Navigating Cultural Complexity

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The world today is more complex than ever. Processes of economic globalisation, technological change and environmental crisis have made the world we live in an exceptionally precarious place. In this world, problems are proliferating at various scales, and the solutions for many of these problems seem increasingly beyond our reach. What role can the humanities and social sciences play in such a world? In this essay I will argue that the key contribution of the humanities and social sciences today is to demonstrate that contemporary problems resist simplistic solutions. Instead, in order to address our current problems, we need to take seriously social complexity, including cultural complexity. To navigate complexity, our research needs to be actively and critically engaged with those problems by providing contextual knowledge and understanding about them. The present essay extends upon the earlier essay 'Engaged Research' in our last *Annual Review* (2014), and is a contribution to our broader discussion in the Institute for Culture and Society of the strengths and challenges of engaged research.

In contemporary society, analytical knowledge is central in the decision-making processes of government and industry. This kind of knowledge has played an especially important role in the process of modernisation. The development of modernity was, for example, highly dependent on the evolution of scientific knowledge as one expression of analytical knowledge. It has had far-reaching impact on the technical processes, economic systems, and organisational structures that make modern societies work. Science and modernity have become inseparable, and modern scientific values, such as those of disinterested inquiry and objective truth, have gradually become pervasive drivers of the quest for understanding and problem-solving in modern society.

While in traditional societies scientific values and methods did not have more than an emergent impact or resonance, in modernity there is a strong belief in the answers that science is able to provide and the sense of certainty it is assumed to afford. For example, science has been fundamental to what we generally recognise as 'progress', especially technological progress. It is the discoveries made by scientists that have produced all the modern inventions which the world has come to take for granted, whether it is the steam engine, the airplane or the mobile phone. In short, science has become pervasive to the generation of wealth and material wellbeing in today's world.

The impact of science is also pervasive in the way societies are governed. For example, modernity has nurtured an enormous belief in *planning* as a way of governing society, based on the predictabilities generated by analytical including scientific knowledge. The practice of planning streamlines the complex process of managing society through goal-setting and deciding in advance what should be done, how, when and by whom. Planning is the application of bureaucratic rationality as a way of getting control and power over the future, and it is predicated on the assumption that the future is knowable, and therefore controllable. This knowledge of the future is generally provided by science. That is, the principles of bureaucratic rationality are matched by the assumptions of scientific rationality; in this way, modern society and modern science can be said to have co-evolved.[1]

However, the success of science has also made the world a vastly more complicated place. Since the Industrial Revolution began in England more than two centuries ago, the discoveries which have been generated by scientific progress have made the world more 'developed' in terms of industrialisation of production, transport systems, communication structures, and so on, but they also have produced wide-ranging social effects, which are often unintended and unanticipated, and which create new problems that require the search for new solutions. For example, the introduction of the motor car, or even the motorbike, in cities such as Hanoi and Beijing, was certainly a form of progress in that it made travel so much faster and more convenient, but it has also resulted in very congested cities and heightened air pollution. In other words, the modernisation of societies has typically been driven by the adoption of new technologies which were invented by science, but the consequences were not singularly good. Instead, the impacts are complex and contradictory, having multiple economic, political cultural and ecological effects.

We can see this being the case very strongly in the process of intensifying globalisation that has transformed the world in the past few decades. Progress in science and technology has underpinned the process of contemporary globalisation, which would not have been possible without the invention of instantaneous communication systems such as the Internet. But as we all know, globalisation has also unsettled people's livelihoods in many different parts of the world and unleashed massive economic and cultural change at local, national and global levels. In this process of change many older ways of life have come under threat, replaced by newer lifestyles based on mass production and consumption, the global circulation of goods and images (via media), intensifying urbanisation, and so on. In all these developments, science and technology are not just benign sources of improvement for society. Instead, by constantly creating new knowledge, they can also cause fresh uncertainty and instability, generating new problems not foreseen by science itself.

