Introduction

Global Sustainability and Communities of Practice

Carl A. Maida and Sam Beck

The community of practice originally denoted a group of people who share a craft or a profession (Lave and Wenger 1991); the concept has been expanded to indicate a process of collective learning within groups with a common concern or interest. As such, communities of practice are organisational forms that complement the current knowledge economy, which since the late twentieth century has witnessed revolutionary advances in information production and dissemination (Wenger 2000). A knowledge economy produces a reliance on shared information among social groups in-action. Communities of practice ensure greater engagement for sustainability by the public as local and global actors. It is a powerful paradigmatic construct that arose through the anthropological imagination (Lave 1988), providing a framework for 'thinking and learning in its social dimensions' (Wenger 2010a: 179). Etienne Wenger understands that this framework is enacted through a 'dual process of meaning making' (2010a: 180). This dual process exists in the interplay of ongoing participatory engagement that creates meaning in both the socially sustained dimensions and the physical and conceptual artefacts of these reified experiences.

Social engagement always has the potential of creating communities of practice as social groups come together, adhere to a common interpretation of the artefacts they create and perform actions in common. A community of practice thus provides a framework

for understanding social learning in complex organisations, specifically the notion of 'knowing'. For novices and experts alike, knowing within a community of practice is based upon socially defined competence, or the ability to act and to be viewed as a competent member in both process and context (Argyris and Schon 1974). Belonging to a particular community is based upon engagement, imagination and alignment within a social learning system that supports and sustains members and the community itself, what Wenger refers to as a 'regime of competence' (Wenger 2010a: 184). Within a regime of competence, individuals have enhanced opportunities to operate above their personal resources, and approach challenging learning tasks without being overwhelmed because of their membership in a learning community.

Communities of practice are dynamic and provide the framework for social learning, because members: share a sense of joint enterprise, indicative of the level of *learning energy* within the community; interact on the basis of mutuality, which points to the depth of social capital generated by mutual engagement; and share a repertoire of resources, indicating the degree of participants' self-awareness (Lave and Wenger 1991).

This framework – of knowing, belonging and social learning through more informal styles characteristic of a community of practice – provides members with the skills to engage meaningfully in knowledge production, exchange and transformation in complex organisations by creating new ways of 'being in the world' with a common identity and membership (Wenger 2010b). Moreover, communities of practice are always in the making as meaning is ceaselessly being negotiated.

This book focuses on case-based chapters on communities of practice, within and beyond anthropological frameworks, to illustrate how participatory researchers, students, policy and community leaders, and the broader public, come to engage in community-based transformational sustainability research and practice. We also suggest here that when anthropologists participate in communities of practice, the skills, knowledge and values they bring into problem-solving processes provide enriched insights and enable anthropological knowledge to contribute to improving the lives of the most vulnerable in society.

Sustainability, Place and the Commons

The concept of sustainability holds that the social, economic and environmental factors within human communities must be viewed interactively and systematically. The Brundtland Report (World Commission on Environment and Development 1987) defines sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs. In 1996, an international group of practitioners and researchers met in Bellagio, Italy, to develop new ways to measure and assess progress towards sustainable development. The Bellagio Principles (1997) serve as guidelines for the whole of the assessment process, including the choice and design of indicators, their interpretation and communication of the results.

Although broadly conceived, the pursuit of sustainable development is pragmatically a local practice because every community has different needs and quality-of-life concerns. Despite local variation, the participation of ordinary citizens, or 'deliberative democracy', remains constant across the sustainable community movement (Hempel 1998). In rural areas undergoing rapid development and urban areas transformed by planning, clearance and renewal, new partnerships are forming on behalf of sustainable development (Chambers 2005; Chambers and Conway 1991; Conway and Barbier 2013). Residents, and state and non-governmental organisation experts, including academics, are partnering to design indicators and to monitor land, labour, housing, health and other quality-of-life concerns. Civic engagement by ordinary residents is essential as local people have practical experience and bring important intuitive insights and localised knowledge to the tasks of indicator design and monitoring. Jane Jacobs (1961) argued on behalf of such 'self-diversification', or neighbourhood transformation that reflects the vitality, mobility and aesthetic interests of its residents.

