**Online supplemental A. Review of previous literature on integrative approaches**

Here we review specific papers from the literature on integrative approaches involving economics, psychology, and/or anthropology. In each case, we explain how our approach builds on or departs from the previous work.

The emerging field of neuroeconomics is an integrative approach combining psychology, economics, and neuroscience ([Camerer, Loewenstein, & Prelec, 2005](#_ENREF_3); [Gutnik, Hakimzada, Yoskowitz, & Patel, 2006](#_ENREF_8); [Sanfey, Loewenstein, McClure, & Cohen, 2006](#_ENREF_13)). While this is an exciting approach for understanding the basic components of human decision making, neuroscience is not yet differentially useful for predicting real-world behavior; fMRI data is notoriously noisy, and has yet to reliably outperform standard self-report measures for predicting decisions ([Glimcher, Camerer, Fehr, & Poldrack, 2009](#_ENREF_6)). Therefore, this approach is currently better suited to basic science rather than policy making and practical problem solving.

Camerer ([1999](#_ENREF_2)) and Rabin ([1998](#_ENREF_12)) extol the virtues of combining psychology and economics. For example, they contend that the economic models of expected utility, discounted utility, and own-payoff maximization are not descriptively accurate and should be replaced with prospect theory, hyperbolic discounting, and social utility. While they make excellent points, this approach is limited in practical settings without anthropology. For example, while they consider exponential versus hyperbolic discounting, this approach is blind to non-monotonic time preferences such as cyclical time, sacred time, or routine cultural scripts. Furthermore, although the combination of psychology and economics offers global guides to modeling and predicting behavior, it ignores the idiosyncrasies of a particular situation and population. Of course, their approach is more parsimonious than ours, requiring only two disciplines, rather than three. We argue, however, that the addition of anthropology is worth the extra effort, and indeed is indispensable, because it aids in the planning and interpretation of the other approaches.

Lynch and Zauberman ([2006](#_ENREF_11)) offer a guide to intertemporal choice and public policy based on marketing, psychology, and behavioral economics. They point out that many problems in consumer choice arise from the discounting of costs and benefits at different rates. For example, many consumers discount time at a higher rate than money ([Soman, 1998](#_ENREF_14)). In this case, a rebate become *more* attractive as it is delayed: people are actually more likely to purchase a discounted product if the rebate can only be submitted in the future (rather than if it can be submitted immediately), because the future effort is discounted more steeply than the future savings ([Soman, 1998](#_ENREF_14)). When people think about submitting a rebate today, they think they are too busy, but when they think about submitting a rebate in the future, they think they will have more time, and it will not be such as hassle.

Lutzenhiser ([1992](#_ENREF_10)) presents a compelling case for the usefulness of cultural models for describing, explaining, and predicting energy consumption. We largely agree with his perspective and points, in particular his assessment of how anthropological and cultural analysis can inform other disciplinary approaches (e.g. "field studies of energy-use are required to allow future large scale survey research to ask the right questions, and to allow interpretation of the patterns of technology and consumption identified in that research" pg. 57). However, while this paper demonstrates the strengths of the cultural approach, it focuses mainly on the weaknesses of engineering, economic, and psychological approaches. As such, it does not offer a complete guide or overview of how to implement an integrated approach. Also, there is no mention of intertemporal tradeoffs, which we argue are central for environmental and energy policy.

Gross ([1987](#_ENREF_7)) offers an overview and critique of the rational actor model, and proposes that the usefulness of the model will vary according to "the extent to which such behavior is normatively prescribed, encouraged, or forbidden" in particular situations.” Thus, while this paper informs our approach, it does not itself outline a holistic integrative approach to intertemporal problem solving.

Henrich and colleagues ([2004](#_ENREF_9)) ([see also the review by Chibnik, 2005](#_ENREF_5)) employs a combination of experimental economics, evolutionary psychology, and anthropology to investigate selfishness and cooperation. They conclude that people living in market integrated societies are relatively more willing to be fair to strangers in ultimatum games. Their approach is aimed at understanding human nature, and is not well suited to practical problems and policy making. Furthermore, they do not examine intertemporal choice.

