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Constitutional Rule & Political Equality

Francis Slade
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The remarks which follow consider the connection between political equality and constitutional rule - with glances at the instance of the American republic.

In a republic the citizen does not obey what those who exercise the offices of rule enjoin because what is proposed for his obedience is asserted to be just, but because the citizen has undertaken a commitment to be ruled by the laws. Those who exercise the office of rule in a republic cannot say to the citizen: "you must obey in this instance because what you are directed by us to do here is just." Rather they must say: "You should obey here because you have committed yourself to obey what the laws authorize." But then they are required to show that what they propose to the citizen for his obedience they are in fact entitled to propose by the laws that have created the offices of rule which they exercise, for their proposals and the obedience they solicit are creations of the law. Those who exercise the offices of rule in a republic - the magistrates - cannot say that what they propose is just and for that reason ought to be entailed by a commitment to be ruled by laws; they must say to the citizen that what they propose is entailed by the commitment to be ruled by the laws and therefore is just. In republics justice means obedience to the laws because in republics the measure of what is just is the laws. Laws in this sense are a constitution, and government by a constitution, or laws, is what identifies republican government. "The Constitution was made," Daniel Webster said, "to guard against the dangers of good intentions." There are, he said, "men in all ages who mean to govern well, but they mean to govern. They promise to be good masters, but they mean to be masters."

In a republic only the law, the constitution can authorize a proposal entitled to obedience. The constitution is the criterion which measures the proposals of those holding the offices of rule as entailments of the commitment to be ruled by the laws. Only if such a proposal is entailed by this commitment, and for no other reason, can the citizen of a republic be obliged to obey it, because only for this reason, and for no other, are those who exercise the offices of rule entitled to proposed it for his obedience. In so far as those who exercise the offices of rule assert that there are other grounds for their proposals and for the obedience of the citizen, to that extent they make a claim to exercise rule independently of the laws. They are no longer simply what Aristotle calls "ministers and guardians of the laws," but rulers in their own right. Their commands are authorized not by the laws, the constitution, but by their own claims as rulers. The justification of their commands has its origins outside the

law, an extra-legal government, whatever its basis, and even if that basis is asserted to be justice, is not republican government. That the will of another taken simply as his will should be the measure of right is the antithesis of republican rule.

The criterion of what is required by the commitment to be ruled by the laws is a constitution strictly construed. Since laws are speech, and words are malleable, to hold otherwise is to hold that the public officers - the magistrates, the government - are entitled to assert that whatever they say the laws say, i.e., they are implicitly authorized to put their speech into the place of the laws' speech. This is to endow them with the power to alter the laws. "When a strict interpretation of the Constitution, according to the fixed rules which govern the interpretation of laws, is abandoned, and the theoretical opinions of individuals are allowed to control its meaning, we have no longer a Constitution; we are under the government of individual men, who for the time being have power to declare what the Constitution is, according to their view of what it ought to mean."⁴ The power to alter the laws is the power to make the laws. Jean Bodin's formulation in *Six livres de la republique* makes it very clear: "included in the power of making and unmaking law is that of promulgating it and amending it when it is obscure, or when the magistrates find contradictions and absurdities... All other attributes and rights of sovereignty are included in this power of making and unmaking law, so that strictly speaking this is the unique attribute of sovereign power."⁵ It is with this power that Ronald Dworkin endows the Judiciary: "The program of judicial activism holds that courts... should work out principles of legality, equality, and the rest, revise those principles from time to time in the light of what seems to the Court fresh moral insight, and judge the acts of Congress, the states, and the president accordingly."⁶ *Quod principi placuit legis habet vigorem*. A government which claims such a power claims to be a sovereign, and a government which is a sovereign cannot be a republican government. In the words of the *Kentucky Resolutions* drafted by Thomas Jefferson, "the government created by this compact (i.e., the *Constitution*) was not made the exclusive or final judge of the extent of the powers delegated to itself; since that would have made its discretion, and not the *Constitution*, the measure of its powers."⁸ A government which is a sovereign is based upon the political inequality between the makers of the laws and those subject to them. Bodin again: "the first characteristic of the sovereign prince is the power to make general and special laws, but - and this qualification is

essential - without the consent of superiors, equals, or inferiors."⁹ James Wilson, one of the first Justices of the United States Supreme Court and a major figure at the Constitutional Convention of 1787, said, in *Chesholm v. Georgia*(1793) that "to the Constitution of the United States the term sovereign is totally unknown." The Antifederalist writer, "Brutus", thought he discerned the possibility of an implied sovereignty of the judicial power of the general government of the United States under the Constitution: "...the judges under this constitution ... are to give the constitution an explanation, and there is no power above them to set aside their judgment..."¹⁰ Republics, however, are regimes whose principle is political equality: no one more than another can claim any right on any ground to make the laws. In republics the makers of the laws are the citizens accepting the laws as rulers; the rulers, the laws - i.e., the "constitution" - derive their power to rule from the promises of the citizens to be ruled by them. Republican governments are made by the laws, they do not make the laws.

Republican government is necessarily limited government, limited in the matters over which it may legitimately exercise its power. For republican government to be successful it is obvious that the competence of government must be narrow. No laws, no constitution, could possibly prescribe appropriate limitations to a government that is granted competence in every aspect and facet of the lives of human beings living in society. Republican governments must be governments instituted for a few well-defined aims. De Tocqueville could say, writing of the pre-Civil War American Union, "The Union is a great republic in extent, but it can in some fashion be likened to a small one because there are so few matters with which the Government is concerned."¹¹ Omnicompetent government cannot be republican government, i.e., it cannot be government according to laws. Omnicompetent government will invoke other grounds for soliciting the obedience of its subjects than the commitment to obey laws characteristic of republics, grounds which are not reasons, but slogans for mobilizing populations.

Republican government is not synonymous with government by the majority. Republican government under, i.e., subject to, fundamental laws, the usual name for which is constitution. These fundamental laws, the constitution, may establish majority decisions as legally binding within the commonwealth and its government and this is what is meant by a "constitutional majority". Such majorities have legal force because, having been established by the laws, they derive their political authority from them. In purely democratic regimes the force of a majority, the unmediated strength of numbers, "the right of the stronger", replaces laws. In a republic every office derives its political authority solely from the laws, i.e., constitution, and not from the manner in which the holder of that office has been chosen, even if the holder of office is chosen by majority vote. The democratic understanding of government, as opposed to the republican, or constitutional, understanding, finds precise expression in Sheldon Wolin's statement "that

the authority of office-holders derived from the power which office-holders derived from *the power which had produced* the Constitution. In this view government is not so much based upon the Constitution as grounded in the people."¹² The democratic ruler claims authority as embodying the collective will of the people, "a formless *pouvoir constituant*,"¹³ seeking legitimacy in "the constant plebiscite of public opinion,"¹⁴ i.e., "the roar of the crowd." As *vox populi* he is *demagogue, duce, fuhrer*. Democratic rulers appear as "leaders" masking their claims as rulers in order to hide the difference that always separates every ruler from those who are ruled. This difference between republican governments and democratic ones is caught in the difference between Wolin's statement and Aristotle's account of the character and condition of those democratic regimes in which the citizens have lost, or never possessed, the capacity for the kind of civic imagination and for the discipline of self-constraint that maintains republican rule, "where the multitude is the supreme authority and not the laws: this comes about when decrees (= 'the people's will') rather than law are authoritative, and this happens on account of those who style themselves *leaders of 'the people'* (*demagogues*)...in cities based on law such persons (*leaders of 'the people'* - *demagogues*) do not appear... but where the laws are not supreme they do... This sort of democracy bears comparison with tyranny among the forms of monarchy... the decree of the one are like the edicts of the other; and the popular leaders (*demagogues*) are the same as the flatterers of tyrants or comparable...They are responsible for 'the people's will' having supremacy rather than the laws. The *leaders of 'the people'* (*demagogues*) become great while they have supremacy over the opinion of the citizens...all the offices are overthrown."¹⁵

The peculiar character of regimes whose rulers are laws, which is what we mean by republics, or constitutional rule, is conveyed by de Tocqueville speaking, again, of the pre-Civil War Union: "The government of the Union rests almost entirely upon legal fictions. The Union is an ideal nation which exists, so to say, only in men's minds and whose extent and limits can only be discerned by the understanding."¹⁶ Not any chance number of persons are capable of being governed in this manner. To establish and maintain conditions propitious for persons capable of being governed in this manner, by "constitutional provisions of the utmost delicacy,"¹⁷ *hoc opus hic labor est*. "The greatest of all the things...with a view to making regimes lasting...is education relative to the regime. For there is no benefit in the most beneficial laws...if the citizens are not going to be habituated and educated to the regime."¹⁸

In Plato's *Crito* Socrates explains why he is bound to obey the rulers of Athens and not escape from prison by constructing a speech for a *persona* who are rulers and who speak of themselves as the Laws. This, of course, is a fiction. In order to be able to think of ourselves as bound by a promise to obey rulers, we must be able to think/imagine ourselves - entertain the fiction being ruled not by men but by Laws, because our promises are not

constitutive of any other form of rule. This, of course, comes down to rule by certain kind of men, men who are able to imagine themselves as subject to Laws which they imagine themselves as having promised to obey, promises which they constrain themselves to keep. In the *Crito* the Laws present themselves as rulers by men of the imaginative speech of Socrates. Socrates enacts in the dialogue the way in which Citizens of a republic must be able to think/imagine themselves and their rulers if they are to be ruled by Laws.

At the beginning of *The Government of Poland* Jean-Jacques Rousseau says: "Putting law over men is a problem in politics that I like to compare to that of squaring the circle in geometry. Solve that problem correctly, and the government based upon your solution will be a good government, proof against corruption. But until you solve it, rest assured of this: you may think you have made the laws govern; but men will do the governing."¹⁹ Rousseau is saying in effect that the problem is not capable of solution; it is like "squaring the circle". What I take to be Rousseau's meaning is this: there are different ways of appearing to solve the problem, but since it is a problem without solution, all solutions are illusions of solutions. But in some instances the illusion is more effective than others. Those instances in which both the illusion and clear-sightedness about the necessity for the illusion are able to be maintained will generally be the best. History teaches that the conditions necessary for such instances are uncommon.

Notes

1. *Politics*, III, 16 (127a20-22). Quotations from Aristotle are from Carnes Lord, Aristotle, *The Politics*, Translated and with an Introduction, Notes, and Glossary by Carnes Lord (Chicago: University of Chicago Press, 194). At a few points there are slight modifications of Lord's translation.

2. Justice Curtis in dissent, *Cred Scott v. Sanford*.
 3. Jean Bodin, *Six books of the Commonwealth*, ed. M.J. Tooley Oxford: Basil Blackwell, nd), Book I, Chapter 10, 44.
 4. *Taking Rights Seriously* (Cambridge, MA: Harvard University Press, 197), 137.
 5. The social equality which Dworkin champions is purchased at the price of political equality. Kenneth Minogue writes (TLS, 3/21/75, 307): "Equality has of course, always been a highly ambiguous notion in political thought. There is a world of difference between despotic and republican equality. The one is essential to political life, the other fatal to it." The ambiguity and difference escape Dworkin-like minds. The difference between republican and despotic equality is plainly laid out in Aristotle's *Politics*.
 6. Harvey C. Mansfield, Jr., *Selected writing of Jefferson*, (Arlington Heights, IL: AHM Publishing Corporation, Crofts Classics, 1979), 55.
 7. Jean Bodin, *Six Books of the Commonwealth*, I., 43.
 8. Allen, W.B. Lloyd, Goron, eds., *The Essential Antifederalist* (Lanham, Maryland: University Press of America, 195), 219.
 9. Alexis de Tocqueville, *Democracy in America* (Anchor Books, 1969), 162
 10. Sheldon Wolin, "The State of the Union," *New York Review of Books*, 1 May 197, 2. Italics added.
 11. The expression is Carl Schmitt's
 12. Jose Antonio Primo de Rivera, founder of the Spanish Falange.
 13. Aristotle, *Politics*, IV, 4 (1292a3 - 34).
 14. *Democracy in America* 164.
 15. Roger Scruton, *The Philosopher on Dover Beach* (New York: St. Martin's Press, 1990), 54.
 16. Aristotle, *Politics*, V, 9, 1310a12-.
- . J.-J. Rousseau, *The Government of Poland*, trans. Wilmoore Kendall (Indianapolis: LLA, 1974), 3. *Oeuvres Completes* (Paris: Gallimard, 1964), III:995.

The Mind/Brain Relation:

III. An Epistemic Plurality

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Transcending Dualisms Without Denying Them

I believe that today there are answers to these questions where only a few years ago there were none. These answers come from "unpacking" conceptual confusions and demonstrating where each conceptualization captures a part of a truthful whole.

A semantic analysis shows that descriptors of brain, senses, and energy sources are derived from an analysis of experience into components. The components are organismic and environmental (biological and physical or social), and each component can be subdivided further into subcomponents until the quantum and nuclear levels of analysis are reached. This procedure of analysis downward in a hierarchy of systems is the ordinary way of descriptive science. Within systems, causes and effects are traced. When discrepancies are found, statistical principles are adduced and probabilities invoked. Scientists have become adept and comfortable with such procedures.

Mental language stems from different considerations. As in the case of descriptive science, mental terms take their origin in experience. Now, however, experience is validated consensually. Experience in one sensory mode is compared with that obtained in another. Then validation proceeds by comparison of one's experience with that of another. A little girl points to a horse. Up to now, her mother has allowed her to say "cow" whenever any animal is pointed to. But the time has come to be more precise, and the experience of horse becomes validly different from that of a cow. Mental language is derived from such upward validations in a hierarchy of systems.

Elsewhere I detail the differences in scientific approach that this upward or outward look entails (Pribram, 1965). It is certainly not limited to psychology. When Albert Einstein enunciated his special and general theories of relativity, he was looking upward in the set of hierarchically arranged physical systems. The resultant relativistic views are as applicable to mental conceptualizations as they are to physical ones. It is these relativisms that existentialists and phenomenologists constantly struggle to formulate into some coherent principles. My own belief is that they will be successful only to the extent that they develop the techniques of structural analysis. But structured analyses often depend on enactment to clarify the complexities involved. Abhorrent as the computer and other engineering devices may be to philosophers and psychologists of the existential-

phenomenal persuasion, these tools may turn out to be of great service to their mode of inquiry.

