

Earlier Draft of “Cool heads for a hot world- social sciences under a changing sky”, published in the May 2012 issue of *Global Environmental Change*. To read the published article click [here](#)

Cool Heads for a Hot World – The need for Social Sciences under Changing Skies

Three decades of debates related to the urgency of climate-change and lack of action during the same time period have led to a growing recognition of the need for social-scientific analyses to inform public opinion, motivate decisions, and strengthen climate adaptive and mitigative capacities (IPCC 2009; Stern 2006, WDR 2010). Those studying climate and its impacts and decision makers expected to respond to climate impacts have both come to accept that the ensemble of problems associated with a changing climate cannot be understood, analyzed, or addressed without the vital contributions of the social sciences. Indeed, despite limited funding (NRC 2009), social scientists have made major contributions to thinking about climate change over the past several years. This contribution has spanned from integrated assessments of drivers and risk, to theorizing about vulnerability, adaptation, and mitigation, to inquiring into the extent to which climate change and responses are likely to be equitable, just, or ethically acceptable. Economics has been the most prominent contributor in this regard, perhaps because its modeling modes of inquiry and statistical analysis of global datasets resonate more easily with the modeling and statistical approaches used by physical climate scientists. Many other social sciences have also contributed and helped reframe how to think about and analyze climate change. The growing number of peer-reviewed articles, journals and scholarly networks, and policy reports dedicated to the human dimensions of climate change attest to the rapid growth and increasing robustness of the field.

ICARUS (Initiative for Climate Adaptation Research and Understanding through the Social Sciences), is an international association founded in 2008 to bring together researchers and practitioners to address the growing need for social-scientific contributions to address climate change problems. In the face of the gathering force of climate change, the myth of Icarus is a cautionary tale, a reminder of how the hubris of human faith in technology can lead to disastrous outcomes (Russell 1924). Yet, it is also a tale of the human inventiveness and drive in the face of challenge.¹

ICARUS is organized around three main and intertwining areas: a) theorizing adaptation, vulnerability, adaptive capacity and resilience; b) understanding the causal structures of vulnerability, forms and causes of adaptation, and the empirical referents of both adaptation and vulnerability at different temporal, spatial, and institutional scales; and c) informing adaptation policy (Agrawal 2008, Lemos et al.

¹ Icarus, having been given wings by his father, the great inventor Daedalus, despite warnings, flew too close to the sun, melted his wax wings, and fell. But, why indeed did Icarus fall? Was it just that his wax wings melted—the technical answer? Perhaps he was greedy, desiring to go as high as possible—kind of a psychological answer. Alternatively, we could fault Icarus for not listening to his father—a kind of moral answer. Or we could blame his father who had too much naïve trust in his young son—a human foibles answer. Russell (1924) felt Icarus died due to the hubris of a belief that scientific inventions would be used wisely. He feared that technology would be likely to be used in the service of greed—to line the pockets of the rich—Russell’s is a socio-political answer. Perhaps, however, Icarus fell because he and his father took terrible risks since they were desperate to escape from the prison of King Minos—a political-economic explanation. The Icarus story is like many other tragedies, produced by a mix of desperation (imprisonment) and hope (symbolized by the sun) complicated by inadequate access to resources (he certainly wouldn’t have used wax if he had something better in the prison). Maybe, with advance planning, Daedalus could have invented the parachute, providing Icarus a soft landing – a well-adapted ending. ICARUS takes this myth of Icarus as a cautionary tale that might guide society to land standing.

2008, Orlove 2005, Ribot 1995). Under each of these broad registers, ICARUS has organized a range of activities that include annual conferences, small seminars that we call “writeshops,” and on-going dialogues that aim to provide social scientists with the intellectual and material support to advance climate change science and practice.² In this context, participants in ICARUS have explored the underpinnings of each of these themes along with cross-cutting issues such as the nature and role of spatial, temporal and of governance scales, institutional determinants of adaptation and adaptive capacity in different vulnerable sectors, methods to understand and analyze adaptation and vulnerability, and the role of equity, gender and politics in adaptation. Studies sponsored by ICARUS are especially attentive to scale and equity issues because, despite the global character of climate change, its consequences are produced, experienced and responded to at the local level and disproportionately by those with the least capacity to adjust to them (Agrawal 2008, Roberts and Parks 2007, Blaikie et al 1994).

