

Historical systems as complex systems

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Abstract: All social systems are simultaneously historical and systemic. They have rules that govern their operation which are reflected in cyclical rhythms; they have irreversible patterns of development which are reflected in their secular trends, and which account for their eventual demise as systems. There are two varieties of complex historical systems: world-empires and world-economies. The latter variety has come to dominate in the period since 1500, leading to the elimination of all other varieties and creating the new situation of a planet with only one existing historical system. The consequences are explored.

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The term 'historical system' is not commonly used in the social sciences. Indeed in general most social scientists would consider it an anomalous phrase. Those who emphasize the historical by and large downplay or deny the systemic. And those who emphasize the systemic normally ignore the historical. It is not that, as an abstract issue, the importance of reconciling this standard dichotomy or distinction between the static and the dynamic, the synchronic and the diachronic, is not acknowledged. The curtsey is made, but in practice, there has been strong institutional pressure to proceed in the one direction or the other of what was in the late nineteenth century designated as the *Methodenstreit* between idiographic and nomothetic modes of scholarship in the domain of social life.

And yet it seems obvious, at least to me, that everything that is historic is systemic, and everything that is systemic is historic. All complex phenomena have their rules, their constraints, their trends or vectors, that is, their structures. Any real structure (as opposed to imagined structures) has its particularities, due to its genesis, its life history, and its environment, hence has a history which is central to its mode of functioning. The more complex the structure, the more crucial its history. The problem is not to state this as some metaphysical truth, but to manipulate this truth in our study of

any real complex phenomenon. My mode of handling this is to conceive the social world as a succession and co-existence of multiple large-scale, long-term entities I call historical systems which have three defining characteristics. They are relatively autonomous, that is, they function primarily in terms of the consequences of processes internal to them. They have time-boundaries, that is, they begin and they end. They have space-boundaries, which however can change in the course of their life-history.

This seems simple, perhaps obvious. It poses considerable problems when one wishes to operationalize these criteria, and indeed the historiography of the last 150 years is filled with debates about systemic boundaries of particular historical systems, even though this language is often avoided. I have tried to approach the issue of boundaries by starting with the social division of labor, the conditions of ensuring social survival. I assume that an historical system must represent an integrated network of economic, political, and cultural processes the sum of which hold the system together. This presumes that if the parameters of any particular process change, the other processes must somehow adjust. This banality enables us however to locate that which is outside the historical system. If something can or does occur in zone X, a zone thought or suspected to be part of a given historical system at time Y, and the rest of the system in effect ignores this happening, then zone X is outside this historical system, even

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though there may seem to be some visible social interaction between zone X and this system. Perhaps if I translate that statement into discussion of a concrete issue, it will become clearer. In my book on the European world-economy in the long sixteenth century, I argued that Poland could be said to have been part of its social division of labor, but that Russia was not. To be sure, both Poland and Russia had sea trade links with various countries of Western Europe (and Poland overland links as well with the Germans). The difference, however, between the two cases was that, in my view (for which I offer some empirical evidence), any more than momentary interruption of the links between Poland and say the Low Countries (a serious but unfulfilled possibility in 1626–29) would have resulted in significant alteration of the production processes in both locales, whereas the actual efforts of Tsar Ivan IV in the 1550's and 1560's to cut such links as existed at the time did not in fact result in such an alteration. Hence Poland and the Low Countries could be said to have been located in a single social division of labor, but Russia was located outside this historical system.¹

If then one uses a measuring rod, I believe it is true that such autonomous social divisions of labor can only be found historically in rather small entities, small both spatially and temporally—I call these mini-systems—and in relatively large-scale, long-term ones—I call these world-systems. Furthermore, I divide the world-systems into two major structural variants: those with a single overarching political structure, the world-empires; and those without me, the world-economies.²

I believe we know almost nothing today about how mini-systems work. For one thing, I believe they no longer exist. Furthermore, I think most of what has been described as mini-systems have in fact been merely local components of world-systems, since one of the prerequisites for their study seems to have been up to now their inclusion in such a world-system. Finally, I think such mini-systems had short lives and, almost by definition,

had no method of recording their life-history. Hence, we are up against a problem analogous to that faced by physicists seeking to study those extremely small particles with a fleeting existence. Perhaps one day we shall devise modes of perceiving these particles (the mini-systems) which cover such a large portion of the social history of mankind, but for the moment we do not seem to be able to do this. Therefore, what I shall have to say concerns world-systems primarily.

