Ten Modes of Individualism—None of Which Works—And Their Alternatives

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Individualism comes in at least 10 modes: ontological, logical, semantic, epistemological, methodological, axiological, praxiological, ethical, historical, and political. These modes are bound together. For example, ontological individualism motivates the thesis that relations are *n*-tuples of individuals, as well as radical reductionism and libertarianism. The flaws and merits of all ten sides of the individualist decagon are noted. So are those of its holist counterpart. It is argued that systemism has all the virtues and none of the defects of individualism and holism. One such virtue is the ability to recognize that individualism is a system rather than an unstructured bag of opinions—which raises the question whether thorough and consistent individualism is at all possible.

An individual is, of course, an object, whether concrete or abstract, that is undivided or is treated as a unit in some context or on some level. For instance, persons are individuals in social science but not in biology, which treats them as highly complex systems. Again, chemical and biological species are taxonomic units but not ontological individuals. As for individualism, it is the view that, in the last analysis, everything is either an individual or a collection of individuals. This is a strong and pervasive ontological thesis.

This thesis underlies and often motivates another nine modes or facets of individualism: logical, semantical, epistemological, methodological, axiological, praxiological, ethical, historical, and political. Oddly, individualism, although pervasive, is usually seen only in relation to human affairs, particularly in the guises of methodological individualism and egoism. This may be due to the fact that, despite its

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I thank Martin Mahner for his useful queries and criticisms.

Received 13 April 1999

Philosophy of the Social Sciences, Vol. 30 No. 3, September 2000 384-406

pervasiveness, individualism—as will be argued below—does not constitute a viable worldview.

The multiplicity of components of individualism, let alone their interdependence, is seldom if ever acknowledged. But, if ignored, none of the individual components of individualism can be correctly understood and evaluated. By contrast, when the multiplicity of individualism is acknowledged, it is seen that its 10 components hang together both conceptually and practically. That is, they form a system or whole made up of interconnected parts—which of course goes against the grain of individualism itself.

I have set myself three tasks in this article. The first is to characterize, evaluate, interrelate and exemplify the 10 types or components of individualism. In each case, two strengths of individualism will be distinguished: radical and moderate. The reader should have no difficulty in supplying names of outstanding scholars who have argued for or against any of the various modes of individualism since ancient times. The second task is to confront individualism with its opposite, namely holism (or organicism). The third is to see whether we are forced to choose between the two, or whether an alternative to both is viable and preferable.

Three warnings are in place. First, I submit that logical discussion is necessary but insufficient to find out whether any given philosophical doctrine works: its compatibility with the bulk of relevant antecedent knowledge must be examined, too. Second, it is unlikely that anyone has been consistent (or foolhardy) enough to uphold all 10 kinds of individualism at once. Third, although individualism is often associated with rationalism, the two are logically independent. After all, Aristotle, Aquinas, Comte, Marx and Durkheim were anti-individualists as well as rationalists of sorts. And most stock-market investors, who are presumably individualists in more than one way, are swayed by greed and fear as well as by rational argument.

1. ONTOLOGICAL

Ontological individualism is the thesis that every thing, indeed every possible object, is either an individual or a collection of individuals. Put negatively, there are no wholes with properties of their own, that is, systemic or emergent properties. Ancient atomism, medieval nominalism, Lenieswski's calculus of individuals, rational choice the-

ory, sociological and legal individualism, and libertarianism either exemplify or presuppose ontological individualism.

The doctrine comes in two strengths: radical and moderate. Radical individualists claim that individuals have no properties of their own other than that of associating with other individuals to constitute further (complex) individuals. All attribution and all classing would be strictly conventional. As a consequence, there would be no natural kinds, such as chemical and biological species: all kinds would be conventional.

Moreover, a world of individuals would be deprived of universals, in particular of laws. Hence, it would be lawless or chaotic in the original sense of the word. If—defying the laws of biology—there were humans in such a world, they would be unable to think in general terms. Furthermore, they would be incapable of acting on the strength of rules grounded on laws, since these—the ontic universals par excellence—would not exist.

By contrast, moderate ontological individualism, exemplified by ancient atomism and modern mechanism, admits properties and possibly natural kinds as well. But it still regards individuals as primary in every sense, and it overlooks or even denies the existence of systems. Undoubtedly, this view contains an important grain of truth: that all the known complex things result from the aggregation, assembly, or combination of simpler ones. For example, light beams are packages of photons, molecules emerge as combinations of atoms, multicellular organisms by either combination or division of single cells, and social systems from the association of individuals.

However, none of these assembly processes occurs in a vacuum. Thus, every atom is embedded in fields of various kinds, and every human being is born into a family and is partly shaped by his or her natural and social environment. No man is an island—nor is atom. (Even Hobbes, the arch-individualist, admitted that in the "state of nature" there are no children, since these are born from their mothers.)

Moreover, some assembly processes result in systems, and every system has not only a composition but also a structure: the set of ties among its components. But, according to individualism, composition is everything, whereas structure is nothing. Hence, a consistent individualist will be unable to distinguish a snowflake from a water droplet, or a business firm from a club constituted by the same individuals. Likewise, the upholders of the "selfish gene" fantasy regard the very existence of organisms as paradoxical, since they deny the coopera-

tion among genes and among these and the other components of the organism.