If the above analysis is correct, then a dualism of sorts can be entertained as valid. First, however, let me provide a cautionary note. This form of dualism is concerned with the everyday domain of appearances with the level of ordinary experiences. As noted, commencing with such ordinary experiences, two modes of conceptualization have developed. One mode operates downward in a hierarchy of systems, analyzing, deconstructing experience into components and establishing hierarchical and cause-effect relationships between these components. The other operates upward toward other organisms to attain consensual validation of experiences by comparing and sharing them.

Thus two mirror images two optical isomers, as it were are constructed from experience. One we call material and the other mental. Just as optical isomers in chemistry have differing biological properties, although they have identical components and arrangements, so the mental and material conceptualizations have different properties even though they initially arise from the selfsame experiences.

I suggest that this is the origin of dualism and accounts for it. The duality expressed is of conceptual procedures, not of any basic duality in nature. As we will see, there are other dualities that are more basic, but these are not the ones that have become the staple of those arguing for dualism.

Mind as Emergent and As Actor

The views expressed thus far have provided a coherent theory that accounts for dualistic views but transcends them by showing them to arise from procedural differences that separately realize a common structure. That structure is neutrally described in mathematical and information-processing (or similar) terms that cannot readily be characterized as either material or mental.

This theory is considerably different from more classical dualistic views that hold to a fundamental separation between the mental and material. This separation has also been ameliorated recently by the proposal (Popper & Eccles, 1977) that interaction between the mental and material takes place by way of a material-like cultural domain that feeds back through the material senses to the material brain. Mental processes are then the emergents that result from this interaction. However, I have argued elsewhere that the way Popper and Eccles defined mind in terms of such interactions is akin to a colloquial use of the

concept "force" (Pribram, 1976). We say, for instance, that gravitational force, "gravity," pulls us to the earth. However, the concept of gravity was derived from studying the interactions of masses in motion. Gravity is thus by definition an interaction term; gravity would not "exist" were there no "us" to be attracted to the earth (and other bodies). We would verify gravity and have it pull us; and appearances certainly confirm this way of conceiving forces: that they are being "produced" by one body and operating on another. Popper developed his thesis of World 3 being "produced" by World 2 in this spirit.

What I see as helpful in the World 2-World 3 division is the attempt to portray the same issue that I discuss in terms of structure and its realization. In a sense, what I call "structure" is what Popper and Eccles called "mind." The difference is, however, that my "structures," also derived from sensory and behavioral interactions, are realized in material, physical environments (such as the structure of a symphony being embodied in a printed score or a magnetic tape). If these structures are to be identified as mental, my formulation would be akin to those of Alfred North Whitehead (1925), Roger Sperry (1980), John Searle (1983), and Eugene Wigner (1969)—a form of mentalism. But, I am not willing to go that far. Rather, I prefer to hold the line by stating that structures transcend both the physical and mental realities in which they become realized.

As noted, strictly speaking mentalism per se implies dualism because there is no need for mentalism if there were no materialism. There is no up without a down. Further, Sperry and Searle attempted to limit their mentalism to those structures that are organized by and in turn organize the brain. But it is not clear whether they would be willing to go to the epistemological limit that holds that mind interacts with the elementary components making up the brain. Intuition regarding the biological roots of mentality is certainly accurate. To confuse the analogy of the computer with the historically based homologies that have given rise to psychological processes is akin to calling a whale a fish. By the same token, however, Sperry and Searle are adamantly opposed to an "independent existence of conscious mind apart from the functioning brain (Sperry, 1980, p. 195); their mentalism does not stretch to cover the very essence of what motivates mentalism in the hands of those who oppose it to materialism: that is, the primacy and independence of mental structures.

There is thus an important difference between a constructional realism such as I propose and mentalist, dualist, and triadic interactionisms. In a constructional scheme the precise place of brain mechanisms can be specified. The sensory and brain perceptual mechanisms that are used to construct the Newtonian reality of appearances; the cognitive, "intrinsic" (my term for Eccles's "liaison") brain mechanisms that are necessary to the formulation of quantum and nuclear physics; the cognitive, motor brain mechanisms that organize intention and plan; the emergence of feelings from the neurochemical

organizations of the brain all can be fitted into their precise and proper place in the scheme. There is no global "mind" that has to make mysterious contact with global "brain." Many mysteries are still there to name only one, for example, how emergents come about and why they are so utterly different from their substrate. But issues become scientific and manageable within the broader context of philosophic enquiry.

The Neural Microstructure

One example of such manageability and precision comes from my own work because Eccles reviewed it and criticized it in his part of the book, *The Self and Its Brain* (Popper & Eccles, 1977). The problem relates to both perception and memory. The issue is how sensory input becomes encoded in the brain cortex. Eccles put the problem in the following way:

What neural events are in liaison with the self-conscious mind both for giving and receiving. We reject the hypothesis that the agent is the field potential generated by the neural events. The original postulate of the gestalt school was based on finding that a massive visual input such as a large illuminated circle resulted in some topologically equivalent potential field in the visual cortex, even a closed loop! This crude hypothesis need not be further considered. However a more refined version has recently been proposed by Pribram (1971a) in his postulate of micro-potential fields. It is assumed that those fields provide a more subtle cortical response than the impulse generation by neurones. However, this field potential theory involves a tremendous loss of information because hundreds of thousands of neurones would be contributing to a micropotential field across a small zone of the cerebral cortex. All the finer grain of neuronal activity would be lost in this most inefficient task of generating a minute electrical potential by current flow in the ohmic resistance provided by the extracellular medium. In addition we have the further problem that there would have to be some homunculus to read out the potentials in all their patterned array! The assumed feedback from micro-potential fields onto the firing frequencies of neurones would be of negligible influence because the currents would be extremely small.

We must believe that there is an ensemble functional meaning in all the discrete neuronal interactions in spatiotemporal patterns. Otherwise there would be a great loss of information. In this context, we must consider the organization of the cortical neurones in the anatomical and physiological entity that is called a module. In the first place it is inconceivable that the selfconscious mind is in liaison with single nerve cells or single nerve fibers. These neuronal units as individuals are far too unreliable and ineffective. In our present understanding of the mode of operation of neural machinery we emphasize ensembles of neurones (many hundreds) acting in some collusive patterned

array. Only in such assemblages can there be reliability and effectiveness. The modules of the cerebral cortex are such ensembles of neurones. The module has to some degree a collective life of its own with as many as 10,000 neurones of diverse types and with a functional arrangement of feed-forward and feedback excitation and inhibition. As yet we have little knowledge of the inner dynamic of life of a module, but we may conjecture that, with its complexity organized and intensely active properties it could be a component of the physical world (World 1) that is open to the self-conscious mind (World 2) both for receiving from and for giving to. We can further propose that not all modules in the cerebral cortex have this transcendent property of being open to World 2. And thus being the World 1 components of the interface, by definition there would be restriction to the modules of the liaison brain, and only then when they are in the correct level of activity. Each module may be likened to a radio transmitter-receiver unit . . . the module may be thought of as an integrated microcircuit of electronics, only vastly more complicated. (Popper & Eccles, 1977, pp. 365-366)

Although Eccles quoted my book *Languages of The Brain: Experimental Paradoxes and Principles in Neuropsychology* (Pribram, 1971a), he ignored in the above account whole sections (e.g., pp. 126-131, 324-327) devoted to what I labeled "logic modules" (Pribram, 1971a). The structure of such modules is presented in much greater detail than Eccles has done in *The Self and Its Brain* or anywhere else. Furthermore, the precise operation of the modules has been simulated by computer on several occasions in my laboratory (Bridgeman, 1971; Phelps, 1974; Pribram, Nuwer, & Baron, 1974; Spinelli, 1966).

But there is more. Eccles criticized me in the first paragraph quoted earlier "The assumed feedback from micropotential fields onto the firing frequencies of neurones would be of negligible influence because the currents would be extremely small." However, further on he used these same currents (which, as clearly defined in *Languages of the Brain*, are the depolarization and especially the hyperpolarizations that occur at synapses and within dendritic fields) to "emphasize ensembles of neurones (many hundreds) acting in some collusive patterned array . . . with as many as 10,000 neurones of diverse types and with a functional arrangement of feed-forward and feedback excitation and inhibition." Excitation and inhibition for the most part are carried out in axonless (Golgi type 2) "local circuit" neurons that depend on the very micropotentials that Eccles criticized in the first paragraph (Rakic, 1976). It is becoming clearer that processing in the brain processing within local neuronal circuits is proceeding by way of local electrotonic and chemical communications that characterize dendrodendritic interactions rather than via the action potential mode so characteristic of long sensory and motor pathways (see, e.g., Schmitt, Dev, & Smith, 1976).

G. M. Shepherd and W. Rall have presented

voluminous neurophysiological evidence on the functional organization of these local microcircuits evidence on which I based my proposal of microstructures (Rall, 1970; Shepherd, 1976). What then is the actual difference between Eccles's microcircuits and my microstructures except that I clearly specify the graded response characteristics of the patterning of electrical potentials that produces the functional arrangements within microstructures (or microcircuits) whereas Eccles failed to do so and took umbrage at the self and its mind operating a "radio transmitter-receiver" (the brain modules).

So much for the neurophysiology. The question is of course: What does this neurophysiology gain us with respect to the mind-body problem? I have suggested that the neuronal microstructure, the microcircuitry, is encoding periodic activity and that sensory transduction of environmental energy results in patterns of neuronal activation in the spectral domain. Eccles was not averse to this when he suggested that microcircuits act much as radio transmitters receivers. Radios operate on periodic information; they are tuned to transmit and receive spectral codes.

The initial evidence for neural encoding in the spectral domain was presented in *Languages of the Brain* (Pribram, 1971a, chap.8). Since its publication, evidence continues to pour in. Originally, G. S. Ohm and Hermann von Helmholtz suggested that the auditory system operates as a spectral analyzer (Helmholtz, 1863; Ohm, 1843). Georg von Bekesy (1957) showed that the skin and the somatosensory mechanism behave in a similar fashion. But the most dramatic evidence concerns the visual system. More and more evidence is accumulating to show that visual-spatial processing is accomplished in the spectral domain. The visual system analyzes the periodic fluctuations of the intensity of light over space (Campbell & Robson, 1968; DeValois, Albrecht, & Thorell, 1978a, 1978b; Movshon, Thompson, & Tolhurst, 1978a, 1978b, 1978c, Pribram, Lassonde, & Ptito, 1981; for comprehensive reviews see DeValois and DeValois 1988 and Pribram 1991).

In the engineering sciences, such processing in the spectral domain is called optical information processing (if done with lens systems) or image processing (if performed with computers) or holography (if storage on photographic film is employed). It is holography that first called my attention to the attributes of the spectral domain and their relevance for understanding the mind/brain relation (Pribram, 1966). In a hologram (the photographic film that stores the microstructure of periodic changes of light and dark over space) the information about forms in space becomes distributed. This sheds light on one of the most difficult problems of neuroscience, namely, how to explain the fact that local lesions in the brain do not selectively impair one or another memory trace. In a hologram, restricted damage does not disrupt the stored information because it has become distributed.

In essence, the information becomes blurred over the entire extent of the holographic film but in such a

precise fashion that it can be deblurred by performing the inverse procedure. Thus, image reconstruction (or construction) from the stored spectral domain is simple; applying the same transform that produced the store will also decode it into an image. In short, contrary to what Eccles stated to be a problem with my theory, the evidence that the brain encodes information in the spectral domain indicates that there is no loss of information nor is a "homunculus" needed to read out the memory trace. Either an input from the senses or from some central source (such as Popper's suggestion that the pain-pleasure expectation and attention mechanisms might be responsible; see also Pribram & McGuinness, 1975) will activate the spectrally encoded memory trace to produce an image. No "self-conscious mind" is sitting there, biasing the functions of the association cortex, as Eccles suggested. Rather, as Popper claimed, self-conscious mind is conceived best as an emergent property of a specifiable brain organization.

Emergence has, of course, direct relevance to the mind/brain problem. Note that storage takes place in the spectral domain. Images and other mental contents as such are not stored, nor are they "localized" in the brain. Rather, by virtue of the operation of the local brain circuitry, usually with the aid of sensory input from the environment, images and mental events emerge and are constructed. The images are Gilbert Ryle's (1949) ghosts resulting from the operations of the "machine" (brain). But, when implemented (i.e., realized, materialized) through action (i.e., in the organism's environment), these ghosts can causally influence, through the senses, the subsequent operations of the brain.

A similar process involving the motor systems of the brain can account for intentional, planned behavior. The evidence that such a process exists is presented in *Languages of the Brain* and elsewhere (Pribram, 1971a, 1976, 1991; Pribram et al., 1981). Much of my laboratory research has been involved in demonstrating that brain function is active, not passive, in its interactions with environment, and in elucidating the processes operative in this active aspect of mind. This research has shown that the intrinsic cortex and the limbic formations of the forebrain actively organize sensory input (see review by Pribram, 1980).

I have belabored this neurophysiology because the discovery that certain operations of the brain can be understood best in terms of processing in the spectral domain is directly related to the discovery in quantum and nuclear physics that ultimately the appearances of energy may be immaterial. We must take a close look at this database so fundamental to a materialist view.

A Convergence:

In concluding I will take up once again a discussion in which Sir John and I have been engaged for well over twenty years. As a confirmed mind/matter dualist, Eccles has, with Karl Popper, (Popper and Eccles, 1977) pioneered an interactionist stance which holds that

psychological processes can and do influence what is going on in the brain. I have accepted this view but claim that it is only a part of the total story. My expressed challenge (Pribram 1986) is that epistemologically a dualist position is tenable only at the verbal level of natural languages; that at other levels of interaction -- e.g. at the neural-behavioral systems level -- a multiplicity of cognitive, affective and conative processes can be discerned (a pluralist stance); and, furthermore, that ontologically an identity relation characterizes the elementary neural and elementary psychological (communicative) relationship at the synapto-dendritic level. This identity position leads to a tension between idealism and realism while resolving (in terms of a neutral monism) that between mind and brain: Reciprocally interacting processes are identified which are neither material nor mental and are subject to measurement as quantities of information (in Shannon's and Gabor's terms).

