CHAPTER SIX

Environmental Sustainability and the Social Sciences in Malaysia

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Introduction

The magnitude of human disturbance of ecosystems and resource stocks has reached the stage where a new geological era – the Anthropocene – has been proposed, in which the dominant driver of the global biophysical system is human influence (Crutzen, 2002). As elsewhere, rapid development in the past few decades has caused the natural ecosystem in Malaysia to be under constant pressure of change, triggering a concomitant shift in risk perception by scientists and activists, and to a lesser extent among bureaucrats and politicians in the government (Sham Sani, 1993; Kathirithamby-Wells, 2005; Hezri and Mohd Nordin Hasan, 2006). Currently, risks and hazards of the environment are known to cause tensions in the fabric of societies. However, both in academe and government, intellectual and policy responses to environmental problems have evolved mainly from the empirical perspective of those trained in the engineering and natural sciences. Dominant understandings of environmental issues are neither *reflexive* nor critical, and are skewed towards a scientised and globalised epistemology which may not be representative of the reality in the country.

As a result, Malaysia is collectively blinkered as far as the place of society in environmental protection is concerned. Inputs on environmental problems have been met with by facile interventions from the social sciences. In short, the environment is only seen as a mere material substrate of the social in the modernity project. If we are to produce accounts of environmental problems that are sensitive to social and cultural change, we

need a different knowledge culture. This chapter advocates 'sustainability' as a potentially emancipative concept equivalent to other higher-order notions such as democracy and justice. It is argued that sustainability could be used to interrogate the social and cultural aspects of contemporary environmental issues in Malaysia (for comparable analysis see, for instance, Jasanoff, 1987; Redclift, 1998; Cash *et al.*, 2003; Ratner, 2004). Its cognitive power resides in its promises to fuse empirical (biophysical) concerns with the normative dimension of sustainability.

The discussion is organised as follows. The first section traces the traditional and 'innocent' articulation of nature as culture. The second section then outlines how the sustainability problematique, especially in its normative dimension, is refashioning and destabilising the debate on environment and development globally and within Malaysia. The subsequent section outlines two sets of challenges for the social sciences in confronting sustainability problems.

Nature as Culture

It is now a universal fact that the environment or nature influences the evolution of societies.[1] A closer inspection of the nature–society interaction reveals the variability of this influence across time and space. During the premodern period of history, social organisation revolved around the elements of nature, building a conservationist ethics of ecological consciousness (Callicott and Ames, 1989). This cosmology has resulted in the sanctioning of practices to respect the bounds of nature, often governed by a variety of informal rules. In other words, there is a kind of respect-based constraint on the use of nature. For instance, in religion, we see the Buddhist ethics of living in harmony with nature pervading all aspects of ancient Tibetan culture (Johnston, 2006). In the animistic worldviews of Malaysia's tropical rainforest dwellers, conceptions of self and social groups are underpinned by myth, taboo (*pantang*) and magic with reference to the superior (mystical) powers of the forest spirit (Hood, 2009). Living in balance with nature was deemed important because venerable nature

[1] This environmental determinism thesis is not similar to, and goes beyond, the established socio-anthropological concept of social Darwinism which stresses the evolution of societies from primitive to intermediate and finally modern. Societies dissolve when their behaviours have negative consequences on the environment and on the society's resource base.

possesses powers that could harm human society in cases of transgression. In other words, at cultural-symbolic levels, traditions shaped premodern societies, appropriating nature as culture that then informs their knowledge and eventually collective decisions and actions.

With modernity, nature and the environment are activated and driven by utilitarian considerations. Accompanying the force of Western industrialisation was a concomitant change in cultural attitudes towards nature. As a new and 'modern' worldview, nature is seen as an infinite resource that should be tapped to feed Malthusian global population growth, and especially increasingly affluent Western societies. As Madhav Gadhil and Ramchandra Guha (1995: 9) eloquently describe it:

> The men presiding over the British Empire perched on chairs of Burma teak at tables of African mahogany, consuming Australian beef washed down with French and Italian wines. Their women were decked in Canadian furs and clothes of Egyptian cotton, dyed with Indian indigo, glittering with diamonds from South Africa and gold from Peru.

