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Systemism: the alternative to individualism and holism

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Abstract

Three radical worldviews and research approaches are salient in social studies: individualism, holism, and systemism. Individualism focuses on the composition of social systems, whereas holism focuses on their structure. Neither of them is adequate, one because all individuals are interrelated and two because there are no relations without relata. The only cogent and viable alternative is systemism, according to which everything is either a system or a component of a system, and every system has peculiar (emergent) properties that its components lack. The simplest model of a system, whether concrete or abstract, is the ordered triple composition–environment–structure. Concrete systems, whether physical, biological, or social, are also characterized by their mechanism or modus operandi. This model is more realistic and therefore more useful. A few examples are examined.

Keywords: Boudon–Coleman diagram; Holism; Individualism; Interdiscipline; Social engineering; Social system; Systemism

1. Introduction

When contemporary social scientists hear the word “system,” they are likely to draw their intellectual guns. They seem to feel threatened by a return to the obsolete holism of Hegel, Comte, Marx, Durkheim, or Parsons. They are rightly diffident of imaginary collective entities such as collective memory, national spirit, and nations that allegedly hover above individuals. And so, they take refuge in the equally obsolete individualism of Hobbes, Locke, Smith, Weber, or the neoclassical microeconomists.

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To be sure, social individualists—pardon the oxymoron—do not deny that individual action is now constrained, now stimulated by the social context or situation. But of course they do not and cannot analyze the latter in individualist terms: they leave it as an unanalyzed whole. And they resist the very idea that individuals flock together—or are thrown together—into social systems such as families, tribes, villages, business firms, armies, schools, religious congregations, informal networks, or political parties, all of which are just as real and concrete as their individual constituents. Individualists insist that all these are just collections of individuals: they underrate or even overlook structure.

Hence individualists miss one of the most important and intriguing of all kinds of events in society and nature: the emergence of novelty or, more precisely, the emergence of things with systemic properties, that is, properties that their components or their precursors lack. By the same token, they fail to realize the existence of systemic social problems, such as those of poverty and underdevelopment, that cannot be solved by doing one thing at a time, because they affect several systems at once—the biological, economic, cultural, and political ones.

2. Systems everywhere

This situation has no parallel in mathematics, natural science, or technology. Indeed, mathematicians know that all valid reasonings (deductive arguments) are systems of statements, and they value hypothetico–deductive systems (theories) well above unstructured sets of formulas. Systemicity is indeed peculiar to modern mathematics. Just think of the concepts of real number system, system of functions, system of equations, coordinate system, topological space, algebra, and axiomatic system. As Hardy (1967) stated, the importance of a mathematical idea is somehow proportional to its relatedness to other mathematical ideas, that is, to its belonging to different mathematical systems. Hence the centrality of logic, the system that underlies, or is included in, all mathematical theories. One might even say that, in mathematics, to be is to be a component of at least one mathematical system. Strays do not qualify.

Physicists use the concept of a system just as frequently as mathematicians, for they study such systems as atoms, molecules, crystals, stars, laser beams, and weather systems. Likewise, chemists study systems of interacting chemical reactions. And of course biologists study systems at all levels: subcellular (such as chromosomes), cells, organs, multicellular organisms, populations, and ecosystems. Only particle physicists study non-systems, such as quarks, electrons, and photons. But they know that all such simple things are parts of systems or will eventually be absorbed by some system.

Much the same holds for technology. Indeed, technology consists in the design, redesign and testing of artifacts. And all of these are artificial systems. Indeed, even the simplest of machines and the simplest of formal organizations is a system, that is, a complex thing whose components are bound together, as a consequence of which the whole has peculiar properties and behaves as a unit in some respects. Think of pulleys, batteries, engines, or computers; or of schools, clubs, business firms, or governments. All artifacts, whether physical like television networks, biological like cows, or social like corporations, are systems. Hence they

should be designed, maintained and repaired in a systemic way rather than bit by bit. That is, they should be examined and handled as wholes, though not as blocs but as systems with a composition, an environment, a structure, and a mechanism.