We now live in a world where science and technology are indispensable, but also where we are faced with hugely complex challenges, whose scale is unprecedented and which science and technology provide no adequate means of resolving. Climate change is perhaps the most important example of an intractable problem, for which there are no national boundaries. It is interesting that, in the case of climate change, the main role of scientists has not been that of providing solutions, but of conveying the message to the world that global warming is real and that something needs to be done about it. The high-profile reports of the United Nations' Intergovernmental Panel on Climate Change, to which thousands of scientists from all over the world contribute, have

1 Nowotny, H, Scott, P & Gibbons, M 2001, *Rethinking science: knowledge and the public in an age of uncertainty*, Polity, Oxford.

raised the sense of urgency to the problem of global warming. But scientists are almost powerless when it comes to finding ways of solving the problem of climate change. The development of more and better science and more advanced technologies does not seem to be the answer; indeed, the very problem of climate change has in large part been a product of the modern industrial modes of production and consumption, which have been fostered by science and technology, first in the Global North, but increasingly also in the Global South. Yet it is very difficult to imagine that humanity will turn back the clock on modernity: in the Global North most people will refuse to give up their comfortable modern lifestyles, while in the South most people aspire to those same modern comforts, and understandably so. The problem of climate change, therefore, is far more than just a technical problem (the need to reduce carbon emissions), but consists of a complex amalgam of political, economic and cultural problems.

While science used to be seen as the source of certainty, predictability and control over nature and society, this modernist belief in science can no longer be uncritically upheld today, shaken as it is by the escalating complexity of the world's problems for which scientific solutions are not available, as the example of climate change shows. Instead, what has emerged in the past few decades is a fundamental increase in uncertainty, both in science and in society. It is clear that scientific knowledge cannot help us in controlling the future, because the future is inherently uncertain. Planning stills exists as a governmental practice to manage society, but the bureaucratic tools of planning are increasingly ineffective, as they are incapable of capturing unexpected contingencies and the unpredictable volatility of ever–changing contexts and influences. In general, there is a growing sense of uncertainty about where human society is heading, for what kind of future we should prepare ourselves, and how.

All this has important implications for the production of knowledge today. There is now a much greater recognition of the limits of the predictive power of scientific knowledge, and this is reflected in the popularity of chaos theory since the late twentieth century, or more generally, of 'complexity theory'. Complexity theory consists of a range of theories which stress non-linearity, unpredictability and self–organisation in the way systems work. It describes the world as intrinsically complex, to the extent that it consists of always–changing, unstable and dynamic systems, where there is no consistent relationship between different elements, and where the whole has emergent properties, which make it always more than the sum of the parts. Interactions between parts may produce unpredictable effects which, however small, may lead to massive changes in the future. There is no simple and linear relationship between causes and effects; instead, as a complex system the world works in a non-linear fashion, with countless multiple agents acting in parallel and impacting on one another in random and indirect ways.[2]

Complexity theory presents a fundamentally anti-positivist philosophy of knowledge, and it has become an increasingly influential way of looking at the world. The 'butterfly effect' describes the idea that the flap of the wings of a butterfly in Brazil may (much later) set off a tornado in Texas. The popular phrase 'living at the edge of chaos' refers to the way in which systems always operate at the precarious border between order and chaos. These are ideas derived from complexity theory, which resonate strongly in the social experience of complexity and uncertainty today. The question now is: How can we respond effectively to this condition of complexity and uncertainty? What kind of knowledge would be best suited to tackle the complex problems and challenges we are faced with?

It is here where I think the humanities and social sciences, and in particular engaged research, can, and should, play an important role. The humanities and social sciences have generally lived in the shadow of the natural sciences, and tend to be neglected in national science and research policies. Governments today still tend to look to the STEM disciplines (Science, Technology, Engineering and Mathematics) as the source of useful, rationalist knowledge, often narrowly focused on the goals of economic growth and technological innovation. Science is still expected to provide a better understanding and more precise predictions of the challenges societies face and to come up with the solutions, but these solutions are often imagined in limited, technocratic ways. This is despite the fact that the challenges faced are generally very complex and multidimensional, strongly embedded within social structures and cultural parameters.

