

## Pull-out supplement



# theFocus

## Collaborative research in Southeast Asia: towards a sustainable humanosphere

Over the past decade, Southeast Asia as a region has undergone economic integration, with the Association of Southeast Asian Nations (ASEAN) serving as the hub of region-making at an institutional level. This integration has been accompanied by a reorganization of the region's economy, spurring stronger demands for energy, food and water as well as significant socio-political change. This rapidly changing milieu poses challenges for researchers to keep track of the region at the country level while keeping a larger perspective in focus. As integration proceeds, rising demands and competition for resources have led researchers to investigate trans-boundary issues such as security, environmental degradation/transformation and socio-political change. The complexity of issues have stimulated collaborative research agendas to develop not just micro- and macro-level analyses of changes taking place in the region, but also questions relating to policy formation and recommendations for various stakeholders.

Such issues have compelled the forging of multidisciplinary alliances to produce 'engaged' approaches attuned to the fast-changing dynamics of Southeast Asia. These approaches have been in terms of the dynamic interplay between the environment, technologies, institutions and societies; the examination of diverse ethnic, religious and cultural domains; and the need to incorporate the tropics as a fundamental analytical point of departure to understand the development of human societies in the region. This special Focus of *The Newsletter* looks at how collaborative research in Southeast Asia is addressing the complex challenges of creating new common research languages in tune with the exigencies of the times.



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### Integrating research approaches

For over forty years, the Center for Southeast Asian Studies (CSEAS) has forged a dedicated integrated approach toward area studies in Southeast Asia and fomented multidisciplinary discussion and dialogue. This hasn't come without serious challenges. It goes without saying that as the natural and social sciences developed in the early 20th century, knowledge underwent an increasing fragmentation that led to the specialization of disciplines, sub-disciplines and the hardening of boundaries. Yet Southeast Asia, a region known for its immense diversity, has always presented challenges to research questions that have inevitably compelled collaboration between and across disciplines. Whether the focus of analysis is social risk, environmental degradation, epidemics, natural disasters, ageing societies, energy procurement or political security, we can no longer rely on approaches from within the confines of academic disciplines we are trained within. However, broadening approaches towards interrelated issues should not be just an academic exercise to destabilize the disciplines we are familiar with. The methodologies we hone can take on a transformational power when taken from the disciplines that created them and employed in new contexts with practical application. One example of this is a collaborative attempt to map the trans-regional spread of food-poisoning bacterial enteric pathogens (found in mollusks) that arise through cultural food practices in a number of Southeast Asian nations by a team of microbiologists, food experts and industries based within the region.<sup>1</sup> Collaborative toolboxes from various disciplines can come to tackle complex trans-boundary issues to improve regional safety practices.

Researchers at CSEAS have sought to foster multidisciplinary dialogues through a series of large-scale projects to push frontier technology related disciplines in addition to fostering specializations. In 2007, with special funding from the Japanese Ministry of Education (MEXT), a large-scale project entitled "In Search of Sustainable Humanosphere in Asia and Africa" (2007-2011) was initiated.<sup>2</sup> The program adopted a holistic approach to what participating researchers called a 'sustainable humanosphere'. This term refers to both the temporal and spatial dimensions that incorporate the entirety of material and energy circulation of the earth and systems of governance toward its sustainability. The humanosphere is constituted by the geosphere, biosphere and human society. The geosphere constitutes the geological composition of the earth system including the atmosphere, the waters and land. The biosphere involves every form of life on earth, incorporating their reproductive, transformative as well as ongoing evolutionary processes. Over time, human societies have evolved and arisen through their interactions with both of them, leading to specific forms of co-existence. Our human societies as such, can be seen as technical systems where energy, materials and information, flow and circulate among these three domains. In sum, the humanosphere is the *ecological and social environment in which local people live* and it formed an important theoretical background for multidisciplinary investigations across the disciplines into Southeast Asia, East Asia and Equatorial Africa. Through such investigations primarily from the tropics, the project aimed to reconsider and overcome existing paradigms that arose from the temperate zone. Sugihara Kaoru (this issue) grounds this conceptual approach, asking us to think about the experiences of Southeast Asia's development within a broader global context of the humanosphere.