Both in logic and in science, individuals and properties—whether intrinsic or relational—come together on the same footing: neither is prior to the other. In particular, there are no relations without relata—by definition of "relation." Moreover, every entity emerges and develops in interaction with other entities. This holds for persons and corporations as well as for molecules, cells, and other concrete entities.

Furthermore, any given individual is likely to behave differently in different contexts—for example, in a dyad, a triad, or a crowd. In sum, everything in the world is connected, directly or indirectly, with other things. Except for the universe as a whole, the total loner, be it atom, person, or what have you, is a fiction. These are systemist theses. (Interestingly, they were corroborated in 1981 by the experiments that falsified Bell's inequalities, which amount to separability.)

In short, ontological individualism does not work, except as a very crude approximation, namely, in the case of negligible interactions (as in a low-density gas). However, it contains two important truths. These are the theses that only particulars have real existence and that there are no universals in themselves. Yet, both are part of the systemic ontology, to be sketched in section 10.

2. LOGICAL

Logical individualism is the view that all constructs are built out of conceptual or linguistic individuals, or zeroth type items. It comes in two strengths: radical and moderate. Radical individualism denounces classes, or it tolerates them but regards them as virtual or fictitious—as if such individuals as points and numbers and operations were any less fictitious.

Set theory treats sets as wholes with properties that their elements do not possess—for example, cardinality and inclusion in supersets. Since set theory is the basement of mainstream mathematics, the adoption of radical logical individualism would cause the collapse of the entire mathematical building. (Substituting categories for sets does not improve things for the individualist because the basic bricks of categories—namely, arrows or morphisms—are even more remote from individuals than sets.)

Another consequence of radical individualism is that it cannot account for the unity of logical arguments and theories. Indeed, every

argument is a whole and more particularly a system, not a mere aggregate, of propositions. The same holds, a fortiori, for theories, which by definition are hypothetico-deductive systems of propositions, that is, potentially infinite systems of deductive arguments. The structure of any such system, that is, the relation that holds it together, is that of entailment. And, pace nominalism, this relation is not definable as a set of ordered pairs of the form <premise(s), conclusion(s)>. Indeed, in all the logical calculi, the entailment relation is tacitly defined by a set of rules of inference.

Extensionalism is the moderate version of logical individualism. Extensionalism admits classes but holds that predicates should be defined as sets of individuals deemed to possess such attributes. In other words, logical extensionalism holds that predicates are identical with their extensions. Thus, "is alive" would amount to the collection of all living things. But in practice, one must use the predicate "is alive" to construct any class of living things. Moreover, different predicates may be coextensive, as is the case with "is alive" and "metabolizes."

All nonarbitrary classes are generated by predicates. In the simplest case, that of a unary predicate *P*, the corresponding class is $C = \{x \mid Px\}$, read "the set of all individuals with property *P*." Something similar holds for predicates of higher degrees. Thus, we must have some concept of love before endeavoring to find its extension, that is, the class of ordered pairs of the form <lover, loved>. In sum, predicates precede (logically) kinds.

Extensionalism occurs in the standard characterization of a relation (in particular a function) as a set of ordered pairs or, in general, a set of ordered *n*-tuples. A first objection to this characterization is that it is only feasible for finite sets. And even in this case, it only yields the extension of the relation, and it is not always feasible. For example, the relation of predication is not definable as a set of subject-predicate couples. A second objection is that *n*-tuples have very different properties from their components—a simple case of emergence. For example, an ordered pair of even numbers involves an order relation, and it is neither even nor odd. Furthermore, the standard set-theoretic definition of an ordered pair involves an order concept.

A third objection to extensionalism is that the most important of all relations in set theory, that of membership, or $\in$, is not definable as a set of ordered pairs of the forms < individual, set >, or < set, family of

sets>. Instead, the $\in$ relation is defined implicitly by the axioms in set theory in which it occurs. If $\in$ were construed extensionally, it would have to be admitted that "$x \in y$" can be rewritten as "$<x, y> \in \in$"—obviously an ill-formed formula.

Nor does one usually define functions as sets of ordered n-tuples, or tables. Again, this is possible only for finite sets such as a finite (hence miserly) sample of the nondenumerable set of ordered pairs $<x, \sin x>$. Only the *graph* (extension) of a function is a set of ordered n-tuples, as Bourbaki notes in *Théorie des ensembles*. For example, the graph of a function $f: A \quad B$ from set A into set B is $\Gamma(f) = \{<x, y> \mid y = f(x)\}$. But the function f itself is defined otherwise, whether explicitly like the trigonometric functions or implicitly, for example, by a differential equation or an infinite series. (Moreover, the more interesting functions come in families or systems.)

In short, logical individualism does not work. We should keep the difference between a predicate P defined on a domain D and its extension $\mathcal{E}(P) = \{x \in D \mid Px\}$, read "the collection of Ds that possess property P." Moreover, we must distinguish this set from the collection $\mathcal{R}(P)$ of individuals that P refers to, that is, the reference class of P. One reason for this distinction is that it may well be that, whereas $\mathcal{E}(P)$ is empty, $\mathcal{R}(P)$ is nonempty. (Examples of predicates with a nonempty reference but an empty extension are "the greatest number," "magnetic monopole," and "perfectly competitive market." Such unrealistic predicates are wrongly said to be nonreferring.) Another reason is that, whereas the extension of an n-ary predicate is a set of n-tuples, the reference class of the same predicate is a set of individuals.