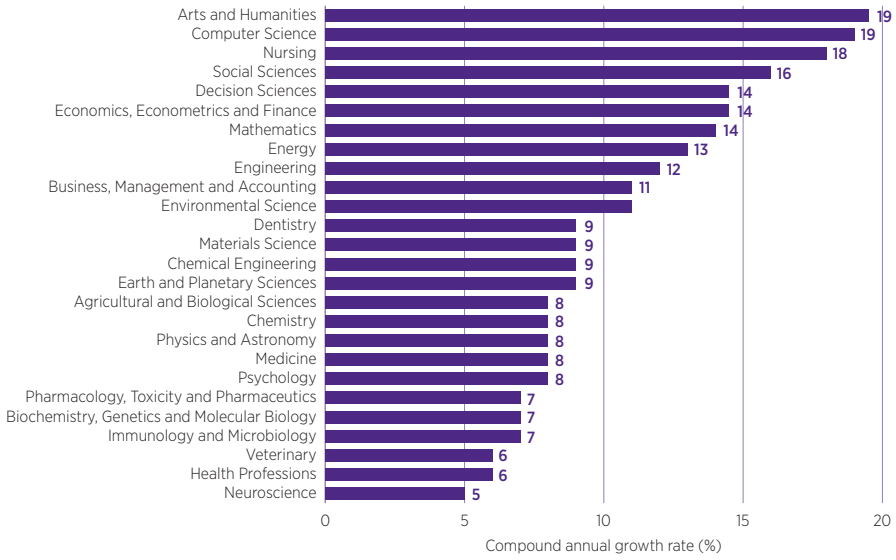
To give an example, Vietnam has a strategy for science and technology development that prioritises the following research themes: information and communication technologies, manufacturing, materials, automation and electronic–mechanical technologies, and environmental technologies. This is a highly restricted list of themes, which are undeniably important for the Vietnamese economy, but they are focused exclusively on technical and engineering solutions. However, in a summary of the long–term challenges facing the countries of Asia, a broader range of concerns for Vietnam has been identified: these include harnessing a demographic dividend, managing mobility and urbanisation, infrastructure, environmental degradation, reducing dependence on technology transfer from developed countries, sustainable and inclusive growth, human capital, and managing energy needs.[3] This list of challenges encompasses a wide–ranging assemblage of issues with distinct economic, political and cultural dimensions, which can only be satisfactorily confronted with knowledge and understanding from the humanities and social sciences. However, in Vietnam as elsewhere in Asia, there is still insufficient recognition for the contribution of the Humanities and Social Sciences, although this may be slowly changing.

A recent UNESCO report confirms this by tracking trends in research productivity by discipline area in Asia, using Scopus publication data. Over the fifteen year period of 1997 to 2012 Engineering has been the most important discipline focus in the region,

2 See Waldrop, M 1992, *Complexity: the emerging science at the edge of order and chaos,* Simon & Schuster, New York; Stengers, I 1997, *Power and invention: situating science,* University of Minnesota Press, Minneapolis; Urry, J 2003 *Global complexity,* Sage Publications, London.

3 Ang, I Tambiah, Y & Mar, P 2015 *Smart engagement with Asia: leveraging language, research and culture*, Australian Council of Learned Academies, Melbourne, acola.org.au

Figure 1.
Growth rate of publications by discipline area in Asian countries, 1997–2012.



Source: UNESCO Institute for Statistics 2014. Derived from Scopus DataLink
http://dx.doi.org/10.15220/2014/ed/sd/2/f33

accounting for 17 per cent of all publications, followed by medicine (11 per cent), physics and astronomy (10 per cent) and materials sciences (9 per cent). The social sciences accounted for only 4 per cent, while only a miniscule 0.2 per cent of the region's publication output was in the arts and humanities.[4] Of course, such statistics need to be considered with caution. The Scopus database, like all databases, can never be a comprehensive compilation of all publications. In particular, it is highly likely that it will not be inclusive of local journals published in languages other than English. I assume that this will especially affect the humanities disciplines, which tend to be published in local languages. Nevertheless, the overall trend is obvious: the humanities and social sciences account for only a small minority of scientific publication output across Asia. However, the UNESCO data also provide a longitudinal picture, which shows a more encouraging development: the data indicate that over the same fifteen year period, the arts and humanities have seen the greatest growth rate of 19 per cent. This growth was especially rapid from 2008 onwards, when publications in the arts and humanities grew four-fold. The Social Sciences also grew more strongly than all STEM disciplines except Computer Science, by 16 per cent (see Figure 1).

While this growth is from a low base, it does suggest that as Asian countries are becoming more 'developed', research and scholarship in the humanities, arts and social sciences is growing in importance. This bodes well for our effort to contribute knowledge that can address the complex challenges of our time in a more holistic way: not just in terms of science and technology, but also in terms of society and culture. However, the question needs to be asked: what kind of humanities and social science research do we need to foster? How can our research best respond to the condition of complexity and uncertainty, as discussed above?

