Heuristic on a theory of social science

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Abstract   The paper uses a series of mathematical analogies to build a model of the social sciences which includes roles for human agency, social structure, time and events. The purpose is to provide a conceptual heuristic for those interested in the study and teaching of the philosophy of social science. A specific example from institutional economics is provided.

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1 INTRODUCTION

Using simple mathematical equations as logical and explanatory devices, this paper applies Hayek's (1997) concept of the definition of the social sciences and Sewell's (2005) use of structure and temporal transformation to build a model defining social science as including both human agency and institutions. The purpose of the paper is to offer a conceptual heuristic for those interested in the philosophy of the social sciences.

2 HAYEK'S DEFINITION OF SOCIAL SCIENCE

Hayek (1979) stated that the purpose of social science "is to explain the unintended or undesigned results of the actions of many men" (41) in order to "grasp how the independent action of many men can produce coherent wholes, persistent structures of relationships which serve important human relationships without having been designed for that end" (141).[1] For Hayek, society was greater than the sum of individual action.

$$\sum_{n}^{N} \text{Individual actions in society}_n < \textit{Society} \qquad (1)$$

Where (1) shows us that the sum of individual actions in society is less than society itself. There are N individuals in society.

For Hayek the purpose of social science then is to understand what constitutes the difference between the individual actions of persons and resulting society.

$$\sum_{n}^{N} \text{Individual actions in society}_n + x = \text{Society} \qquad (2)$$

Where (2) shows us that the purpose of social science is solving for (trying to understand) x.

3 SEWELL ON STRUCTURE AND TIME

Sewell (2005, esp. 124-151) argues that theories of structure can help to inform Hayek's (although Hayek is not mentioned in his text) notion of the research program in social science.

$$\sum_{n}^{N} \text{Individual actions in society}_n + [\, x \,] = \text{Society} \qquad (3)$$

Where in (3), $[\, x \,]$ represents societal structure.

Sewell (2005, esp. 1-24) then argues for the importance of understanding *time* and *transformation* in the social sciences.

$$\{\, \sum_{n}^{N} \text{Individual actions in society}_n + [\, x \,] = \text{Society} \,\}_t \qquad (4)$$

Where (4) shows us that the sum of individual actions and a society's structures at time t make up society at time t.

However (4) does not per Sewell (*ibid.*) account enough for human agency effects on the structures themselves. At a particular time, human agency is limited by structure, but over time human agency changes structure. In fact structure lags behind human agency. This is also consistent with Veblen ([1904] 1958, esp. 215-216 and 388-389).

$$\{\; \Sigma_n^N \text{Individual actions in society}_n \}_t \;+\; \{[\, x \,]\}_{t-1} \;=\; \{\text{Society}\}_t \qquad\qquad (5)$$

Where (5) shows us that society at a given time, *t*, is the summation of human action at time *t* plus the structures of society resulting from the previous time period, *t-1*.

4 SEWELL ON EVENTS

Sewell (2005) writes that in addition to human agency effects on structure, events have transformative power over society, "A rupture that has consequences outside its initial place of occurrence is far more likely to result in a transformative cascade than one that is spatially contained" (260). In this context, if we assume that society is spatially bounded then an event is something that occurs outside society (outside of our previously formalized equations for defining the research program of social science).

$$\text{Society}_t + \text{Event}_t = \text{Society}_{t+1} \qquad\qquad (6)$$

Where (6) shows us that Society at time *t+1* equals Society at time *t* plus any Events at time *t*.

It follows from the logic that we have been outlining here that an Event-changed society carries with it a new set of structures, which is captured in our heuristic model (5) in the *[x]* variable at the next time period.[2]

5 A NOTE ON DETERMINISM IN THE SOCIAL SCIENCES

If we revisit (5) above,

$$\{ \sum_{n}^{N} \text{Individual actions in society}_n \}_t + \{ [\, x \,] \}_{t-1} = \{ \text{Society} \}_t \qquad (5)$$

We can evaluate the concept of structure, $[\, x \,]$. In economics structure might be considered as institutions (or policy), in anthropology structure might be considered culture. Bourdieu (1977) called structure *habitus*.

Note that Marx (1955 [1847]) thought technology was deterministic. Under Marx's historical materialism it is the technology at a given period, t, which determines the superstructures of society.

This can be formalized[3],

$$T_t \rightarrow S_t$$

$$T_{t+1} \rightarrow S_{t+1} \qquad (7)$$

Where (7) tells us that technology at time t determines the superstructure at time t, and it is only with a change in technology (at time $t+1$) that we find another set of societal superstructures.

It should be noted that Sewell's argument is not "event deterministic" in that he states that human agency, in addition to exogenous events, also affects structure.

6 IMPLICATIONS FOR INSTITUTIONAL ECONOMICS

Let us revisit (5) again from an institutional or comparative economics perspective. *Ceteris paribus* (all things being equal) economics might say that if the endowments in a society are equal (or can be compared for resulting differences) then the economic performance of a society should equal that of another society. However, we know that this is not the case.[4]

$$\{ \textstyle\sum_{n}^{N} \text{Individual actions in society}_n \}_t + \{ [\, x \,] \}_{t-1} = \{ \text{Society} \}_t \qquad (5)$$

In economics it is generally assumed (and we will follow that assumption here) that economic actors use rational choice to maximize their welfare. To generalize, from (5) this would mean that,

$$\{ \textstyle\sum_{n}^{N} \text{Individual actions in society}_n \}_{t,a} =$$
$$\{ \textstyle\sum_{n}^{N} \text{Individual actions in society}_n \}_{t,b} \qquad (8)$$

Where (8) tells us that, for any period in history, the summation of individual action in Society *a* would equal that of Society *b*, *ceteris paribus*. But as stated we know this does not represent economic reality. We know that in many cases,

$$\text{Society}_{a,t} > \text{Society}_{b,t} \qquad (9)$$

Where (9) tells us that *ceteris paribus* Society *a* outperforms (has greater economic growth than) Society *b* for a given time period.

Using the notion of structure presented in this paper, this would tell us that the structures, or in economic parlance, institutions, of Society *a* are better (for economic growth) than the institutions of Society *b* for the given period under study.

To put this another way,

$$\textstyle\sum_{n}^{N} \text{Individual actions in society}_{n,t} < \text{Society}_t \text{ ,where institutions are good, and}$$

$$\textstyle\sum_{n}^{N} \text{Individual actions in society}_{n,t} > \text{Society}_t \text{ ,where institutions are bad.} \qquad (10)$$

Where (10) tells us that the economic performance of a society for a period of time is a function of that society's institutions for the period. When institutions prohibit human action economic performance is less than the sum of individual action, and

where institutions encourage individual human action, society is greater than the sum of individual action.

7 CONCLUSION

This paper has built a formal model of the social sciences using mathematical analogies showing roles for agency, structure, time and events in the social sciences, with an example from institutional economics. The paper has attempted to offer a conceptual heuristic for those interested in the philosophy of the social sciences and social transformation.

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[1] Note that Hayek emphasizes the unintended consequences of many people as creating the important structures in society. He did not think that coerced (government) action could be as successful as individuals acting freely in a decentralized manner. Hayek called this the "knowledge problem" in the socialist calculation debate. See Burczak 2006, among others, for a discussion of the socialist calculation debate.

[2] It should be noted here that the Sewell's concept of the exogenous Event has its parallel in economics with the concept of an exogenous Technology "shock".

[3] The formalization of Marx is from Rothbard 1995: 373.

[4] See Cavusoglu and Tebaldi 2006, among others, for discussion on the "convergence hypothesis" in growth theory.