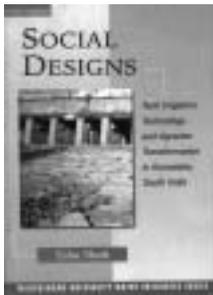


Complementarity of Technology and Institution: a critique of social designs



Esha Shah. 2003. **Social Designs: tank irrigation technology and agrarian transformation in Karnataka, South India**

New Delhi: Orient Longman. 288 pp. Rs 295

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Esha Shah's *Social Designs* is an interesting book, though the analysis falls much in the same line of that of many other published dissertations like *On the Water Front* by Mollinga (2003). Institutional analyses have usually been interesting to read due to the stories they attempt to tell about interactions between human and its habitat world, resulting in formation of social relations, which further create a more important aspect of human existence in the form of institutions. My reading of *Social Designs* was initiated with these preconceived notions. As I finished reading the first two chapters with these notions getting further reinforced, simultaneously I started realizing the new dimensions in Shah's analyses. Like Mollinga, Shah has also attempted to see how an external stimulus to an existing system creates ripples in the *status quo*. However, while Mollinga attempted to look at management regimes of canal irrigations in South India, Shah's interesting contribution is her experiment with technology. Solely because of this zest of experimentation, Shah deserves a big congratulation.

Social Designs presents two critical arguments on a broader scale. Both are related to interactions between technology and institutions. The first reflects on how

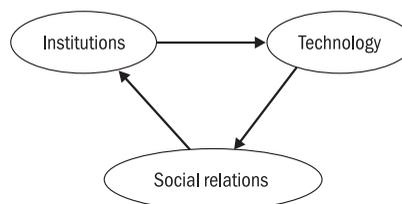


Figure 1 The institution-technology-society interconnection

institutions shape technology, and the second reflects on how the interactions feed back on society (Figure 1).

The book is organized in nine chapters. Chapter 1 presents the basic hypothesis, research questions, and central concern of the research. Shah puts forward the question on how social and political factors impinge upon technology, and how social relations of power shape technology. The literature review on this interaction between technology and institution is provided in this chapter, which is extremely enriching. Chapter 2 talks of the relationship between paddy cultivation and tank designs. It states that designs of paddy irrigating tanks are coded with certain characteristics that have been shaped in a specific historical context. Chapter 3 discusses how in the aftermath of the Green Revolution, an authoritarian class of owner cultivators

emerged at the all-India level, thereby ushering a new era of agrarianism. While a lot of discussion has been devoted to the populist politics of new agrarianism at the macro and the meso-levels, there has been a discussion on its impact on paddy pricing policy in Karnataka. Broad aspects of commercialization and diversification of agriculture in the 1980s and the 1990s have also been discussed. Chapter 4 provides diverse trajectories of technologies, in terms of tank designs and their relation with paddy cultivation. It is from chapter 5 onwards till chapter 8, that the causal loop between technology and society has been discussed. The storyline developed in the process is interesting, and provides new insights into tank irrigation and agrarian transformation in Karnataka. Chapter 9 consists of summary and discussions of observations of the previous eight chapters.

A more interesting mode of scrutinizing Shah's analyses is by superimposing the same on Ostrom's (2005) IAD (Institutional Analysis and Development) framework. Ostrom's IAD framework assumes an *action arena*, which is the focal aspect of any analysis. Two important attributes that make up the action arena are the action situations and participants. They interact

with each other as they are affected by exogenous variables (at least at the time of analysis at this level) and produce outcomes that in turn affect participants and the action situation. Action arenas exist in all spheres of human endeavours and in the interactions among all these arenas with others. The summarized aggregated mode of representing arenas when they are the focal level of analysis is shown in Figure 2, where exogenous variables affect the structure of an action arena, generating interactions that produce outcomes. Outcomes feed back onto the participants and the situation, and may transform both over time.

When interactions yielding outcomes are productive for those involved, participants may increase their commitment to maintaining the structure of the situation as it is so as to continue to receive positive outcomes. When participants view interactions as unfair or otherwise inappropriate, they may change their strategies even when they are receiving positive outcomes from the situation (Fehr and Gächter [2000]). When outcomes are perceived by those involved (or others) as less valued than other outcomes that might be obtained, some will raise questions about trying to change the structure of the situations