Obviously, the failure of logical individualism makes no dent on logical analysis. It only shows that an analyzed system is still a whole, or higher order individual, with properties of its own, among them its structure. Moreover, only logical analysis can ascertain whether a given set is a system, that is, a collection every member of which is logically related to some other members of the same set. Hence, the demise of logical individualism poses no threat to rationalism.

The upshot for mathematics, science, and technology is that they would gain nothing and lose much if they were to eliminate predicates in favor of individuals or n-tuples of individuals. The reason is that there are no real bare individuals, devoid of properties: these are fictitious.

3. SEMANTIC

According to semantic individualism, the meaning of a conceptual or linguistic whole, such as a sentence or the proposition it designates, is a function of the meanings of its parts. However, the function in question has never been specified. Moreover, it cannot be defined because the thesis is false, as shown by the following counterexamples.

Heidegger's definition of time as "the ripening of temporality" is meaningless even though its constituents make sense. Another example is that the sentence "That will do" gets its meaning from its context. A third one is that the proverbial propositions "Dog bit man" and "Man bit dog" are not the same although they have the same constituents. As a last example, the predicate "good teacher" does not equal the conjunction of "good" and "teacher." Instead, "good teacher" is definable as the conjunction of "teacher," "knows his subject," "loves his subject," "clear," "inspiring," "dedicated," "patient," "considerate," and so forth. In short, contrary to individualism, the units of meaning—concepts and their symbols—are not assembled like Lego pieces. Rather, they combine like atoms and molecules—or people, for that matter.

Linguists have known for nearly two centuries, particularly since de Saussure's 1916 classic work, that every language is a system, whence no expression is meaningful by itself, that is, separately from other expressions in the language. So much so that a language may be analyzed as a system with a definite composition (vocabulary), environment (the natural and social items referred to by expressions in the language), and structure (the syntax, semantics, phonology, and pragmatics of the language).

What holds for languages also holds, mutatis mutandis, for conceptual systems, in particular classifications and theories. Indeed, the sense or content of a part of such a system depends on the sense of other members of the whole: it is a contextual not an intrinsic property. For example, the meet ($\vee$) and join ($\wedge$) operators in a lattice intertwine so intimately that it is impossible to disentangle them. Consequently, they have no separate meanings. And in classical particle mechanics, the sense of "mass" depends on that of "force" and vice versa, although both are undefined and in particular not interdefinable. Their meanings are interdependent because they are related through Newton's second law of motion. Were it not for the latter, we

would be unable to interpret mass as inertia and force as a cause of acceleration.

What is true is that—contrary to semantic holism, in particular intuitionism—the linguistic and conceptual wholes, such as texts and theories, must be analyzed to be correctly understood. And analysis is, of course, the breaking down of a whole into its constituents—without, however, severing the relations that hold them together. Moreover, conceptual analysis is best performed in the context of a conceptual system, preferably a hypothetico-deductive system or theory. For instance, to grasp the meaning of the technical concept of spin in microphysics, it is necessary to place this concept in some theory of elementary spinning particles, according to which spin is anything but a rotation. Incidentally, this example shows that ordinary-language analysis cannot ferret out the meaning of theoretical terms.

Semantic individualism also holds that truth values can be assigned or estimated one at a time. This presupposes that truth values inhere in propositions. But this is only true for logical truths and falsities—and even so only within a given logical calculus. The truth value of extralogical propositions depends on the truth value of others: axioms in the case of theorems and empirical evidence in the case of low-level factual statements. In other words, the truth value of any proposition other than a logical formula depends on other statements in the given context. In these cases, one should not write "p is true" but "p is true in (or relative to) context C."

In short, semantic individualism does not work because it overlooks the web in which every construct and every sign is embedded. Still, its thesis that analysis is necessary stands and is important.

4. EPISTEMOLOGICAL

Epistemological individualism is the thesis that to get to know the world, it is necessary and sufficient to know the elementary or atomic facts—whence the name "logical atomism" Russell and Wittgenstein gave to this doctrine. Any complex epistemic item would then be just a conjunction or disjunction of two or more atomic propositions, each describing (or even identical to) an atomic fact.

This view may hold for the knowledge of everyday facts recorded in such sentences as "The cat is on the mat"—a favorite with linguistic philosophers. But it fails for the most interesting scientific statements, which are universal generalizations that cannot be reduced to con-

junctions because they involve quantification over infinite or even nondenumerable sets. (Example: "For all t in $T \subseteq \mathbb{R}$: $f(t) = 0$," where t designates the time variable, whose values lie on the real line $\mathbb{R}$, and "$f(t) = 0$" is a possible form of a law statement such as a rate equation or a dynamical law.)