A major step forward in resolving some remaining issues is possible on the basis of Sir John's presentation during this conference. Eccles once again presented his dualist interactionist views. He placed the causal action of mental phenomena at the synapse. The process alters chemical transmission by influencing the probability of opening a channel in the presynaptic vesicular grid. In a paper written with Friedrich

Beck, a mathematical physicist, the process is viewed as follows:

"The interaction of mental events with the quantum probability amplitudes for exocytosis introduces a coherent coupling of a large number of individual amplitudes of the hundreds of thousands of boutons in a dendron. This then leads to an overwhelming variety of actualities, or modes, in brain activity. Physicists will realize the close analogy to laser-action, or more generally to the phenomenon of self-organization."

"Exocytosis is the opening of a channel in the presynaptic vesicular grid and discharge of the vesicle's transmitter molecules into the synaptic cleft. It is as a whole, certainly a classical membrane-mechanical process. In order to investigate the possible role of quantum mechanics in the probabalistic discharge, one has to set up a model for the trigger mechanism by which Ca^{2+} prepares the vesicle of the presynaptic vesicular grid for exocytosis."

And again:

"Since the resulting excitatory post-synaptic depolarization is the independent statistical sum of several thousands of local excitatory presynaptic potentials at spine synapses on each dendrite, we can concentrate on the process of exocytosis at each individual bouton".

Compare these passages with some by Yasue, Jibu and Pribram taken from Appendix A of *Brain and Perception*.

Once the distribution of charge carriers in the ionic bioplasma evolves due to the distribution of dendritic

isophase contours (2), the pattern of oscillations of the membrane potentials in each location changes. This is because the amount of charge carriers in each location affects the Ca^{2+} controlled ATP cyclic process and so the resulting oscillations of biomolecules of high dipole moments. Thus, the fundamental activity of the dendritic network is represented by a reciprocal feedback and feedforward control of the distribution of the dendritic ionic bioplasma due to the oscillating component of membrane polarizations. To summarize, let us recall the idealized case of synchronized oscillations (1).

$$\theta(t) = e^{-i(\omega t + \alpha)} \quad (1)$$

There, $S(x,t) = (\omega t + \alpha)$ and we have a vanishing spatial frequency $k = 0$ and constant angular frequency ω . This highly cooperative oscillating network of membrane polarizations prohibits the flow of ions (i.e., charge carriers).

By contrast, under less idealized conditions, the charge carriers in the dendritic network evolve and distribute as a function of the local phase differences of the oscillating components of the membrane polarization. This less idealized general case describes a holoscape (2). The spatial frequency of the phase relations among

$$\theta(x,t) = e^{iS(x,t)} \quad (2)$$

the contours of the holoscape (3), guides the charge carriers in each location to change with an energy proportional to that frequency. In other words, the dendritic holoscape of contours (2) at any moment controls the further time evolution of charge carriers in the entire dendritic network. According to the theory presented here, this pattern of charge carriers (i.e., ionic bioplasma) in the dendritic network of primary sensory cortex processes sensory input. Thus, the dendritic holoscape (2) of this cortex can be regarded as coordinate with image processing.

$$k(x,t) = \nabla S(x,t) = \left(\frac{\partial S(x,t)}{\partial x}, \frac{\partial S(x,t)}{\partial x^2} \right) \quad (3)$$

To return to Beck and Eccles:

"So as to make the model quantitative we attribute to the triggering process of exocytosis a continuous collective variable q for the quasiparticle. The motion is characterized by a potential energy $V(q)$ which may take on a positive value at stage I, according to the metastable situation before exocytosis, then rises towards a maximum at stage II, and finally drops to zero (the arbitrary normalization) at stage IV."

"The time dependent process of exocytosis is described by the one-dimensional Schrodinger equation for the wave function $\psi(q;t)$

$$i\hbar \frac{\partial \psi(q;t)}{\partial t} = -\frac{\hbar^2}{2M} \frac{\partial^2 \psi(q;t)}{\partial q^2} + V(q) \cdot \psi(q;t)$$

The initial condition for $t=0$ (stage I, beginning of exocytosis) is a wave packet left of the potential barrier."

And again, Yasue, Jibu and Pribram:

Because the neural wave equation (4) is linear, analysis of neurodynamics can be performed within the realm of conventional mathematical analysis. For example, the existence of solutions to the neural wave equation (4)

$$i\hbar \frac{\partial \psi}{\partial t} = \left[-\frac{\hbar^2}{2} \Delta + U_{ex} \right] \psi \quad (4)$$

for a wider class of external static potentials U_{ex} is known (Kato, 1964). The use of the neural wave equation in neurodynamics opens the possibility to represent the dendritic microprocess within a new mathematical framework.

It seems worthwhile to notice here that the formal similarity between neural and quantum processes has been pointed out both in physics and in neurology. In physics, Margenau (1984) has suggested that a process similar to electron tunnelling occurs in the neural microprocess. Hameroff (1987) has developed the theme that soliton waves occurring in microtubules could account for dendritic processing. And in the context of the current appendix, the formulations of Frölich (1975), Umezawa (Stuart et al., 1978; 1979), and Singer (Singer, 1989; Gray & Singer, 1989; Gray et al., 1989) become especially relevant. Further, as noted in Lectures 2 and 4 of this volume, Gabor developed a communication theory based on psychophysics that used the same formalisms as those used by Heisenberg in his descriptions of quantum microphysics. From the neurological standpoint, the holonomic brain theory is based on these proposals. Neurodynamics as developed in this appendix incorporates this formalism in a mathematical model in which the fundamental equation is of the same form as in the quantum theory.

Finally, from Lecture 4 of *Brain and Perception*:

"Activity in axons and in other dendrites such as those stemming from reciprocal synapses produce depolarizations and hyperpolarizations in the dendritic spines. The postsynaptic effects are ordinarily invoked by chemical transmitters whose action is modified by other chemicals that act as regulators and modulators."

These postsynaptic effects must overcome an obstacle before they can influence spike generation at the axon hillock.

"The stalks of the spines are narrow and therefore impose a high resistance to conduction (active or passive) toward the dendritic branch. Spine head depolarizations (as well as hyperpolarizations) must therefore interact with one another if they are to influence the action potentials generated at the axon hillock of the parent cell of the dendrite."

Thus the activation of interacting polarizations

"occurs in parallel, is distributed, discontinuous and resembles in this respect the saltatory mode of conduction that takes place from node to node in myelinated nerve' (Shepherd et al., 1985, p2193). In the holonomic brain theory such parallel processing is described as nonlocal and cooperative and is

represented by a Hilbert space. The mathematical similarity between the quantum and neural mechanics can [thus] have a basis in neurophysiological reality: For instance, as described in the epilogue to these lectures, the microtubular structure of dendrites can serve to provide cooperativity by way of boson condensation to produce soliton or phonon patterns of excitation practically instantaneously (Frohlich 1968, 1983, 1986; Hameroff 1987)."

The Mind/Brain Relationship:

Despite these agreements as to the details of the relevant synaptodendritic process, there remains an important point of disagreement between Eccles and myself which surfaces only tangentially in these quotations. Eccles views mental processes as unidirectional causal influences on the operation of the synaptic mechanism. By contrast I see the interaction between the physiological and the psychological process as reciprocal. The evidence for such reciprocal interaction at every level (subsynaptic, synaptic, neuronal and neural systems) makes up the substance of the various lectures composing *Brain and Perception*. Reciprocity leads to bootstrapping, that is, self organization, within the brain/mind matrix.

What is missing in Eccles account, is the emergence of mentality (including consciousness) from the operation of the neural process. This is an inconsistency: In the paper presented at this conference, Eccles makes an excellent case for the emergence of feeling and self-consciousness as rooted in the evolutionary development of the very same synapto-dendritic cortical architecture which he claims is receptive to psychological influence. In his view, however, this development only "allows" mind to influence brain. Still, Eccles felt sufficiently comfortable with the view that mentality emerges from an interaction between biology and culture to write a book "The Self and its Brain" with Karl Popper a strong advocate of the emergentist view.

My own stance begins by taking computer programming as its metaphor. At some point in programming, there is a direct correspondence between the programming language and the operations of the hardware being addressed. In ordinary von Neuman configurations, machine language embodies this correspondence. Higher order languages encode the information necessary to make the hardware run in ever more abstract and generally useful languages. When the word processing program allows this Foreword to be written in English, there is no longer any similarity between the user's language and the binary of the computer hardware. This, therefore, expresses a dualism between mental language and material hardware operations.

Transposed from metaphor to the actual mind-brain connection, the operations of the neural wetware made up of dendrites and synapses and the electrochemical operations occurring therein seem far removed in their organization, as is the language describing their operation, from that used by behavioral scientists to

describe psychological processes. But the distance which separates these languages is no greater than that which distinguishes word processing from binary. What is different in the mind-brain connection from that which characterizes the program-computer relationship is its intimate reciprocal self-organization at every level. High level psychological processes such as those involved in cognition are therefore the result of cascades of biopsychological bootstrapping operations rather than the result of solely top-down programming procedures.

Eccles proposes that the elementary neurophysiological operations of dendrons have a counterpart in elementary psychological operations he calls psychons. He has been severely criticized for failing to delineate what he conceives to be a psychon, that all of his beautifully detailed descriptions are limited to dendrons. If we take seriously the possibility that at the dendron level something is occurring which is akin to a computer being programmed in machine language, it behooves us to delineate the psychon. A reciprocal rather than a unidirectional causal relationship would be more productive, allowing bootstrapping of mind-brain organizations. Beck and Eccles appear to recognize this when they state that "physicists will realize the close analogy to laser action, or more generally, to the phenomenon of self organization." This statement comes pretty close to my own formulation which used the optical laser produced hologram as its initial metaphor for processing at the synapto-dendritic level (Pribram 1966).

Computers process information in terms of Boolean BITS, the amount of processing achieved being measured by Shannon's unit, the reduction of the amount of uncertainty. The holonomic brain theory is based on the evidence that the unit of processing in the cortical receptive dendritic fields, is a quantum of information, a Gabor wavelet or similar Hermetian. But Gabor, as did Shannon, defined his elementary unit to deal with the efficiency with which human telecommunication could proceed. As an hypothesis, Pribram's *Brain and Perception* takes the idea that a quantum of information describes not only the neural but also the psychological elementary process. In short, the biopsychological language that corresponds to computer machine language is a language based on the quantum of information. In Eccles' terms, the quantum of information measured in Gabor-like terms is a measure of the psychon.

The units, the Gabor elementary functions, are thus measures that apply equally to the operations of the material wetware of the brain and the operations of mental communication among human actors. But, just as in classical programming hierarchies, embodiments at each level are transformed into those at the next level. Still, something remains invariant across these transformations or the process would fail to work. There is therefore a difference between surface embodiments or other instantiations (such as behavioral performances) of different grains which become trans-formed and the deeper identity which in-forms the transformations.

Transformations are necessary to the instantiations -- Plato's particular appearances -- of the ideal in-forms: the instantiation of Beethoven's 9th Symphony is transformed from composition (a mental operation) to score (a material embodiment) to performance (more mental than material) to recording on compact disc (more material than mental) to the sensory and brain processes (material) that make for appreciative listening (mental). But the symphony as symphony remains recognizably "identical" to Beethoven's creative composition over the centuries of performances, recordings and listenings.

Thus two issues concerning "identity" can be discerned: 1) What is it that remains identical in the various levels and grains of the hierarchy of abstractions which connect English with binary? and 2) Is the correspondence between machine language and machine operation an identity or a duality? I believe the answer to

both the questions hinges on whether one concentrates on the surface transformations of multiple grain or deeper structural relationships. (Pribram, 1986).

What remains invariant across surface instantiations is "in-formation", the form within. Surprisingly, according to this analysis, it is a Platonic "idealism" that motivates the information revolution ("information processing" approaches in cognitive science) and distinguishes it from the materialism of the industrial revolution. Further, as in-formation is neither material nor mental, a tension between idealism and realism will displace the current tension between mentalism and materialism. It remains to be seen whether this tension will then be resolved with a Pythagorean-like pragmatism. (References for Parts I, II and III will be printed with Part III of *The Mind/Brain Relation*.)

Heidegger and Thinghood

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Philosophers have always been intrigued by the thinghood of things. Human entity finds itself surrounded by things which are its concern and become the objects of its projects. Thus neither the existence of human beings nor the origination of that horizon of significations called the world can be understood without reference to the thinghood of things. For things are not mere objects. While they engage and absorb us they also waylay us, assail us. While they are named and used as if they were nothing but equipment they often become impediments to be overcome, enigmas to be reckoned with. Things are special entities which penetrate our world laden with meaning but all the while maintaining an inner being of their own.

One of the most original and comprehensive philosophical probes into the thinghood of things has been undertaken by Martin Heidegger in his early and later works. In the following pages I will trace the highlights of Heidegger's work on this fundamental issue of philosophy. But first a brief historical recapitulation of the issue from the Heideggerian standpoint should be undertaken. The pre-Socratic thinkers can be viewed as the first thinkers to thoughtfully confront the amazement of the thinghood of things which they regarded as the basic task of philosophizing. According to Heidegger, Plato and Aristotle explicated the thinghood of the thing from the vantage points of form and matter (*eidos* and *hylē*) with an inward looking philosophical orientation that recognizes the soul (*psyche*) as the ground of human entity's comportment with things. Plato by his emphasis on "form" understood as "appearance," indicative of the representational act, and Aristotle by his explication of the "what" of a thing as its *ousia*, laid the foundations of metaphysical philosophizing which produced a variety of accounts of thinghood. What these accounts share in common is as follows: a viewing of the thing through a subject-object dualism, and a focusing on the already-being-there of things,—i.e., a dismissal of the thing-world connection. According to Heidegger, Kant's observation that things-in-themselves remain beyond the purview of theoretical knowledge is indicative of his primary interest in the representational role of the thing. It is not primarily an acknowledgement of the inner being of the thing. As far as Heidegger is concerned, Husserl's call of "back to things themselves" is more a call for sharpening of the lenses through which we look at things,—i.e., a call for the employment of the phenomenological method than a recognition of the world-building role of the thinghood of a thing. This is obviously so because Husserl fails to emerge out of the confines of the subjectivity of the subject.

