What can anthropologists say about climate change?

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Abstract

'Climate Change', until recently the preserve of scientists and well-informed environmentalists, has recently and suddenly taken on new public meanings, rhetorical power, economic value and political currency. On the one hand, the burgeoning climate change economy has spawned a raft of new consultances, enterprises, exchange systems and entrepeneurial opportunities. On the other, 'climate change', 'global warming' and indeed 'carbon' itself have become powerful cultural symbols carrying a complex range of meanings. In this article I report a case-study of a waste management project in Indonesia that has re-invented itself as a 'climate change' project, partly as a strategy to attract funding. This story is followed by some suggestions as to how we might think about the unintended and sometimes contradictory or ironic flip-sides of 'climate change', and returns finally to the challenge for an ethnographically-based anthropology of climate change.

While there may be debate about the reality or the extent of climate change and how best to deal with it, there is no doubt as to its reality as a phenomenon of public knowledge and popular culture. However, the vast majority of discussion about climate change tends to be science-talk, politics- and policy-talk or economics-talk with much of it repackaged in the form of media-talk. In addition most of this discussion tends also to work from top-down, globalist, universalist perspectives largely emerging from wealthy nations of the north embodied within the slogan of 'global problems need global solutions'. At the same time, the idea, image, and metaphor of 'climate change' is out there in the world of public knowledge, taking on a life of its

own, 'changing the way local events are framed and understood' (Milton, 2008:57-8) and having all sorts of effects, that we do not seem to know very much about.

One of the more surprising aspects of all this, much-noted, but little-understood, is that, despite the overwhelming scientific consensus that climate change is real, threatens life as we know it and causes varying degrees of anxiety, fear or terror for most of us; we (collectively, globally) are doing so little about it. Or, as George Monbiot puts it, while we mostly agree that climate change '…is the single most important issue that we face …We have also agreed to do nothing about it' (2007:ix). The Copenhagen summit of December 2009, seems sadly to have done little to change this agreement by default. Ironically the only nations to demonstrate any real commitment to reducing their own emissions were a group of nations of the south, with already low emissions, but who were also most vulnerable to the predicted effects of climate change (Omidi 2009). This ongoing disconnect between knowledge and behaviour, evidence and action, suggests that all is not well with our understanding of 'climate change'– there is something wrong or missing in our models of it as a system or process in which human thought and behaviour are clearly key elements.

Climate Change (hereafter CC for brevity) thus clearly involves social/cultural facts as well as meteorological, political and economic ones. Yet the 'science' of CC is (to date) rather short on social science, let alone the science of anthropology. The voices of social scientists are also rarely heard in public debates on CC. Notable by their scarcity are discussions of the cultural dimensions of CC – as a set of meanings that intersect in complex ways with its other dimensions, its social organisation, how it is worked out at the level of local practice – by real people in the real world.[1] These are the very modes and levels of analysis that anthropology seems especially well-equipped for – its special provenance.

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[1] This lack of an anthropological voice is not for lack of interest on the part of anthropologists. Recent conferences (AAS 2007, ASA 2008), journals (TJA 2008, SfAA (2008), The Asia-Pacific Journal of Anthropology (forthcoming), Ethnos (forthcoming), books (Baer and Singer 2009) as well as funding applications, all testify to growing interest and commitment to CC research. My point however is that anthropological voices and perspectives do not (yet) form part of the conversation or, as Kay Milton puts it 'It is not enough to talk to ourselves about these things; we need to make our voices public' (2008:58).

Kay Milton has suggested that 'an anthropology of climate change' might usefully consist of three main elements: contributions to big-picture debates, analyses of discourses of CC, and of 'realities lived on the ground … with thoughts, feelings and strategies which may or may not engage with the global discourse' (2008:58). Anthropology is indeed well-equipped for these tasks, but among them, it is the third that seems least likely to be addressed by the approaches of other disciplines. Part of my argument here is that such analysis of 'realities on the ground' and especially its frequent lack of fit with 'global discourse', is one of the most important contributions anthropologists could and perhaps should be making to CC research.