The colonisation process by the Western powers engineered the global spread of utilitarian philosophy to premodern societies. Such a normative change can be seen in the contrast between *food collection* practices by hunter-gatherer societies and *food production* using modern agriculture characteristic of contemporary industrial society. This practical shift has, by and large, reoriented, if not replaced, the old nature–society cosmology with a new belief in the supremacy of agricultural technology to *control* nature. Stratified societies began to emerge with the earliest irrigation agriculture, inducing specialisations that prevented people from having direct physical contact with soils, plants and animals, formerly inescapable in hunter-gatherer societies. It made universal the idea that the earth consists of materials for human use and that problems are be accessible to scientific and technological solutions.[2] Over time, such deterministic thinking warranted the triumph of modernity over tradition. In practice, this was ostensibly reflected in eroding the notion of 'balance' and gradually replacing it with 'exploitation', guided and facilitated, as it were, by modern technology.

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[2] Moreover, the early stage of colonialism was a time when the physical environment, and particularly its climate, was posited to be influential on human behaviour. Many scholars then wrote about the correlation between the temperate climate and high civilisation based on industry in Europe, a natural advantage that provided a reason to explore the four corners of the earth to fuel the industrialisation process.

When the impact of the exploitation of nature began to rear its ugly head, the solutions to environmental problems are contrived to use more sophisticated technological fixes. This mode of development finds its expression in the concept of ecological modernisation, essentially pursuing progress by minimising the impact on the environment. The major fault line of such a technology-based approach is the modification of the epistemological space of 'traditional' peoples, in relation to their stewardship of nature. In its place, the traditional human cosmology that respects nature is substituted by cultural change underpinned by ecological modernisation with its 'optimal yield' utilisation philosophy (Hajer, 1996). Although a technological fix is important in a rapidly changing ecosystem, it tends to neglect the importance of values that inform human motivation and behaviour. Overreliance on technology steers the growing global population away from ethical living so deep-seated in premodern societies. We now turn to sustainability as the leitmotif of environmentalism.

Sustainability and its Normative Dimensions

A century or more after the Industrial Revolution, the downside of what was conceived as 'progress' began to appear visible as bulk pollution impacted on the urban industrial centres both in the developed and the developing countries (Lumley and Amstrong, 2004). Without limits to the human ability to consume and produce, the future survival of the earth began to look uncertain. Over time, what started as predominantly concerns about biophysical environmental degradation at the international level gradually culminated with the question of how societies can shape their modes of transformation to benefit both the present and future generations. Gro Harlem Brundtland, with reference to the World Commission on Environment and Development, understood the challenge as non-declining 'needs' across generations (WCED, 1987). This is the essence of the concept sustainable development or sustainability (Lélé, 1991; Brodhag, 1999; Lumley and Armstrong, 2004; Hezri, 2009a).[3]

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[3] While the term 'sustainable development' was popularised by the World Commission on Environment and Development report *Our Common Future* (1987), it is generally recognised that notions of sustainability were promoted in 'limits to growth' and 'green' discourses in the early 1970s.

Initially, sustainability tends to be associated with the ecological system and its crisis. According to Robert Costanza and Bernard C. Patten (1995: 193), '[t]he basic idea of sustainability is quite straightforward: a sustainable system is one which survives or persists'. Therefore, sustainable development prescribes sound environmental stewardship while not denying the perpetual necessity for progress in socioeconomic terms. Arguably, there are two normative standpoints here that should be clearly delineated. These are the protection of the functional integrity of ecological systems and guaranteeing resource sufficiency for human needs.