3. Systemism

The ubiquity of the concept of a system is such, that it suggests adopting a whole systemic worldview. This is centered in the following postulates:

1. Everything, whether concrete or abstract, is a system or an actual or potential component of a system;
2. systems have systemic (emergent) features that their components lack, whence
3. all problems should be approached in a systemic rather than in a sectoral fashion;
4. all ideas should be put together into systems (theories); and
5. the testing of anything, whether idea or artifact, assumes the validity of other items, which are taken as benchmarks, at least for the time being.

Yet, social individualists resist the systemic approach. They insist on studying only the components of social systems, that is, individuals, while overlooking their structure or set of connections (internal and external). I guess theirs is a defensive strategy: they do not wish to be taken for holists, and they are diffident of the writers who call themselves system theorists although actually they are holists. (Talcott Parsons, Niklas Luhmann, and Erwin Laszlo come to mind.) Their opaque and long-winded utterances has given systemism a bad name. I guess this is why most social scientists shun the word ‘system’ even while studying social systems.

Fortunately, few authentic social scientists practice the philosophy they preach. For example, Karl Marx was a holist in epistemology: in fact, he was the grandfather of the now fashionable social constructivism. But when it came to economic and political matters, he insisted that individual action is the source of all social change. Likewise, Max Weber popularized Dilthey’s individualism, subjectivism and antiscientism. But he did not practice these philosophical views: indeed, he proceeded scientifically when tackling sociological and socioeconomic problems. Moreover, Weber studied such systems as the slave society, the caste system, the feudal structure, organized religion, bureaucracy, industrial capitalism, and legal codes.

Closer to us, James S. Coleman (1990) stated that, in his own variant of methodological individualism, “[t]he interaction among individuals is seen to result in emergent phenomena at the system level” (p. 5). Moreover, he criticized the “fiction that society consists of a set of independent individuals, each of whom acts to achieve goals that are independently arrived at, and that the functioning of society consists of the combination of these actions of independent individuals” (p. 300). And he stated that “the correct path for social theory is [. . .] to maintain a single conception of what individuals are like and to generate the varying systemic functioning not from different kinds of creatures, but from different structures of relations within which these creatures find themselves” (p. 197). In other words, once a social system is in place, individuals become replaceable to some extent: their roles can be enacted

by different persons. When I told Coleman that his views were not individualist but systemist, he replied that maybe he was a closet systemist.

4. A batch of examples

Moreover, Coleman, Boudon, and others have performed plenty of micro-macro analyses. These can be condensed in what may be called Boudon-Coleman diagrams (Bunge 1996, 1998). Here is a self-explanatory example:

Macrolevel Economic growth → Population stagnation

↓ ↑

Microlevel Old-age security → Decline in fertility

A holist is likely to be baffled by the information that, in our time, economic growth is bound to be accompanied by population stagnation; and the individualist must take old-age security as a given—even if it depends partly upon a macrosystem, namely government. The systemist dissolves the paradox by linking the system and individual levels. In doing so he unveils the mechanism that mediates two macrovariables.

Second example: There are two main currents in the study of ideas, the individualist or internalist, and the holist or externalist. Internalists focuse on conceptual problems and solutions, whereas holists focuse on networks and formal organizations. The internalists tend to deal in disembodied ideas, whereas the externalists tend to study groups while minimizing the importance of ideas. The two parties do not talk to each other. And yet it should be obvious that each of them sheds light on only one of the sides of the coin, and that neither captures the complexity of the micro-macro links. For example, internalists cannot explain why science was born only once, in ancient Greece, and why it whithered a couple of centuries later. Externalists are equally at a loss to explain these processes, because they cannot even distinguish science from magic, religion, or philosophy, all of them allegedly being "social constructions" contrived by groups or networks (see, e.g., Collins, 1998).

By contrast, the systemist is likely to look at the problem this way. Every thinker is born into a pre-existing tradition, which he either follows or rebels against. He inherits some findings and problems and, if original, invents or discovers new ones. The solutions he proposes to the problems he tackles are born in his brain, not in society: social groups are brainless, hence they cannot think. Of course, social groups and circumstances can stimulate or inhibit thought. But their influence is not such that every idea has a social content, let alone a political purpose.