The substantive part of this article is a climate-change story at just this level, but not in any of the familiar sub-genres. It is one in which CC appears in unusual form and its effects unanticipated. At the same coeval time,productive changes to a small development project in one of anthropology's 'most favoured of favourite' 'out-of-the-way places' (Geertz 1983, Tsing 1993) are evident. While I do not pretend that this is how all CC research should be done, the example does, I think, illustrate the kinds of knowledge that can flow from a distinctively anthropological approach, open as Anna Tsing says, to 'the ethnographer's surprises' (2006:x) and revealing a certain lack of fit with standard global discourses of CC. This story is followed by some suggestions as to how anthropologists and others might think about these unintended and sometimes contradictory or ironic flip-sides of 'climate change'. I then returnto the challenge of developing an ethnographically-based anthropology of climate change.

A (different kind of) climate change story

The ethnographic subject is a medium-sized, district-level waste management project in a very ordinary village on the island of Bali in Indonesia. It has been running since mid-2004, and is the fruit of a long and complex history that need be retold here only in outline.

Bali is a tropical island with rich volcanic soil and abundant seasonal rainfall. The pre-human ecology consisted largely of rainforest with a coastal fringe of mangrove swamps. Traditional subsistence ecology was based on partial clearing of this forest for the cultivation of crops, mostly rice in fields irrigated by complex systems of channels and tunnels (Lansing 1991) and the extensive use of forest products, especially indigenous coconut

trees and bamboo, as well as introduced banana palms, for the construction of everything from the tiniest ritual offerings to the largest architectural structures. In this culture, surplus, unused or abandoned materials were simply left wherever they fell. 'Waste management' consisted of regular sweeping of organic material into piles out of the way of the business at hand, to be eaten by chickens, dogs and pigs or simply to decompose. Quantities large enough to cause inconvenience or of a kind to cause ritual pollution were burnt. Neither 'waste' nor 'waste management'in the sense that it is known in industrial economies existed.

In the 1970s the Suharto regime began to open Indonesia to the global economy in various ways including foreign investment, imported consumer products and tourism. Both population and prosperity increased and with them so did levels of consumption, including motor vehicle use, along with consequent demands for resources and production of wastes and pollutions. By the late 1980s serious waste problems had begun to emerge, especially in densely populated urban areas.

Bali was typical of this pattern but it was also a special case, because of its unique mode of development based on tourism. While tourism is in many respects a relatively 'clean' form of development, it requires high levels of amenities and consumption to service the needs of tourists, most of whom are from affluent industrialised countries. These needs include non-local foods and drinks which tend to come in non-bio-degradeable packaging. The prosperity that flowed from tourism also led to the development of a local middle class with new tastes for consumption of similarly packaged goods (see fn) This packaging soon became the major source of a new kind of inorganic waste, especially in the more prosperous and touristed areas.[2]

While tourism was clearly part of the problem, it was also part of the solution. By the end of the 1980s tourists were complaining about rubbish on the streets, beaches and in rivers. The government initiated street cleaning and rubbish disposal systems which consisted essentially of trucking and dumping at best into primitive landfills and at worst over banks into river gorges. A minority of the local middle class, young, educated and often with overseas experience, began to debate the problems and

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[2] The global packaging industry understand this very well and are specifically targeting the growing consumer classes in developing countries. http://www.bvents.com/event/383920-propak-indonesia-22nd-international-series-of-exhibitions-for-the-processing-packaging-industries

seek solutions, often leading to the formation of environmentally oriented NGOs.

Ubud is a small town in south-central Bali, known as a centre of 'traditional' culture, especially the arts, which has grown rapidly as a result of tourism based on this cultural resource. In 1981 a local organisation called Yayasan Bina Wisata was formed to increase mutual awareness between tourists and locals and to attempt to guide tourist development in a direction considered compatible with local culture. Despite their efforts the rubbish problem grew apace in the rapid development of the late 1980s and early 1990s. In 1993 (when I began my research in Ubud), the problem was out of control, with rubbish lining the streets and unregulated dumping and burning occurring at the edges of town, and tourists publicly pointing out the contradiction between image and reality (Fleischman 1994). In the same year a group of educated, middle-class Indonesians (mostly Balinese) formed an organisation called Yayasan Wisnu, named for the Hindu deity associated with preservation and maintenance of the universe (http://baliwww.com/wisnuenviroworks/). One of their first projects was in Ubud, a practical attempt to set up a system for rubbish collection and recycling (Bali Post 1993). This project did not eventuate for a variety of reasons, mostly to do with the convoluted factionalisms of local community politics. Two subsequent projects in the late 1990s likewise foundered on the shoals of local politics.