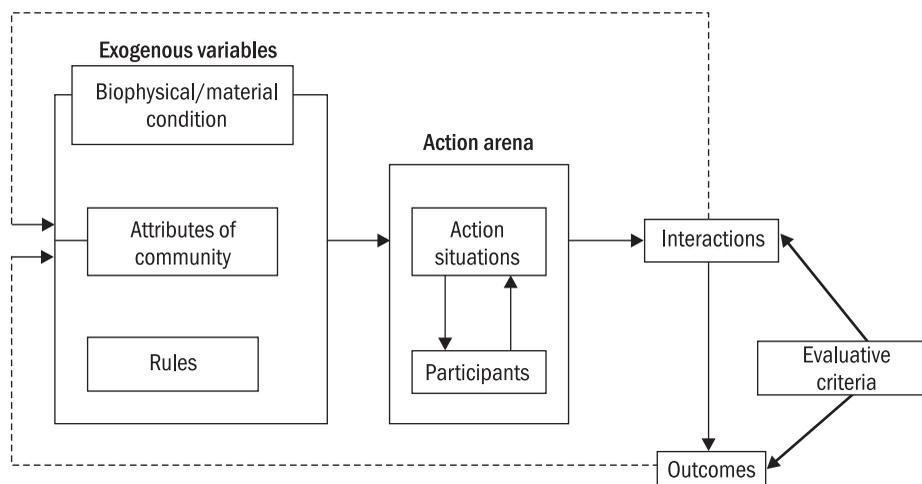


Figure 2 The Institutional Analysis and Development Framework
Sources Ostrom (2005), Ostrom, Gardner, and Walker (1994)

by moving to a different level and changing the exogenous variables themselves.

From the perspective of the IAD framework, Shah looks at how social and institutional factors impinge upon technology. The social and institutional factors are the exogenous variables that affect technological designs. In the action arena, there are participants that involve the users, decision-makers, and service providers as well. Various action situations have been described in the book. With the action situations created and with the stakeholders' reactions in each, there are outcomes with the technological designs.

However, this is not an end in itself. Apparently, the IAD framework presents a static structure, with which though the feedback loops can be seen, changes in the endogenous variables in the action arena are not envisaged. For capturing Shah's analysis, a modified IAD structure is required, which might not be repetitive, but a recursive, dynamic IAD framework where at every round, the exogenous and endogenous variables in the action arena interchange their respective roles.

The book is rich in terms of literature review. One of the biggest strengths of the analysis is that it is adequately embedded in the existing literature. Often, analysis has emanated from the literature. The analysis is rigorous and trans-disciplinary by combining a sociological perspective into the investigation of evolution of technology, and its role in the evolution of social agrarian institutions. What also makes it interesting is the presentation, which has been done in an extremely lucid yet powerful manner.

Despite all these good aspects of the book, there are some problems with this research, which have always been an integral part of the institutional school of thought. Shah belongs to that institutional school of thought that poses to be bestowed with the omnipotent capacity of being the only academic solution to the world's problems. While there have been positive aspects of such qualitative research,

no qualitative research in the world has set any kind of numerical benchmark for decision-makers and policy-makers to devise policies. Shah's analysis has not been able to transcend the bounds of partisanship, which has been an integral problem of any institutional study. Like Mollinga (2003), her analysis is broad, subjective, lacks the sharpness of neoclassical thought, and remains context-specific. Such research is, of course, not beyond the researcher's own biases. To that matter, no research can transcend researcher's biases. But, lack of objectivism in these sorts of qualitative research, and context-specificity can never allow its applications in the broader context. This research is descriptive, analytical, but at certain times, follows a bit of a journalistic note, without specifying any objective instrument of decision-making in front of policy-makers. This research is another eye-opener that the world's problems cannot be solved only by analysing the working of institutions. That staunch institutionalism devoid of various other objective instruments is a myopic attempt, this book reinforces that too much reliance on institutionalism is another mode of subscription to reductionist thinking.

The analysis confines itself to paddy, maybe by looking at the dominance of the crop in the region in terms of acreage, and consumption. In the water-scarce region like that of Krishna basin, there remains an utmost need to diversify crop production; how the engineering designs change in response to cropping pattern changes, remains an unanswered question. I would reckon such approaches as 'reductionist institutionalism', which not only lacks the analytical sharpness of quantitative research, but also presents an extremely partial picture of a much broader storyline.

This does not mean that such research should not happen. Rather, such research on institutions is necessary. However, my concern is regarding the implications of such research on IWRM (Integrated Water Resources

Management). Despite the fact that it talks of irrigation technology, there has been no allusion of IWRM or demand-side-management in the book.

Overall, this is a good work that initiates with a very interesting research question. It

has its positives, and deserves to attract a good readership. This does implicitly contribute to theory building, by providing a case with which to initiate a new thought process of the complementarity of technology and institution.

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