The humanities and social sciences have often been dismissed as producing only value-laden, contextual and therefore unreliable knowledge, lacking objectivity and universal applicability. Of course the humanities and social sciences comprise a very diverse, sometimes conflicting range of theories, methods and approaches. Some disciplines in the social sciences, such as economics, political science and some versions of sociology have, more-than-others, embraced methodologies which stress value-neutral objectivity, modelled after the example of the physical sciences and using overwhelmingly quantitative analytical techniques to establish their epistemic authority. Not surprisingly, governments tend to prefer quantitative knowledge — understood as factual evidence — when they do deploy social science knowledge for policy and planning purposes. However, although statistical and other objectivist knowledge does have its uses (I have used some myself when referring to the Scopus publication data earlier), they tend to create an exaggerated illusion of certainty and absolute truth, which flies in the face of the condition of uncertainty and complexity I have referred to earlier.

Indeed, it can be argued that in the current time of mounting global uncertainty and complexity, attention to context and values is precisely what we need in our knowledge production practices. As the distinguished social theorist Immanuel Wallerstein points out: 'We live with the knowledge that uncertainty, at least long-term uncertainty, seems to be the only intractable reality'.[5] But if this is so, then we need to break down the illusion of certainty and the quest for absolute truth, and accept the fact that our knowledge production practices can never wipe out this overall uncertainty. In our exceedingly complex and inherently uncertain world, it is not helpful to define the role of knowledge as the creation of 'controllable islands in the sea of uncertainty',[6] as was the case when positivist conceptions of science ruled.

Instead, we should have more modest aims: all we can do as humanities and

4 UNESCO Institute for Statistics, 2014 *Higher education in Asia: expanding out, expanding up — the rise of graduate education and university research*, UNESCO, Montreal.

5 Wallerstein, E 2003, *The uncertainties of knowledge*, Temple University Press, Philadelphia, p. 56.

6 Nowotny, H, Scott, P & Gibbons, M 2001, *Rethinking science: knowledge and the public in an age of uncertainty*, Polity Press, Cambridge, p. 35.

social science researchers is to expand our contextual understandings of the world, which will always be partial and incomplete. At the same time, however, such contextual understandings can play a powerful role in assisting us in making more informed choices in response to the concrete problems in front of us. Making choices involves taking responsibility, and this inevitably involves values. In Wallerstein's words: 'If reality is uncertain, there is no way to avoid choices. If we cannot avoid choices, there is no way to prevent the value commitments, preferences, and presuppositions of the analyst from entering the process of analysis.'[7] In short, in foregrounding the importance of values and context in knowledge production, I am arguing here for research in the humanities and social sciences that seeks to contribute to people's efforts to navigate the morass of complexity we find ourselves in, in ways that are sensitive to the ways in which complex global challenges are experienced, made sense of, and responded to on the ground. Such experiences and responses are always context–specific and informed by particular values.

This philosophy of research starts with the recognition that all knowledge has profound consequences for how we live in relation to others and to nature. As researchers we will therefore have to be actively and reflexively aware of the consequences of our knowledge production practices. This awareness informs what we can call the spirit of 'engaged research'. I should stress that engaged research is more an *orientation* towards knowledge than a fixed set of prescriptions. It is an orientation based on the recognition that we need to work together to help formulate the informed social choices we need to make in navigating the massive complexities of the twenty–first century, without recourse to the stance of scientific certainty.

So what are the requirements of engaged research in the face of the global challenges we face? First of all, it is important in engaged research that we *frame* our global challenges firmly as social (including cultural) challenges, not just as technical or physical challenges. This is not as easy as it sounds, given the current dominance of techno–scientific ways of thinking, which have provided a particular lens through which to understand problems. But as the example of climate change shows, and more broadly the challenge of global environmental change, human social and cultural practices are profoundly implicated in the deterioration of natural environments. Both the causes and consequences of our environmental problems have a fundamental human dimension and are fundamentally social in nature. They involve the ways in which our societies are organised and their economic imperatives, they impact on people's lifestyles and aspirations and the ways in which they pursue their dreams. Formulating responses to these problems therefore requires taking into account the meanings and values people attach to their lives, the ways in which they make their living and the problems they face, as they intersect with the physical and biological factors that impinge on people's living environments. Engaged research, in short, recognises the inextricable interconnectedness of nature and culture, of society, politics and economics.