Heidegger's probes into the thinghood of the thing have been part of a life long quest. To aid in his project of a reinvigoration of western thinking by a rekindling of the question of Being, Heidegger studies, at first, the existence of the entity in whose Being, Being remains an issue. In order to properly study the Being of Dasein, its essential structure "being-in-the-world" must be studied. Methodological principles adopted in *Being and Time* declare that Dasein is to be studied as it is "proximally and for the most part (*wie es zunächst und zumeist ist*) in its average everydayness."¹ Being-in-the-world of Dasein is to be studied, at first, by a convenient but rigorous study of its surrounding world (*Umwelt*). Heidegger penetratingly reflects over the equipmentality of equipmental things in the surrounding-world of Dasein and points out that fundamentally not presence-at-hand but readiness-to-hand is what is yielded by the things around. In *Being and Time* things studied as *pragmata* and the erroneous assumption of the metaphysical tradition to take for granted the pure presence-at-hand of bland objectivity of the things, is highlighted. Heidegger points out that without the mediacy of the world, one can neither understand things nor oneself. The pragmatic role of the thing within the surrounding world is explained by recognizing that Being of a thing-within-the-world has to do with its equipmental character.

However, whatever Heidegger finds out about the thinghood of the thing in *Being and Time* is but the first moment of his life long quest to spell out the nature of the phenomenon of the world as well as the status of the thing. As early as in *The Essence of Reasons* (1929),² Heidegger begins to probe the man-world relation without being confined to "the system of useful things". In an important footnote (#55) in *The Essence of Reasons*, he says that his study of the system of useful things in *Being and Time* was only a "preliminary characterization" (*erste Kennzeichnung*) of the problem of the world. He warns here that the problem of the world should not be merely equated (*identifiziert*) with the "ontical system of useful things."³ In *The Essence of Reasons*, Heidegger emphasizes that the world exercises an ascendancy in the man-world relation as it governs man's interpretative understanding, and it is far from being merely subservient to the subjectivity of the subject. As we will gradually discover in this exposition, this change of focus soon after the publication of *Being and Time* by no means signifies that Heidegger began to dismiss any of the important and ontologically rooted findings of the analytic of Dasein. It only signifies that the

nature of the world and the ontological status of things needs to be probed from several perspectives, staring in each case from a fundamental ontological point of departure. Thus, the conclusions of *Being and Time* are only supplemented; they are never dismissed or replaced by the thoughtful discoveries of the later works.

Heidegger reflects over the thinghood of the thing from newer perspectives and gives it more independent bearings in some of his lecture-essays composed in 1950s.⁴ Before these reflections, Heidegger's 1935 essay on the art-work, *The Origin of the Work of Art*⁵ provides important clues concerning his critique of the metaphysical conceptions of the thing. His insistence on the primacy of the art-work over art as well as the artist, shows a recognition of the fact that a reflection on the ontological status of the thing is as instructive as a consideration of the existential structures of Dasein in learning more about the world-concept.

In his discussion on "Being and Appearance" in *An Introduction to Metaphysics*,⁶ Heidegger reflects on the aspect that Being gives itself as it is dispersed in manifold entities. He remarks that the Greek word *doxa* encapsulates the outward appearance of entities that are close at hand for man. "*doxa* means aspect, regard...(ansehen), the regard in which one stands; if the regard...is a distinguished one, *doxa* means fame and glory...For the Greeks glory was not something additional which one might not obtain; it was the mode of highest Being."⁷

Heidegger remarks that in a broader sense *doxa* is the "regard (ansehen, looking-at, esteem) which every entity conceals and discloses in its appearance (aussehen)" that is *eidos* or idea. The aspect is always the one that human beings take and make for themselves. In experiencing and dealing with entities, humans are always forming views of their appearance.⁸ Often it is done without looking closely at the thing itself. Thus, *doxa* stands for "(1) regard as glory, (2) regard as sheer vision that offers something, (3) regard as mere looking-so: appearance as mere semblance,(4) view that man forms, opinion."⁹ Heidegger cautions here against a one-sided, purely subjectivistic approach: "We must take care not to falsify appearance by taking it as something merely imagined, subjective. No appearance, just as much appearing, belongs to the entity."¹⁰ It is the independent aspect of the thing that Heidegger explores and spells out in his later works in his inimitable style by referring to the metaphor of the fourfold.

As mentioned above, Heidegger has made some important critical remarks about the traditional concept of the thing in *The Origin of the Work of Art*.¹¹ Attending to the Being of actual artworks, one notices that they are naturally present as things,--i.e., they have a "thingly" character. Hence one must ask what kind of a thing is an artwork. Heidegger remarks that it was the observation of the use-objects, the closest things around the human being, that led to the view that things have matter and form. This view was subsequently applied to all entities including artworks. Thus the equipmental character of the equipment should provide a clue to the thinghood of the thing.

Heidegger studies the Being of a pair of shoes, as they appear in a painting of Van Gogh and graphically describes the world and earth are opened up in this artwork. Heidegger remarks here that the usefulness of an equipment does not lie in the entity itself but in its reliability (*Verlässlichkeit*).¹² Over and above what he maintained in *Being and Time* regarding the readiness-to-hand (*Zuhandenheit*) of equipment, here Heidegger asserts that the equipmental being of an equipment--i.e., its serviceability and its belonging to a totality may be disclosed in an art-work.

Heidegger's statement in *The Essence of Reasons* and in *The Origin of the Work of Art* that "the world worlds" (*die welt weltet*) apart from indicating that the world is better described by a verb than a noun, also asserts that the world is not just subservient to man's will but reigns over (i.e., regulates and defines) man's understanding of things and of himself.¹³ Heidegger remarks succinctly in *Essence of Reasons* that "Dasein's freedom lets a world 'reign' and 'world' (*eine welt walten und welten lassen*)."¹⁴

In some of the important lecture-essays delivered in 1950's, an important one of which we will consider in detail in this paper, new grounds are covered in raising, comprehending and resolving the problem of the thinghood of the thing and the world. These essays in themselves are at the summit of Heidegger's work, and show that, while his confrontation with the traditional is as resolute as ever, his inquiry has matured itself in the craft of "thinking," by removing itself, as far as possible, from the metaphysical "philosophizing." With regard to the definition of the world as such, these works seek to unfold further the meaning of the "worlding" of the world, and further comprehend the connection between world and thing and between the world and language. The "essencing" or "happening" of the world is articulated by Heidegger, at times, through references to the "mirror-play of the fourfold" (*Geviert*), since the "worlding" as such cannot be expressed in traditional terms--i.e., in terms of causes and reasons. The lecture-essays of the period in which the problems of the world and the thinghood vis-a-vis the human being are comprehensively treated are: "The Thing" (*Das Ding* - 1950), "Building Dwelling Thinking" (*Bauen Wohnen Denken* - 1951), and "Poetically man dwells" (*...dichterisch wohnet der Mensch... --1951*). Some essays on the nature of language, composed in this period also provide a wealth of reflections on the world and the thing. Heidegger's labors in these investigations point out the difficulties a thinker faces in articulating what worlding of the world means, and the limitations of knowledge in this sphere.

In the middle period, that is, after the publication of *Being and Time* and *The Essence of Reasons*, Heidegger reflected over the question concerning the thing, in *Origin of the Work of Art* (1935) and in his lecture-course entitled *Grundfragen der Metaphysik*¹⁵ (1935-36) which was later published as *Die Frage nach dem Ding*¹⁶ (1962). In the essay on art-work, as well as in this lecture-course, which examines Kant's position in detail, he expresses his

dissatisfaction over the way the question "what is a thing" has been resolved in ancient (i.e., by Plato and Aristotle) and in the modern eras of philosophy. In the essay "The Thing," which we will consider in some detail below, Heidegger makes yet another attempt to resolve the age old question taking its cue from the fact that "things" have given way to a multiplicity of "objects" in the present age of technology.

In this essay, Heidegger remarks at the outset that in the present times, "all distances in space and time are shrinking."¹⁷ We are able to travel to distant corners in the world in a shorter time and to communicate instantly today. Nevertheless, the "nearness of things remains absent." What does this "nearness" mean? It cannot be known directly, but we must learn about it by thinking about a thing that is near. Heidegger takes the example of a jug. A jug is a container which may contain something in it. However, the thingly character of the jug-thing does not lie in its being a represented object; for manifestly it is a thing that stands on its own. It is also something that has been produced and given self-support. But neither the objectivity nor the self-support would enable us to understand the thingness of this thing. It is not a thing because it was made; rather it had to be made because this container was needed. It might be said that in the course of its making the jug shows its "outward appearance" or idea (*eidos*) to the maker. But "idea" cannot explain the what and how of the thing.

We often call a thing "object" or "what stands forth." Standing forth has a sense of stemming from somewhere--i.e., either it is self-evolving or made by another. Standing-forth also conveys a sense of unconcealment of something present. Nevertheless, the representation of what stands forth cannot lead us to thing qua thing. A jug's thingness has to do with its Being qua vessel. Heidegger emphasizes the "holding nature" of the jug. It is the void of the jug that holds, let us say, the wine. The scientific explanation would say that there is no void; rather the air that fills the jug is replaced by a liquid. But science is of no help in showing us the thinghood of things, for science annihilates thing as thing by turning it into an object. "This has happened and continues to happen so essentially that not only are things no longer admitted as things, but they have never yet at all been able to appear to thinking as things."¹⁸

We must pay attention to what the jug holds and how it holds. Holding is twofold: taking in and keeping in (of, say, wine). But it is a jug for the "outpouring." Its thing character has to do with giving, pouring out. Heidegger's affirmations imply that the thinghood of a thing does not lie entirely in the matter and form of an entity but in its "gathering" involvement in (human) world. Heidegger points out that the thinghood of the jug unfolds itself only when we dwell upon its Being as a vessel from which the gift of wine is poured out for mortals.

The spring stays on in the water of the gift...In the water of the spring dwells the marriage of the sky and earth...In the gift of water, in the gift of wine sky and earth

dwell...In the jugness of the jug, sky and earth dwell...But the jug's gift is at times also given for consecration...the outpouring is the libation poured out for the immortal gods.¹⁹

What Heidegger seems to be referring to is that a thing does not exist in isolation or irrespective of other entities belongs to the unity of man's world in a way that man's involvement with it gathers together the disparate aspects of the world, so that man dwells in the nearness to things. A "thing" is one which shows itself as a meaningful element of man's world and enables man to carry out the significant tasks of his Being in his world. It is as if the world converges on this thing, as it is employed by man to perform a meaningful task such as paying homage to the gods. The way things carried significance to man before the annihilation of the thing took place, shows us how "in the jugness of the jug sky and earth (did) dwell," how in the gift of wine, the world of man arose, how everything merged in a wholeness, how the divine was acknowledged as divine and as immortal, and how man's existence was accepted as wedded to death. The thinghood of the jug does not merely lie in its equipmental Being but in its Being that gathers in itself the wholeness of man's world.

In the gift of the outpouring that is drink, mortals stay in their own way. In the gift of the outpouring that is libation the divinities stay in their own way,...mortals and divinities each dwell in their different ways. Earth and sky dwell in the gift of the outpouring. In the gift of the outpouring, earth and sky, divinities and mortals dwell 'together all at once'.²⁰

What Heidegger wants to convey is that as man was engaged in an original existential act such as offering libation to gods, it was if in this outpouring of wine, man's world defined itself or its essential aspects appeared in their precise significance. In this act of outpouring the wholeness of man's world emerged, and yet the different aspects or different grounds of his existence received their essentially different meanings. This act defined the difference between the mortal man and immortal gods, and led to an acknowledgement of the divine. The distinction as well as the essential belongingness between the earth and sky, too, came to the fore. It was as if the mutual belongingness of the earth and sky, divinities and mortals appeared and made sense in the performance of this act.

Heidegger's use of the present tense in this description indicates that he believes that although things have been transformed into objects in our times, man cannot be described to have lost the possibility of essential dwelling in the fourfold or his poetic dwelling in the world. Heidegger explains further that the outpouring is a gift because it "whiles" (*verweilt*) earth and sky, divinities and mortals. This "whiling" is not mere "persisting" but an "appropriating" which brings the four into their belongingness so that they are unconcealed. The gift "whiles" the onefold of the fourfold, as the jug presences as jug.

The thing things. Thinging gathers, appropriating the

fourfold, it gathers the fourfold's stay, its while, into something that stays for a while: into this thing, that thing.²¹

The nature of the jug as a thing also explains the nature of "nearness." In "whiling" the four, the earth and sky, the divinities and mortals, the thing brings them near to each other. This is nearing. But this is a nearing that preserves the farness. Nearness, in thinging, remains "at work in bringing near." It is implied that "thinging" is a happening"; it is not something already settled, something static. Heidegger repeatedly stresses that the thing whiles the onefold of the fourfold and as we refer to "one" we already think of the other three. The meaning of each one of the four is articulated as follows:

Earth is the building bearer, nourishing with its fruits, tending water and rock, plant and animal...

The sky is the sun's path, the course of the moon, the glitter of the stars, the year's seasons...

The divinities are the beckoning messengers of the godhead. Out of the hidden sway of the divinities the god emerges as what he is...

The mortals are human beings. They are called mortals because they can die. To die means to be capable of death as death.²²

How precisely has Heidegger defined these four aspect of the worlding of the world is a matter of speculation. But some of his purposes are manifest in this peculiar expression of his thought. First of all, he is articulating the four aspects of the world, and not the four aspects of Being, as Richardson has interpreted.²³ We do not mean to say the Being is not at issue in all this, but the major reason for introducing this metaphor is to explain the "worlding of the world" which is inexpressible in the traditional way of defining as such. That the fourfold has to do with the world is stated again and again by Heidegger, in these later essays without clearly explaining the connection between world and Being. Secondly, the metaphor allows Heidegger to express this happening as an "essencing" of the world, as opposed to the "essence" which fails to consider the connection of the "worlding" with the temporalizing of man. Heidegger want to impress upon us that "world never is, it worlds." Thirdly, this expression permits him to destroy the assumed ontological priority of the human subject, that of man over the world. World here is not thought of merely from the standpoint of man, nor is earth taken as more real than sky, nor does this conception of man gives the illusion that man himself is the beginning and the end. Fourthly, the identity and difference, among these aspects, are thought as founding each other. None of the four is exclusive of the other three. The distinctions between them are not strict, and are not comparable to the distinction between one entity and the other. In other words, all presuppositions of the traditional manner of "defining something" are avoided purposely here.