In 2001 the local Rotary Club became interested in the problem. Rotary Ubud consists mostly of western expatriates, and its president at the time, and the driving force behind this project was David Kuper, a retired chemical engineer from Switzerland. He also had some years experience working for SwissContact, a Swiss aid agency in Indonesia, so he was in many ways well-equipped with the technical and management expertise needed as well as some local experience and knowledge.

In 2003 Rotary, together with Bali Fokus, another NGO specialising in waste issues (www.balifokus.or.id), worked with the local council (LKMD) in Ubud to develop a plan for a processing facility for Ubud's waste, based on recycling as much of it as possible, together with an improved waste collection and a public awareness campaign. They designed a system, arranged funding from international aid/development sources and leased a site in a nearby village. However, the village in question was less than enamoured with the prospect of becoming the rubbish dump of Ubud and a tourist industry from which they derived

little direct benefit. Once again things got bogged down in local politics. The funding had time-limits attached to it, this pressure exacerbated the tensions, and by the end of 2003 everyone had became frustrated and this project too collapsed.

In 2004, David and Bali Fokus started again. This time, however, they approached the tricky political waters through a successful tourism entrepreneur in Ubud, who had a strategic network of political connections throughout the district. This man happened also to be from a village called Temesi, in a poorer area further away from Ubud where the main landfill dump for the district (of Gianyar) was located. He persuaded both the Temesi community and the district government to agree to a pilot project to recycle part of the waste stream at the existing landfill and arranged for all the necessary consents to be processed in a matter of days (rather than the usual weeks or months). Rotary already had funding of $240,000 from the Swiss and American international aid agencies, sufficient for a facility designed to handle about 4 tonnes of waste per day. The facility was constructed very rapidly and was officially opened in mid-2004.

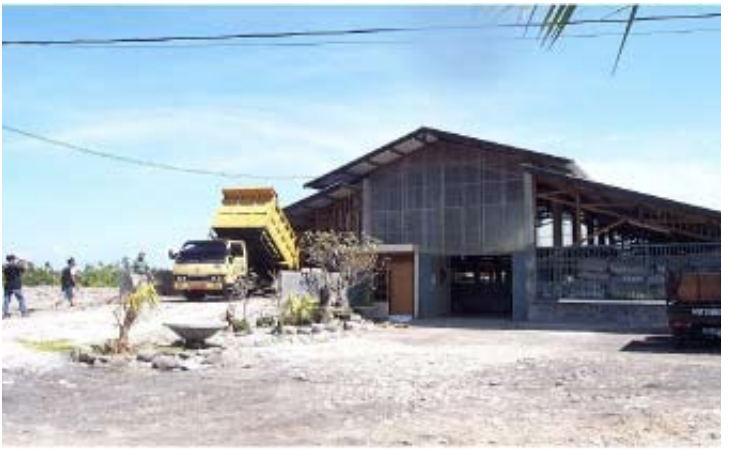

Figure 1. The Temesi Recycling Facility. Photo David Kuper.

The facility consisted essentially of a large open shed with access for waste at one end and egress for finished products at the other. Inside was a long conveyor belt on which the rubbish was sorted manually by workers from the local village. The recycleable materials (glass, metals, paper and plastics) were separated and packaged for sale to networks of professional scavengers

(pemulung) who transported and sold them to recycling plants in Java.

Despite minor problems, social as well as technical, the system worked well, but it was limited by two critical factors. Firstly it was processing only a small fraction (about 4 tonne/day) of the existing waste stream (more than 50 tonne/day) and it needed to process much more to achieve the economies of scale necessary to pay for itself. Secondly, it become increasingly clear that less than 10% of the waste stream was actually recycleable, while more than 80% was in fact organic material.[3]

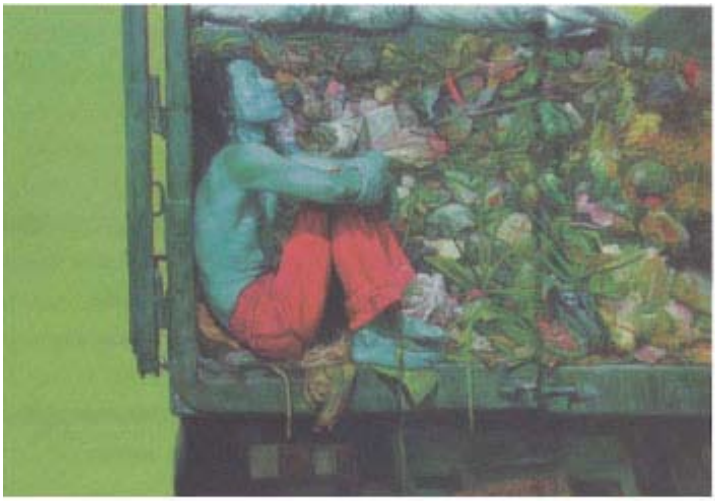

Fig. 2. 80% of Waste is Organic Material.
Painting by Hendro Wiyanto.