The contradiction between the two normative standpoints underscores the navigating role of *policy*. This, in turn, carries the implication of *choice* (Caldwell, 1993) or trade-offs between functional integrity of ecosystems and resource sufficiency for human needs. Scholars such as Stephen R. Dovers (1997) and William M. Lafferty (2004) argue that as a collective choice, sustainability problems are different 'in degree and in kind' from discrete environmental problems. Sustainability problems such as global climate change, biodiversity loss and transboundary waste are arguably more complex than a local environmental problem such as urban air pollution in a developing city. Climate change presents a long-term challenge with a temporal scale that lies beyond ordinary policy and political election cycles. To fight dangerous levels of global warming, many countries set the target year of 2050 to stabilise greenhouse gas emissions, a period that outlives most mandates for political parties in power (Dovers and Hezri, 2010). The management of hazardous waste necessitates international regulation because it always extends beyond the political and administrative boundaries of states. Similarly, the notion of irreversibility pervades the biodiversity problem. The loss of biodiversity assets (for instance, through the disappearance of endemic species) may redirect a system's evolutionary path to the extent no policies could rectify. These attributes contribute to the 'differentness' of sustainability, demanding special treatment in public policy (Dovers, 1997).

As a policy problem, sustainability destabilises the 'end-of-pipe' environmental management philosophy prevalent in the 1970s and 1980s. Contrary to the local bulk pollution problem characteristics of the 'environmental problem', the urgency of systemic issues such as transboundary pollution and climate change calls for a radical reform agenda concerning policy, institutions and governance. Related to the question of policy choice,

sustainability introduces 'a set of *normative* commitments to the development problematic' (Becker *et al.*, 1999: 5). For Michael Redclift (2005: 218), the driving forces of the political turn lie beyond system integrity and human needs to include the immutable workings of capitalism and neoliberalism as its crucial parameters:

> Increasingly 'sustainability' was detached from the environment, and environmental sustainability was confused with wider questions of equity, governance and social justice, which served to shift political discussion to different quarters.

One implication of this is that sustainability is interpreted with ambiguity. Indeed the sustainability goals go beyond Redclift's schema to include democracy, freedom, gender balance, efficiency and equality, to name a few. Justice between and within generations eventually took the centre stage, with the question of needs being transformed to the issue of rights and distributive politics. For instance, who owns and controls land resources, and who governs the environment? What is the relationship between the 'ecological services' performed by poverty-ridden populations, and their future stake in the conservation of resource systems? What are the core values that should underline a sustainable society? As a result, sustainability appears fuzzy, elusive and ideologically controversial. Yet more positively, such a definitional diversity is not uncommon during the emergent phase of any potentially big idea of broad appeal. Sustainability is therefore considered as being at par with useful but contested concepts such as democracy, liberty, equality and security. Herein resides the emancipative power of sustainability as a concept to guide research and steer action. It has been labelled a creatively ambiguous concept, as it challenges the way we perceive many development-related issues. Because it can be emancipative, it is also known as a generator of problems. Sustainability outlines *new rules of the game* for our political and social systems, and the task of natural and social scientists alike is to grasp and understand the relationships between social, economic and ecological processes.

Analysing Sustainability

During the 1970s and 1980s research on the environment was predominantly a domain of the natural and engineering sciences. Technical problem solving was deemed important because environmental problems were

seen as a mere side effect of technological progress. Naturally, it was not uncommon for the environment function to be combined with science and technology portfolios in government ministries. Following this premise, public policy revolved around technical actions such as installing wastewater treatment, conducting environmental impact assessment and restoring the ecology of polluted river systems. The emergence of sustainability, however, exposes the complexity of understanding the connection between society and its environment across the world. Sustainability science (or studies) is proposed as a new approach to analyse this complexity. The new endeavour presents the social sciences with fresh theoretical and operational challenges. Malaysia's experience in environmental issues offers interesting insights into the necessary role of the social sciences in analysing sustainability.