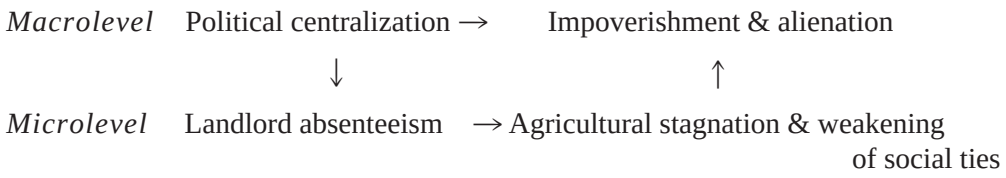
Obviously, the ideas in social studies have a social content. Hence, they must be judged by their adequacy to social facts or their efficiency in promoting social change. By contrast, the validity of mathematical proofs, and the truth of physical or biological theories, have nothing to do with social class, political power, or economic growth. These social factors are relevant only to the ability of individual researchers to conduct their work without distorting political or ideological pressures. For example, the cultural policy of liberalism, which is based on individualism, is one of benign neglect. By contrast, the totalitarian cultural policy,

which is based on holism, is one of censorship. (For the holism-Nazism connection, see Harrington, 1996.)

My third example is Tocqueville's ([1856] 1998) explanation of the backwardness of French agriculture compared with the English in the eighteenth century. The mechanism was landlord absenteeism, far more common in France than in England. Whereas the typical French aristocrat left the administration of his land in the hands of a steward, and took up a position as a civil servant or a courtier, his English counterpart was typically a gentleman-farmer who lived on his estate and saw personally to it that his land was well cultivated, his tenants paid punctually their rent, and his neighbors observed law and custom. In sum, whereas the typical squire remained at the center of his rural web, his French counterpart was marginalized.

In turn, the root of this difference is macrosocial, namely the political organization, which was centralist in France and decentralized in England. A French aristocrat gained more power and prestige from shuffling papers, socializing and scheming in Paris, than from pottering in his grounds, learning new cultivation methods, and acting as local magistrate. In this case, individual choice, and its consequence for rural life, were ultimately determined by the political system. As Tocqueville himself wrote, "the chief and permanent cause of this fact was [. . .] the slow and constant actions of institutions" (p. 181).

Boudon (1998) regards this case as confirming what he calls contextual individualism and cognitive rationality. I prefer to think of Tocqueville as a systemist *avant la lettre*, particularly since he noted the social aspect of the process in addition to its economic and political ones. Indeed, Tocqueville's main point is that landlord absenteism destroyed the rural web centered in the landlord, in addition to impoverishing landlord and peasant alike. He was thus a socio–econo–politologist. Indeed, his explanation fits the following Boudon–Coleman diagram:



In this case, like in all other social processes, there are uncounted individual choices, decisions and actions. But all of them occur within or between social systems, and they reinforce or weaken the bonds that keep these systems together. Choice, action, bond, and context go together.

5. A second batch of examples

Fourth example: The science-technology-market system. There are two main socioeconomic views on the relation of technological innovation and the market. Individualists claim that inventor proposes and market disposes. Holists claim, by contrast, that invention is market-driven: market demands and inventor supplies. (Yet, ironically, all market worshippers espouse individualism.) Each party parades a large collection of examples, without

bothering about counterexamples. I submit that only a systemic view of the matter attains the whole truth.

The first thing to note is that there are big inventions and small ones: radical novelties and improvements. Whereas the former are motivated mainly by sheer curiosity and the love of tinkering, improvements may also be motivated by profit: they are often commissioned by the technologist's employer with a view to marketing the corresponding products. By contrast, some radically new inventions have created whole new markets. For example, the electrical industry was made possible by electrical engineering, which in turn was the child of experiments and theories on electricity and magnetism. In particular, Michael Faraday discovered the principle of electromagnetic induction, which was used by Joseph Henry to design the electric motor, and by Nikola Tesla to design the dynamo. Industry transmuted these and many other bits of scientific and technological knowledge into welfare and wealth. This is only one of many science-technology-industry systems. The market does not create: it only demands and selects—that is, rewards or punishes. It would be just as silly to underrate its power as to regard it as the fountain of technological ingenuity.