Secondly, engaged research takes the complexity of global challenges seriously. What this means is that we should avoid reductionist thinking, which may lead to the misguided evocation of simplistic solutions to complex problems. Jake Chapman makes a distinction between two types of problems: 'difficulties' and 'messes'.[8] Difficulties are bounded problems about which there is broad agreement about the nature of the problem and some accepted understanding of its possible solution. For example, when a car breaks down, the problem can be easily solved by finding the faulty part and replacing it. 'Messy' problems, on the other hand, are unbounded problems in terms of the time and resources they could absorb, the scope of inquiry needed to understand them, and the number and range of people who may need to get involved. Messy problems are inherently complex because there are many valid perspectives on the issue or the situation, many different interpretations of the available information, and many divergent interests associated with attempts to solve the problem. Often, the boundaries of the problem cannot be clearly circumscribed, because it is entangled with a host of other issues. Climate change is perhaps one of the most dramatic examples of such a complex, messy problem.[9] No single discipline or scientific field is able to fully understand, let alone address complex challenges such as this; therefore engaged research will need to be interdisciplinary, even transdisciplinary, ideally involving researchers with various and complementary perspectives and expertise.

A third important requirement for engaged research is that it recognises both global processes and local particularities. This is a crucial point. We need to look at issues and problems from the perspective of multiple scales. To understand the complexity of what is going on in a particular locale it is not enough to conduct a purely local ethnography, nor is it sufficient to focus only on the broad global dimension. Although climate change is a global problem, the way it manifests itself around the world can be very different. Therefore, the way adequate adaptations to it are to be found is context–dependent, and they are subject to local conditions and to the resources and capacities people on the ground possess to rise to the challenge of imagining, organising and implementing responses that are suitable to the situation they find themselves in.

At the same time, local particularities are always complexly intertwined with global processes; they should therefore not be considered in isolation. In this regard, an important point needs to be made about the role of the nation–state. Too often, research tends to be conducted within a frame of methodological nationalism, in which the nation–state is assumed to be the natural space within which local issues and specificities are contained.[10] However, in today's globalised world social and cultural processes not only take place both above

7 Wallerstein, *The uncertainties of knowledge*, p. 56.

8 Chapman, J 2004, *System failure: why governments must learn to think differently*, 2nd edn, Demos, London.

9 Giddens, A 2009, *The politics of climate change*, Polity Press, Cambridge.

10 Wimmer, A & Glick–Schiller N, 2002 'Methodological nationalism and beyond: nation–state building, migration and the social sciences', *Global Networks*, vol. 2, no. 4, pp. 301–334.

and below the level of the nation–state; they are also intimately interconnected across boundaries. Therefore, our research should go beyond the container theory of the nation–state, in which what is happening *in* Vietnam, for example, is assumed also to be *of* Vietnam.

Of course, the global challenges I have referred to here, such as climate change, make it amply clear that the national frame is an insufficient platform for understanding and action. In practical terms, we can overcome methodological nationalism by engaging in collaborative international research, where both local and global issues can be jointly examined in comparative perspective. A focus on cities is also beneficial because the interconnectedness of local and global processes is particularly tangible in cities.

Finally, a few words need to be said about how we should conceive of 'solutions' in engaged research. Engaged research aims to contribute to making informed choices on how to act in a complex and uncertain world, but it is obvious that there cannot be any definitive, one–size–fits–all solutions: complex problems can only be addressed partially in context–dependent and culturally responsive ways. Moreover, efforts to solve one problem may have unforeseen or unintended consequences and create new problems down the track, in turn needing concerted efforts to resolve them, and so on. This means that we need to adopt a more process–oriented approach to 'problem–solving', which is not based on pre–determined linear goals and formulas but on long–term engagement with evolving realities and an ongoing effort to generate contextual knowledge that can help us plot a course through the complex challenges we face. In this regard, engaged research is fundamentally future–oriented, even as it recognises the constitutive importance of the past. Precisely because the future is uncertain and fundamentally unpredictable, it is our responsibility to contribute what we can by proposing constructive paths towards it and practicable ways of navigating the complexities along the way.[11]

Image taken by ICS Researcher Denis Byrne in Zhuxiuyuan, China.

This village in Zhuxiuyuan district has been surrounded by urban development spreading outward from Zhongshan. While most of the village houses shown here incorporate 'traditional' tiled gabled roofs, their reinforced concrete two-storey structures and their exterior windows reflect the aspirational modernity of the families of overseas migrants who built them in the first half of the 20th century.

11 Ang, I 2011, 'Navigating complexity: from cultural critique to cultural intelligence', *Continnum: Journal of Media and Cultural Studies*, vol. 25, no. 6, pp. 779–794.

Professor Ien Ang photographing the changing streetscape of Sydney's Chinatown, as part of the ARC Linkage project, 'Sydney's Chinatown in the Asian Century'.