Sustainability Science/Studies

Sustainability science or studies, as opposed to the traditional 'environmental science' disciplines, is needed as a knowledge system to advance our understanding of the complex interaction between society and its environment (Kates *et al.*, 2001; Barnett *et al.*, 2003; Komiyama and Takeuchi, 2006). Over the years, the disciplines that examine these complex problems have become fragmented. As a result, much research is conducted from a narrow disciplinary perspective with regard to both phenomena identification and problem solving. As an antidote, the pillars of sustainability science therefore must be two-pronged: it should be 'integrative' and also 'relevant' to societal needs for transition towards sustainability. This is line with the Gibbons Mode 2 thesis whereby knowledge production is perceived as context-driven, problem-focused and interdisciplinary in orientation (Gibbons *et al.*, 1994).

Therefore, sustainability science should avoid a reductionist approach which is divorced from practical problems confronted by society. This, however, renders sustainability studies or science Herculean in its ambition. Often its scholars and scientists aim to undertake projects that are essentially integrative, and they try to connect the natural, social and engineering sciences, environment and development of communities, multiple stakeholders, geographic and temporal scales. Thus, a cross-disciplinary discussion of empirical and social sciences, practices, and policies related to sustainability is now imperative.

Environmental Social Science

Social science has a key role in framing the research agenda for this new scientific endeavour. To complement the technical approach to environmental problems, social science should understand and explain human behaviour within the context of rapid environmental change. For instance, a critical realist perspective is useful in identifying structural conditions responsible for sustainability problems in Malaysia (see Redclift, 2009 for general prescriptions). But before we move on to define the areas of social science, it is useful to distinguish the differences between natural science and social science. For his eloquence, it is apt to quote Redclift (1998: 177–78) at length:

> In contrast with the natural sciences, the social sciences are pluralist in conception: the admission of differences is not held to weaken the authority of science.... These deeply rooted epistemological differences surface whenever natural and social scientists meet, and are most evident between the more interpretative social sciences and the most positivist natural sciences. Their implication for the discussion of sustainability is clear, while the natural sciences proceed by closing down debate, by establishing near-consensus between everybody, the social sciences proceed by opening up debate, by admitting the existence of competing controversial universes, or distinct epistemic communities.

Given the challenges outlined above, can we still arrange and traverse the stepping stones to bridge social and natural sciences? The traditional social sciences are known to lack a grand unifying theory (Skinner, 1985). Thus, each discipline of the social sciences operates comfortably within its own domain so long as it stays oblivious of the others. However, with the advent of sustainability, cross-fertilisation of ideas began to take place between the social science disciplines, integrated conceptually by the science of ecology, and by the problem orientation in sustainability research (see Table 6.1). Environmental social sciences such as ecological anthropology, political ecology and environmental economics are responding to ecological concepts such as variability, persistence, resistance and surprise (Scoones, 1999). While such integration may be feasible in some scientifically advanced nations, the reality within the context of a developing country such as Malaysia merits further analysis.

Contested Problem-solving Knowledge

The main social force behind environmental change in Malaysia is the state. The government machinery plays a direct role in modernisation, qualifying

Table 6.1
Environmental social science disciplines and examples of empirical work on Malaysia