Fifth example: The combination of competition with cooperation. Whereas individualists stress competition or struggle, holists emphasize cooperation or solidarity. (Marxism is a special case: it stresses interclass warfare but intraclass solidarity.) Actually, competition and cooperation coexist in all social systems, though not in the same respects. Social systems cannot emerge and persist without a modicum of (spontaneous or coordinated) cooperation in some regard. And, once in place, competition in some respect is bound to arise precisely because of a common interest in some scarce resource—attention, love, time, space, food, money, job, or what have you.

Think for instance of a scientific community. Some post-Mertonian sociologists of science, notably Latour and Woolgar (1979), claim that there is no such community: that individual scientists are engaged in a selfish and unscrupulous struggle for power. But these writers are poorly informed in this regard as in others (see Bunge, 1999). Indeed, every scientist knows that, while researchers compete for peer recognition, they also learn from one another: scientific research is a social endeavor even when it has no social content and no practical value (see Merton, 1973). As Wolpert (1992) states, "[i]n order to promote the success of their ideas, scientists must thus adopt a strategy of competition and cooperation, of altruism and selfishness" (p. 88). In any event, Latour's claim that "science is politics by other means" has recently been falsified by an empirical study of citations (Baldi, 1998).

Sixth example: Boudon (1974), who calls himself a contextual individualist, has shown that the proliferation of universities after World War II has had a perverse effect. This is the emergence of a voluminous intellectual proletariat, and a concomitant increase in social inequality. The mechanism is this: As the number of university graduates increases, the queues of candidates waiting for qualified jobs lengthen. The practical moral is obvious: to check the massive unemployment of university graduates, either (a) impose quotas in the professional faculties, or (b) raise the level of job specification in industry and government. That is, influence choice to minimize failure.

6. Implications for social-policy design

The preceding examples suggest two important points, one theoretical and the other practical. The first is that the explanation of social change calls for the unveiling of social mechanisms, which in turn involves micro-macro analyses. This is so because every individual action is partially constrained by macrosocial circumstances, which may in turn be affected to some extent by individual actions.

The second point is that the design of effective social policies should be based on correct hypotheses concerning the social mechanisms of interest. The reason is that a social policy is supposed to set up or repair some social mechanism—e.g., of wealth redistribution, conflict resolution, or health care. By contrast, the intuitive and the empirical approaches to social policy-making are wasteful and often counterproductive. For example, contrary to popular wisdom, a raise in minimum wage does not increase unemployment, but benefits the economy as a whole because it increases demand (Card, 1995).

There is an additional reason for favoring systemic social policies, namely that social problems are typically systemic. That is, they involve many interrelated features and even several social systems at a time. For example, an effective policy of national development must involve factors of various kinds: environmental (e.g., protection of forests and fisheries), biological (e.g., birth control and health care), economic (in particular industrialization), political (in particular political participation), and cultural (in particular education).

The reason for such multifactorial approach is that all those factors are interrelated. For example, there is no modern industry without educated manpower, and no education on an empty stomach, let alone on a gut full of parasites. For this reason, the sectoral and one-problem-at-a-time approach is bound to fail. Even a staunch individualist like the financial wizard George Soros (1998, p. 226) has concluded that, contrary to the opinion of his erstwhile teacher Karl R. Popper, piecemeal social engineering cannot work to solve systemic problems, and suggests that these must be tackled radically and in all their complexity.

Contrast the systemic approach to social issues with its rivals. The radical individualists oppose all social planning in the name of individual liberties (aka privileges). Hence they leave individuals to their own resources—which, in an inegalitarian society, are meagre for most people. On the other hand, holists swear by top-down planning. Hence, even when they address the basic needs of the common people, they are likely to ignore their aspirations and rights. In either case, the powerless individual, whether forsaken or corralled, has nothing to gain. The systemic approach to social policy-design is quite different from both libertarianism and totalitarianism: it attempts to involve the interested parties in the planning process, and designs social systems and processes likely to improve individual well-being, revising the plans as often as required by the changing circumstances.

7. Social science is about social systems

Consider briefly the French Revolution of 1789. Despite its tremendous world-wide consequences, it was a cakewalk: the central government fell in the course of an evening.

