Spontaneous Order, Mechanism Design and X: Smith, Condorcet and Marx

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1 Introduction

Social realities are emergent properties. But these emergent properties can be local or global.

For Smith (and for Hayek) 'spontaneous order' is the correct framework to understand and even to modify the social realities, such as the market institutions. Trillions of interactions (contracts, exchanges, etc.) form up the institutions bottom-up in an evolutionary setting. The fittest fields and particles survive.

For Condorcet (and for Van Neumann) social realities are no different than natural/physical realities. Social mathematics resulting in 'mechanism designs' that can lead to optimality should be the correct framework. The institutions are largely reflections of rational top-down mental constructions.

Israel and Gasca (2009:p.xi) concurs this conjecture:

> Von Neumann was not only a respected government advisor but, acting in this capacity, he succeeded in communicating and even putting into practice his idea that the governance of worldly matters must be guided by a universal logic within which each individual must move in accordance with a rational strategy directed to achieve the best result, taking into account the fact that also the other individuals are pursuing the same aim.

It is ironic that the spiritual head of Atomic Energy Commission, Von Neumann died suddenly in 1957, aged only 54, as a result of a bone cancer that rapidly laid him low.

Von Neumann was closer to Marx than he was to Smith or Hayek.

Isrel and Gasta (2009: p.8) write that "for him game theory was to represent a very general form of mathematical analysis of theproblems of conflict between individuals pursuing contrasting ends".

Nevertheless, Von Neumann was no socialist. "My opinions have been violently opposed to Marxism ever since I remember, and quite in particular since I had about a three months taste of it in Hungary in 1919."

2 Search for the Universal Theory: Quantum Gravity

2.1 Enter Physics

General Relativity is space-time invariant. Just in the case of 'mechanism design'. They apply anywhere and at any time.

Quantum Theory (as in Standard Theory) has to be case on a Hilbert space-time, and it has to be local and dependent on time.

The search for the unity is an ongoing process. Loop quantum theory of gravity and M-theory (as a potential master String Theory) are the major candidates.

Though there are quite a few sceptics who argue that unless we change our thoughts, concepts and maths fundamentally, the effort for unity will be futile (Penrose 2001, Bourbon 2001)

Quantum theory, per se, does not apply to gravity. General gravity does not affect masses at the Quantum (Planck) scale. But we know that both exist, each in their domains. Quantum theory is probabilistic (Bayesian and evolutionary). General gravity is almost deterministic akin to Mechanism Design. Give Einstein the masses (momentum and energy) of any matter, you will get a full model with specified distances between the units and equilibrium (at any space-time).

2.2 Enter Maths

The maths of Hilbert and Chaitin are very different animals. Logical versus Constructionist math worlds speak different languages.

"This implies the rejection of a basic principle in classical propositional logic, namely the so-called principle of the excluded middle, according to which, given a proposition P, either P is verified or non P is verified. In this way the constructivist approach, which has persisted to the present time, albeit in an increasingly smaller group of mathematicians, questioned the validity of logical demonstration as a foundation for the certainty of

mathematical results. Von Neumann, who, in his first publication on set theory (Neumann 1923) had tried to introduce Cantor?s transfinite cardinals more rigorously but not axiomatically, became a convinced supporter of this approach."

How ironic is that an enemy of Marxism," von Neumann proposed an axiomatic system for set theory that had been further improved with respect to that of Zermelo- Fraenkel. It was based on the distinction between 'classes' and 'sets'. The idea was to consider a new group of entities ? classes ? which had the peculiarity of not being able to be included in other sets or classes, while sets are particular classes that may be the elements of a class. By making this distinction it was possible to eliminate many antinomies like that of Russell."

The journey was open. "At this scientific meeting the three positions ? logicistic, intuitionistic and formalistic ? confronted each other on the foundations of mathematics, and were represented respectively by Carnap, by Arend Heyting, a disciple of Brouwer, and by von Neumann himself."

3 Marxian Theory

Enters Marxian social theory and dialectics. Social Realities are Global Emergent Properties; constrained by Designed Mechanisms.

3.0.1 Conflict and Change

"Niels Bohr, director of the Copenhagen Institute of Theoretical Physics, had incorporated this phenomenon in a 'rinciple of complementarity', which he believed could be extended to real phenomena in all fields, including biology and psychology, and which delimited the very boundaries of knowledge. According to this principle, elementary particles display two complementary properties, each of which accounts for only a part of the subatomic processes."

3.1 Relations and Networks