Buckley and Chapman ([1996](#_ENREF_1)) offer an informative history and comparison of anthropology and economics. Their paper is primarily concerned with understanding people, rather than with proposing practical problem solving techniques and policy frameworks. Also, it presents a comparison and contrast of two viewpoints, rather than a truly integrative approach.

As Cassen and Lall ([1996](#_ENREF_4)) point out in their review of the "East Asian Miracle", economic analysis is often meant to provide universal guides to policy (for example, that free trade helps developing economies), but in truth, many (perhaps all) examples of successful economic development have not followed market-friendly policies. For example, the high-performing East Asian economies did not rely on free trade during the period of their rapid growth. Instead, they provided protections to key industries. Smart economic policy requires attention to the particulars of a given region, culture, and historical context; as such, the success story of one country or region cannot be simply copied and applied in another place. The high performing East Asian economies did not for the most part rely on free trade during the period of their rapid economic growth (Cassen & Lall, 1996).

Wood ([2008](#_ENREF_15)) advocates an integrative approach to time in research and public policy, focusing on the integration between social sciences (particularly anthropology) and physical sciences (such as ecology, meteorology, and geology). Each discipline generally operates at a preferred temporal scale (such as minutes, days, years, or centuries), which can lead to confusion in interdisciplinary collaboration: short, medium, and long time scales mean different things to different people. We admire his attempt to incorporate the physical sciences in an interdisciplinary paper, which is beyond the scope of our paper. However, he offers more questions and problems than solutions, with the main advice being to understand the complex and varied viewpoints of different disciplines.

Buckley, P. J., & Chapman, M. (1996). Economics and social anthropology--reconciling differences. *Human Relations, 49*, 1123-1150. doi: 10.1177/001872679604900901

Camerer, C. F. (1999). Behavioral economics: Reunifying psychology and economics. *Proceedings of the National Academy of Sciences, 96*, 10575-10577.

Camerer, C. F., Loewenstein, G., & Prelec, D. (2005). Neuroeconomics: How neuroscience can inform economics. *Journal of Economic Literature, 43*(1), 9-64.

Cassen, R., & Sanjaya, L. (1996). Lessons of east asian development. *Journal of the Japanese and International Economies, 10*, 326-334.

Chibnik, M. (2005). Experimental economics in anthropology: A critical assessment. *American Ethnologist, 32*(2), 198-209.

Glimcher, P. W., Camerer, C. F., Fehr, E., & Poldrack, R. A. (Eds.). (2009). *Neuroeconomics: Decision making and the brain*. London: Academic Press.

Gross, E. (1987). The rationality of symbolic actors. *The British Journal of Sociology, 38*(2), 139-157.

Gutnik, L. A., Hakimzada, A. F., Yoskowitz, N. A., & Patel, V. L. (2006). The role of emotion in decision-making: A cognitive neuroeconomic approach towards understanding sexual risk behavior. *Journal of Biomedical Informatics, 39*(6), 720-736. doi: 10.1016/j.jbi.2006.03.002

Henrich, J., Boyd, R., Bowles, S., Camerer, C. F., Fehr, E., & Gintis, H. (Eds.). (2004). *Foundations of human sociality: Economic experiments and ethnographic evidence from fifteen small-scale societies.* New York: Oxford University Press.

Lutzenhiser, L. (1992). A cultural model of household energy consumption. *Energy, 17*(1), 47-60.

Lynch, J. G., & Zauberman, G. (2006). When do you want it? Time, decisions, and public policy. *Journal of Public Policy & Marketing, 25*(1), 67-78.

Rabin, M. (1998). Psychology and economics. *Journal of Economics Literature*, 11-46.

Sanfey, A. G., Loewenstein, G., McClure, S. M., & Cohen, J. D. (2006). Neuroeconomics: Cross-currents in research on decision-making. *Trends in cognitive sciences, 10*(3), 108-116.

Soman, D. (1998). The illusion of delayed incentives: Evaluating future effort-money transactions. *Journal of Marketing Research, 35*(4), 427-437.

Wood, C. H. (2008). Time, cycles and tempos in social-ecological research and environmental policy. *Time Society, 17*, 261-282. doi: 10.1177/0961463X08093425