### Developing interdisciplinary studies through collaborative dialogue

Fruitful dialogue that took place between researchers from different disciplines on the program resulted in a number of outcomes and new research directions.<sup>3</sup> In terms of deepening the understanding of the specificities of Southeast Asia's abundant and fertile environment, it became clear

that the region's biomass plays a pivotal role in any understanding of relations between human societies and environmental management. Historically, biomass societies in tropical Southeast Asia – those with traditionally small populations that were heavily dependent on agro-forestry products for their livelihood needs – were the ones that exhibited resilience, developed sustainable practices and created a web of trans-regional tropical communities. Over the last 50 years, these have been re-organized by nation-states and their development priorities and policies, the imperatives of economic growth, and integration into the global capitalist production system. The 1960s Southeast Asian green revolution to increase rice yields was just a precursor to the rise of large-scale plantations and a re-structuring of industrial production in the region. We now have large tracts of lands being 'bio-refined', in effect a form of 'dispossession', reorganizing entire eco-systems across the region. However, these reorganizations should not be seen purely from the effects of human societies on local environments, but rather how our agency has unleashed unparalleled changes that we might not be able to turn back. Yet, researchers can offer serious solutions to re-integrate areas that have fallen under the imperatives of economic development.

Mizuno Kosuke (this issue) and his research team make clear in their project in Riau, Indonesia, that scientific research can aim to recommend a long-term path of development that is not purely an economically oriented one. They are presently conducting an investigation within the framework of the natural sciences (measuring biomass, assessing levels of bio-diversity and the impacts of industry and agro-forestry). The other facet of this research, within a social sciences framework, examines what people think and how people respond to challenges; its aim is to assess the interactions between various stakeholders such as individuals, companies, local government and the state. Combining the research results from this collaborative investigation allows us to see ways in which we can potentially reconstruct our humanosphere through incorporating messages from tropical forests.

Ishikawa Noboru (this issue) also highlights the potentials that can exist in collaborative research. His project in Sarawak, Malaysia, also shows the pressing need for a multifaceted approach toward an analysis of ecologically transforming landscapes such as those found in insular Southeast Asia. Monoculture cropping and the conversion of tropical forests to agricultural land can have irreversible effects when thresholds are crossed leading to reconfigurations that require observations across the disciplinary spectrum. Both the above projects showcase how synergies between disciplines can create a more holistic approach that brings out a richer picture of what is taking place in parts of Southeast Asia and how it is connected to a broader global economy.

Human interventions and the subsequent replacement of ecosystems are not just superficial, but very much affect life below ground. Biomass – living organisms and matter – is crucial for the maintenance of the soil and the regulation of water flows. Good soil conditions are invaluable for insects and bacteria, which provide immeasurable ecosystem services. Our relations to our environments are deeply connected to species with whom we share geographical space. Human societies have, for example, a tenuous relationship with termites (*Isoptera*) and ants (*f. Formicidae*) which form an important part of terrestrial animal biomass in Southeast Asia. Neoh Kok-Boon (this issue), an entomologist who works on ant communities and their relationship to agricultural production in Southeast Asia, highlights the need to review the ingrained 'commonsensical' view of termites as pests that degrade productivity and infest human habitats. What becomes clear is that policy toward our agro-landscapes needs to factor in changing perceptions of other species' roles in a shared ecological space.

Readers might wonder if the humanities have been sidelined by the synergy that has arisen between the social and natural sciences. Any analysis of environments transformed by the pervasive influence of human societies would be lacking without historical scrutiny of the technological and administrative apparatuses that have arisen with the rise of modern nation states in the region. A theme that underpins all of the articles in this Focus is the crucial need to include historical and cultural analysis. Loh Kah Seng (this issue) offers us this necessary perspective in his discussion of flooding – a perennial issue across the region – and how the Singaporean state's management of floods has its roots in a broader colonial (and transnational) historical context.