The proposed solutions were as clear as the problems and also relatively straightforward: to enlarge the facility to process at least 50 tonne/day and to shift the focus from recycling to production

[3] This proportion is typical for waste streams in the less urban parts of Indonesia (Zurbrugg 2003:5, see also Tang 2004:17 on urban waste). However in this case, the original intention had been to concentrate on the waste from hotels and restaurants, in which the proportion of recycleable materials is much 'richer'. This is the basis of another smaller, but commercially successful recycling plant in Jimbaran, at the heart of the upmarket resort-hotel district (Atmojo 2008). In the case of Bali, an additional element boosting the organic component is the daily offerings composed mainly of leaves, flowers and foodstuffs.

of high-quality compost for sale to the growing local market for hotel gardens and public parks. They had already begun research and development to improve the quality of their compost and the site and waste stream were available. To expand the facility however, they needed significant development capital ($126,000). They sought funding through the usual aid/development channels and found some, but it was not sufficient and it tended to have awkward strings attached. One of the less awkward conditions of the funding was that they work with a local organisation, especially on community development aspects of the project. By this time their association with Bali Fokus had ended and they began to work with another NGO, Yayasan Gelombang Udara Segar (usually abbreviated Gus) whose background was in beach cleanup projects (www.gus-bali.org).

It was also around this time that 'climate change' began to play a increasing part in the story. From the start David had been aware of the advantages of aerobic composting in terms of greenhouse gas (GHG) production, but it was around this time that he began to seriously consider the possibility of obtaining carbon credit funding through the Clean Development Mechanism (CDM).CDM is part of the post-Kyoto global system of climate change measures developed by the United Nations Framework Convention on Climate Change (UNFCCC). Central among these measures was the establishment of a global system of so-called 'carbon' markets, in which emissions of GHGs carry costs, while reductions of such emissions have a corresponding positive monetary value.[4] CDM is based on the belief that it is generally cheaper (up to15 times cheaper according to UN estimates) to achieve emission reductions in southern countries (LDCs) than in northern ones. CDM is an international bureaucratic mechanism, within the UNFCCC, to enable emission-reducing projects in LDCs to sell their carbon credits to net emitters in the north who are unwilling or unable reduce their own emissions.[5]

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[4] The use of 'carbon' as the key term in this system is somewhat misleading. It is not literally about carbon at all, but about GHGs. Carbon dioxide (CO2) is the most common GHG and it is used as the basic measure of GHGs and 'currency' of the market. Quantities of other GHGs are converted into tonnes of CO2 having the equivalent greenhouse effect. It is worth noting however that the basis of industrial and post-industrial economies on carbon-based fossil fuels does justify the use of 'carbon' as a broader metaphor for the whole system.

[5] For the official version of what CDM is about see http://cdm.unfccc.int/index.html. For a more critical view see Vidal (2008).

The Temesi project seemed to qualify because it reduces emissions by taking organic material out of the waste stream entering the landfill, where it would otherwise decompose anaerobically (without oxygen) producing methane (CH4), a very powerful GHG. By composting it aerobically (with oxygen) instead, it produces only carbon dioxide (CO2), a much less powerful GHG, leading to a net reduction of emissions. David was already convinced of the superiority of aerobic compost in nutritional and hygienic terms, and his research and development was focused on optimising this quality by forcing air through the material during the composting process. The new knowledge about CDM simply added a potential funding source, technical logic and public relations bonus to the existing direction of the project.

In response to this emerging awareness, the project was gradually reconceptualised and repackaged as a CC project. The expansion of the facility included a plan to transform the site from a rather malodorous tropical landfill dump into a landscaped 'Climate Change Theme Park' for the edification and education of visitors, especially school groups.

