Values in Science Workshop Schedule

Institute for Futures Studies May 17-18

Monday, May 17th

11.00 – 11.15	Introduction	- Welcome from Gustaf Arrhenius, Krister Bykvist, Göran Duus-Ötterström (PIs "Climate Ethics and Future Generations") - Technical Instructions
11.15 – 12.15	Katie Steele (ANU)	**Justifying climate targets: a role for reverse-engineering our decision models** A relatively common view amongst those concerned about climate decision making is that climate targets of any stringency – including those referred to in policy discussions, like the "2 degrees warming" target – *cannot* be justified in terms of maximising expected social utility. The idea is that our most fine-grained predictive decision models – the so-called "integrative assessment models" that couple a climate and economic model – simply do not support anything like precise probability and social utility distributions over the relevant outcomes, and worse, the lack of precision matters for discriminating between climate targets (e.g., Frisch 2013). It is then suggested that a climate target may rather be justified in a different way, say, procedurally, as a social agreement (e.g., Pezzey 2018); or by appeal to an alternative *precautionary* decision principle that focuses on the plausible worst-case scenarios (e.g., Frisch 2018). While they have merits, I argue that these proposals fall short with respect to truly *justifying* a climate target. Put differently, they fall short as ways to rationalise the opinions of many that certain climate targets are quite simply preferable to others. I argue that, to this end, we should engage in a reflective equilibrium process: *to some extent* we should reverse engineer our expected social utility models so that they yield conclusions that accord with our more informal reasoning. The revisions I have in mind concern the translation of physical climate possibilities into social wellbeing. I do not attempt to provide the right translation, but rather focus on the reverse engineering process: when does our informal reasoning come apart from our complex decision models, and what sorts of adjustments to either or both can reasonably restore consistency in such cases?
12.15 – 13.15	Lunch	
13.15 – 14.15	Julie Jebeile (Bern) and Joe Roussos (IFFS)	**"Usability" in climate science: moving from natural science to science-for-policy** Historically climate science developed as a natural science, drawing in particular on physics. This has influenced its methods, e.g., of uncertainty management, and how climate scientists and philosophers think about the role of values in climate science. However climate science aims to inform

		policymaking and in this respect it is expected to provide usable knowledge that is reliable, salient and legitimate. Its failure to do so has led to discussions of a "usability gap", and the call for closer cooperation with stakeholders in creating user-tailored climate information. In this talk, we highlight the tension between the aims that climate science has historically set for itself and the expectations that policy users have of it, looking in particular at the case of climate services. We studied the STS literature on science-for-policy, in the "mandated science" and "post-normal science" traditions. We argue that climate science ought to see itself as closer to science-for-policy, and that this reconception leads to a change in how to manage uncertainty and values.
14.15 – 14.30	Break	
14.30 – 15.30	Per Wikman Svahn (KTH)	**Values in worst-case scenarios for decision-making under deep uncertainty** Decision-making under deep uncertainty (DMDU) has recently been developed to handle very uncertain developments, especially for managing climate change risks. In contrast to the standard "predict-then-act" paradigm of decision-making, DMDU-approaches do not rely on predictions and exact probabilities for external developments. However, DMDU-approaches still require some information about the uncertain developments. In particular, "worst-case scenarios" become more critical. In this paper, I examine the role of values in producing information about worst-case scenarios for DMDU-approaches using examples from climate change adaptation and risk management in other areas. I establish the thesis that information used for a particular decision-making context should take the decision context into account, including relevant values at stake. This thesis means that if the decision-making context is very different for a DMDU-approach than a traditional decision-making approach, then the information used for the DMDU-approach should use different values than for the traditional context. Then, I discuss the "inductive risk" of making erroneous assumptions for worst-case scenarios and the implications for DMDU-approaches. Finally, I discuss how these issues are handled in existing approaches and make some preliminary recommendations.
15.30 – 15.45	Break	
15.45 – 16.45	Sabine Undorf (SU)	**How do values in science enter model-based assessments of climate sensitivity uncertainty?** The past decades of philosophical scholarship have established that values, including social ones, do -legitimately- play a role in science. This insight has however not reached the gross of the climate-scientific community; and in turn, some of the complexities and properties of climate science have arguably not been acknowledged enough in the philosophical

		discourse to be able to provide easily and broadly applicable descriptive accounts and normative guidance regarding value-judgements. In this presentation, I will report on the results of an interdisciplinary collaboration that aims to bridge this gap by identifying how value-judgements enter much of the climate-scientific research process. Specifically, I will discuss typical choices faced at each step underlying scientific assessments such as those undertaken by the IPCC, all the way from climate model development to results communication, and illuminate possible values invoked to address these choices. The focus will be on Equilibrium climate sensitivity (ECS), a number that quantifies the magnitude of future climate change and is one of the most sought-after pieces of climate-scientific knowledge, the uncertainty of which has proven to be very persistent over time. I will discuss the findings within the historical evolution of climate models, ECS estimates, and their uncertainty range, and highlight transferable insights for the wider values in climate science debate.