Delocalisation results when people become less affected with local concerns, especially in decisions about the management of common resources, and in their stance towards their neighbours who have been marginalised by consequences of global change (National Science Foundation 1995). Through its encounter with

these displacements, the new ecological anthropology has come to view the community as embedded within larger systems at the regional, national and international levels, and to study the impact of a multi-tiered and globalising world on the locality (Burawoy et al. 2000; Gupta and Ferguson 1997; Kottak 1999; Marcus 1995; Oliver-Smith and Hoffman 1999; Wolf 2001). This recent paradigm recognises the importance of the state and cultural mediations in ecological processes at a time when local ethno-ecologies are being transformed by development, biodiversity conservation, environmentalism and the influence of non-governmental organisations (Brosius 1999; Escobar 1999).

Within political ecology, environmental justice research has addressed the ways poor communities organise to confront disproportionate, high and adverse environmental exposure (Harper and Rajan 2002; Pastor 2001, 2002). At the intersections of the social and the ecological, political ecology has helped to frame the narrative of social-ecological resilience (Peterson 2000), a *bridging concept* defined as 'the capacity of an urban region to absorb uncertain climatic stimuli and their effects so as to maintain the essential social and ecological functional and structural properties while undergoing change' (Beichler et al. 2014: 4). However, as with the design of sustainability indicators, many communities face challenges in developing their own resilience measures, notably because of limited time and resources; the lack of available data necessary to plan resilience-building efforts; and inadequate sharing of data among community stakeholders (National Academies of Sciences, Engineering, and Medicine 2017).

The concept of sustainable development, as framed by Michael Redclift (1987), links the transfer of capital, labour and natural resources within the global economic system. Through a comparative framework that situates the historical role of the environment within capitalist development, Redclift views resource exploitation and structural underdevelopment in the southern hemisphere as a consequence of environmental change in the industrialised northern hemisphere. With global change, localities throughout the world have undergone ecological crises, such as resource depletion, changes in land use, unequal resource allocation and biodiversity loss. The *Anthropocene* characterises the current geological

age – a time when the human domination of nature is challenging our planetary boundaries, with consequent deforestation, pollution, climate change and species loss (Gibson and Venkateswar 2015). These conditions are frequently accompanied by anthropogenic hazards, such as emerging epidemic and persistent chronic diseases and chaotic environmental episodes, including drought, flooding and violent storms.

Since the industrial era, anthropogenic activities have become the major driver impacting on the Earth system; it is now exponentially worse. Complex environmental challenges, brought about by rapid and rapacious development, the voracious exploitation of both natural and human environments for profit, and the growth of human populations, together with the current technological revolution that has changed both lifestyles and social norms, call for a new approach to learning that facilitates interdisciplinary action on behalf of sustainability. Integrative science and education has shifted the emphasis towards actively using what learners know to explore, negotiate, interpret and create through collaborative activities across academic disciplines (Bruffee 1999) and on-the-ground practitioners. As a potentially disruptive innovation, collaborative learning challenges researchers, students and the public to acknowledge their roles as participants engaged in producing knowledge for change that integrates and synthesises data from diverse fields and experience into both whole-systems and political-economic process-oriented perspectives that move beyond normative and uncritical thinking to develop alternative well-grounded holistic approaches to improving the quality of life, especially for the vulnerable.