I start by noting an historical shift in the relationship of the world-empires and the world-economies. From circa 10 000 B.C. to circa 1500 A.D., there have existed (and co-existed) a large but countable number of such world-systems (as well as an unknown, probably very large, number of mini-systems). During this period, the world-empire form seemed 'stronger' than the world-economy form, in that, with some regularity, expanding world-empires absorbed nearby world-economies (as well as nearby mini-systems). World-empires seem to have had built-in space and time limits, since the expansion outwards always seemed to reach a point where the central authority's power was overtaken by disintegrative forces and these world-empires then contracted. In the spatial 'voids' thus created, new world-economies and mini-systems subsequently reemerged. As far as we can tell, two generalizations can be made about the co-existence of world-empires and world-economies in this long period. Those world-empires that succeeded (that is, there were no doubt in addition a large number of abortive attempts to establish world-empires) lasted for significant lengths of time (say, on the order of a half-millennium from beginning to end). On the other hand, world-economies seemed more fragile and not one lasted this long in this period.

Circa 1500, something strange occurred, for which in my view there is as yet no truly satisfactory explanation. The relative strength of the world-economy and world-empire form became inverted. That is to say, one particular world-economy, the one established in a large area of Europe at this time, proved to be less fragile. It survived and therefore was able to serve as the framework for the full development of a capitalist mode of production, which requires and can only exist within a world-economy form. Once this capitalist world-economy consolidated itself, it expanded spatially by virtue of the logic of processes inter-

¹ For the details of my argument, see Wallerstein (1974, Ch. VI, *passim* and esp. pp. 304–305, 315). For a view which takes issue with me empirically on whether or not Russia in the long sixteenth century was part of the European world-economy, see Nolte (1982, pp. 32–48).

² For an elaboration of these categories, see Wallerstein (1979, Ch. 9) and (1984, Ch. 14).

nal to it, absorbing the surrounding world-empires (for example, the Russian Empire, the Ottoman Empire, the Mughal Empire, the Chinese Empire), as well as, of course, the surrounding mini-systems. Furthermore, unlike what had previously occurred with world-empires, the expansion process seemed to have had no in-built spatial limits. By the end of the nineteenth century, the capitalist world-economy had expanded to cover the entire planet, absorbing it seems all other existing historical systems. Ergo, for the first time in the history of the planet there existed only one historical system on the planet. This created an entirely new structural situation, since now there were no co-existing historical systems external to the one surviving system called the capitalist world-economy.

This poses three intellectual problems. (1) What explains the transition circa 1500? I have already said that explanations previously given, including I may add my own, are weak; I shall not pursue this question for the moment. (2) What is it about the current system which explains its ceaseless expansion? (3) What are the consequences of the fact that this historical system operates today without other systems external to it?

The ceaseless spatial expansion of the capitalist world-economy has been a function of its central dynamic, the ceaseless accumulation of capital. This dynamic operates in three ways. In the first place, lateral spatial expansion has specific effects in recreating the margin of surplus-extraction each time that this margin is reduced globally in order to contribute to extricating the world-economy from a conjunctural downturn by means of expanding global effective demand via some partial redistribution of this surplus to relatively low-income sectors. The process of geographical expansion serves to incorporate new sectors of direct producers receiving low remuneration which reexpands the percentage of surplus centralized in the hands of a small number of relatively large accumulators of capital.³

Secondly, the capitalist world-economy involves structures which specifically reward technological advance more often than not. In world-empires, there were also rewards for technological advance, but there were significant penalties as

well (which tended to slow the process down considerably), since centralized authorities were constantly faced with the difficult political problem of controlling their geographically-dispersed senior cadres, and technological advance made this more difficult, through what might be called its tendency to democratize the use of force. The rapid technological progress thus ensconced in the normal workings of the capitalist world-economy made it technically possible, because militarily possible, to overcome the resistance of world-empires to incorporation within the world-economy.

Thirdly, a capitalist mode of production involves mechanisms that specifically penalize behavior that is non-responsive to the shifting optimal modalities of maximizing the accumulation of capital. Those who control economic operations and who do not act to maximize capital accumulation eventually go bankrupt and are removed as actors. Conversely, there are no mechanisms (such as might exist in a world-empire) to penalize irrational modes of consuming the world product. Indeed, there is no way of intruding systematically and persistently anti-market values into decision-making. Consequently, there is no basis on which opposition to geographical expansion could have been effectively mounted, once it was shown to serve the interests of capital accumulation.

The deepening of the capitalist processes and the geographical expansion of the boundaries of the social division of labour were then the outcome of very strong forces involved in the very creation and consolidation of a world-economy. They have been thus far unstoppable. One might even talk of a juggernaut effect. Of course, this has been an historical process in which every parameter is constantly changing. Historical systems are preeminent examples of the non-reversible arrow of time. Yet we purport to analyze this system structurally, which implies the existence of some kinds of repetitive phenomena, and at some level (however limited) some kinds of thrusts towards equilibrium, even of moving ones. We thus come back to the original contradiction of the phrase 'historical system'—something which is always changing directionally but something which is also always the same essentially, at least provisionally.