In Heidegger's descriptions of the Being of the earth and sky, divinities and mortals, his earlier conceptions are developed and investigated further. It is the same earth that was articulated in the essay on art-work, the earth that is

building bearer, the ground of entities that are unconcealed. It is not a mere counterpole of the world as it was in *The Origin of the World of Art*, but now more precisely understood as an aspect of the worlding process. Sky is the new counterpole of the earth that represents the undetermined, uncertain aspect of what-is or what could be. It is that against which what is determined can be measured. Divinities are the embodiments of the divine, against which man measures himself, and in distinction with their immortality, knows and accepts his mortality. Mortal is he who contemplates death, accepts the possibility of the impossibility of his existence. Though about death is developed here further that in *Being and Time*:

Death is the shrine of Nothing...(It) harbors within itself the presencing of Being...Death is the shelter of Being...Mortals are who they are, as mortals, present in the shelter of Being. They are the presencing relation to Being as Being.²⁴

A new conception of man has now been adopted. Man is not an animal that is rational, but a being who "becomes mortal." Death really enables man to comprehend his relation to Being--i.e., himself as there-being (*Da- Sein*), and to understand that he is a presencing being. Just as Nothingness functions presencingly alongside Being, death functions alongside man's existence. Hence man is now more appropriately defined as mortal. Heidegger describes the fourfold further:

Each of the four mirrors in its own way the presence of the others...Mirroring in this appropriating - lightening way, each of the four plays to each of the others.

This appropriating mirror-play of the simple onefold of earth and sky, divinities and mortals, we call the world. The world presences by worlding. That means: world's worlding cannot be explained by anything else nor can it be fathomed through anything else...²⁵

By using the metaphor of light for unconcealment, and by taking Being in the sense of presencing, Heidegger attempts to explain the worlding of the world as the "mirror-play" (*Spiegel-Spiel*) of the foursome. "The inexplicable and unfathomable character the world's worlding lies in this that causes and reasons remain unsuitable." What is to be understood is the "simplicity of the simple onefold of worlding," that the "human will to 'explain' just does not reach." In reality, the four are "grounded in and explained by one another."

Out of the ringing mirror-play, the thinging of the thing takes place. The thing whiles -- gathers and unites -- the fourfold. The thing things world... If we let the thing be present in its thinging from out of the worlding world, then we are thinking of the thing as thing.²⁶

When thing is thought as thing, the region from which it presences is "spared and protected." "Thinging is the nearing of world." The present age is suffering from a "default of nearness" and thing as thing remains annihilated. When do things appear as things? They do not appear by human design. But in the "vigilance of mortals" in which a retreat from the representational thinking, and advance toward "thinking" is made, thinghood of things can

be understood. Heidegger also observes that in contrast to the countless objects and living beings, the things are modest in number. But it is only by dwelling that things are experienced as things.

Men alone, as mortals, by dwelling attain to the world as world. Only what conjoins itself out of world becomes a thing.²¹

In the above mediation on the thing Heidegger seems to say that not all entities are experienced as things and being-in-the-world does not always attain to true dwelling, yet the basic nature of the thing and the basic nature of dwelling explain the essentials of man-world connection. Heidegger seems to believe that thinghood of things and dwelling are viewed differently in different ages, but they nevertheless constitute the grounds of onticity and man's Being-in-the world. This is why comprehension of what is a thing is a key to understanding of Being not only of equipment and art-work but also of human world.

Thinking about the nature of the thing in its independence reveals that the thing has a "gathering" role. The thing things world. Taking the example of a jug, Heidegger observes that over and above its equipmental function the jug-thing gathers human world by granting a wholesome meaning to its involvement in human world. When the jug outpours its gift, the four (i.e. the multiple) aspects of the world persist or while together. The thing things. Multiple aspect of human reality fuse together. A fullness of meaning dawns upon life as things come to be radiant in our vicinity.

Notes

1. Martin Heidegger, Being and Time, trans. John Macquarrie and Edward Robinson (New York: Harper and Row, 1962), p.38
2. Martin Heidegger, The Essence of Reasons, trans. Terrence Malick (Evanston, Ill., Northwestern University

Press, 1969).

3. Heidegger, The Essence of Reasons, p.81
4. Some of these essays are included in Poetry, Language, Thought, trans. Albert Hofstadter (New York: Harper and Row, 1971).
5. Heidegger, "The Origin of the Work of Art" in Poetry, Language, Thought.
6. Martin Heidegger, An Introduction to Metaphysics, trans. Ralph Manheim (New Haven: Yale University Press, 1959).
7. *Ibid.*, p.103
8. *Ibid.*, p.104
9. *Ibid.*, p.105
10. *Ibid.*, p.105
11. Heidegger, "The Origin of the Work of Art," pp.19-39
12. *Ibid.*, p.34
13. Heidegger, The Essence of Reasons, p.103; "The Origin of the Work of Art," p.44.
14. Heidegger, The Essence of Reasons, p.103
15. Martin Heidegger, Grundfragen der Metaphysik, lecture text composed in 1935.
16. Die Frage Nach dem Ding. Tubingen: Niemeyer, 1962
17. Martin Heidegger, "The Thing" in Poetry, Language, Thought, p.165
18. Heidegger, "The Thing," p.171
19. *Ibid.*, p.172
20. *Ibid.*, p.173
21. *Ibid.*, p.174
22. *Ibid.*, p.178
23. W.J. Richardson, Heidegger: Though Phenomenology to Thought (The Hague: Martinus Nijhoff, 1973), p.572.
24. Heidegger, "The Thing," p.178
25. *Ibid.*, p.179
26. *Ibid.*, p.180, 181
27. *Ibid.*, p.182

This paper "Terrorism: Analysis and Response" was to receive the Realia Laureate Award, but due to Alfred Koenig's death, the award was not given. Subsequent reviews and analysis disclosed that this paper would have been the award winning paper. Therefore, at the 1994 Annual Conference at Estes Park, Colorado this summer, Ray M. Barlow will be presented this due Laureate Award.

Terrorism: Analysis and Response

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Terrorism has ceased to present itself to the public mind as an occasional, single act eliciting gasps of horror. Terrorism has become a continuing phenomenon erupting almost predictably in response to certain sets of circumstances. In spite of this regularity, however, terrorism as a general phenomenon is scarcely better understood than it was at the outset of this age of terror. Individual acts of terror (a hijacking of an airplane or an attack on British soldiers in Northern Ireland) are partially understood, but the overall phenomenon is not. This lack of understanding is most evident, when investigators attempt to define terrorism in order to establish a frame of reference for their remarks on the subject.

Some researchers like Paskins and Dockrill in their book, *The Ethics of War*¹ focus on underlying strategy employed by the terrorist, when they say that terrorism is *indiscriminate, evasive warfare in pursuit of a political aim*. The key concept in this definition is expressed in the word, *evasive*, which suggests that the attacker acts so as to evade any response from the enemy. This is clearly a strategic concern. Yet one might comment that terrorist use of the media to "take responsibility for an action" is hardly to be considered evasive. Indeed such publicity-seeking almost invites a response.

A second group of researchers emphasized the motive of the terrorist as the essential element of their definitions. An example of this approach is found in Michael Walzer's book, *Obligations: Essays on Obedience, War and Citizenship*.² Walzer perceives the modern individual as existing simultaneously in many frames of reference, each of which attempts to claim authority over him. As a result of this multi-relatedness the individual has divided loyalties, which in turn produce a phenomenon Walzer calls "divided political man." Divided political man simply cannot acquiesce to the demands of all frames of reference and so becomes a "natural rebel," who tends to withhold allegiance from all authority. When pushed to obey this natural rebel responds by striking out against the authority figure in such a way as to avoid retribution. Walzer asks his reader to note that the opponent of this natural rebel is always a bureaucracy which enjoys superior force. The extreme case of the natural rebel is the terrorist.

The focus on motive is expressed in a more positive vein by Jacob Bronowski in his book *The Face of*

Violence.³ Bronowski believes that at the heart of violent behavior is the desire to make a difference with one's life or to show oneself as a person with a will. The very complexity of society prevents the individual from acting significantly, because it is rare that social institutions appreciate individual initiative. Faced with the impersonality of society the individual seeks a collective identity of a rebel group, which offers the person the ambivalent identity of a uniform and the right to salute and be saluted. Behind the "persona" of the terrorist organization the individual finds significance and also a shield from ethical responsibility for terrorist actions.

The circumstances, which allow terrorism to emerge, from a third focus in definitions of this phenomenon. The principal circumstance is the absence of effective international law, which can find and punish the terrorist, when the latter strikes and then disappears within the hospitable nations. The absence of such law derives, as John Dewey once remarked, from the claims of national sovereignty made by all nation-states. Paul Arthur Schilpp expands upon Dewey's well-known remark, when he says that the claim of national sovereignty implies that no laws exist beyond national laws. The only law transcending national laws is the law of self-interest and it is not always in the national self-interest of a given country to take action against organized terrorism within its boundaries. Witness the tolerance of Syria and Lebanon for terrorist training camps in those countries. In a world deprived of the ordering influence of international law the terrorist finds his element. In such a climate he can always find a haven by appealing the self-interest of harboring nations.

A fourth group of investigators attempts to define terrorism by citing differences between that phenomenon and organized warfare. In warfare military fights military, whereas in terrorism the object of attack is the civilian population of a nation whose policies the terrorist wishes to change. Nor is it the terrorist's intention to destroy enemy forces, as it is in warfare. The terrorist's intention is to inspire fear among a life-respecting population by portraying himself as an individual who does not respect the right to life. Thus the terrorist trades on the human respect for the lives of the terrorist victims, as well as the lives of civilians in other countries among whom the terrorist hides, once his deed is done. In terrorism the

conventions of war, which protect the bystander, are significantly absent.

The shortcomings of the previous attempts to define terrorism are many. First, the all too frequent phenomenon of state-terrorism does not appear to be included. Second, it is not clear to what extent the emergence of terrorism is motivated by psychological factors (Walzer; Bronowski) or by purely political considerations. Third, the ability of the terrorist to operate *between* nations rather than within a nation due to the absence of international law assumes that the only approach to shutting down terrorism is legal. Could there not be other instrumentalities that nations could employ to eliminate havens for terrorists?

Philosophical Analysis

A major hindrance in dealing with terrorism is that this phenomenon is most often perceived in only one of its dimensions: the economic, the geopolitical or the religious. Such perceptions skew not only the analysis of terrorism but also the responses based on such analysis. In this paper I intend to submit the phenomenon of terrorism to a philosophical analysis in order to get at the roots of terrorism rather than the overt aspects mentioned above.

In the course of this analysis I will make several borrowings, which I wish to own up to beforehand, from the pre-socratic philosopher, Heraclitus, from Confucian ethics based on relationships and finally, from Martin Buber's work on existential community.

The philosophical analysis of the terrorist problem, which I propose, proceeds in a series of three interconnected statements, a chain argument in the broad sense.

First, the terrorist breaks the natural moral relations between human persons, relations which include two inseparable aspects: the obligatory aspects (duties) and the liberatory aspect (rights). By demanding his basic rights, while rejecting his duties, the terrorist in effect destroys interpersonal relations reducing his victims to the level of things.

Second, by destroying interpersonal relations the terrorist undercuts the possibility of genuine community among people, leaving dehumanizing collectivities as the only alternatives for human association.

Third, the undercutting of community and the rising dominance of conflicting activities is an attack on what the philosopher, Heraclitus, called *cosmos*, that world-shaped which externalizes the *logos* (principle of meaning) found in every person.

In the rest of this section of my presentation I will attempt to expand these three preceding statements.

The first statement refers to the moral aspect of relations among people. A productive way of speaking about these relations is first to look at the fundamental species of these relationships, then to examine with the help of Confucius the different specific modes in which these relationships are externalized and finally to examine the ethical conclusions implied in these relationships.

In discussing the fundamental species of these

relationships I will borrow freely from Martin Buber's concept of the interhuman. I apologize if this portion of my paper repeats a commonly understood insight, but it is necessary in order to construct a foundation for what follows. As we are all aware, Buber differentiates between the I-it and the I-thou word-pairs as setting up different relations between people, as well as differing modes of being; ego orientation and person orientation.

In the I-it interaction the individual looks out upon his environment as replete with objects which he can experience and use.⁵ The verb, **experience**, means to appropriate external objects, reducing them to concepts within the individual's conceptual framework and ultimately to put this conceived reality to work for the individual's interest. In the I-it interaction the individual does not move toward the other person; rather the other must move into the individual's frame of reference. Thus, the it in the I-it interaction inevitably loses its particular identity to become an appendage of the experiencing and using I. The meaning of the object is constituted by the individual's frame of reference. Furthermore, just as singular objects assume personalized meanings in the I-it interaction, so the complex of objects called environment assumes an idiosyncratic meaning. Thus in the I-it interaction there is little possibility of a common meaning or *logos* among and within different persons. Yet, as Heraclitus teaches, a common *logos* or principle of meaning exists in each person, rising to **dialogos** among people and making it possible for many people to share a common world view or *cosmos*.

By contrast in the I-thou relationship the thou does not become a concept in the personal framework of the I. The uniqueness of the thou is preserved. The I-thou dialogue itself involves a two-fold movement: the primary phase being the **setting at a distance of the other person**, the recognition of the thou as irreducibly other, retaining his or her own individuality. The thou is not simply an element in the environment of the I. Unlike the human person the animal sees all reality only in terms of its own needs. Thus the animal's environment is selective and integrated with the animal's needs. To the animal there is no world beyond the objects that are useful in satisfying animal needs. Man, on the other hand, can survey reality from a perspective which transcends his needs. Buber calls this surveying **distancing reality**.

Once reality has been distanced the second phase of the I-thou relation involves the I actively turning toward the thou, the other person now known in his or her uniqueness and presenting to the other person the whole being of the I. In the I-thou relationship the thou has not been reduced solely to what the I finds useful, as in the I-it interaction. No, the thou is a whole person, just as the I is. In the I-thou relation there is a tension due to the separateness of the I and thou, but also a relational principle inherent in both for the resolution of that tension. This relational principle is the *logos* or common core of meaning found within every person.