Tocqueville ([1856] 1998) explains this process clearly and in systemic terms, namely as a result of the replacement of the feudal social networks with four closed and mutually hostile castes: those constituted by the peasants, bourgeois, aristocrats, and the Crown. Those traditional networks were ripped when, in the previous century, the landowners abandoned their land and left their tenants to their own devices as a consequence of the concentration of both government and nobility in Paris. This is how it happened that "the ties of patronage and dependence which formerly bound the great rural landowners to the peasants had been relaxed or broken" (p. 188). The king was thus a victim of his own art "of dividing people in order to govern them more absolutely" (p. 191).

There was more: the centralization of political power left a political vacuum that was filled by the intellectuals, most of whom criticized the unjust social order. This explains the disproportionate influence of the *philosophes*, in particular the Encyclopedists: they occupied the place that the aristocrats occupied in England and elsewhere at the time. "An aristocracy in its vigor not only runs affairs, it still directs opinion, sets the tone for writers, and lends authority to ideas. In the eighteenth century, the French nobility had entirely lost this part of its empire; its moral authority had followed the fortunes of its power: the place that it had occupied in the government was empty, and writers could occupy it at their leisure and fill it completely" (p. 198). A century and a half later, the author of a huge treatise on the sociology of philosophy (Collins, 1998) devotes only one page to the Encyclopedists, and fails to explain their remarkable influence.

The point of these stories about the French Revolution is to remind ourselves that, contrary to the radical individualist tenet, society is not an unstructured collection of independent individuals. It is, instead, a system of interrelated individuals organized into systems or networks of various kinds. In fact, every one of us belongs at once to several systems: kinship, friendship and colleagueship networks, business firms, schools, clubs, religious congregations, etc. This explains the many "identities" every one of us has (Tilly, 1998, p. 34).

To be sure, the emergence, maintenance, repair, or dismantling of any social system can ultimately be explained only in terms of individual preferences, decisions and actions. But in turn these individual events are largely determined by social context. I support the systems that benefit me, and sabotage those that hurt me. In sum, agency and structure are only two sides of the same coin. We see agency through Weber's microscope, and structure through Marx's telescope.

Now, individuals are studied by natural science and psychology, which—along with anthropology, linguistics, demography, and epidemiology—is one of the biosocial sciences. The social sciences proper, such as sociology and economics, do not study individuals, except as components of social systems. Thus, anthropology studies entire communities such as villages and tribes. Sociology studies social systems, all the way from the childless couple to the world system. Economics specializes in the study of the social systems engaged in production, services, or trade. Politology studies power relations in all systems, particularly the political ones. And history studies social (structural) changes on all scales.

It is not enough for a social scientist to point out the social context or circumstance of a fact. He is expected to study *social* facts, and a social fact happens to be one that happens in a social system—such as a strike in a factory—or between social systems—such as an

international conflict. Hence, he must study social *bonds* in addition to social contexts, for bonds are what hold social systems together.

In short, the social sciences study social systems. Some of those who dislike the word 'system' prefer the word 'structure'. But structures are properties of things, not things, whereas social systems are concrete things. For example, a corporation is a system with a definite (though perhaps changing) structure, or set of bonds among its components and its environment. The socioeconomists who study the social structure of a corporation do not investigate the structure of a structure—a meaningless expression—but the structure of a thing.

8. Interdisciplines

The interconnectedness of social facts ought to be reflected in the social sciences studies. That is, the frontiers among them ought to be trespassed, as Hirschman (1981) has insisted, because they are artificial. The reason is that all the social sciences refer to a single entity: society. In other words, we should promote the mongrel disciplines, or interdisciplines, such as socio-economics, political sociology, economic anthropology, sociolinguistics, and biological sociology (not to be mistaken for sociobiology). Robert Vogel's (1994) work on the relations among economic growth, demography, physiology, and economic policy making, is a brilliant illustration of the rewards of interdisciplinarity.

As a matter of fact, the merger process started a century ago in the natural sciences, and is now in full swing in the social sciences (see, e.g., Smelser and Swedberg, 1994). Witness the following laundry list of intersciences, some basic and others applied: Physical chemistry, biophysics, biochemistry, cognitive neuroscience, neurolinguistics, biosociology, socio-economics, medical sociology, and legal sociology.