First, in theorizing Adaptation, Adaptive Capacity, and Resilience, scholars involved with ICARUS seek to understand the theoretical underpinnings of adaptation practice and the interactions between adaptation and other processes (such as conservation, development, and planning) that shape outcomes in different contexts. This includes developing and testing theories that guide inquiry into perceptions of climate change, its social and political-economic causes, the social underpinnings of its modeling and scientific analysis, its physical manifestations, the conditions that translate change into benefits and crisis, and the actions and conditions that enable productive response and enhanced security. It also includes investigations into the roles of institutions, social actors, and processes across scales that influence adaptation action in different contexts. To achieve these goals, we need to build databases, design robust quantitative and qualitative analytical approaches, and compare across the rich library of case studies available in the literature focusing on local adaptation (meta-analysis) so as to build theoretical generalizations that are useful across geographies, cultures, and political systems and also relevant to more specific studies interested in individual contexts. We need also make better use of the broad arsenal of social theory and methodological approaches. Indeed, adequately addressing the complexities of adaptation associated with differences in scales, regions, and sectors requires different kinds of knowledge from and across the social science disciplines, recourse to different analytical frameworks, and even borrowings from the biological and physical sciences. We recognize the challenges in promoting this exchange. Indeed, in climate change debates and in the social sciences, even the term adaptation remains ambiguous. Despite a long history of adaptation studies in the fields of psychology and anthropology, its earlier uses are at best loosely associated with the collective problems created by climate change. Moreover, the term is rarely used by social scientists to discuss efforts to cope with problems other than climate change. If there are features of climate change that makes it unusually well matched to adaptation, it would be useful to articulate such features explicitly rather than assume them. Precision in language and understanding can translate into more useful and targeted analyses and interventions. Such analytic developments will advance social science theory and also provide better guidance for the decision makers at national, community and organizational levels.

² ICARUS aims to promote social science research on climate change by identifying new frontiers of theory and empirics in a forum where social science researchers can develop ideas from discussion to publication. The founding meeting for ICARUS was organized at the School of Natural Resources and Environment at the University of Michigan. Subsequently, ICARUS has convened conferences: ICARUS I, II, & III at the University of Illinois in 2010, University of Michigan in 2011 and Columbia University in 2012, and additional three-day writeshops (small meetings organized around new areas of scholarship emerging at the ICARUS conferences). These more-intimate eight- to twelve-person writeshops allow researchers to share draft articles and to produce well integrated special issues of journals such as the present issue of *Global Environmental Change*.

Second, to understand the empirics of adaptation we seek to observe and document adaptation action and build critical qualitative and quantitative databases to test and explore theories about vulnerability and adaptation. Such databases include an effort currently being funded by the Bill and Melinda Gates Foundation, and additional studies supported by the Kresge Foundation. Efforts to address climate change and craft strategic initiatives to enhance rural and urban poor's adaptive capacity can profitably examine causes of vulnerability and historical adaptive responses, their institutional context and correlates, and the role of institutions in facilitating adaptation. Such research can also help document the ways effective adaptation is achieved and the conditions and forms of interventions likely to produce maladaptive responses and outcomes. Documenting, understanding, and learning from past strategies, and crafting interventions that strengthen historically proven collective efforts is a critical first step and potentially one of the most effective mechanisms in the multi-stranded effort to reduce the adverse acute and long-term stresses of climate change (Agrawal 2008).

Finally, ICARUS recognizes the need to inform decision-making and policy design. Our efforts form part of a global conversation that includes citizens around the world, activists and social movements, and a variety of institutions and organizations ranging from communities to nations to international organizations. In addition to operating in empirical and theoretical registers, ICARUS also undertakes concrete engagements, seeking to inform adaptation policies, especially in less-developed regions. ICARUS aims at fostering research-based decisions and actions that can positively change the world in which we live. Future efforts to design and implement adaptation policy will benefit from improved understanding of the effects associated with different climate hazards, levels of exposure of social, and ecological systems, and sensitivity of such systems to climate stress, and their capacity to adapt to the most egregious conditions of risk. Because climate response policies are shaped by multi-scale governance arrangements that manifest over different temporal horizons, decisions made at the global level today shape local opportunities and decisions that can have major impact on future generations and the long-term sustainability of social and ecological systems. Indeed, little is known about how adaptation policies should take into account the nested effects, tradeoffs, and potential unintended outcomes of different adaptation options (this special issue).

With growing recognition that climate change is unequivocal, vulnerability widespread, and adaptation inevitable, social scientists must make more comprehensive and engaged contributions, and even take the lead in furthering the analysis of climate-change issues and identifying effective response to climate impacts: at different scales, in different sectors, and for different groups of vulnerable peoples. We need cool heads in a world that is getting hotter. Social scientists must engage with policy interventions, be practically oriented, and help solve the multi-faceted problems that climate change will inevitably make more visible, urgent, and complex. Governance failures have contributed to the urgency with which climate change impacts will be felt; without stronger contributions from social scientists and scholars of governance, the likelihood of solving climate change problems is remote at best, and at worst nonexistent. ICARUS aims to contribute to the analysis and solutions of climate change challenges the three arenas of empirical research, theoretical advancement, and policy engagements. The articles in this special issue illustrate the variety of ways in which these strands combine.

Works Cited

Please refer to the reference list at:

<http://www.sciencedirect.com/science/article/pii/S0959378012000222>