Woven throughout this transition is the narrative of sustainability, understood as focusing on the physical, sociocultural and institutional development practices that meet the needs of present users without compromising the ability of future generations to meet their own needs, particularly with regard to use and waste of natural resources (Maida 2007). To this end, sustainable practices support ecological, human and economic health and vitality, with the presumption that resources are finite, and should be used with a view to long-term priorities and consequences. However, cultivating sustainability literacy and public engagement on its

behalf requires diverse perspectives, trans-generational timeframes and local-to-global connectivity. The need to promote participatory learning within a community of practice on behalf of sustainability literacy in the broader public is clear; however, few community-based approaches have been developed to date that integrate disciplines into a holistic perspective of Earth's natural and human systems.

Related to sustainability is the centuries-old controversy over how urbanisation and industrialisation affect the soil, water, air and other common resources. The debate pits those advocating for the local control of shared resources against proponents of centralised control of common holdings by state or corporate power – and this polarity has helped shape public policies and institutional arrangements. The 'tragedy of the commons' connotes, in part, the undesirable effects of population pressure on certain shared resources, especially commons, which originally refer to farming and grazing land, hunting and fishing areas, forests and places for the disposal of wastes to which all members of a society have access. These common-pool resources were enclosed and restricted in the face of exploitation by individuals or groups attempting to maximise their own gain (Agrawal 2003). Collective and shared use of such resources was ended through economic manipulation and outright violence transferring the use of such resources into the hands of private ownership for profit or the state in the age of capitalism.

Accompanying the neoliberal turn in contemporary capitalist development is an advanced form of extractive capitalism, including open pit mining and ocean overfishing, which displaces local communities and disrupts their regional economies. These practices continue to exploit longstanding common-pool resources through property rights and *financialisation* (Graeber 2011), conditions that give rise to the organic emergence of communities of practice to counter the incentives of global capital, including the debt economy and other moral hazards of globalisation (Federici 2014).

The literature on common-pool resources and common property has focused on environmental degradation, resource depletion and the impoverishment of populations. Scholars of the commons have offered the reinvention of community-based conservation as

a corrective (Ostrom 2008). Bio-regionalists envision a more equitable relationship between human and natural systems through reorganising society around common ecosystems or bioregions and upon sustainable principles and self-management. Some have called for a 'recovery of the commons' as a means of regaining local community through peoples' direct involvement in the web of the natural resources and rearranging the relationships that people have with each other by collaborating across differences (Reid and Taylor 2010). This would come about through a revitalised sense of citizenship based upon shared governance around food, water, soil and energy, the release of human potentials, shared identity and common membership. Accompanying this push towards the reconstituting of the commons is the goal of creating the conditions for sustaining local cultures.

Such place-focused politics would become viable if local communities were rebuilt upon ecological principles rather than upon political or economic centralisation, principles of privatisation and profit making. Defining and securing a satisfactory quality of life for localities impacted by restrictions resulting from state- and market-based commodification of the natural and sociocultural commons, including public space and public health, is a key feature of the sustainability project. This emphasis on access to public goods expands the rhetoric and theory of the commons to include arenas not typically considered in current debates on common-pool resources. Sandy Smith-Nonini (2006: 235), for example, expands the concept of the commons to include medical and health services as a *health commons,* arguing that 'governments and societies have an obligation to collective social welfare, and that the health of populations should be maximized and thought of as a public good'.

Viewing the commodification of the urban commons by real-estate interests and other forms of private accumulation that drive capitalist urbanisation as contributing to the degradation of a city's land and labour resources, David Harvey (2012: 87) argues that 'if state-supplied public goods either decline or become a mere vehicle for private accumulation (as is happening to education), and if the state withdraws from their provision, then there is only one possible response, which is for populations to self-

organize to provide their own commons'. Bonnie McCay (2002: 362) supports a cultural and historical approach as a way to contextualise these more institutional concerns surrounding the commons 'as ones about competition and collaboration among social entities; the embeddedness of individual and social action; and the historical, political, sociocultural, and ecological specificity of human-environment interactions and institutions'. By seeing these linked interactions as *situations,* we may get a better sense of the broader 'webs of significance or cultural "filters"' (McCay 2002: 393) through which people come to comprehend common-pool resource issues.