Tuesday, May 18th

13.00 – 14.00	Marina Baldissera Pacchetti (Leeds)	**Trust and values at the science-policy interface: challenges for adaptation to climate change.** I show that using a model of trust can clarify the role of value judgements in the interaction between scientists and policy makers regarding climate science and uncertainty. Theories of trust are a social science tool for analyzing the trust relations between individuals (interpersonal trust) and between organizations (organizational trust). After describing the key differences between the procedural and structural characteristics of science and policy making, I explore some of the main ideas of theories of trust. Different forms of trust (procedural, affinitive, dispositional, rational) describe the trust relationship that can develop between policy makers and scientists. I suggest that these forms of trust help clarify how value judgements enter the decision-making process at the science-policy interface. A breakdown in trust can damage the relationship between scientists and policy makers, and I discuss a breakdown in procedural trust, a form of trust that arises from the trustor's reliance on the rules of knowledge production of the trustee. The trustor is usually an individual, and the trustee can be either an individual or an institution. The breakdown can result from a misalignment of epistemic value judgments in knowledge co-production and from differences in incentive structures for scientists and policy makers. The difference in incentive structure can influence epistemic and ethical value judgements of both scientists and policy makers. Finally, I suggest that deep uncertainty is a special case of breakdown in procedural trust that arises from a misalignment of value judgements about what counts as reliable information.
14.00 – 14.15	Break	

14.15 – 15:15	Karoliina Pulkkinen (KTH)	**Making scientific progress more progressive: why distribution matters for progress** Philosophical accounts of scientific progress disagree on whether truthlikeness, knowledge, problem-solving capacity, or understanding is more central for scientific progress. Despite this disagreement, the accounts of progress share the tendency of analysing it in terms of accumulation. Here, I argue that mere accumulation of goods is not always enough for scientific progress, as there is a subset of projects where scientists have an obligation to provide knowledge that stems from a deeper moral obligation. With the example of scientists' use of simulation models to gain a better understanding of African climate, I demonstrate that a mere accumulation of goods is not enough, but their distribution matters too. For this reason, philosophical accounts of scientific progress should be updated to consider how goods are distributed, not just accumulated.
15.15 – 15:30	Break	
15.30 – 16.30	Henrik Thorén (Lund)	**Uncertainty Domestication in Integrated Assessment Modelling: Values and practices** Integrated assessment models (IAMs) is a model type that is of central importance in contemporary climate science and policy making. These models, developed explicitly with policy-relevance in mind, are used for a number of different tasks such as finding optimal policy-pathways and mitigation goals, ex ante policy assessment, as well as developing and quantifying emissions and policy scenarios. Due to the way IAMs are usually constructed they have been the subject of intense controversy —not least with respect to how various uncertainties and risks are represented and 'managed' within these models. Among the more notable debates we find disputes over intergenerational discounting, how climate damages are modelled, the representations of specific technologies (in particular so-called negative emissions technologies), the treatment of 'imported uncertainties' from climate science (for example with respect to equilibrium climate sensitivity), and the focus in some IAMs on highly aggregated variables and proxies such as global average GDP. In this talk we depart from an examination of two controversies that have been of historical significance in both research and policy —intertemporal discounting and climate damages. However, we examine these as debates about how to appropriately structure or domesticate uncertainties. These conflicts, we show, turn on differences about what are perceived to be appropriate ways of dealing with or managing specific extant (or otherwise problematic) sources of uncertainty—differences that often turn out to be rooted in narrow disciplinary priorities, norms and conventions.

		We then move to discuss the relationship between how uncertainties are domesticated and the import and significance of (non-epistemic) values in IAMs. A common charge against the use of IAMs is precisely that they violate orderly and appropriate division of labour at the science-policy interface and that the way uncertainties are handled makes the models reliant on, and obscures, problematic value assumptions. To conclude the paper we provide some tentative general outlines of how one could think about the domestication and management of uncertainty at the science-policy interface from a normative point.