Social science disciplines	*Brief description of foci*	*Examples of published work on Malaysia*
Ecological anthropology	The study of humanity and the micro-processes of how non-Western societies live with nature	Brosius, 1999; Lye, 2005
Human and cultural ecology	Demand-side study of cultural ideology of materialism and consumption. More generally, the study of the relationships between individuals, social groups and their environments	Aini *et al.*, 2003
Political ecology	Interaction of political and ecological processes. Political issues of structural relations of power and domination over environmental resources	Majid Cooke, 1999; Yee, 2004
Environmental history	History that seeks understanding of human beings as they have lived, worked and thought in relationship to the rest of nature through the changes brought by time	Kathirithamby-Wells, 2005
Environmental philosophy	Consideration of the ethical and moral relationships between human beings and the natural environment	Osman Bakar, 2007
Environmental economics	The study of externalities, or how economic activity impacts the environment, and of how economic mechanisms can be created that minimise harm to the environment	Vincent and Rozali, 1997; Jamal Othman *et al.*, 2004
Human geography	The study of how societies perceive and use the environment, and the co-modification of space and time. The power of ideas to shape landscapes	Sham Sani, 1992; Brookfield, 1994; Abdul Samad Hadi *et al.*, 2006
Environmental sociology	Understanding of the social origins of environmental change. The study of constructivist response to the global environmental change	Sonnenfeld, 2000; Shamsul and Azmi, 2008
Environmental policy analysis	Practical application of social science concepts and methodologies for management and public policy	Hezri, 2004; Hezri and Mohd Nordin Hasan, 2006

the country as a developmentalist state (Abdul Rahman, 2000). The processes of material-physical environmental change for industrial production have been empowered by state-led technological rationality. For instance, the industrialisation of agriculture as a socioeconomic activity was driven by technocratic economic planning (Saiful and Hezri, 2008). This economic development policy is viewed as a sector-based process of planning by targets and instruments such as a five-year planning system which sets out future objectives and programmes. Over time, the same planning rationality is reproduced as a policy style whenever the nation is confronted with a novel public policy issue. As a result, command and control development planning remains a key policy instrument. Any novel policy arenas would be added as a new chapter into the five-year planning document, and incorporated into its corresponding process of preparation.

Apart from politicians, technocrats within the state apparatus and university-based experts are key actors in crafting Malaysia's modernity. Their role includes framing policy issues and providing advice on specific government decisions. However, the composition of disciplines that contribute to this process differs from one policy area to another. In the area of development policy, participating social scientists include development economists, anthropologists, urban geographers and rural sociologists, to name a few common examples. While economists design poverty alleviation projects, urban geographers assist in the functional zoning of settlement, commercial and industrial areas. Together with the in-house government technocracy, these sociological and economic approaches to modernisation have reshaped the socioeconomic processes in Malaysia. Indeed, it was seen as fashionable during the post-Second World War era for social scientific knowledge to help make better policy decisions (Rich, 1981). This 'development era' saw the cooptation of experts in economic planning, at the expense of broader participation of interested citizens. This was a widespread trend across the world.

The emergence of sustainability broadens the disciplinary participation by including the natural sciences in development planning processes. Both in academe and the government, intellectual and policy responses to environmental problems evolved mainly from the empirical perspective of those trained in the engineering and natural sciences. Replacing the inputs from an ecological anthropologist, we may find botanists as key formulators of national biodiversity policy. Or, surrogating policy and international relations experts, we are now seeing geologists articulating Malaysia's position for the

highly politicised international climate change negotiations. True enough one may argue that some of the scientists involved have had considerable experience of policy issues. Be that as it may, such practices of misplaced expertise are daunting because sustainability-related policies are far-reaching in impact on society and no single discipline would suffice in prescribing solutions. It is intellectually dangerous to consent to natural scientists grappling with normative questions of ideology, equity, governance and social justice in prescribing public policy. Arguably as a result, Malaysia is collectively blinkered as far as the place of society in the sustainability vision is concerned. Social sciences input into solving sustainability problems such as biodiversity and climate change has thus far been minimal.

The reasons for these tendencies are both practical and psychological, tied up as they are to the supply and demand chain of ideas and resources. They are practical because the government's non-discriminating system will naturally outsource contract research to applied researchers whom it deems able to deliver specific outputs and deliverables. The implication of this is *policy capture* whereby researchers are driven by the government's agenda and not the society's interest (Hezri, 2009b). More often than not, closure-prone solutions will be non-critical, and therefore run the risk being a smokescreen for the perpetuation of the status quo, in place of a neutral or radical stance to benefit social target groups. And they are psychological on the part of the researchers as some might perceive access to policymaking (somewhat naively) as an opportunity to transmit 'scientific' and policy-relevant knowledge to society.