A norm of epistemological individualism is that all problems should be tackled one at a time. But this is not how one actually proceeds in research. Indeed, posing any problem presupposes knowing the solution to logically previous problems. In turn, the solution to any interesting problem raises further problems. In short, problems come in packages or systems. The same holds for issues or practical problems. For example, drug addiction is not successfully fought by just punishing drug pushers, let alone drug addicts. It might only be solved by attacking its economic and cultural roots, such as poverty, the free drug market, anomie, and ignorance. Thus, practical problems too assemble into systems, whence the maxim "One thing at a time" is a recipe for failure or even disaster. Systemists should prefer the rule "All things at a time, though little by little."

Epistemological individualism, like its ontological mate, may have been suggested by ancient atomism, but it fails in modern atomic physics. The reason is that a quantum-theoretical problem is not well posed unless a boundary condition is stated—and the boundary in question happens to be an idealized representation of the environment of the object under study. And an ill-posed problem has either no solution or no unique solution.

More precisely, any problem in quantum physics boils down to stating both the state equation and the boundary condition. The latter specifies that the state function vanishes at the boundary. Now, a change in boundary may be accompanied by a qualitative change in the solution. For example, the state of a free electron confined within a box is represented by a standing wave; by contrast, if the box expands to infinity, the electron is represented by a propagating wave. Moreover, the form of the solution depends critically on the shape of the box: the "wave" may be plane, spherical, cylindrical, and so forth. In sum, there will be as many solutions to the problem as stylized environments.

The point in recalling this example is that, far from being analyzed, the environment idealized by the boundary condition (box) is taken as an unanalyzed macrophysical whole. The social analog is the (macrosocial) situation or institution, which is not describable in microsociological terms. This social context—particularly the eco-

nomic, political, and ideological constraints and stimuli, as well as the mores and ethos of the epistemic community—is all too often overlooked by the individualist epistemologist, just as it is wildly exaggerated by his collectivist counterpart. But if cognition is detached from its social womb, it becomes impossible to understand how knowers get to learn anything, why peer recognition is such a powerful motivation of research, or why other members of the scientific community rather than the researcher himself are eager to falsify his hypotheses.

Finally, epistemological individualism is defective also in focusing on the individual knower isolated from her epistemic community. It is not that the latter does the knowing, as the social constructivist-relativists claim: after all, social groups are brainless. Cognition is a brain process, but individuals learn not only through hard thinking and doing but also from one another. And, as Robert K. Merton put it long ago, they are motivated by two mutually reinforcing reward mechanisms: intrinsic (the search for knowledge) and extrinsic (peer recognition).

Moreover, the members of every scientific community are expected to abide by such social rules as the open sharing and discussion of problems, methods, and findings. So much so that to qualify for peer recognition, researchers pay a heavy peer-evaluation tax. In short, cognition is personal, but knowledge is social. "I know *X*" is not the same as "*X* is known [by the members of a given social group]."

5. METHODOLOGICAL

Methodological individualism is, of course, the normative counterpart of epistemological individualism. It holds that, since everything is either an individual or a collection of individuals, the study of anything is in the last instance the study of individuals. In other words, the proper scientific procedure would be of the top-down kind: from whole to part. This micro-reductionist strategy is best known in social studies, but actually it has been attempted—as well as vehemently denounced as "Cartesian"—in all fields.

For example, the properties of a solid would be known by analyzing it into its constituent atoms or molecules, and those of a multicellular organism by reducing it to its cells. But solid-state physicists know that the first conjunct of the previous sentence is false. Indeed, the properties of a solid are not understood by modeling it as an aggregate of atoms but by analyzing it into three components: the ion-

ized atoms, the electrons roaming among the latter, and the electromagnetic fields accompanying the ions and the electrons and that glue these constituents together. Hence, atomic physics, although necessary, is not enough to understand extended bodies. The disastrous consequence for radical reductionism should be obvious.

Likewise, biologists know that the second conjunct of the above claim is false as well since cells can associate into organs and the latter into larger systems, whose biological roles are quite different from those of their constituents. Hence, cellular biology is necessary but insufficient to understand organs and, a fortiori, the organism as a whole: one must also investigate how cells connect to one another, for example, through ions and hormones.

Methodological individualism works only for simple problems of the following form. Given an individual, together with its law(s) and circumstance(s), figure out its behavior. For instance, find the trajectory of a ball rolling down a ramp under the action of gravity—or the behavior of a maximizing consumer in a given market. But the method fails whenever interaction is of the essence. For instance, it fails for a binary star and, a fortiori, for a system of a large number of bodies (or persons). Actually, even in the case of the single body, the method gives only an approximate solution, for it neglects the reaction of the body on both the constraint and the field. Likewise, people are not passive agents either: they react on the very networks in which they are embedded.

If methodological individualism were adequate, to know a triangle it should suffice to know its sides regardless of its relations, namely, the inner angles—which is not even true in the exceptional case of equilateral triangles. Likewise, to know a human family it does not suffice to know its members: some knowledge of the relations among them and with other people is necessary as well. In general, social facts can only be understood by embedding individual behavior in its social matrix and by studying interactions among individuals. The composition and the structure of a system are just as inseparable in social matters as in natural ones. Detachment entails distinction but not conversely.