However, to access this funding via the CDM system they needed to quantify and certify their reductions, make an application to UNFCCC, obtain approval from the appropriate government agencies in both host and sponsoring countries, and find businesses to buy their reductions. These are complex processes, even using the 'simplified' methods allowed for 'small projects', which require sophisticated scientific, technical and legal skills. Such skills simply do not exist in villages like Temesi, for which, ironically, the CDM was ostensibly designed. While David was able to understand the process involved, much of the detailed work was beyond even his capacity and indeed beyond that of anyone else in Bali, or perhaps even Indonesia. So they had to hire specialist consultants in Europe to do most of the measurement, calculation, certification, applications, brokering etc. This all cost some $33,000 which was paid for out of donor funding.

Eventually all these pieces came together and in November 2008 the project was certified as removing methane equivalent to some 77,000 tonnes of CO2 out of the atmosphere over the next 10 years, for which they expect to earn an income of over $1.5m, depending on the going rate.[6] A chance meeting with a

[6] The market establishes the rate in much the same way as markets for stocks and shares. At the time of writing (January 2009) the going rate is slightly under $20/tonne.

Swiss visitor in an Ubud café, alerted David to the possibility of cooperation with Kuoni, a Swiss based international travel operator, who later also became a major donor and purchaser of their carbon credits to offset the emissions caused by all the plane flights they booked.[7] They are also pursuing Verified Emission Reductions (VER) of a further 60,000 tonnes of CO2 equivalent which they estimate will be avoided after the expiry of the ten-year period of the Certified Reductions.[8]

Year	CO2 Equivalents (tons / year)	Carbon Credits (USD 20.00 / ton)
2008	1,972	39,440
2009	3,855	77,100
2010	5,436	108,720
2011	6,766	135,320
2012	7,887	157,740
2013	8,834	176,680
2014	9,635	192,700
2015	10,312	206,240
2016	10,887	217,740
2017	11,375	227,500
Total	76,959	1,539,180
Annual average	7,696	153,918

Fig. 4 Estimated Carbon Credits over the 10 year CDM crediting period. Source: Project documents

Funding is, however, contingent on maintaining the predicted level of production and to achieve this level, they still needed to expand the facility. Fortunately there was sufficient donor funding (from IDRC, the Canadian government aid agency) to begin this process in mid-2007. Construction of this and the first stage of the theme park were fast-tracked in order to hold an official opening to coincide with the UN Climate Change Conference which was, serendipitously held in Bali in December 2007.

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7 See http://www.kuoni-group.com/Corporate+Responsibility/Climate+Change/Bali.htm

8 Verified Reductions are less certain, less rigorously assessed and less highly valued than Certified reductions.

In mid-2008 an advance CDM payment had been received, but they were still struggling to achieve their production targets because of difficulties finding sufficient local labour for the critical process of manual sorting. An alternative plan to bring dozens of experienced Javanese scavengers onto the site was complicated and delayed by the local cultural politics of migration.[9] A year later, the labour bottleneck had been cleared but the new obstacle was a need for more covered workspace for the additional workers. Funding was in place and they were awaiting the necessary permits to proceed. At the time of writing the new 4800 sq.m. building is approaching completion and a total of 150 people were employed.

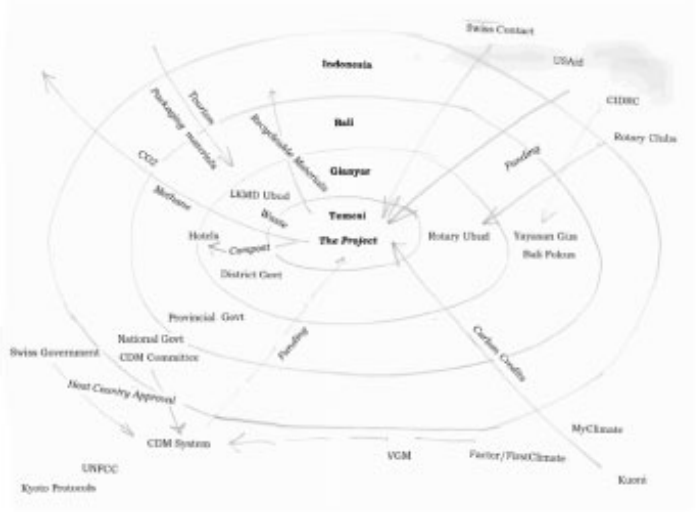

Fig 5. The Parties Involved

Thus, briefly, from origins in attempts to clean up the streets of Ubud, over a period of fifteen years emerged a waste management project, then a recycling project, a compost project, and finally a CC project. The following diagram presents a (very simplified) map of the main parties and processes involved.