The literature on social studies of science would attribute such competing knowledge construction over the meaning of policy-relevant knowledge to the pursuit of experts' individual and group interests (Jasanoff, 1987).[4] We maintain that, in the absence of appropriate problem definition by social scientists, policy responses will skew towards a 'scientised' and globalised epistemology of sustainability based on Western values. Sustainability policy instruments such as the community-based Agenda 21 process, indicator systems, and participatory decisionmaking approaches were underpinned normatively by the liberal democratic ethos of European and American cultures. This undesirable intellectual dominance legitimises

[4] Competing knowledge constructions among natural scientists, politicians, bureaucrats, civil society and social scientists that have a stake in the development problematique.

and reinforces a Western sustainability discourse not representative of the reality in the country. The growing trend whereby nation states find themselves challenged to redirect national policies according to commonly accepted international objectives will aggravate the dominance of the global epistemology. Based on these concerns, and to embrace the complexity of social and historical reality in Malaysia, a revival of social science to participate collaboratively in sustainability discourse and solutions is imperative.

Challenges for the Social Sciences

Michel Foucault's archaeology of knowledge posits that disciplines are the product of social and epistemological constructions (Foucault, 1989). Similar to other established fields, sustainability knowledge is socially produced through institutionalisation and professionalisation processes. The contribution to the existing literature on the social aspects of the environment in Malaysia is clearly lacking, as exemplified in Table 6.1. The Malaysian social science community may be a part of these (institutionalisation and professionalisation) processes by actively engaging itself with sustainability problematic in two areas. The first is research, whereby the social sciences marshal their theoretical canons to deepen the understanding of sustainability through place-based empiricism. The second area of engagement is to seize the opportunity of new policy challenges of applying sustainability in Malaysia.

Research Agenda

For theoretical development, social scientists need to reexamine distinct ontological positions regarding sustainability. At present, the assumption that societies across the world are pursuing similar social and cultural goals is inherent in international environmental treaties (Dow, 1992; Taylor and Buttel, 1992). If we are to avoid the confusion that bedevils the study of sustainability, we must determine more precisely what culturally specific definitions of what is sustainable for Malaysian society mean. Such an endeavour will involve the following activities: (a) definition of research objects and areas; (b) definition of epistemological positions; (c) selection of operational concepts; (d) elaboration of the research strategy; and (e) construction of interpretative theoretical frameworks. In the interest of brevity, this section gives only a cursory elaboration on the first and last activities. The selection of research objects and areas necessarily reflects this chapter's focus on the normative dimension of sustainability.

Values for sustainable development. This research examines the ontological status of social reality and human nature in relation to the environment. The cultural construction of the environment feeds the debate on the meaning of sustainability as choices of values (Ratner, 2004). Indeed, the underlying structure of sustainability revolves around the question of values. However, under the influence of cosmopolitan environmentalism, many have come to regard the values of democratic participation as nearly universal. In Malaysia, as elsewhere, the content of the sustainability debate and the logic of social action that follows are both defined by specific chosen values. An area of study is to further contemplate the questions of national unity and pluralism, as well as what constitutes cultural integrity that needs to be passed on to future generations. All are higher order Weberian value spheres concerning inter- and intragenerational justice and equity unique for Malaysia. We must also ask questions about who we are introspectively, and what institutions should govern our basic social allegiances, that together form the sustainability value spheres for Malaysia. What are the components of conservation ethics within religion and the ethnic-based worldviews and belief systems? Other relevant questions may include, but are not limited to, the following: What are the core values of a sustainable Malaysian society? What are the elements of these core values that need to be sustained, nurtured or even removed? What are the strategies to propagate the core values? And what is the baseline in history upon which we are to locate our conception of sustainable society for intergenerational considerations?

