new cultural and national identities through the sensorium and the materiality of the “everyday” along the way. This gives rise to a new set of questions, applicable across our research projects: does “everyday” use imply a monoculture, a “national” form, or a trans-regional one—or does it in fact explore all of these categories?

#### 4 Conclusion

The three themes outlined in this essay will be the subject of an international conference at the University of Hong Kong in May 2021. The event will serve as an opportunity to present the first round of publications that have emerged from our project

(Leung and Caldwell 2019; Sharif and Huang 2018; Gottschang and Santos forthcoming; Peckham and Shinha 2019). More broadly, we will reflect on how the collaborative research, revision, and presentation methods—which have guided the project from its inception—can advance the study of science and technology in an East Asian context. In a world divided by linguistic barriers, and in a profession—academia—prone to hyper specialization, we assembled an interdisciplinary team hailing from a multitude of cultural backgrounds and intellectual traditions. Some have spent decades immersing themselves in the study of East Asia, whereas others are relative novices to the region. Similarly, some have devoted their professional careers to the study of technology, while others have only recently foregrounded it in their research. By organizing both small topic-driven workshops and larger annual meetings that bring together all of the team’s nine research projects, we have stimulated a conversation among scholars of very different technologies that rarely intersect. These cross-disciplinary and multitopic discussions have enabled our participants to draw insightful comparisons, inspired new theoretical approaches, and helped us all to avoid the pitfalls of essentialization and technological determinism. Moreover, we have brought these interdisciplinary insights to a wider audience, both inside and outside academia, through a series of edited volumes, newspaper editorials, public exhibitions (Chu and Tang 2018; Hirsh 2018), and a virtual museum to be launched in late 2020.

Our goal for the coming years—and our motivation for writing this essay—is to encourage other scholars to join us in that endeavor. They can do so in three ways: 1) by engaging in dialogue with one of our ongoing research groups; 2) by proposing new fields of research not addressed by our project, such as botany or financial technologies; and 3) by expanding our study of East Asian technological engagements with adjacent world regions, such as Southeast Asia and the Arctic. By growing our intellectual community, we thus aim to transform the project into a sustainable platform for collaborative STS research in East Asia and beyond.

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