The manifold interhuman relationships which emerge from the basic I-thou or I-it interactions are well illustrated by the ethics of Confucius. The Confucian ethics flows from a basic principle called *Jen*, which is translated as human-heartedness. This principle is the cornerstone of all relations among people according to Confucius. The ideograph for *Jen* is composed of two characters: one character signifying man and the other signifying two. This demonstrates the Confucian stress not on the individual **alone**, but on the individual in **relation** with other people. Confucius held that human relations should be based on and proceed from the moral sentiment of *Jen*, which will lead to positive efforts for the good of others. *Jen* is not a special kind of virtue, but all virtues combined. Then Confucius, as it were subdivides *Jen* into the concepts of **filial piety** and **fraternal love**, both focusing on a relationship with others. The parallelism with Buber's I-thou dialogue is evident. Fraternal love and filial piety Confucius make the cornerstone of a harmonious social structure. Confucius admonished us that "the man of *Jen* is one who, working to sustain himself, sustains others and, working to develop himself, develops others."⁶ This reflects Buber's understanding of the I-thou relation: "the basic word, I-thou, can be spoken only with ones whole being. I require a thou to become I; becoming I, I say thou. All actual living is encounter."⁷

In the *Analects* Confucius further articulates the idea of *Jen* by introducing into its compass the concepts of faithfulness (honesty with oneself) and altruism (sympathy with the outside world), thereby subdividing *Jen* into four ideals, each of which should characterize one aspect of our relationships with others. It is significant, however, that in enumerating these relational ideals he avoids two mistakes: considering the individual as existing separately from society and considering the individual as so wholly enmeshed in society that the individual can hardly be said to exist at all.⁸

Thus Confucius believed that the conscience of the individual would forbid him either to withdraw from society or to surrender his moral judgement to it. The moral individual, therefore, lived **within** the complex of social relations called *Li*, bringing to his life the perfect virtue, *Jen* or human heartedness and its attendant ideals: filial piety, fraternal love, faithfulness and altruism. The parallel between Buber and Confucian thought is instructional here. Buber contends that we should avoid the extremes of both **individualism** and **collectivism**. Both are inadequate. "individualism understands only part of man; collectivism understand man only as a part (of an impersonal system); neither advances to the whole of man."⁹

From Confucius' articulation of *Jen* practiced within *Li*, philosophers have developed the Confucian Ethic of Interdependence with its five basic relationships which embrace the totality of interactions in civil society; superior-subordinate, parent-child, husband-wife, older brother-sibling, friend-friend. Even to the casual observer the connection between these five societal relationships and

the four ideals comprising *Jen* become clear. According to the ethic of interdependence right behavior (or sincere behavior) is the behavior which conforms to the specific relationship in which and individual actually stands to another individual. Within the framework of this ethic, for example, sexual harassment would be immoral because it injects into the superior-subordinate relationship element proper only to the husband-wife relationship.

The terrorist carries the distortion of interpersonal relationships even farther, injecting into what should be I-thou relationships the possessive element proper to I-it interactions. The terrorist perceives his victim as less than a fellow person and more like a chess piece in the larger strategy of gaining the ends of the collectivity to which he (the terrorist) has given his allegiance. Indeed the terrorist cannot look upon his victims as persons, for if he does so, if he establishes I-thou relations with them, he can no longer victimize them.

But there is more at stake here than the impersonalization of victimization, because the terrorist in effect is breaking up the essential interhuman relationship from which communities may grow and by which the terrorists own personhood is established. The terrorist demands his rights as a person and the rights of his people without for a moment admitting that he is the subject of duties towards his victims, actual or potential. The interhuman relationship is a **single reality** of which rights are liberatory aspect and duties the obligatory aspect. Rights and duties possess not reality separated from each other; they are real only as qualifiers of essential interhuman relationships. The terrorist, therefore, who places the rights of his opponent in jeopardy by ignoring his duties as a human being in effect is destroying the possibly of interhuman relationships within which his own rights can call upon the duties of other people.

In Heraclitus' term the terrorist is "asleep" to the reality of the interhuman; he is distorting reality by fleeing the world all men have in common into the fantasy of an isolated self or an isolated cause. In Confucian terms he is mistakenly considering his identity or the identity of his cause as something separate from that complex of relationships called society. He does violence to his conscience by attempting to form it on the basis of an unreal isolation. In Buber's terms the terrorist admits only I-it relationships in which the I is the Ego using other persons as things in the interests of an isolated cause. Central to all approaches to terrorism is the unreality of the isolation of both the single terrorist self and the terrorist cause. The inevitable outcome of such isolationism is the breaking up all interhuman relationships which are characterized by both human rights and human duties.

The second statement to which I now draw your attention is an implication of the first just discussed. By destroying genuine interhuman relationships the terrorist has cut away the basis of **human community**.

As we have seen, Buber distinguished the two word-pairs; I-it and I-you, the latter being genuine dialogue reciprocally spoken by two persons with their whole

beings, thereby establishing the personhood of each. Proceeding along the same lines Buber further reflects on individualist, collectivistic and communitarian man.

It should be noted that in Buber's view individualism is a sorry state at best, since by attempting to break off genuine contact with his fellows the individualist cannot grow as a person.

Buber used the thought of Heraclitus with its insistence on Logos, that common kernel of meaning found in each person, a Logos that is externalized in genuine I-thou dialogue and in existential relationships.¹⁰

He also rejects the idea that human development can occur when an individual immerses himself in the crowd, seeking identity by affiliation. This he calls *collectivism*.

Buber believes that the underlying motivation for the modern flight to collectivities is the psychological bankruptcy of individualism. Here the person tries to escape his destiny of solitariness by fitting himself into a "general will" and allowing personal responsibility for life to be absorbed into a collectivistic responsibility.¹² In a collectivity the person's isolation is not overcome, but overpowered and numbered. In a collectivity people are not interrelated but bundled together to become an instrument in the achievement of the collectivity's goal. The person with all his or her uniqueness is out of place in the collectivity indeed "collectivity is based on an organized atrophy of personal existence."¹³

The appropriateness of Buber's analysis to the situation of the terrorist should be clear. Here we gain a new perspective on Walzer's *Divided Political Man* so trapped in incoherent frames of political reference that he does not consider himself significant, to borrow Bronowski's phrase. Here is the bankruptcy of individualism, which precipitates the potential terrorist to flee into the anonymity of the terrorist collectivity where he becomes somebody if only by affiliation.

If isolation individualism and the anonymous collectivism are not man's destiny, what is? Buber's answer is community, which is created by genuine I-thou relations between many individuals. Buber's contrast of community and collectivity is instructive:

"collectivity is not a binding but a bundling together; individuals packed together, armed and equipped in common with only so much life from man to man as will inflame the marching step. But community...is the being no longer side by side but with one another of a multitude of persons. And this multitude, though it also moves toward one goal, yet experiences everywhere a dynamic facing of the other, a flowing from I to thou."¹⁴

This community Buber sees a rising form expanding the sphere of "the between", the interhuman created in genuine I-thou dialogue. Remember to Buber "the between is not an auxiliary construction but a *real* place and the bearer of what happens between men."¹⁵ Raise I-thou relations to the level of a multitude and the essential "We" is formed. By *We* Buber means a community of persons in which goals are achieved not at the expense of the

personhood of the members, but because of that personhood.¹⁶ In "We" each person is significant, each interhuman relationship is valuable, every person's unique potential respected and used to its fullest. Goals are achieved, but no person is lost by the wayside.

Ironically it is *community* which the terrorist longs for but which he seeks to destroy. As we listen to the West Bank Arab, to the Black South African, to the Northern Irish Catholic, we hear a common lament expressing the sincere desire to be somebody, to live in a society where each person is cherished. Yet in his allegiance to the terrorist collectivity the individual must destroy that very I-thou relationship which will sew the seed of the community he is looking for. And if he is reminded of the possibility of building community, he like the people enmeshed in all collectivities consider community an unreal will-of-the-wisp, and unattainable ideal.

Dialogue is silenced. Bundled together men march without Thou and without I, those of the left who want to abolish memory and those of the right who want to regulate it, hostile and separated hosts, they march into the common abyss.¹⁷

The third statement which derives from the terrorist destruction of community of which we have just spoken points to the ultimate object of the terrorist attack. That object is in Heraclitus' terms, human Cosmos, that common world-shape deriving from Logos, which is the seed of meaning planted and growing in every person. It is Logos that specifies human nature and makes it possible for mankind uniquely among all other kinds to live in a *world*, a rationally understood orderly whole, rather than merely in an environment, a complex of parts connected to one's individual needs and desires. This distinction between *cosmos* and *environment* is important in understanding the destructiveness of terrorism. The terrorist trapped in his collectivity, can rarely, if at all, lift his eyes beyond the confines of his own cause to its impact on larger worldwide issues. Thus he is the victim of his environment and scarcely can conceive a cosmos beyond.

Heraclitus who planted many of the seeds of western thought, did so in our instance as well. "The waking," he said, "have a single cosmos in common."¹⁸ A further dictum "not as men sleep must we act or speak,"¹⁹ suggests that the initial reference to "waking" could not have been incidental, since waking and sleeping are clearly arranged as opposites. The moral philosopher Plutarch, who preserved the first fragment for posterity, later provided an interpretation. In sleeping the individual turns away from the common cosmos and turns toward some view of reality that belongs to him alone. In waking to the logos within the individual knows the world shape which belongs to the whole human race and is aware of the full mutuality of being a member of that race. To borrow Buber's term used above only in the common world of waking do many individuals become "We." The cosmos is not only something we as humans affirm; it is an order which we must all work toward together and indeed at all times,

because it is an infinite need of adjustment. We are aware of the pairs of opposites in Heraclitus' world view. These opposites are in continuous movement and so in constant need of adjustment so that a world order must continuously be recreated. However, the common task of creating world order is not the work of a team harnessed to a wagon which all must pull; no this task is made up of battle and strife, but also of a willingness to be guided by logos and an interest in the wholeness of reality which transcends private ends either individual or collective. As Buber, commenting on Heraclitus observes;

This cosmos from which we come and which comes from us is, understood in its depth, infinitely greater than the sum of all the spheres of dreams and intoxications into which man flees before the demand of We.²⁰

It is as We through dialogue with many persons that man develops a world out of his private experiences, a common cosmos which each person works for and in which each person is precious to every other person.

The terrorist points his Kalishnakov rifle against the head of an old man on the deck of Achille Lauro and coldly pulls the trigger. Why did he choose the old man, cancer-ridden, incapable of harming, too weak to be an enemy? Why? To show the governments of the world that "we have no human pity," to show, as we might paraphrase it, that terrorism turns its back on the world, that the terrorists are ready to destroy the whole world in the interests of their part of it.

I believe it is essential for us to understand that terrorism is a threat, not just to individuals who are its potential victims, not just to the balance of power among collectivities, but a threat to the very existence of our concepts of world, to the very possibility of world order.

Response

The responses to terrorism are almost as numerous as are the writers who conceive them. Yet there are two general categories of responses which may be easily discerned; the retributive and the therapeutic.

The retributive response is based on the premise that like the wild animal the only thing the terrorist will recognize is force. Make each terrorist act so costly in terms of suffering that the terrorist will gradually lose his appetite for violence. Whether simple retribution is effective I know not; I do know, however, that retribution had the inevitable effect of making the victims into terrorists, too. Since the terrorist practice evasive warfare, which requires that he melt into an innocent population once the terrorist deed is done, retribution cannot be focused only on him, but may destroy the innocent with the guilty. Furthermore, retribution, however seemingly justified, easily falls into a cycle of **revenge** kept alive by rage rather than by reason.

The therapeutic response on the other hand, assumes that the terrorist is a mentally ill sociopath or at least mentally deluded in his aims. Yet as we say earlier in this paper, this is not necessarily the truth. Terrorism can have superficially reasonable aims and strategies in which violence is not senseless. So to declare that the terrorist is

sick and in need of therapy, especially at the hand of those people who, as the terrorist sees them, are his victimizers, is not very productive.

No a third alternative, which I call the **dialogic response**, is in my estimation more promising. This alternative derives from the foregoing philosophical analysis of terrorism and terms of interhuman relations, community and cosmos.

Before articulating this alternative response, however, we need to realize the depth of the atmosphere of mistrust which exists on both sides. This atmosphere of mistrust is not based on the fear that any party to an agreement, terrorist or victim, may be deceptive; rather is it based on the conviction on both sides that the other side cannot do otherwise than be deceptive. If such a conviction prevails, the primary purpose cannot be to understand or establish relationships with the other side but must be to unmask the other side.²¹ Thus is speech itself poisoned.

When this form of mistrust colors the atmosphere of negotiations between potential or former terrorists on the one side and their adversaries on the other, what should be sincere **dialogue** about genuine human needs of people becomes at best a game to see which side can be the more devious. To employ Buber's terminology the participants focus on understanding the adversaries' verbal strategies of deception and using these strategies to trip the adversaries up. These are extreme instances of the I-it interaction in which the common humanity (logos) in each side is denied or ignored.

To break this cycle of I-it relationships we must first realize what Heraclitus taught: that in every person logos exists, that this logos is a principle of meaning shared by all people. This logos provides the basis for a breakthrough from unproductive I-it interactions to potentially productive I-thou relations.

When I-thou relationships replace even for a moment, I-it interaction, the seed of community is sown; first a community of two and eventually a community of many, all of whose members are devoted to working for a cosmos or world order in which all communities would be at home. This is the part of a dialogic response to terrorism, a path that begins when an I-thou relationship breaks into the game of mistrust, to the recognition of the other first as a person, to growing community and finally to cosmos. This is what Hutchins called *The Civilization of Dialogue* in which the terrorist demand for liberty and equality would be tempered by fraternity.²²

Let us admit it, Terrorism enrages us. It is a threat to each of us. Yet it is more of a threat to destroy our world and to reduce mankind to the level of warring animals. Because of the depth of the threat it poses to the whole human condition we cannot let the so called practical people convince us that the quick fix of counter force is the ultimate answer, however satisfying that may be to our rage. We must get to the persons behind the masks and speak to them as person to person. There is no other alternative and there is little time to waste.

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Newton's First Law of Motion and Aristotelian-Thomistic Principles of Measure Foreword to Part II

In Part I of his study of the relation of the Galilean-Newtonian First Law of Motion (the Law of Inertia) to the classical, philosophical, metaphysical principle that whatever is moved is moved by another, Professor C.B. Crowley surveyed the recent resurgence of interest in this problem among certain thinkers as a result of correspondence between physicist, philosopher, and historian Pierre Duhem and metaphysician and theologian Reginald Garrigou-Lagrange, O.P. In the course of this survey, Crowley noted perplexing questions which had arisen in the mind of Garrigou-Lagrange as a result of the seeming contradiction between these two principles. In their own way, both these principles seem to be true; yet they seem to contradict one another. How can this be? Could it be that the principle upon which the whole of Newtonian mechanics is based contradicts a true metaphysical law? Could it be that one law is true and the other false? Might it be the case, as some thinkers have maintained, that the Law of Inertia "works" and "saves the appearances" but that it is just a "free postulate of the mind" and/or a useful hypothesis without metaphysical foundation.