If the precursor disciplines are represented by circles, the corresponding interdiscipline is represented as the intersection between those circles. And the entire system of the sciences can be represented as a rosette of hundreds of partially overlapping petals.

Obviously, not every juxtaposition of disciplines will result in their combination. For example, geosociology and molecular economics are hopeless monsters. Let us sketch the conditions for the fertile marriage of two previously separate disciplines. Call D_1 and D_2 the precursors of an interdiscipline D_{12}. Next, call $\mathcal{R}(D_1)$ y $\mathcal{R}(D_2)$ the respective reference classes (or collections of entities which they account for). Further, let $\mathcal{C}(D_1)$ and $\mathcal{C}(D_2)$ designate the sets of technical (or specific) concepts of the respective disciplines. Let us now propose a couple of definitions.

Definition 1. D_{12} is the interdiscipline comprised between D_1 y D_2 if, and only if,

(a) $\mathcal{R}(D_{12}) = \mathcal{R}(D_1) \cap \mathcal{R}(D_2) \neq \varnothing$;
(b) $\mathcal{C}(D_{12}) = \mathcal{C}(D_1) \cap \mathcal{C}(D_2) \neq \varnothing$;
(c) there is a non-empty set $P(D_{12})$ of bridge (or clamp) formulas, in which concepts of both $\mathcal{C}(D_1)$ and $\mathcal{C}(D_2)$ occur.

The semantic concept of reference is exactified elsewhere (Bunge, 1974). The idea of a specific or technical concept, such as that of social structure in sociology, and demand elasticity in economics, hardly needs comment. By contrast, the concept of a bridge (or clamp) formula can do with some clarification, all the more since the same expression has been used with a different meaning in the philosophical literature on reduction. Let the following examples suffice.

In biophysics: The velocity of circulation of blood increases as its viscosity decreases.
In biopsychology: Speech = Specific activity of the Wernicke or Broca areas in the cerebral cortex.
In bioeconomics: A renewable resource is exploited rationally if and only if its rate of renewal exceeds the rate at which it is farmed.
In socio-economics: Labor productivity is inversely correlated to income inequality.
In criminology (conceived of as a merger of sociology and law): The crime rate is a linear function of the unemployment rate.

These examples show that a bridge formula may be either a law or a definition. We may now resume the task of defining some concepts.

Definition 2. An interdiscipline is

(i) an *interscience* if and only if it is scientific;
(ii) an intertechnology if and only if it is technological.

Remark. For an interdiscipline to be scientific (or technological) it is necessary, though insufficient, that at least one of its precursors be scientific (or technological). That this condition is not sufficient, is proved by the existence of such pseudosciences as astrology (a hybrid of astronomy and folk psychology) and psychohistory (a cross of history with psychoanalysis), and such pseudotechnologies as faith healing and monetarist macroeconomics. In sum, pedigree is not enough: the claim to the scientific character of an interdispline must be established independently.

We are finally in a position to commit ourselves to a definite thesis about interdisciplinarity:

Postulate. Given any two disciplines, there is another discipline such that an interscience can be interpolated between the two.

In other words, there are no independent sciences or technologies. If a field of knowledge is disjoint from all the sciences, then it is nonscientific. For example, psychoanalysis and parapsychology are alien to experimental psychology and neuroscience: this suffices to prove that they are pseudosciences.

9. Conclusion

Neither of the two most influential approaches to the study and management of social affairs is completely adequate, let alone practically efficient. Individualism is deficient because it underrates or even overlooks the bonds among people, and holism because it plays down or even enslaves individual action. By contrast, systemism makes room for both

agency and structure. Moreover, it emphasizes the role of the environment, and suggests studying or altering the mechanisms of both social stasis and social change. The consequence for political philosophy and social-policy design is that systemism takes into account social values (ignored by individualism) as well as individual values (held in contempt by holism). Hence, it is more likely than its rivals to inspire and defend policies that combine competition with cooperation, and enhance individual welfare and liberty while strengthening or reforming the requisite institutions.

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