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[9] For discussion of tensions between Balinese and immigrant Javanese and the politics of ethnicity in Bali see MacRae 2006.

What is climate change in this story?

There is much more that could be added to and said about this story, but for the present purpose the main question is, what is going on with CC in this story? How does CC work here? What does it mean? Whatever the answers, CC in this story seems to bear little resemblance to the CC that all the science-talk, politics-talk,economics-talk or media-talk is about. What it seems to me is going on includes:

1. Firstly, CC is an idea, a concept that appeared, quite accidentally from somewhere (nobody is quite sure where) and entered into the project, transformed the way its creators thought about it and eventually transformed its funding base, its public profile and even its material form.

2. In this story CC takes the specific institutional form of CDM – a rigorous regime of rules, practices and resources that were conceived by a global institution and are dispersed among a global network of organisations, and require globally distributed resources to access, address and mobilise them.

3. CC is not just an idea or a system, it also has concrete, material effects. It enables money to flow into a very small out-of-the-way place, both because it has the magical power to mobilise aid and development funds, but also in the form of carbon credits, which once again flow into Temesi from places unknown to local people. It enables buildings to be built and people to be employed. It attracts visitors of all kinds and puts Temesi on the map in ways that it had never been before. When it looks like attracting hordes of Javanese/Muslim scavengers, it also becomes a matter of concern for the local Balinese/Hindu community.

4. And, finally, in this story CC is, from a local point of view, not just the usual alarming prospect of rising temperatures, drought, crop failures, disturbed weather and rising sea-levels, but the bearer of new things, some of them good, some of them potentially not so good.

Seen in these ways, CC starts to look like a fairly strange and mysterious beast, as are many social facts when we look closely at them and which anthropologists have a long tradition of rendering both strange and familiar. But it also looks like a lot of the phenomena we gloss, often too loosely, under the label of 'globalisation' - it comes from goodness knows where and when it arrives it takes on local meanings and uses. One of the central theoretical and methodological challenges to anthropology over the past

couple of decades has been to develop a range of conceptual tools and ethnographically-informed approaches to the conditions of globalisation, and there is now a growing corpus of examples.[10] One of the most creative and distinctively ethnographic and in my opinion, most useful of these, is Anna Tsing's innovative book Friction: an ethnography of global connection (2005). It begins with the sadness and anger of local people in Borneo at the destruction of their rainforest and community. Tsing's dilemma as an ethnographer, 'How does one speak out against injustice and the destruction of life', is resolved by the advice of a local friend who advises her to write critically and to become like 'a hair in the flour' (2005:205-6). She does this by working her way back along the various 'chains of global connection' (2005:x) that converge to bring about this destruction, looking not for their systematic wholeness, but for the 'gaps' (2005:172), (sorry - nothing!) and other points of 'friction' where the wheels of universal progress do not turn smoothly and things unfold according to unlikely and contradictory logics. Although our story here is substantively rather different, I find her approach 'good to think with' about it, especially about the way in which CC works. While this is not the place to review Tsing's argument in detail, two of her ideas especially resonate with this story:'allegorical packages' and 'zones of awkward engagement'.

Allegorical packages are 'globally circulating terms, theories, and stories…utopian visions …political models' (2005:215) which can 'travel when they are unmoored from the contexts of culture and politics from which they emerged and (are) re-attached as allegories within the culture and politics of (others)… (2005:234) where they are 'translated to become interventions in new scenes where they gather local meanings … (2005:238). Tsing is talking about stories and ideas that have come to inform the practice of Indonesian environmental activists. But I think this kind of process is a not-always-visible dimension informing many other activities in the processes called globalisation.

In the case of CC, it may be useful to shift images of 'it' from one of monolithic, mono-directional global environmental juggernaut, economic problem and political challenge, to one of a set of 'packages', scientific, political, economic, bureaucratic as well as allegorical. They originated in such places as scientific laboratories and environmental organisations, moved to the UN, Al Gore and the global media, but have now gone out into the world, either sent deliberately, or just escaping, and travel around

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[10] See, for example Gupta and Ferguson (1997).

until they come home to roost in places intended or unintended, where they take on meanings and are put to uses according to local interpretations and needs.