In his attempt to address these puzzling questions, Crowley noted a peculiar lack of consideration among contemporary scholars of the study of the metaphysical foundation of the Law of Inertia, which foundation, he suggested, could be discovered in Aristotelian-Thomistic "metaphysical principles of measure." To show how this might be accomplished, Crowley said it would be necessary, from a metaphysical standpoint, to consider the notion of the "one" for it is in this notion that the notion of measure is first found.

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Newton's First Law of Motion and Aristotelian-Thomistic Principles of Measure Part II

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The Various Kinds of One

In his *Metaphysics* and in his *Commentary* on the same work, Aristotle and St. Thomas distinguish the various ways in which "one" is said. First, they point out that "one" is spoken of **through itself** (*per se*) and **accidentally** (*per accidens*). After considering all the ways in which "one" is spoken of accidentally (*per accidens una*), they consider the various ways in which "one" is spoken of *per se*. Here they again distinguish two ways of speaking about the one through itself (*per se una*). First, there are those according to the conditions found in things, or in reality. Then there is the logical one.(28) (Since this way of being one is not pertinent to the present article, and it will not be considered here).

In n. 849, they consider those realities that are one *per se* by nature, and by continuity, that is, by being continuous. They say, some things are continua by themselves, whereas others are continua by something else—as a bundle of sticks, bound together by a chain, and so on.

In n. 851, they point out that things that are continua by nature are "more one" than those that are continua by art—as are artifacts—because what are continua by nature are so, not by reason of something extrinsic to

them (as are the continua by art), but are one of their very nature. Hence they say that those things that are naturally continua are especially "one."(29)

The Nature of One

Having considered all the various kinds of "one," they conclude that those things that are entirely (*omnino*) indivisible are **maximally** said to be one. For this is universally true: That **whatever things do not have division, insofar as they do not have division, are called one**. Hence, Aristotle and Aquinas conclude that all ones are called "one" for one reason, and that reason is "to be indivisible" (*esse indivisibile*). For one, properly speaking, is indivisible being (*ens indivisibile*). Or, one is *esse indivisibile*, or "to be indivisible."(30)

The Maximally Indivisible One

In n. 865, Aristotle and St. Thomas indicate what is perfectly and maximally indivisible, and so one—that is, those things in which the intellect in understanding their quiddity (or nature) is entirely indivisible (as, for example, simple things), which are not composed of material and formal principles. Here the intellect in grasping their

quiddity, or nature, does not comprehend them as things by composing their definition from diverse principles, but rather the intellect comprehends them **after the manner of a negation**, for example, a point is defined negatively as that of which there is **no part**.(31)

Also, the human intellect can grasp a quiddity (or a nature) after the manner of the habitude or a relation to the things it composes, as the unit is defined as the principle of number; and such things as these have an **indivisible understanding in themselves, and so are maximally indivisible**.(32)

The Relative Ones

In n. 561, in laying the bases for the parts, or divisions, of philosophy, Aristotle and St. Thomas speak of the "parts" of being, and the "parts" of **one**;(33) and they say that just as the parts of being are "substance"; "quantity"; "quality"; and so on, so the parts of **one** are the "identical"; the "equal"; and the "similar." They explain that the "identical" is the **one** in "substance"; the "equal" is the **one** in "quantity"; and the "similar" is the **one** in "quality." In n. 2000, they point out what are the contraries of these **ones**. The contrary of the "identical" is the "diverse"; of the "similar," the "dissimilar," or the "unlike"; and of the "equal," the "unequal." "For those things are diverse whose **substance is not one**; those are unlike whose **quality is not one**; and those are unequal whose **quantity is not one**"; and they call these contraries the "**pluralities**" of their respective **ones**. (What should be noted here is that the relative **ones** and their **pluralities** are another instance of the "the one" and "the many.")

The Property of One, as Indivisible "To be a Measure"

Having shown that **one** "is to be indivisible" (*indivisible esse*), they next show that there follows a certain property of **one** as indivisible, which property is "to be a measure." In n. 1938, they continue, saying that, since the notion of **one** is "to be indivisible" (*ratio unius sit indivisibile esse*), then that which is indivisible in any genus is a measure; and this is especially true and said properly (*proprie*)(34) of that which is the first measure in the genus of quantity (for quantity is distinguished from all the other accidents in this: that it is the measure of substance).(35)

From that first measure in the genus of quantity, the notion of measure (*ratio mensurae*), is analogically transferred into all the other genera (of being). For "a measure properly is nothing else than that by which the quantity of a thing is known,"(36) that is, a measure is a principle of knowing the quantity of a thing.

In the *Metaphysics*,(37) they distinguish a **quantum** whole from all other material wholes, in this: that "a quantum is what is divisible into those things that are in it"; and, adds St. Thomas: Aristotle says "into those things that are in it," to show the difference between a **quantum** whole and a **mixed** (compound) whole, and an **elemental** whole. For a **quantum** whole's divided (*divisa*) parts are individual things (that is, singular-individuate-*per-se-hoc-aliquid-una*-parts); which is not the case with those

"parts" into which **mixed** wholes are resolved, nor with those "parts" into which **elements** are resolved, namely, matter and form.

When speaking of mensuration (n. 978), and of a measure (n. 1938), they say mensuration belongs to quantity **properly** (*proprie*). For quantity is distinguished from all other accidents in this: that it is "the measure of substance" (n. 1768). Hence, as indicated in n. 1938, it is in the **unit** (*una*)-parts into which a **quantum** is resolved, and at which the division terminates, that the notion of the **one** as an indivisible measure is **properly first found**; and it in this notion that, properly speaking, is found a principle of measuring. Then, from there, the notion of "part" and of "measure" as a principle of knowing or of measuring elemental natures is transferred **analogically** to matter and form, and to elements in relation to mixed natures. Thus, it should be clear that, **properly speaking**, the indivisible **one** (*unum*) that is through itself first (*per se primo*) a measure is that **one** into which a quantum is divided, and at which the division terminates, is also that by which the quantity of that quantum is known,(38) as a quantum (*ut quantum*), or as measured.(39)

In n. 1938 they continue that the quantity of a thing is known by **one** or by **number**. By **one**, for example, we say, "one stade,"(40) or "one foot." By **number**, as when we say, "three stadia," or "three feet"; and they add that every **number** is (itself) known by **one**, from the fact that a **one** taken "so many times" renders a **number**. In this way, **number** is defined as a plurality, or multitude, measurable by **one** and, when measured, it is **number numbered**, and a quantum.(41) Whence, every quantity as quantity is known by a **one**. The phrase "as quantity," is used here to signify the **measure of quantity**, for the properties and other accidents of quantity are known in another way.(42)

The Quantity in which the One that is a Measure is First Found

Aristotle and St. Thomas next point out (n. 1938) in what species of quantity(43) the "**one**" that is a measure is first found--namely in discrete quantity, saying that that by which the quantity of a thing is first known is the **one itself**, which is the principle of number: for a **one** in the other species of quantity is not **one** itself (*ipsum unum*), but something that happens to **one**, as we say, "one hand," or "one magnitude." Whence it follows that "**one itself**" (*ipsum unum*), which is the first measure, is the **one** that is the principle of number according as it is a **number**. For every **number** itself is measured by a **one**, as was just said--namely, every **number** is known by a **one**, for a **one** taken so many times renders a **number**, known as measured (*ut quantum*).

The **number** to which both Aristotle and Aquinas are referring is quantitative **number**, that is, that **number**,(44) or the plurality of **part-ones** that arises from the division of the continuum, which **number** is "a measure by its nature"(45) because, as was said above, since the notion of measure belongs first and **properly** to quantity

(which is the measure of substance--and to which therefore mensuration properly belongs), then the parts into which a quantum is divided (*hoc aliquid*, or *una* parts--that is, *quanta una*) and as terminated by the last **part-one** (or last **one**), are called **number**,⁽⁴⁶⁾ and are measures.⁽⁴⁷⁾ That is, they are individuate-*quanta-una*-parts; hence, by their nature, they are not only the unit (*una*) parts arising from the division of the continuum; they are also the parts or the principles of knowing or of measuring that continuum from which they came, as it is a quantum--that is, **as measured**, for they are equal to it, or they "go into it" as many times as they came from it.⁽⁴⁸⁾ Hence the divided *una* (*una quanta*) parts called "**number**," are those parts that originally compose the continuum as a quantum and potentially existed in it (which existence becomes actual by the division); and, therefore, they are the principles of knowing the quantity of that continuum, precisely as it is a quantum, or as measured.⁽⁴⁹⁾

In other words, the unit parts (*quanta-una*-parts), or **number**, are first the measures of the continuum; and, just as, for Aristotle, matter and form are the principles of composing and knowing the essences or the natures of things; so the divided unit parts (*quanta-divisa-una*-parts), called "**number**," are the principles both of composing the continuum and of knowing the quantity of the continuum as it is a quantum--that is, as measured. This kind of knowing a quantum as it is a quantum through its unit parts (*quanta-una*-parts, or **number**), is properly called "measuring"; and it is this intelligible quantum **number**, arising from the division of the intelligible quantum continuum, that was the subject of Ancient mathematical arithmetic.⁽⁵⁰⁾ In n. 1888 these divided parts are called "discrete quantity" because these actually divided parts now exist by themselves and are not united to one another, as they were in the continuum before division, where they did not exist actually by themselves but had the existence of the continuum itself.

This **number** is later referred to (n. 1955) as nothing else than a plurality of **ones**. Hence, number is composed of unities; is resolved into unities; and is known by and/or measured by unities; and is discrete quantity. Consequently, the notion of measure is first found in discrete quantity--called "**number**."

Transference of the Notion of One as a Measure

In n. 1940, Aristotle and Aquinas point out that from **number** and from the **one** that is the principle of **number** the notion of a measure is spoken of in other quantities, that is, that namely, by which each one of them is known; for that which is the measure of any genus of quantity is called "**one**" in that genus.

In n. 1007, St. Thomas points out that the relations which belong to continuous quantity are also attributed to number. Then (n. 1008), in giving the numeral proportions, Aristotle and Aquinas say that the numeral proportions are of two kinds--namely, equality and inequality. Of inequality there are two species: 1) the exceeding and exceeded; 2) the more and the less. Hence the notions

"equality," "excess," "more" and "less," are *per se* and primarily quantitative notions.

In n. 1005, in speaking of relations (to which, in n. 1022, the category the "equal" is said to belong), St. Thomas points out that a **quality as a quality is related only to the subject in which it is** (that is, in which it inheres); and, in this way, one quality is not related to another (that is, a quality as such only has the relation of "being in" (*in esse*) its subject not of "being towards" (*ad esse*) another), and so, **properly speaking**, is not quantitative or measurable.

A quality, however, is ordered to another quality (and, so, has *ad esse*) in two ways: 1) insofar as it receives the notion of a potency (whether that be active or passive) insofar as it is a **principle of action or passion**; or 2) insofar as a quality is ordered to another quality by **reason of quantity, or of something pertaining to quantity**, as something is said to be whiter than another (that is, it is **more white** or **more intense**, which **more**, and its correlative **less**, are quantitative properties), or as something is said to be **equal to or similar** to another.⁽⁵¹⁾ (Note here that this teaching is based on the foundations of relations, two of which are action/passion and quantity).⁽⁵²⁾

In this regard, therefore, St. Thomas says⁽⁵³⁾ that quantity is twofold: 1) *dimensive* (*mollis*) quantity, which is found only in bodies; and 2) *virtual* (*quantitas virtutis*), which is taken according to the perfection of some nature or form. This latter quantity is designated insofar as something is said to be **more** (*magis*), or **less** (*minus*) hot, insofar as it is more perfectly or less perfectly hot (for Aristotle and Aquinas heat is a quality (n. 993); and, so, in this respect, it is a virtual quantity). Since the perfection of some form or nature is **analogically** called "virtual quantity," then the properties of quantity, such as, "equality," "excess" and "defect" are also, **analogically**, to be found in qualities as virtual quantity.

In the same article in the *Summa theologiae* Aquinas shows how **equality** belongs to virtual quantity. He says that inasmuch as **equality** is virtual quantity it includes in itself a likeness (*similitudine*) and something **more** because it excludes **excess**.⁽⁵⁴⁾ For whatever agree in some **one** form, can be called similar (*alike--similia*), even though they participate **unequally** in that form, as if one says air is **alike** to fire in heat. However, they cannot be called **equal** if one of them participates in that form **more perfectly** than the other.

Now, in order that excess and defect, which are the unequals (and, so, the **pluralities of the equal**),⁽⁵⁵⁾ be measured, they too must be measured by a **one**, that is, by a quantitative **one**, which is a measure. That *unum*-measure is the relative **one** in quantity--which is **equality**.⁽⁵⁶⁾ For the **equal** is that which is *neither more or less*, but is **one** in quantity;⁽⁵⁷⁾ and excess and defect are species of quantitative **inequality**--which inequality is **analogically** the plurality⁽⁵⁸⁾ (or **number**) that is opposed to the **one** that is the **equal**. Therefore, the plurality, excess and

defect, is measured by the **one** which is the **equal**; and excess and defect in virtual quantity (as quantitative plurality) are measured by **equal intensity**, which is the **one of virtual quantity**, and the measure of intensive quantity, or of *quantitas virtutis*.

Philosophically this notion of a quality as a virtual quantity provides the Aristotelian and/or Thomistic philosopher with a means of understanding all the modern measuring sciences as quantitative. Starting, for example, with heavy bodies, one can understand the Ancient scientists placing two heavy bodies equidistant from each other on a balance scale to attain equilibrium in the quality heaviness (that is, their oneness, or equality in heaviness). This was the method employed in the Ancient science of *De ponderibus*,⁽⁵⁹⁾ today called "Statics," which, again, deals with quality as *actio* and *passio*, or as *interactio*, which as measured is called "force" to attain the equilibrium of forces, which equilibrium will, in the science, be disturbed, changing what was in a state of equality into one of inequality (the plurality of the equal), which is to be measured. Hence the science of mechanics becomes the first universal mathematical science of virtual quantity considered in general (that is, of *quantitatis virtutis in communi*), whose concepts are then appropriated analogically to the particular mathematical sciences, all of which are today called mathematical "physical" sciences.