Environmental citizenship and identity. Our grasp of the political experiences, framing process or the political space in Malaysia as far as the environment is concerned is still minimal. For instance, movements concerned with the environment are known to have provided a social forum, a laboratory for experimentation with power and political identity. It is not rocket science to notice that the composition of environmental civil society follows Malaysia's notorious ethnic leitmotif. It is imperative that scholars unpack these experiences and their cultural meanings in order to define social sustainability vis-à-vis the political space of democratisation more realistically. Perhaps, with the seemingly vibrant opinion exchange in the country, we could consider the question of environmental citizenship as a new social contract for all Malaysians.

Environmental politics and governance. We cannot understand the prospects for and constraints on sustainability without grasping its politics. To an extent, environmental citizenship and identity cover some elements of

environmental governance especially its *politics* component, that is, investigation of interaction between interest groups. More work is needed in understanding the *polity* component of the Malaysian political system. Hardly enough is known thus far about the role of environmental institutions, such as ministries and ministers, and the epistemic communities surrounding them. Additionally, analysis into the question of processes of governance will clarify the *policy* component of environmental politics. First, this would explain the emergence and the performance of environmental policies in Malaysia. Second, this focus would interrogate the compatibility of the democratic ideal of environmental governance that sits comfortably with the debate on the forms and nature of advanced economies.

Social studies of 'sustainability' science. Admittedly this object of study might sound rather exotic. Science has for several centuries maintained its authoritative status as the provider of truth about the natural world. Nonetheless, this should not deter us from subjecting environmental scientists to scrutiny. This is because the production of facts by scientists is a social process; hence it does not escape sociological explanation. The case of policy-relevant science in Malaysia, for its ostensible deviation from the ideal, has the potential to generate interesting theoretical insights about science and society in a rapidly developing country. Plausibly it will expose the tensions between early and late modernity in terms suggested by Anthony Giddens, or between first and second modernity in Ulrich Beck's theory of risk society and reflexive modernisation (Beck, 1992; Beck and Lau, 2005).

To show the normative conundrum of sustainability, consider the deeply contested question of climate change governance. While the developed West harps on blanket strengthening of the global regime, the perspective in developing countries is very much based on the injustice claim due to the historical emissions by the former. Redressing this requires the climate and development discourse to be enriched by the perspectives from ethicists, philosophers and development specialists. If carried out with considered resolve, the four normative research areas outlined above will help to jumpstart the connection between sustainability science with the intellectual legacy of development studies.[5] The commingling of these two fields is crucial because,

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[5] Development studies scholarship is broad, encompassing analytics such as the goals of development as well as the roles played by markets and nature in the organisation of world affairs. The Malaysian Studies Conference series is a venue for development scholars to exchange information and push the boundaries of

as the mainstay of Malaysian social science, development studies could guide the progress of sustainability studies in an appropriate direction.

Policy and Management Agenda

The twenty-first century has been dubbed as the century of the environment (Lubchenco, 1998). Naturally, scientists engaged in sustainable development are currently bridging the worlds of knowledge and action. Therefore, the heavily ethics- and normative-based 'sustainability science' needs a meaningful contribution from social science scholars. But often knowledge, the social sciences included, lies dormant until external events (e.g. international financial crises, natural disasters) facilitate policy change. The assumption that social science knowledge benefits actions through a trickle down effect is an oversimplification. For this reason, scholars need vigorous strategies to mainstream sustainability into public policy. Four such strategies are especially relevant in Malaysia.

