

Amit Bhaduri

Economics of Transformation



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The last ten months spent at the Wissenschaftskolleg have been both productive and enjoyable for me. I wish to begin by emphasising that it is a most rare fortune to be able to be productive while enjoying the day-to-day existence in the Kolleg. This was made possible by an extremely efficient and understanding administrative and library and secretarial staff, who never imposed themselves but always helped in every possible way. It is a very well-organised, yet unobtrusive place for anyone who wants to work in a concentrated manner for roughly a year. I had chosen a rather ambitious strategy of research in which the direction was not clear in the beginning. I had decided to read through and examine many currently fashionable models of mathematical biology and "self-organising" systems to find out in what way, if at all, they

could help in illuminating an economic issue that has long interested me, namely, whether one could say anything useful regarding the "appropriate" economic role of the state and the public sector. For this, I worked on the conjecture that adaptive/cooperative behaviour might produce better results in some circumstances. Given my interests as a macro-economist also interested in developmental issues, I chose two particular contexts to specify the problem: the role of the state in formulating industrial policies for developing "infant" industries, and the typologies of interaction between the public and the private sector, in order to better understand cooperative and conflictive behaviour. Both these problems are directly relevant for the general problem of transformation from the bureaucratic command to the market system on which Kazimierz Laski and I have been working together in the Kolleg.

Two propositions of general interest seem to emerge from my investigations so far. First, based on various "thought experiments" with mathematical modelling we understand better why economic developments and policy prescriptions have an unavoidable element of "unpredictability", typically ignored by economists. This is not simply a matter of imperfect data or information, but arises from the fact that economic analysis lies on the border between "theory" and "history". At every point of time in economic evolution, historical circumstances and chance events of small probability affect the outcome of the next round. Consequently, even the same economic policy can have very different effects depending on the historical circumstances or the context in which it is applied. More specifically, to illustrate this point precisely, I was able to construct a mathematical model exhibiting the phenomenon of "hysteresis", i.e. how and why "history" matters for defining the "appropriate" economic role of the state. Second, this line of argument also shows why "economic fundamentalism" of any sort is unlikely to succeed. Given this inherently limited predictive power of their subject, economists should spend less time preaching their particular version of "the truth"; and more time on devising built-in self-correcting mechanisms on the recognition that their predictions are bound to go wrong quite often. At present this is the broad outcome of my research on the economy as a complex adaptive system, using analogies particularly from models of evolutionary biology. The following four interrelated papers were completed in this area during my stay at the Kolleg:

1. "Dynamic Patterns in Transformation", to be published in *Structural Change and Economic Dynamics*, December 1995 or March 1996.
2. "The Economic Role of the Transformational State", to be published in French, February 1996, in a volume edited by Professor R.

Delorme, CEPREMAP (Centre d'Études Prospectives d'Économie Mathématique Appliquées à la Planification), Paris. An English version will appear subsequently.

3. "Rethinking the Economic Role of the State", still in mimeo form.
4. "From 'Progress' to 'Chaos' through Bio-diversity". This mini-paper of only one page arose out of my playing around with mathematical models of theoretical biology. I spotted the problem of "chaotic" movement rather than "progress" through natural selection, which I believe had not been noticed earlier in the relevant literature. The paper was completed only towards the very end of my stay here. This paper has little to do with economics, and I have sent it to a pure science journal for publication. If the idea of this paper works out, it would be a real example of interdisciplinary research.

I was able to try out this relatively new approach to analysing economic problems only because the Wissenschaftskolleg provided such wonderful facilities and uninterrupted time to explore in uncharted directions. All colleagues in the Kolleg were supportive. However, I wish there had been a few more biologists and/or applied mathematicians among us this year, so that I could benefit from their expertise over lunches and Thursday dinners, if not breakfasts!

In addition to research in this borderline area of economics and evolutionary biology, Kazimierz Laski and I collaborated throughout the year on the macroeconomic problems of transformation in East Europe. We questioned the popular preconception that East Europe had a recession caused mostly by "supply shock". This, in turn, led to our questioning the standard analytical framework, widely used conventionally by economists to distinguish a "demand shock" from a "supply shock". We demonstrated analytically why demand and supply shocks cannot be distinguished in terms of aggregate demand and supply analysis. The results are summarised through the completion of the following paper:

- "Making Sense of Aggregate Demand and Supply Analysis", co-authors: A. Bhaduri, K. Laski, and M. Riese. This paper has been submitted for publication.
- Finally, Kazimierz Laski and I have work-in-progress on analysing the on-going process of inflation, particularly in Poland and Hungary. Problems of reliable data turned out to be rather serious for completing the paper. But we hope this work started at the Wissenschaftskolleg in Berlin will be completed now between the two cities of Vienna and Delhi in not too distant a future.