We need thus to combine the bottom-up (synthetic) and the top-down (analytic) approaches, which relate the microlevel to the macrolevel, instead of attempting to reduce the one to the other. (Individualists are micro-reductionist, whereas holists are macro-reductionists.) I submit that such combination, characteristic of the systemic approach in all research fields, retains the sound parts of

individualism and holism. Systemism yields explanatory schemata like the following, according as one starts with macro facts (top-down analysis) or with micro facts (bottom-up synthesis):

$$\begin{array}{lll} \text{Macro level} & \begin{array}{cc} A & B \\ \downarrow & \uparrow \end{array} & \begin{array}{cc} A \to B \\ \uparrow \quad \downarrow \end{array} \\ \text{Micro level} & a \to b & a \leftarrow b \end{array} \quad .$$

The partial failure of methodological individualism has an important consequence for the theory of scientific and technological explanation. According to the so-called covering law "model" of scientific explanation, to explain a fact is to show that it fits a pattern: that is, to subsume it under a law-like statement. But this is not what scientists or technologists call an explanation: they want to know how things work, that is, what makes them tick. This accounts for their preference for laws that sketch some mechanism or other—causal, random, or mixed—for the occurrence of the fact to be explained.

For example, physicists were not satisfied with Galileo's kinematical laws: they wished to know the causes of motion. Nor were they satisfied with thermodynamics: they endeavored to unveil the underlying mechanism, which turned out to be a combination of causation and chance. Again, it is not enough to state that remembered episodes are first "stored" in short-term memory, then transferred to long-term memory. Cognitive psychologists want to find out how such memories emerge, work, connect, and deteriorate: they are after the neural mechanisms of learning, memory, and forgetting. In particular, they wish to know whether learning is the same as the strengthening of synaptic efficacy leading to the formation of new systems of neurons. They are not satisfied by being told that mental processes are cases of "information processing"—whatever this may be.

Now, every mechanism is a process in some concrete system, such as an atomic nucleus, crystal, cell, brain, ecosystem, or business. And the very concept of a system is alien to individualism, which recognizes only the components of systems—for example, the trees in a forest and the individual members of an organization. Hence, explanation proper, which invokes mechanisms, is beyond the ken of individualism. Consequently, methodological individualism erects an intolerable barrier to scientific understanding.

In short, methodological individualism does not work. Moreover, it cannot work because the universe is not a mere aggregate of atomic facts but a system of systems and because agents—in particular,

knowers—are not self-reliant individuals but nodes in social networks.

6. AXIOLOGICAL, PRAXIOLOGICAL, AND ETHICAL

Individualism and holism also occur in value theory, action theory, and ethics. Axiological (or value-theoretical) individualism holds that only individuals can evaluate, there are only individual values, and the part is more valuable than the whole—which is likely to be fictitious anyway. Praxiological (or action-theoretical) individualism focuses on individual action and accordingly overlooks both the social embeddedness of action and the interactions among individual actions. The ethical consequence is obvious: a moral or legal norm is morally justified only insofar as it benefits the individual.

Only one of the three claims of axiological individualism is obviously true, namely, that only individuals can perform valuations. However, we often evaluate under social pressure. Moreover, values are adopted or rejected by social groups to the point that an individual's standing in a group depends on his acceptance of the group's values. In short, valuation is individual, but some values are social.

The second thesis, that there are only individual values, makes no room for social values, such as peace, social cohesion, equity, and justice. Yet, most of us are attached to such values, not least because their realization is a necessary condition for that of a number of individual values. And no social value is an aggregate or combination of individual values. For example, individual goodwill does not suffice to build a good society.

The third thesis, that the person is more valuable than any of the social wholes she belongs to, rests on the ontological presupposition that individuals are detachable from the systems they are embedded in. This thesis is just as wrong as the holistic view that individuals are expendable and subservient to the whole—state, church, party, corporation, or what have you.

One should not be forced to choose between the isolated individual and the supraindividual whole, because both are fictions. In reality, there are only interconnected individuals and the systems they constitute. Hence, when evaluating an individual action, we should ask whether it is not disvaluable to the social whole in question; and when

evaluating the latter, we should ask whether it promotes personal welfare.

Accordingly, free riders and nihilists are just as disvaluable as exploitative or despotic governments. It also follows that we should strive to minimize anomie—the discrepancy between personal achievement and social value or norm—by reforming both individual conduct and social structure. I submit that this systemic approach to axiology is free from the defects of its individualist and holist rivals. And it is the one that should help manage the unavoidable conflicts between individual and social values instead of suppressing either of them.

What holds for axiology also holds, mutatis mutandis, for praxiology and ethics. In all three fields, individualism overlooks the problems that originate in such macro-social issues as overpopulation, poverty, sex discrimination, exploitation, and war. And yet, the victims of any of the latter by far outnumber the cases of suicide, abortion, prostitution, euthanasia, and small-scale crime—the specialties of the individualist moral philosopher. In short, individualist moral philosophers focus on micro-moral problems and thus overlook the macro-moral ones, which are far harder to tackle because they call for social policy making and political action.

By contrast, the systemist recommends focusing on the individual in society rather than on either the individual or society—which is just an instance of the logical thesis that relations come together with their relata. There is a further reason: the practical and moral agent is neither the isolated individual nor society as a whole but the person in society, at once constrained by some norms and empowered by others.