For example, in a famous local-but-global village in Bali, a retired Swiss engineer overhears a visitor talking Swiss-accented German in a café and takes him to a smelly rubbish dump in an obscure village, where some other travelling packages about waste and recycling had already come home to roost – then the idea of CC, and the practicalities of CDM ricochet back and forth between Europe, Jakarta, Geneva and Temesi until they eventually transform the whole project. Now others - local schoolchildren, Government officials, Jakarta environmentalists, foreign anthropologists, all come to Temesi, make their own interpretations of it and take them away to tell other people in other places. The project has itself become a travelling allegorical package that I and no doubt others launch on further travels around the world.

The other concept I find apposite here is that of 'zones of awkward engagement' that refer to the social and political places where strange bedfellows meet: unlikely partners with seemingly incompatible agendas who find themselves in relationships of collaboration, because 'they find divergent means and meanings in the cause'. 'This is collaboration with a difference: collaboration with friction at its heart', 'bring[ing] misunderstandings into the core of the alliance' (2005:245-7). Such partners get together and despite the fact that they may not even be aware of their lack of fit, they work together and something comes out of it anyway: often 'not consensus making, but rather an opening for productive confusion …' [which is in turn] sometimes the most creative and successful form of collaborative production … (2005: 247). This, she suggests is the kind of process which lies behind the making of much real change in the world.

These seem to me very insightful observations (albeit not entirely without precedent in anthropology) and they provide useful tools for making sense of things that defy the making of more common sense. In the case of our story here, if we return to the map of parties and processes above, it begins to look like a tangled web of traveling allegorical packages and zones of awkward engagement. The first point to note about this map is that it spans across several concentric spatial zones, as 'global' processes are well known to do. But in this case the 'centre', where they all converge is not a centre of metropolitan power, but an out-of-the-way village. The dramatis personae of the story are located at various points across the range of spatial zones. The

key ideas driving the project, as well as the funding and technical knowledge enabling it, all originate in places far from Temesi where they have their own everyday business to go about. But circumstances have uprooted them and made them available in other places according to the whims of tourism, information technology and the aid industry. They have come home to roost in Temesi, not by design, but because aspects of them seemed to suit the perceived needs of the project at the time. 'Balinese culture', tourism, 'rubbish', clean streets, recycling, composting, climate change – they are all packages of knowledge and meaning that have come from afar, intersected with and been adapted to local meanings and uses, and in the process become the agents of economic, social and environmental change.[11]

The relationships between the cast of characters involved in the series of collaborations over the years may likewise be seen as nodes in a web of 'awkward engagements'. Bina Wisata, the Ubud community council, and Yayasan Wisnu all had their own agendas and priorities as well as a common interest in a cleaner Ubud, but in the end the confusion was not productive or creative enough – their 'engagement' was just too 'awkward'. Likewise with the subsequent collaborations between the series of local NGOs, Rotary, various international donors and the district government and of course the community of Temesi. But eventually, since the present project began, the creativity and productiveness of their confusion has been sufficient to at least counter-balance the obvious tensions and conflicts of interest and priority between them. Perhaps the less these are spelt out here the better, because ironically, while the local community is broadly supportive of the project, their engagement is perhaps most awkward of all in that among all the parties to the project, they are probably least aware of the larger picture and the most sceptical of its yet-to-be-fully-realised benefits to their community.

There may be little benefit in further labouring these applications of Tsing's ideas to this case, but my point is that her (anti-)model of global process helps me, and hopefully you, to see local/global processes of development and change, specifically 'climate change' in terms that undermine any assumptions of monolithic, mono-directional, mono-causal process. CC may then, I suggest, be usefully approached in the same way that we

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[11] Should we be tempted to assume that 'rubbish', 'cleanliness' and 'recycling' are unproblematic universals, we need only refer to Drakner (2005) or Korom (1998) for a reminder of how culturally specific they are.

are learning to approach processes of globalisation generally.More specifically, Tsing's model of globalisation reveals the complexities and contradictions of CC in ways that may help us make sense of some its less obvious or predictable effects.

