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## How Social Complexity Happens: Causal-History Explanation

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Big whirls have little whirls  
That heed on their velocity,  
And little whirls have littler whirls  
And so on to viscosity.

*Lewis Fry Richardson*

Lewis Fry Richardson's poem accurately elucidates the context of my comments. As physicists search for the theory of everything, social scientists search for the universal theory to explain changes in social dynamics. But what propels change? Natural selection exemplifies savage struggle for life (war of nature in Darwin's words) and explains biological changes. Does a similar force drive social [culture] change? Early social thinkers suggested conflict (Marx and Weber), ideology (Weber), or levels of social interactions (Simmel) as stimuli of social [cultural] change. In his refined circumscription theory Robert Carneiro relates change in social organizations to conflict and identifies its brutal context as a creative process. He proposes that causal explanation<sup>1</sup> of the rise of social complexity in the past involves warfare, and as such exhibits variability prone to randomness, similar to genetic mutation in biology. His approach to causal history of social changes, which includes adjustments of political systems, is convincing because causal explanations generally:

- are pragmatic ways to explain phenomena rather than summation of them under generalizations or laws;
- relate to empirical evidence but they are not simple inductions; they involve abductive reasoning seen as neither inductive nor deductive;
- offer clear methodology (logic, justification of tools and methods and interpretation of research results);

Social Evolution & History, Vol. 11 No. 2, September 2012 70–73

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- emphasize causal histories of events;
- focus on the question how (how-possibly), but do not discount generalizations (models), which may become starting points for causal explanations.

Carneiro advocates his earlier point of multivariate origins of states presented as multicausal unitary process. Thus, multicausality is about identifying regularities in pressures and intentions acting in combination. Factors such as population pressure, warfare, concentration of resources, social and environmental circumscription contribute to social change. Grouping long-term causal histories of events in a unitary, cohesive process of social changes offers persuasive how-possibly explanation and also suggests nomologically-inspired answers to why it happens (regularity of events).

Carneiro relates causal-histories to environmental and political circumscription. As non-monotonic logic (*e.g.*, McCarthy 1980), circumscription is the context-dependent abductive reasoning distinguished from inductive or deductive approaches (Peirce 1932; for brief discussion see Vayda 2009: 30). Being educated in the shadows of Steward's cultural ecology, I appreciate the argument behind environmental circumscription, but it is political circumscription that attracts me most. In the early 1980s, I wondered about the outbreak of complex polities in Central and Eastern Europe of the 900s and 1000s CE and recently I refined my thoughts by analyzing data supporting, among others, a hypothesis that changes in settlement pattern and the emergence of fortified villages (forts) were responses to rising conflict that eventually lead to the appearance of a dissipative complex polity [chiefdom] in the North-Central European Plains (Lozny 2011). Carneiro (1981) called chiefdoms fundamentally warlike. My examples related to the political organization in the northern part of the Central European Plains at the time of Charlemagne's expansion to northeastern Europe corroborate this claim. My study concerns the state formation process in the North-Central European Plains, at the fringes of the powerful complex societies such as the Merovingian and Frankish Kingdoms, the Scandinavian Kingdoms, the Czech Kingdom and the Kingdom of Rus. The key idea is labeled as 'turbulence' theory, which explains that major changes are always accompanied by changes at the periphery of the mainstream. The principle governing this concept is that once the main process reaches a critical

mass, it undergoes runaway growth, sweeping up the surroundings in accelerating rate. At first, a few modes dominate, but under stronger forcing the modes become distributed as in Kolmogorov's theory of turbulence (or Richardson's poem). Force in the social context is summarized as conflict and its instrumental representation is warfare. Thus, through a combination of causal events one of the several chiefdoms of the North-Central European Plains turned to a more complex polity at the expense of other polities, which were eventually (forcefully?) incorporated into the newly emerging state. I label my view as the sibling rivalry hypothesis – the multiple polities compete to gain power, and the one that grows slowest is at the mercy of the others. The newly emerging interactions eject it from the core by cutting it off from its pool of resources and leaving it permanently stunned. If it happens before the structure has had time to attain state-level complexity, the result is a non-state and eventually political and economic dependence. These two scenarios have distinct implications. In the turbulence scenario, the sequence of events is the same for states and non-state complexities. States simply come from cores that happen to be larger (bigger, richer, having better economies, *etc.*) and non-state complexities come from less resourceful structures. The range of turbulent velocities determines the relative proportions of small to large. The sibling rivalry scenario attributes small-scale complexities to dynamic interactions that can toss the structure out of the central processes of change.

Carneiro's theory is focused and explanandum events clearly stated. I have tested some of the causal conditions [event] underlying this theory such as organization of power, institutionalization of leadership, causality of the transition from sequential hierarchy to simultaneous hierarchy (cf. Johnson 1982), *etc.* and in light of my data, I support Carneiro's point that warfare (perpetual low-threshold conflict) is critical in the evolution of political systems and causes the rise of social complexity.

Here are the suggested conditions constituting the causal *chaîne d'opérations* in the rise of social complexity in general:

- abundance of food resources causes sedentism which results in population growth and leads to controlling access to resources;
- food producing technologies amplify economic productivity and consumption beyond the household or band level and cause the emergence of social ranks and hierarchies;

- concentration of power and decision-making beyond family level causes institutionalization of leadership (institutionalized [tenured] power), and sequential hierarchy;
- institutionalized [tenured] leadership causes centralization of power and amplifies competition (conflict) (transition from sequential to simultaneous hierarchy; change from achieved to ascribed statuses, which eventually produced centralized bureaucracies);
- power is symbolized and conflict ritualized through warfare, which becomes endemic cultural trait.

#### NOTE

<sup>1</sup> Causal explanation involves a pragmatic approach to answer real-world occurrences (see Vayda and Walters 2011 for discussion).

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