### Formulating new indices to meet the dynamics of regions

Various indices, such as the Gross Domestic Production (GDP), Gross National Production (GNP) or the United Nations Human Development Index (HDI), have existed for some time. Putting aside the criticisms that exist over how accurate indices are at gauging the state of the world, there has still been no concerted attempt to quantify and place human activities within the context of global atmospheric-hydrological circulation and assess sustainability of the geosphere, biosphere and the human realm as an integrated whole. Parts of tropical Southeast Asia are home to some of earth's most diverse and fragile ecosystems. The region possesses immense biomass resources sustained by an abundance of solar power. But can we gauge the potentiality of this region – and those which are found in equatorial Africa and the Amazons – through current indices, which are heavily orientated toward measuring economic growth, sustainability and human development? Sato Takahiro and his team (this issue), working within the framework of tropical agricultural ecology, present an alternative way to assess the interactions between environmental sustainability and the welfare of human societies. Through a comparison of the carrying capacity of temperate and tropical zones, they provide some clues as to which areas are most suited to support future human societies in, what is now, a world restructured by our human-centered needs. Incorporating multiple species, entire eco-systems and solar power into analyses can create meta-level discussions to inform policy makers and prepare future societies for the changes awaiting us.

### Nurturing a shared common future

To deliver on our promises to offer solutions that can flexibly deal with regional and global needs – be they geared toward the plural needs of an emerging Southeast Asia or towards developing research frameworks that can pursue these – a clear commitment needs to arise from a spirit of collaboration between the disciplines. This requires more than institutional mandates that foster regional 'oases' of research teams. It ultimately requires a restructuring of the intellectual processes that direct our agendas to prioritize concrete solutions. These can help establish the sustainable use of the environment and its energy sources, foster biomass societies, and push for future energy efficient modes of production in tune with current forms of social development. By attempting to collaborate across and through disciplines in a committed fashion, we widen the range of analytical resolution and incorporate more global players who can influence multilateral policy. This can only be achieved by stepping outside of established frameworks and reformulating our disciplines. To do so will allow us to foster new ideas and researchers who can be prepared for the challenges ahead.

**Mario Lopez, Center for Southeast Asian Studies (CSEAS), Kyoto University (marioivanlopez@cseas.kyoto-u.ac.jp)**

### Notes

- 1 This was the main subject of two consecutive collaborative research projects dealing with food-borne enteric pathogens spreading internationally that were/are supported by Kakenhi or Grants-in-Aid for Scientific Research S (no. 19101010, FY 2007-2011) and A (no. 2429038, FY 2012-2014) from JSPS/ Ministry of Education, Sports, Culture, and Technology, Japan.
- 2 The program mobilized specialists from within Kyoto University, CSEAS, the Graduate School of Asian and African Studies (ASAFAS), the Center for Integrated Studies (CIAS), and the Center for African Area Studies (CAAS). Other institutions that have produced strong results from within the natural and earth sciences also actively participated, mainly the Research Institute of Sustainable Humanosphere (RISH), the Institute of Sustainable Science (ISS), the Graduate School of Agriculture, the Institute for Research in Humanities and the Graduate School of Engineering.
- 3 The main results of this project were summarized in Sugihara, K., Kawai, S., Kono, Y. and A. Tanabe (eds.) 2010. *Chikyūken, Seimeiken, Ningenken: Jizokuteki na Seizonkiban o Motomete* [Geosphere, Biosphere, Humanosphere: In search of Sustainable Humanosphere]. Kyoto University Press: Kyoto. Six edited volumes in Japanese were published as *Koza Seizon Kiban-ron* [Lectures on Humanosphere] in 2012.