

Appendix 3. Balancing induction and deduction.

Induction and deduction are mentioned in appendix 2 as steps in the scientific process. They also represent distinct perspectives within the ESS community, and two extremes of a dimension, along which it is helpful to locate any given research project. Broadly speaking, an empirically deductive research project seeks to apply established theories to new cases. It is highly hypothesis-driven, and has well-specified expectations regarding the patterns it expects to find in the data. It generally will have less room to adapt to unexpected events and new information as the project proceeds. An inductive research project is the opposite: it tends to not be guided by a set of hypotheses, and is more exploratory in nature, attempting to establish new theories from the bottom up. **Ethnography** has become firmly established as a very highly inductive, fieldwork-based approach to social science generally, as well as ESS (Stoffle et al. 1994; Crate 2006).

Deductive vs. inductive approaches to research are sometimes associated with quantitative vs. qualitative research, respectively. While there is some truth to this insofar as quantitative measurement probably presupposes at least some theoretical expectations, I believe this association is also frequently inaccurate. A qualitative case study can be highly deductive, for example, if it is approached with a well-specified set of hypotheses, each derived from a particular theory that it is aimed at critically testing. Additionally, a quantitative analysis can be highly exploratory, such as is the case with several multivariate techniques (e.g. cluster analysis). Within the history of ESS there is a lively (and unfortunately sometimes mutually dismissive) debate about the merits of each of these perspectives. However, it is important to note that no research project is entirely inductive or deductive. Rather, the decision of the researcher is to how heavily tilt their project towards one approach or another.

The approaches of **rapid rural appraisal** (RRA) and subsequently **participatory rural appraisal** (PRA) represent steps that many scholars have taken to increase the inductive nature of ESS: see Chambers (1994) for a seminal discussion. RRA emphasizes semi-structured interviews that combine a certain amount of structure and flexibility in the data collection process. RRA practitioners have developed a suite of techniques to conduct empirical fieldwork, including transect walks and seasonal calendars. PRA takes the approach further to formally incorporate the communities being examined into the research design process.

RRA and PRA represent a perception that, for some time, development-oriented ESS research was overly deductive, and thus failed to incorporate the perspectives of the rural populations that were the subject of much ESS research. Instead, it was only the perspective of the researchers that was seen to matter, a situation that has ethically ambiguous political implications. This issue derives from the fact that ESS is inescapably normative: in conducting ESS we must decide what is socially and environmentally important (and to whom) and what is not. The concern of inductive-oriented scholars has been that deductive research left this decision entirely up to the researchers themselves, without allowing communities to contribute their own perspectives and to guide important aspects of research design and implementation. Highly inductive, and particularly participatory, ESS is characterized in part by endogenizing the design of important research elements into the research process itself, allowing interactions with community members to steer much the work. In sum: while it is important to maintain a deductive perspective in order to ensure that the research conducted is replicable, generalizable, and avoids overly ad hoc theorizing, the researcher should be aware of the unfortunate history this perspective has enabled and the undesirable power dynamics that have been involved in its implementation (see Scott 1998).