An example should clarify the preceding. The practice of harvesting organs from executed prisoners is expanding. Utilitarians, who are individualists, are bound to approve of it: why let go to waste organs that could help the living? Others oppose this practice on religious grounds. A systemist opposes it for a different reason: because it condones the death penalty and promotes the organ-harvesting industry.

Positive utilitarianism is wrong in using a fuzzy notion of happiness (or utility) and in ignoring the social context of moral problems and individual action. This is why it is at best ineffectual. And negative utilitarianism ("Do no harm") is insufficient, for one ought to try and help others, defying custom or challenging the law if need be.

Since the sources of, and solutions to, so many practical and moral problems are partially social, a practical philosophy is impractical or worse unless it balances private and public concerns, thus tackling macro-ethical issues as well as micro-ethical ones.

7. HISTORICAL AND POLITICAL

Historical individualism is a philosophy of history, namely, the tenet that history is made by individuals. It comes in two versions. According to one of them, the main actors are great heroes or villains, whereas according to the other, all the rational decision makers are historical agents. The obvious merit of historical individualism in either version is that it rejects inaccessible superhuman agencies such as fatalism, the general will, and Volk, the Romantic idea of people-nation. The obvious flaw of the doctrine is that it overlooks the natural environment, tradition, and social networks, none of which is reducible to individuals.

Political individualism is the thesis that individual liberty is the maximal value. It is the same as libertarianism rather than classical liberalism, which is consistent with democratic socialism. When joined with a solidary morality, libertarianism entails that all political institutions should be suppressed: this is classical left-wing anarchism. And when joined with egoism, libertarianism entails that government should be minimal and should act exclusively in the service of those who have the wherewithal to act on their own: this is contemporary right-wing libertarianism (or neoliberalism). In other words, political individualism preaches either the elimination of all government or its shrinking to the law-and-order forces.

Classical anarchism presupposes, like Rousseau, that people are basically good and solidary, whence they need no external constraints. By contrast, contemporary libertarianism assumes, like Hobbes, that we are all evil and selfish, whence in need of protection from ourselves. Neither presupposition is supported by social psychology. The latter tells us rather that, as Robert Louis Stevenson suggested a century ago, we are a mixture of good and evil.

This may sound trite because it is, whereas individualism is off the mark if only because every person needs help and seeks it and is willing to cooperate in some respects. Political holism is no better for it drowns individuality, whether in its mild communitarian version or in its ferocious totalitarian one. True, by comparison with either, polit-

ical individualism looks attractive. But, just as holism justifies political oppression, individualism is socially dissolving, as Tocqueville noted long ago. Hence, neither is consistent with democracy.

Fortunately, there is an alternative to both extremes. This is the systemic view that, since the individual strives to survive but cannot succeed without help, he must learn to combine competition with cooperation. The political corollary is that we need institutions, both governmental and nongovernmental, to channel our prosocial impulses and hold in check the antisocial ones. Participatory democracy might fit this bill. But this is another story.

8. FIRST ALTERNATIVE: HOLISM

Since individualism is deeply flawed in all its 10 modes, an alternative to it is required. The first one to come to mind is, of course, holism (or collectivism). This is the view that the whole precedes and dominates the part, as a consequence of which it is more valuable. The metaphysics of Aristotle and Hegel are typically holistic.

Ontological holism asserts the priority of the whole. But of course a whole is not such unless it comprises parts. Hence, part and whole are on par. So much so that a change in a part may cause a qualitative change in the whole and conversely, as when an individual initiates a social movement and when the latter drags another individual. Holism also claims that every thing interacts with everything else. But this is not so, because the intensity of most interactions decreases with distance. This makes it possible to isolate almost anything, at least in some regards, to some extent and for a while.

According to logical holism, relations precede their relata. For example, Marx attempted to characterize the person as the set of her social relations. But this is of course logically incorrect, for relations come with their relata, and these with the former. Thus, the relation $<$ is not properly defined unless accompanied by the domain D in which it holds, just as D is not fully characterized unless one specifies its structure, that is, the set of relations that hold among its members. When proceeding rigorously, one always defines the total system, such as the relational system $S = < D, < >$. In short, logical holism is just as untenable as its dual, namely, logical individualism.

Semantic holism is the view that the meaning of any construct (or the signification of any sign) depends on the entire body of knowledge (or text). This thesis has not been formalized, and it is hard to see

how it could be. In any case, the thesis in question is false, as shown by the following counterexamples. The meaning of the implication relation is exhaustively determined by the predicate calculus and that of photosynthesis by biochemistry. In neither case do we need to rope in further fields of knowledge. In sum, semantic holism is false. Its merit is to stress that there are no stray constructs: that meaning is contextual. But, to be manageable, the context must be restricted.

Epistemological holism may be compressed into three theses: on the source and the subject of knowledge and on the part-whole relation. The first is the claim that the highest, or perhaps even the sole, source of knowledge is the pristine, total, and instant intuitive apprehension of the whole, untainted by either experience or reason. Moreover, intuition would be infallible. This view is so dogmatic, and so obviously at variance with all we know about cognition, that it is hardly worth being discussed. On the other hand, the problems of the kinds and roles of intuition, as well as of their relation with both experience and reason, are genuinely interesting questions, at once empirical and philosophical. But their discussion requires analytical tools that the holist abhors.