Intellectually, the issue is one of distinguishing cyclical rhythms, secular trends, and crises that are transitions and therefore ruptures. It is part of the governing social ideology of our present

³ The process of course involves other elements as well. See Wallerstein (1982, pp. 15–22).

world-system to give moral priority to the new. Since the world is changing at each moment, it is consequently always intellectual child's play to discover and to illuminate what is novel. It is in fact much more difficult to discover what has not changed 'essentially'. I therefore pose as methodological admonition number one—exhaust first the description of the unchanged, that is of the repetitive, the cyclical. Obviously, to do this, we have to begin by deciding on the unit of analysis, and it is in this fashion that my discussion of the boundaries of historical systems becomes crucial. What is repetitive or cyclical is that measured within the time and space boundaries of a given historical system.

Given in fact that everything always changes, the cycle, the repetition is at best approximate, never exact. But the changes are not random. They are in principle predictable within the rules of functioning of the system—else it would not be a system. For example, I argued previously a particular sequence: economic stagnation; some redistribution of surplus and hence both new effective demand and reduced global surplus-appropriation; lateral systemic expansion and hence incorporation of new low remuneration productive zones and consequent increased global surplus-appropriation. This is a small part of a more complex picture and I will not for the moment elaborate the merits of this analysis. I merely wish to point out that if the sequence is true, there are hidden in its operation secular trends. One is obvious, that of lateral spatial expansion. Another is not obvious from the material I have given you here, but let me say that I could demonstrate that located within this sequence there is a trend to the proletarianization of the labor force. Now if we draw each of these trends as a simple linear curve in which the abscissa represents the percentage of the whole (percentage of the planet included in the boundaries of the capitalist world-economy, percentage of the workforce of this world-economy which is proletarian), then it follows that the secular trends move towards asymptotes.

This simple reality accounts for crisis, transition, rupture. If, in order to solve a middle-run problem, that of repetitive economic stagnations, it is essential (among other things) internally to proletarianize and laterally to expand boundaries, then as one approaches over the long run these asymptotes one can no longer solve the repetitive

middle-run problems. Of course, I would have to demonstrate that there are not effective alternative modes of solving the problem. But once again this is an empirical argument about the structural rules governing a particular historical system. If I am wrong on these rules, then there will be found other rules. But whatever the rules, the contradiction between middle-run solutions for conjunctural, cyclical problems (disequilibria if you wish) and long-run possibilities of using these solutions (the approach to the asymptote) will remain.

Hence every historical system must therefore remain historical. If it has a beginning, it will have an end. The end can take many forms. I think however it is most useful to think of this end not as some sharp line but as a band of time, a 'transition' during which the oscillations around whatever line one measures become greater and more erratic. What I think this means, not in the language of the physical sciences but in that of traditional philosophy, is that the range of choice of social actors, the degree to which free will prevails over necessity, expands. Basically what I am arguing is that within a functioning historical system, there is no genuine free will. The structures constrain choice and even create choice. Both the oppression by the strong of the weak and the resistance of the weak to the strong, for example, are structured, predictable, measurable phenomena. However, when the system enters that band of time marking its period of demise or rupture (which by definition only happens once and only at its end), everything (or almost everything) is up for grabs. The outcome is indeterminate. I suppose that at some higher level of abstraction we might be able to explain these outcomes, but at the level at which life is really lived we cannot. That is the meaning of the old adage that "history reserves its surprises".⁴

⁴ In the language of the physical sciences, the approach to the asymptote corresponds to the evolution of a system towards a stationary state "characterized by the minimum entropy production compatible with the constraints imposed upon the system". Prigogine and Stengers (1984, p. 138) continue: "The stationary state toward which the system evolves is then necessarily a nonequilibrium state at which dissipative processes with nonvanishing rates occur". The existence of dissipative processes with nonvanishing rates seems to me the condition within which that philosopheres have called 'free will' tends to prevail, or at least to have wider scope. The outcome is then 'indeterminate'.

I believe we have entered into such a band of transition now. I believe the oscillations—both political and intellectual—are becoming greater and more erratic. I believe the outcome is de facto indeterminate. I believe equally that our real range of choice has thereby increased enormously, and that our political choices and our intellectual choices thereby become profoundly choices of morality in ways that were not true a century ago. In such moments, therefore, the working distinction between political, intellectual, and moral choices becomes narrower (albeit I don't think it ever disappears) and each choice thereby becomes more difficult, not easier. I have no doubt this is true for the physical and the biological sciences. It is truest of all when we come to the study of the most complex systems of all, historical social systems.

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