Life Politics and Restoration of the Commons

Citizen science bridges researchers and the lay public, across diverse populations and subpopulations, on behalf of sustainability (Bäckstrand 2003; Corburn 2005). Regarding the production or transfer of critical knowledge, citizen science is decidedly personal and interpersonal in style, enacted from the bottom up, most often at the local level, and based on relationship building (Bonney et al. 2009). It involves science initiated and carried out by citizens not trained to be professional scientists. These independent citizen perspectives, tied to local geographies, tend to be more holistic and serve as a corrective to normative science, in that they liberate citizens from the norms and specialised practices of professional disciplines. Early lay efforts to monitor common-pool resources and common property were carried out by users who depended upon a given resource for long-term sustenance. These efforts focused on meeting local and regional challenges of environmental degradation and resource depletion that threatened watersheds, fisheries and pasturage, with a goal of building consensus among users of a particular resource, and limiting the control over such resources by non-local entities. Initial interest in citizen science concerned ecological and environmental health sciences, as average citizens became more aware of the impact of science and technology on their personal lives and their community's quality of life (Brossard et al. 2005).

Citizen science remains effective to the degree that it relies upon standards and standardised procedures for measuring environmental impacts, and in this way bridges the gap between lay initiatives on behalf of democratising science and expert knowledge (Ottinger 2010). As an example, biomonitoring, or body-burden research, emerged in response to growing public demand for information about humans' exposure to chemicals in the environment (Morello-Frosch et al. 2005). Since then, community residents collaborating with environmental health scientists in universities and community-based organisations have monitored workplace toxins, air and water pollution, household lead, flame retardants in consumer products and environmental chemicals in breast milk (Morello-Frosch et al. 2009). On-the-ground data-collection techniques, such as 'ground-truthing', seek residents' knowledge to identify pollution sources located in their communities and verify compiled data derived from standardised risk-screening of environmental indicators (Heaney et al. 2007).

Anthony Giddens' (1991) notion of life politics, or those movements that challenge contradictions of capitalist growth and technological development through reflexive and existential means, is especially instructive. Without community-based institutions comprised of constituents caught up in these changes, considerable suffering and clearly less progress in meeting commons-destroying challenges may prevail. Social suffering, in this sense, is caused by disorders and inversions that threaten to destroy the sociocultural fabric of the modern world. Roy Rappaport (1994) understood this suffering as resulting from environmental degradation, population increase, warfare, globalisation, development and threats to cultural autonomy. At the community level, these typically manifest as social pathologies, including crime, environmental and mental illnesses, family dissolution and homelessness.

Expert and lay groups taking collective action on behalf of sustainability and maintenance of the commons view shifting organisational arrangements as examples of institutional bricolage, a patchwork of well-worn practices adapted to new conditions; hence, there is a sense of incremental tweaking or muddling through in carrying out necessary tasks. Bricolage denotes the construction or creation of a work, including an ideational or institutional struc-

ture, from whatever materials are at hand. These newer formations typically use ideas, tools and other forms of bricolage, borrowed from older institutional traditions, to craft strategies for survival and sustainability (Cleaver and de Koning 2015). The question of whether bricolage can be transformational remains unanswered, as there continues to be uneven distribution of power between the centre and the nascent, peripheral, community-based organisations forged as crisis formations and adaptations to extreme conditions, such as ecological threats to common-pool resources, and the risks and hazards of modernity.