First, the social sciences can collectively inform analysis of the transition from the current development model towards plausible sustainability paths. This is a task that professional organisations such as Persatuan Sains Sosial Malaysia (Malaysian Social Science Association) and social science research centres should undertake. Convening symposiums and seminars to explore the transition is a feasible first step. Herewith, social science could rethink forms of physical and social infrastructures needed for the transition to take place. In addition, there are gains to be made by exploring why and how the current development trajectory is not sustainable. The outcomes from such a gathering may be synthesised into a collective resolution for the government to take action. Such futures analysis and utopian thoughts must eventually be socialised in the country's social science and public discourse.

Second, in their individual capacities, social science scholars may work closely with natural scientists. This could take place in developing common tools that enable government and society to evaluate progress towards sustainability. Social sciences' comprehension of social processes is

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scholarship. The nexus between development studies and sustainability is apparent from the case of climate change where nature and difference remain at the centre of global politics. Malaysia's long experience with development offers environmental researchers an opportunity to learn from how development issues are positioned within academia and how they are leveraged to influence policymakers.

valuable here, especially in designing culture-sensitive and policy-relevant tools such as scenario modelling and narratives. One possible task is to construct a common metaphor describing the nature–culture nexus with an appeal to society at large. Powerful metaphors can help improve educational campaigns on the environment. Their ultimate role is in legitimising and eventually encouraging behavioural change.

Third, in designing interdisciplinary research and assessment projects, social science scholars may incorporate potential users or beneficiaries such as society, government and industry. During the course of research social scientists, with their interpretative canons, should attempt to understand the symbolic dimensions of social exchange. Hence, they balance natural scientists' positivism in designing policy-relevant processes that suit the sociopolitical context in Malaysia.

Finally, collectively or individually, social science scholars may undertake 'boundary work' by performing the role of advisers and consultants. The assumption is that there exists a 'boundary space' between research-based knowledge and the world of actions and decisions.[6] In the context of Malaysia, boundary organisations which play the intermediary or bridging role include advisory bodies like the Environmental Quality Council (EQC) and the National Biodiversity Council, as well as research centres such as the Centre for Global Sustainability Studies at Universiti Sains Malaysia, the Institute for Environment and Development (LESTARI) at Universiti Kebangsaan Malaysia and the Penang Institute. Apart from sharing their disciplinary knowledge, social science scholars, because of their awareness of knowledge epistemology and ontology, are capable of understanding what conditions allow policy learning within these bodies. In addition, reflexive scholars-cum-advisers could identify the types of lessons that are drawn by these bodies and centres in their decisionmaking activities, and communicate them back to the scientific community. In sum, engagement in the corridors of power, and the creation of networks of researchers, should not be discounted by social science scholars. A reorientation of social sciences research

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[6] See Sheila Jasanoff's elucidation of boundary organisation in her seminal paper (Jasanoff, 1987). The boundary condition is an extension of the thesis made popular by C.P. Snow in his famous Rede Lecture entitled 'The Two Cultures'. He believes that the breakdown of communication in society is caused by the schism between the humanities and natural sciences on one hand, and the division between the world of knowledge and the world of action on the other.

and policy advocacy may open up fresh perspectives for the development of sustainability strategies that resonates with the needs of Malaysians.

Concluding Remarks

This chapter has considered a number of related questions. It began by considering the changing views on the role of nature as culture. Gone now is the romantic worldview that bestows respect to the immense powers of nature to human beings. Arguably, the transition from tradition to technological rationality, or modernisation in short, has almost come to its full circle as is evident with the emergence of sustainability as the new leitmotif of environmentalism and research. The question of formulating policy-relevant sustainability science exposes the paradox of structure and agency, and its corresponding misplaced structuration process. In spite of the increasingly rigorous research activity on the subject of environmental sustainability, there has been limited attentiveness to its social aspects. The subsequent discussion then outlined potentially fruitful research areas for the future, and dealt briefly with sustainability policy areas that social sciences could partake in. For a wider purchase and more enduring presence of social sciences in this area, more meaningful engagement with the daily grind of politics and problem-oriented research is mandatory.

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