The holistic view on the source of knowledge is that the knower is society as a whole. This is the social-constructivist thesis, first advanced by Marx. Taken literally, this opinion is grotesque since the organ of knowledge is the brain, whereas society has no brain. Moreover, social constructivism makes no room for original and particularly nonconformist thinking. The only merit of this view is that it corrects individualist epistemology by reminding us that every knower is a member of one or more information networks. But, by anchoring the individual too firmly to his community, it fails to explain creation and rebellion. After all, the fisherman goes out to catch fish, not nets.

Besides, holism fosters cultural relativism, that is, the view that each community has its own set of beliefs and values, which are neither better nor worse than those of other tribes. Needless to say, relativism is incompatible with the search for objective truth, which is cross-cultural: it leads to epistemological anarchism. And, because it denies the universal canons of valid argument, relativism does not even make rational debate possible among people from different cultures or even subcultures. Relativism is also inconsistent with the very idea of moral and political progress. And, because it is localist rather than universalist, it does not even need the concept of humanity.

As for the holistic view on the epistemic part-whole relation, it comes in two strengths: radical and moderate. According to the former, to know the part we must know the whole. Since this is impossible, we are doomed to ignorance. By contrast, moderate holism holds only that human knowledge is a totality. This is true up to a point. In fact, human knowledge is indeed a system but one whose components are not bound equally strongly. For example, geologists and mathematicians can work side by side without ever interacting significantly; and, whereas biologists use some mathematics, mathematical research makes no use of biological findings.

Methodological holism holds that the whole needs no explanation—except perhaps in terms of its history—and that it explains the part. Thus, every particular biological process would be accounted for by a single overpowering vital force; mental processes would be explained as movements of the soul or of its "faculties" or "modules"; and particular social facts would be accounted for by society-wide social forces, such as Zeitgeist and social learning, which are just as undefined as "vital force" and "soul." Needless to say, all these are remnants of prescientific thinking.

Holism also claims that the confirmation or refutation of any thesis in any field of knowledge is bound to alter the entire system of human knowledge. For example, if quantum mechanics were to use a logic of its own (as some have claimed), then logic and mathematics would coevolve. For better or worse, this particular example is false. In fact, no one has ever found any new physical result with the help of quantum logic—which is not surprising since quantum physics presupposes classical mathematics, whose underlying logic is classical.

In sum, the various fields of research are indeed mutually related but some ties are weaker than others are. And empirical work cannot alter formal truths, for these do not represent any particular matters of fact: if they did, mathematical theorems would be tested in the lab. In conclusion, methodological holism does not work.

Axiological holism holds that any whole is more valuable than its parts and that these are valuable only insofar as they serve the whole. The praxiological consequence is obvious: individual action should only be judged in terms of its contribution to the good of the whole. In turn, this entails that a norm is morally justified only if it guides actions that favor the whole: it inspires a duties-only morality. Political holism preaches the enslavement of the person to the powers that be—state, church, party, or corporation—all of which fits in with

totalitarian ideologies, neither of which makes room for the private sphere.

In sum, holism is not a viable alternative to individualism.

9. HYBRIDS

The shortcomings of individualism and holism have suggested crossing them. There are two hybrids of individualism and holism. One may be called *individholism*, or individualism with a hidden holistic component; the other is *holindividualism*, or holism with a tacit individualist component. Both are conspicuous in social studies and their philosophy. Let us exemplify them.

The neoclassical micro-economists and other rational choice theorists, as well as most hermeneuticists (or interpretivists), call themselves individualists. And so they are, but not consistently, because they often correctly start their analyses with macro-situations that they do not analyze in terms of individual actions. The vague notion of "logic of the situation" is a case in point since it takes "the situation" as an unanalyzed whole. The same holds for free-market worship, in particular for the collective "invisible hand," which is no more real than such holistic fictions as collective memory, national destiny, and will of the international community. Ditto for hermeneutic relativism since it regards culture as a whole, and for left-wing anarchism because it espouses a communitarian morality.

In other words, the individholist smuggles in items that a consistent individualist should reject. Likewise, holindividualism, as exemplified by Marxism, is inconsistent because it correctly admits the role of leaders who take initiatives and attempt to mobilize the masses or at least influence public opinion. A consistent holist places the entire burden on such supreme but anonymous wholes as nation, people, or history.

What is wrong with individholism and holindividualism? Not much since both can provide correct if incomplete analyses of some social facts—which is not surprising because they are cryptosystemist to the extent that they admit wholes with emergent properties. But they are inconsistent with their own declared intentions. Besides, although they do not sin by commission, they do sin by omission. Indeed, a deep bottom-up synthesis of a social fact, from a mere exchange of goods to a social revolution, will be correct only if supplemented with a top-down analysis of the same fact (see section 5). Such

dual study is typically systemic rather than either individualist or holist.

10. THIRD ALTERNATIVE: SYSTEMISM

I submit that systemism combines the sound components of individualism and holism: the former's thesis that there are only particulars with the holistic emphasis on the peculiarities of wholes. Systemism holds that everything, whether concrete or abstract, is a system or a component of one or more systems and that all of these have systemic or emergent properties. And it analyzes a system into its composition, environment, and structure. If concrete, a system also has a mechanism or modus operandi: the processes that keep the system going—or end up undoing it.