The continued growth of these forms of social capital will require broader citizen access to electronically transmitted information and interactive communication technologies to stimulate interest in local affairs and participation in national policy dialogues. Nowhere is this more apparent than in the widening gap between information elites, such as scientists and policymakers, and the lay public with respect to knowledge about and access to computing and networked communication resources. The increasing access by laypersons to networked communication technologies has led to the formation of diverse lay interest groups, or 'virtual communities'. These may also be communities of practice, with frequently geographically dispersed individuals, linked together by interactive communication, who share a common concern. Similar to arenas sustained by scientific and policy elites, lay electronic networks engage and affiliate participants in spontaneous, but also considered, discussion and debate around clearly meaningful issues. Despite the substantial early apprehension of social scientists that computer-mediated communication would further isolate individuals and restrict their participation in the public sphere, alliances built electronically appear to strengthen social and civic ties, but also may blur many visually defined boundaries based on race, class, gender and disability. Electronic alliances can potentially sustain citizen participation within emerging federal arenas, such as consensus conferences and other forms of deliberative democracy that increasingly require the advice of laypersons in the development of scientific and technological policies (Worthington et al. 2011).

To this end, the task of reforming or restoring the commons in both rural and urban contexts is a challenge – an ecological, eco-

nomic and equity-related challenge that involves a form of counter-hegemonic education and reflective and critical practices. Paulo Freire forwarded these practices to both promote collective action and social justice at the local level and obtain a clearer actionable understanding of the relationships individual groups have to power, providing the opportunity to rearrange such relationships by becoming literate about the power structure (Freire 1970).

Sustainability and Collaborative Anthropological Practice

Returning now to the community-based concerns of anthropologists engaged in sustainability research and practice, the operational framework of a community of practice is instructive. All communities of practice contain three structural elements: (1) domain, or the area of shared enquiry; (2) community, or the environment where relationships are built; and (3) practice, or the body of knowledge, methods, tools, cases and stories put into action. A community of practice, therefore, is comprised of individuals who share a common interest in a specific domain of knowledge (Lave 1996). They are engaged in sharing knowledge, developing expertise and solving problems within the specific area. Within communities of practice, local, regional, national and even global actors develop collaborative partnerships, on behalf of greater transparency in planning and implementing broad-based and inclusive sustainable practices.

As collaborative peer networks based upon a shared area of inquiry, communities of practice are, for the most part, voluntary and focused both on learning and on building capacity through collaborative relationships. They are engaged in sharing knowledge, developing expertise and solving problems. Communities of practice break down communication barriers through continuous exchange of knowledge in a more open and informal manner. In this way, they also operate as a knowledge commons, a shared social-ecological system that supports the flow of communication among members of collaborative practice communities (Hess and Ostrom 2006). However, to sustain a knowledge commons on behalf of local and global sustainability, communities of practice can

work towards diminishing and making transparent the boundaries between the expert producers of such knowledge within the academic, public, non-profit and private sectors, by incorporating lay persons within them.

Translating anthropological research into action promotes better understanding, so that both experts and the lay public may meaningfully engage in informed dialogues about their common concerns for sustainable communities (Maida and Beck 2015). Collaborative methods, such as participatory action research, will ensure a more socially responsive sharing of anthropological knowledge across diverse sectors and constituencies. A critical anthropological approach also orients participants towards a deeper democratic lifeway creating the opportunity for 'environmental stewardship' and 'global citizenship', even at the local level.

The authors of this volume discuss in their chapters how networks of researchers, practitioners and experts communicate with a wider audience to translate sustainability concepts into terms broadly understood by the public, and how emergent communities of practice ensure greater engagement by the public, as citizens, activists and citizen scientists, locally, regionally, nationally and globally. The authors also address the ways that class, gender and ethnicity play a role in how these communities meet the challenges of global sustainability. As a result, dynamic and potent *regimes of competence* come into play within these chapters, and this concept is at once both synergistic and capable of bridging these discrete ethnographic cases into a narrative on the value of communities of practice in global sustainability.