An anthropology of climate change

Given the rather perplexing and to date not very fruitful engagement of the world's social, cultural and political systems with the overwhelming scientific consensus about climate change, it seems that what we are dealing with may indeed be usefully seen as 'zones of awkward engagement', 'gaps' between knowledge and action, 'frictions' between wheels not quite engaging with each other and not especially amenable to analyses based on implicit positivist, rational-choice models.It seems also that this may really be how CC works globally – not unfolding with a systematic global logic, but in a confusion of meanings, interests and agendas. Rather than becoming frustrated with the endless scientific debate about the reality and extent of CC, the empty rhetoric and prevarications of politicians and the perverse distortions and manipulations of the carbon markets, it may be more useful and ultimately more productive, academically as well as practically, to simply enter into whatever 'zones of engagement' however 'awkwardly' they may present themselves, and to trust that the confusion will eventually be productive.

An anthropology of climate change, especially in the south where many of the real consequences seem likely to come home to roost, [does not need to add to the fairly monolithic scientific, political and economic conversations, but to bring the conversation back to where CC is actually worked out in practice, in the 'zones of awkward engagement' of everyday life. These will not tell us all there is to know about CC, but they may not be a bad place to start, especially for anthropologists.

So what…?

Some of you, having read this far, may be wondering 'so what?' – a nice story, some clever theory-talk, but if climate change is real and we want to do something about it, we need to get past nice stories and clever theory. For a start I would reiterate that I do not think it is productive for anthropologists to enter into the debates about the reality or the extent of CC. If however we relocate 'CC' into the larger historical context of economic, environmental and social change of which globalisation is but the

latest phase, then CC also may be seen as but the latest and maybe the biggest/scariest side-effect of this history. Hans Baer (2008) is not wrong in locating the source of CC in the capitalist/industrial/military complex and his call for fundamental change of this system is also justified. Likewise Thomas Reuter (in this issue) presents a cultural counterpart of Baer's argument - for a psychological/moral critique of the same system. I can find no fault in either of their diagnoses, nor in their prescriptions, but neither am I convinced that we can rely on their recommendations becoming policy in the foreseeable future, as the Copenhagen experience should remind us. This is not reason to abandon such global-level approaches but it is reason to be working simultaneously from the grass-roots level upward. However, as soon as we shift our focus to this level however (as the story above shows), the complexities, ironies and contradictions become visible and before we know it, the global juggernaut of CC blurs into a mass of local effects, interpretations and political/economic interests.

However one thing the story above shows us is that CC is not always what we think it is. I would like to suggest further that it may not even be necessary for us to believe literally in CC at all, to do something useful about it. Human societies have always tended to conceptualise threats, dangers and evil in terms of metaphors: Black Death, Grim Reaper, Infidel Hordes, Yellow Peril, etc. The growing awareness of environmental risks of the past half-century have likewise been understood in terms of a series of dominant images – from Rachel Carson's chilling image of a 'Silent Spring' (1965), the 'oil crashes' of the 1970s, 'ozone holes' of the 1980s, 'peak oil' and 'global warming' of the 1990s. While these have referred directly to specific material problems, environmentalists have long recognised that all environmental problems are interlinked and these images have also functioned in wider public imaginations as metaphors for environmental destruction and crisis more generally. I would suggest that 'climate change' is (whatever else it may also be) another such image – referring to a particular set of meteorological conditions, but also functioning as an unprecedentedly powerful metaphor for human ecological irresponsibility and its environmental consequences generally. At the level of culture, or public knowledge, the 'point' about CC is not its status as scientific truth, but its function as a compelling metaphor for the global consequences of environmental mismanagement.

Anna Tsing's notion of 'allegorical packages' helps me can help us to understand how this global metaphor works in practice – travelling and eventually arriving at local places in locally

specific forms. When these packages of knowledge (already laden with complex and ironic histories) meet the specificities of local cultural, political, economic and social interests, structures and processes, the sometimes surprising results are less surprising when I think of them as 'awkward engagements'.

So, while it remains the business of scientists to explore the reality and extent of CC, and of engineers, economists and politicians to search for solutions, the business of anthropologists is somewhat different. On the one hand it is to show how these things work out on the ground, in real local contexts, but it is also to relocate them into larger historical and cultural frames of reference. At both levels it is also to reveal the complex interplays of technological, ecological and political-economic processes as well as cultural understandings and motivations that constitute 'climate change'. This may not put us in the forefront of designing 'solutions' but it may help us to avoid deluding ourselves about what is really going on.

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