Hence, the simplest model of a concrete system, such as a cell or a society, is the composition-environment-structure-mechanism quadruple. Individualists project this quadruple onto its first component and holists onto the third. Hence, individuals are found, not given: they are found by ripping networks or dismantling systems. Whether in the external world or in the conceptual and semiotic realms, there are only interrelated individuals, that is, systems.

The systemic approach gives rise to a new ontology. The popular confusion between systemism and holism has hampered the recognition and development of this new ontology. One of its distinctive features is that it connects items that individualists treat as mutually independent, without, however, making the holistic mistake of refusing to analyze such wholes and study the mechanisms of their emergence and dismantling. An upshot of this approach is the thesis that society is a system of interconnected systems—the biological, economic, political, and cultural ones. A practical consequence of this thesis is that, to be successful, a national development program must be at once biological, economic, political, and cultural: piecemeal reforms have at best short-lived results, at worst perverse effects.

On the other hand, there is no need to insist on logical systemism because logic and mathematics are automatically systemic in dealing, not with either stray individuals or solid blocs but with conceptual systems: arguments, algebraic systems, number systems, spaces, manifolds, function families, and so forth. Nor need we dwell on semantic systemism because it is generally understood that constructs and signs make sense only as components of systems, and that

a proposition is assigned a truth value only on the strength of other propositions.

Since epistemological and methodological problems come in packages, they should be tackled as such, that is, systemically. This requires combining analysis with synthesis, reduction with fusion. The coalescence of different disciplines to form interdisciplines, such as biochemistry, cognitive neuroscience, social psychology, socioeconomics, and political sociology, is a triumph of the systemic approach—which is often adopted tacitly, though.

The systemic approach to axiology, or value theory, shows valuation to be a process occurring in an individual brain controlled by biological drives and social stimuli and constraints. Praxiology, or action theory, is similar and so is ethics, or moral philosophy. In all three cases, the systemic approach admits both the individual source and the social context of valuations, decisions, plans, actions, and norms of conduct. The individual, partly self-made and partly shaped by the environment, proposes and interacts with other people, but the environment disposes.

Finally, the systemic approach to politics, the law, political science, and political and legal philosophy rests on an analysis of society into the different but interconnected subsystems within which the individual evaluates, decides, acts, and is acted on. Political systemism overcomes the limitations of individualism (which focuses on the mythical independent and free citizen) and of holism (which focuses on the mythical overwhelming and allegedly unanalyzable power).

The moral for the so-called policy sciences, or sociotechnologies, is this. The systemic issues, such as those of poverty, war, and national debt, call for a systemic approach because every one of them is a whole package of interrelated social ailments. For example, whereas the individualist attempts to alleviate poverty by giving alms to his favorite beggars, the holist will favor social programs, and the systemist will combine the latter with local organizations in which the poor can help one another.

CONCLUSIONS

A first upshot of our study is that individualism is not one but many sided. Moreover, far from being mutually independent, these sides form a decagon. But this exemplifies the epistemological thesis of systemism and thereby raises the individualists' dilemma: if thor-

ough, they are inconsistent—whence, if consistent, they are not thorough. In other words, individualism is self-destructive. This is why there is no individualist system but only an individualist hydra that will grow a new head every time it loses one.

A second result is that individualism fails in all its 10 modes. This result has been found by checking the individualist theses against the relevant evidence. However, individualism never fails completely, for it focuses on an essential aspect of every system, namely, its composition. Moreover, individualism often serves as a sound corrective to holism, which in turn is right in emphasizing the reality of certain wholes and their emergent properties.

A third result is that since individualism fails, so does radical reduction, or top-down analysis with neglect of structure. By contrast, moderate reduction succeeds in some cases, whereas bridge building—in particular the fusion of disciplines—succeeds in others. For example, chemistry uncovers the composition and structure of genes but only cell biology exhibits their role or function in living beings. (Hence, it is not true that genetics has been reduced to chemistry.) Likewise, physiology and biochemistry investigate digestion, but only ecology and ethology can tell us what and how much food an animal can get in a given environment.

A fourth result is that we are not necessarily impaled on the horns of the individualism-holism dilemma. Indeed, systemism is the correct alternative to any form of individualism, as well as of holism and their hybrids. After all, the world is a system, and so is human knowledge. Ignore the main associates of an individual—be it thing or construct—and you will not know the individual. And ignore the individual, and you will not know the system.

A fifth upshot is, I submit, that there is a morally right and practically viable alternative to both political individualism and political holism. This is the systemist view that we should care for personal welfare and advancement as much as for the institutions that favor them—surely a platitude. But, in addition to this truism, systemism includes the controversial but testable hypothesis that the best way to design, construct, maintain, or reform our institutions is through a combination of social technology with participative and integral democracy—biological, economic, political, and cultural. However, this claim has yet to be empirically validated.

In sum, individualism does not work. But it makes an important contribution, namely, concern for the individual components of systems. Systemism retains and works out this contribution, as well as

the holistic concern for the peculiarities of wholes. Being a synthesis, it is bound to be rejected by the radical individualists as well as by the holists, although practiced by moderate individualists and holists alike.

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