Sustaining the Countryside

The first set of essays focus on the sustainability of local communities of practice in rural communities in the face of globalisation and its attendant changes. Linda D'Amico describes the ways rural women and men in the Ecuadorian Cloud Forests created regional and trans-regional institutions to develop and sustain effective environmental governance that offer examples of expanded social equity and adaptive resilience in the face of change. Marta

Crivos, María Rosa Martínez, Laura Teves and Carolina Remorini depict how intersectoral forums with governmental and non-governmental actors and local residents helped bring about joint reflection on viability and sustainability of local and global practices and resources in a rural community in the Calchaqui Valley (Salta, Argentina). Debarati Sen examines how fair-trade-engendered solidarity practices in Darjeeling's tea plantations erase the complex history of workers' struggle with the state and established systems of power through collective bargaining, which, in turn, produce new kinds of transnational praxis affecting the plantation public sphere.

Sustainable Urbanism

The second set of essays look at how communities of practice can become paths towards sustainability in the urban context. Carla Guerrón Montero explores the relationships among state, culture and politics in the context of the largest educational project of social inclusion, local participation and citizenship in the Municipality of Camaçari, state of Bahia, north-eastern Brazil, in a community of practice where stakeholders are potentially producing a new way to understand what it means to be a modern Brazilian citizen. Krista Harper and Ana Isabel Afonso use ethnographic and Photovoice techniques to document how urban gardeners in Lisbon, Portugal cultivate the spirit of civic ecology while growing food in interstitial urban spaces. Danielle V. Schoon and Funda Oral examine a community of practice formed to advocate for spatial preservation of a neighbourhood and the cultural heritage of its Roman (Gypsy) residents in Istanbul, Turkey to argue that the challenges presented by rapid urbanisation in places like Istanbul require interdisciplinary action and collaboration. Sam Beck looks at the movement for affordable housing in Williamsburg, Brooklyn, where Latino residents created a community of practice and engaged in a struggle against displacement; for dignity, respect and self-determination; and for community sustainability by advocating for and achieving low- and moderate-income housing in a rapidly gentrifying community.

Organising for Sustainability

The third set of essays regard how communities of practice can help frame contemporary interventions in urban regions. Carl Maida describes a community of practice among high-school students and their adult mentors engaged in project-based learning that uses San Diego Bay as an outdoor laboratory to understand regional urban ecology with the goal of 'knowing sustainability'. Sandy Smith-Nonini discusses lessons learned from a social enterprise project – a non-profit co-op of upcycler crafters and vintage vendors – supporting sustainability education in central North Carolina. Brian McKenna provides a case of bureaucratic cooptation of a community of practice mobilised to confront local environmental health problems, specifically water and air pollution, and restaurant health, in mid-Michigan. A final theoretical essay by Richard Westra discusses how all communities of practice face questions relating to the material economic foundations of future sustainable societies concerning economic scale and the re-localising of production and consumption sundered by globalisation, and focuses on the local exchange and trading system as a foundation of rich, eco-sustainable community material life.

Together, the contributors to this volume explore communities of practice as a means to cultivate sustainability literacy and public engagement on its behalf, a task that requires diverse cultural perspectives, trans-generational timeframes and local-to-global connectedness.

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Carl A. Maida is a professor at the UCLA Institute of the Environment and Sustainability in the College of Letters and Science, where he teaches courses on action research methods and conducts community-based research on urban sustainability. His current research focuses on the ongoing dialogue between professional and lay knowledge in the areas of health, the quality of life and sustainability of urban communities, and on the larger national and global debates on access to public goods. He is a member of the UCLA Sustainability Committee. He is a Fellow of the American Association for the Advancement of Science, the American Anthropological Association and the Society for Applied Anthropology.

Sam Beck is Senior Lecturer at Cornell University where he directs the Urban Semester Program. He has dedicated himself in the last twenty years to an activist role as an anthropologist carrying out research in North Brooklyn. As such he is an active Executive Board member in local community-based organisations that insist on being recognised with dignity and respect and struggle for community sustainability. He is a member of the Vernon Avenue Project, Inc. and its spinoff Reconnect Industries, Churches United for Fair Housing, The Grand Street Boys and Brooklyn Legal Services A. He has received multiple awards for his community service work and as a teacher.

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