The same thing is true of measuring the qualities of motion (that is, its fastness or slowness). These qualities, simply as qualities of motion, are not quantitative, nor are they measurable. Nonetheless, in n. 1943, Aquinas indicates that a mobile being can be considered as having an excess of movement insofar as one moving body can be faster than another; and in this way, a quality can have a quantitative notion (that is, as a virtual quantity) and so can be measured.

In n. 1947, Aristotle and St. Thomas point out that in measuring the fastness or swiftness of movements, men use the most simple motion that is, also, the most uniform and the most swift, which has the minimum of time, which they consider to be the movement of what they apprehended to be the first heaven, the diurnal⁽⁶⁰⁾ movement which is regular and most swift.

In the *De caelo et mundo*,⁽⁶¹⁾ St. Thomas indicates that in nature only the movement of the heavens is continuous and regular; otherwise it could not certify as to the quantity of all other movements, which is to measure them. For if the movement of the heavens were not continuous, but interrupted, there would not be an equality of time between the movement measuring and that measured, and if it were not regular, but sometimes faster and sometimes slower, it could not have, in itself, the determinate (or definite) certitude through which the quantity of other movements could be certified. In addition, he says that the minimum of movement is that which is most fast (which takes the minimum of time) and this minimum movement is the measure of movement. Moreover, Aquinas contrasts the most fast as given here (in the *De caelo*) with that given in the *Physics*; and he asserts

that in the *De caelo* Aristotle calls the most fast from the shortness of time rather than from the magnitude over which the movement passes, but, according to Aquinas, Aristotle adds, "according to the minimum magnitude" (that is, the most fast is that which is according to the minimum magnitude).

Finally, Aristotle concludes that such movement "in nature" must be a circular movement,⁽⁶²⁾ for of all lines that proceed from and return to the same point the least is the circular line. The heaven, however, moves circularly (that is, is most uniform, proceeding from and returning to the same point and is the most fast, or the most swift—that is, takes the least amount of time, and is the first and natural measure of motion—which is natural time. With all the preceding as a foundation, attention will now be turned to a consideration of the metaphysical philosophical principles of measure underlying Newton's Law of Measuring Change in Motion.

28. St. Thomas Aquinas, *In V Metaph.*, L. 7, n. 842 and *In X Metaph.* L. 1; and Aristotle, *Metaphysics*, 1015b16-1016b3 and 1052a15-1052b19.

29. That is, because they have greater unity they are more properly called "one."

30. St. Thomas Aquinas, *In V Metaph.*, L. 7, nn. 852-866; also *In X Metaph.*, L. 1 nn. 1932 and 1936. From this it becomes understandable why, in the first Book of his *Elements*, Euclid defines a point as that which is without a part.

31. Cf. *In III Metaph.*, L. 12, n. 501; and nn. 875, 901, and 1981.

32. *Ibid.*

33. The term "parts," as referred to being, and as referred to "one," is being used analogically, for, since one is indivisible, it cannot have any "parts" ("parts" here means kind of one); as also is the term "plurality," as used for the diverse, different, and unequal. Hence, analogically, these are the relative *plura*, opposed to their relative ones. These "pluralities" will be fruitful in measuring, as our consideration of the philosophy of measure will show.

34. *In I Post. Analy.*, L. 36, also uses the word "proprie." So too, do *Metaph.*, n. 978 and n. 1938.

35. *Metaph.*, n. 1768.

36. And so, in the order of quantity, a measure is what a definition is in the order of natures-- that is, just as a definition is a principle of knowing the nature of a thing [n. 1460 ff.] so a measure is a principle of knowing the quantity of a thing, as measured [n. 1938].

37. Bk. V, L. 13; and L. 15, n. 977.

38. Cf., n. 1938. Cf., also, n. 872, and *Post. Analy.*, Bk. I, L. 36.

39. See n. 1938.

40. A stade is a Grecian measure of 125 paces, or 652 feet.

41. Cf. *In X Metaph.*, L. 8, nn. 2075-2096.

42. What quantity is, namely the order of parts to each other to a terminal part, and the kinds of quantity are known by the logician; and what *quantum* is, namely, that

which is divisible into *hoc aliquid* parts, and what the **equal** and the **unequal** are, which are special passions or attributes of quantity, are known also by the logician and by the metaphysician. What a quantum is and its predicates, or passions, are found in n. 977 ff., and what the **equal** is, is found in n. 2060-2072.

43. For the logician, who speaks **univocally**, there are only two species of quantity, namely, discrete and continuous. However, for the metaphysician, who speaks **analogically**, the kinds of quantity are *molis*, or dimensive quantity (wherein the notion of quantity is first found, and which is discrete or continuous); and *quantitas virtutis*, or virtual quantity, which belongs to forms, whether substantial or accidental. Cf., St. Thomas, *Summa theologiae* I, q. 42, a. 1, ad. 1.

44. This number is the Aristotelian-Thomistic quantitative number, which is a measure by its nature.

45. In n. 560 Aquinas points out that the division of continuous quantity causes number, which is a species of quantity insofar as it has the nature (*ratio*) of a measure.

46. Cf., n. 1725.

47. As was said, this number is quantitative number. It is not the modern logical notion of number as a "set," or a "class," which is like a genus, and is not by nature a measure. Bertrand Russell calls it a "logical fiction." He says: "In seeking a definition of number, the first thing to be clear about is what we may call the grammar of our inquiry. Many philosophers, when attempting to define number, are really setting to work to define plurality, which is quite a different thing. Number is what is characteristic of numbers, as *man* is what is characteristic of men. A plurality is not an instance of number, but of some particular number. A trio of men, for example, is an instance of the number 3, and the number 3 is an instance of number; but the trio is not an instance of number. This point may seem elementary and scarcely worth mentioning; yet it has proved too subtle for the philosophers, with few exceptions." Bertrand Russell, *Introduction to Mathematical Philosophy* (London, George Allen and Unwin Ltd.: 1919; New York: Simon and Schuster: 1971), 11. Elsewhere in the same work he says: "We shall then be able to say that the symbols for classes are mere conveniences, not representing objects called 'classes,' and that *classes are in fact*, like descriptions, *logical fictions*, or (as we say) 'incomplete symbols.'" *Ibid.*, 182. Russell summarizes this logical notion by saying: "Thus, to sum up: Mathematically, a number is nothing but a class of similar classes." *The Principles of Mathematics* (W. W. Norton, 1943), 116. Since, for Russell, number is a "class," and a "class" is a "logical fiction," then it is an *ens rationis*—and not an *ens mensurae*; and since, for him, it is an *ens rationis*, it is no wonder that he cannot distinguish mathematics from logic. Cf., the entire Chapter XVIII, "Mathematics and Logic," in his work, *Introduction to Mathematical Philosophy*, cited above, especially 196, where he queries: "What is this subject which may be called *indifferently* either mathematics or logic?" [Italics in

this last sentence are mine.]

48. Cf., n. 1471, where St. Thomas says that a quantitative part measures a whole according to quantity.

49. Thus verifying the first principle upon which all mathematics is based, namely, the whole is equal to the sum of its parts. It is for this reason, too, that this number is infinite. For since the continuum is divisible ad infinitum (*In I Physics*, I, L. 3, n. 3.), then the number resulting from this division is infinite. [Cf., also, Bk. III, L. 12, n. 395.]

50. Cf., nn. 249-560. Also, St. Thomas says that the **one** that is the principle of number, which superadds to being something of the **genus of measure** and, likewise, the number of which it is the principle, are both found in things having dimensions. The reason for this is because such a number is caused from the division of the continuum; and this number, that is the number caused from the division of the continuum, is the **subject of arithmetic**. *Questiones disputatae quodlibetales*, q. I, a. 1. Today these are called "integers"—that is, they are not the signed numbers, called "positive" and "negative." See Russell, *The Principles of Mathematics*, 177, n. 112.

51. See nn. 2010-2012.

52. See nn. 1001-1005.

53. *Summa theologiae* I, q. 42, a. 1, ad. 1.

54. The **equal** is that which is neither **more** or **less** in quantity (n. 2069 and n. 2070 and 2072); or what is **one** in quantity (n. 561). Using mathematical terms, Bertrand Russell defined the "**equal**" as follows: "There are, in fact, two ways of defining **equality**. Two terms may be said to be **equal** when their ratio is **unity**, or when their difference is **zero**." *The Principles of Mathematics*, 342.

55. In n. 2000, Aristotle and St. Thomas say that the contraries of these **ones** (that is, of the **identical**; of the **same** or the **like**; and of the **equal**) are the **diverse**, the **different** and the **unequal**, which pertain to **pluralities**—that is, they are **analogically** the **pluralities** of their respective **unities**.

56. In n. 2005, St. Thomas points out that the Platonists made "the **equal**," which is a measure, a species of all **equal straight** lines; which **equal straight** lines were as suppositis; and so also the **equal** was the species of all the four equi-angular suppositis. For an understanding of this position, cf., n. 2008.

57. Cf., n. 1269; n. 2069, and nn. 2070-2072.

58. "And the contraries [of the **identical**, the **like** or the **same**, and the **equal**] that is, the **diverse**, the **unlike** and the **unequal**, pertain to plurality. For those things are diverse whose substance is not **one**; those are unlike whose quality is not **one**; and those are unequal whose quantity is not **one**." (n. 2000.) Whenever something is measured, by that very fact of being measured, it becomes quantified, or a quantum, and is called a "quantity." Then, once something has been quantified, the mathematical scientist can treat it as a quantum, and can use the principles of quantity and measure to formulate statements of the quantitative proportions involved. This allows him to use mathematics, which is the science of quantity, and its

proportions, to "explain" (that is, to formulate) measuring propositions as principles, from which quantitative conclusions can be drawn. Note: all textbooks of physics call all measured qualities "quantities"--that is, "physical quantities."

59. The ancient science "*De ponderibus*," today called "Statics," marked the starting point of the modern science of "Mechanics." It is the position of the present author (a position he has not seen elsewhere) that the science of Mechanics is the first mathematical science of *quantitas virtutis*, in which such "physical" quantities as "mass," "force," "energy," and so on, are first found.

60. The daily movement. Aristotle and St. Thomas define the **equal** in speed as what goes the **same** (or, **equal**) distance in the **same** (or, **equal**) time; and they give three definitions of faster: (1) What goes **equal** distance in **less** time. (2) What goes a **longer** distance in **less** time. (3) What goes a **longer** distance in **same** (or, **equal**) time. St. Thomas, *In VI Phys.*, L. 3, n. 769. These definitions are the philosophical definitions of "fastness" (today called **speed**), which philosophical definitions contain the two whole quantities "distance" and "time as duration." They are not the mathematical physical definitions of the quantity "speed," wherein the body is moved at a constant velocity, or a constant changing velocity, which requires the concept of "instantaneous velocity" (which, while *mathematically imaginable*, is philosophically impossible); and,

mathematically, is "time" as rate of change of distance per **unit** time, expressed mathematically as feet per second. In mathematics, a point on the circumference of a circle goes faster than any point on a radius within it. The *Pseudo Aristotle* says that a longer radius moves more quickly than a shorter one under pressure of an equal weight. Aristotle, *Minor Works of Aristotle*, "Mechanics" (Loeb Classical Library, Harvard University Press: 1963, 347). In modern mathematical-relative-physics, since Einstein, what is considered as the most swift and regular measure of time as rate, is that of the speed of light, which in the SI Metric System is 299 792 458 meters per second.

61. *In II De caelo et mundo*, L. 6, n. 356.

62. The term "in nature" is inserted here because, in the mathematical measuring of change in motion, the uniform straight line motion is the mathematical principle of measuring change in motion, as will be seen below. Furthermore, what should be pointed out is that, whether one accepts Aristotle's and St. Thomas's philosophical ideas about the movement of the outer heaven, or not, the measuring principles of time that they enunciate are true measuring principles--that is, that the first measure of time must be "continuous," "regular," and "most fast"--for all of these are **ones**, and therefore measures. Using these same principles, relativistic physics uses the speed of light as being "continuous," "regular" and "most fast," as the mathematical physical measure of time.

Addendum

Letters to the Editors

To the Editor:

...Thinkers of the 16th-17th centuries had little to say of rights but much to say about duties. Now as a result of the Revolutions we have much to say about "rights" but sometimes, as with the ACLU, nothing about "duties."

Every issue of our evening newspaper, *The Atlanta Journal*, has an editorial or a letter with the critical comment that we have neglected the responsibilities side of the ledger--particularly with regard to family, education, health, community, citizenship.

A healthy society was defined by William Graham Sumner as one in which there prevailed an "equilibrium between rights and duties." Do we have now a great *disequilibrium*? So a Pakistani taxi driver said to me: "My son Mohammed comes home from school telling me he has there learned his *rights*. I tell him that from the *Koran* he as my child must first learn his *duties*."

I'm getting into some of the problems that people are struggling to formulate and resolve...Might there be one issue of *Contemporary Philosophy* to give the historical background [of these problems] and then another with constructive systematic proposed solutions? With regard to the historical, there is, as far as I have searched, no account of how thinkers who formulated social relations as to fulfillment of our duties implied rights: As a parent "I am responsible to feed my child" implies my child has a right, a justified claim, that I feed him/her...Would it then follow that we shouldn't begin the discussion in a "Bill of Rights" context--but rather of persons bound together, as husband and wife, parents and children in a family constituted by connected duties that are mutual or reciprocal. The question of "rights" comes up because duties have been neglected or power has been abused....

There is a rich idealistic tradition of "no rights without duties." Who could write on Hegel, Fichte, Coleridge, Carlisle, Green, Bradley, Bosanquet and such an American as Hocking (W.E.)?

Two American figures include the founder of our sociology, William Graham Sumner, who wrote on the "shifting of responsibility," passing off duties that the individual ought to carry out to "society" or "state." This is now a hot issue. Bill Clinton: "The government can't raise your children for you!"

The other neglected authority on jurisprudence, now used by Judith Jarvis Thomson in her book on *Rights*, is John Wesley Hofeld, whose *Fundamental Legal Conceptions* puts rights in the context of carefully refined "responsibilities, privileges, and liabilities." Some lawyers now are saying that responsibilities need now to be stressed.

Two interesting people who tried to redress the imbalance in favor of rights by going to the opposite extreme are Simone Weil in *Search for Roots* and Mahatma Gandhi who constantly told people not to protest the neglect of their rights without first thinking of what *dharma* they had neglected...

I await your response.

Cordially,

Paul Grimley Kuntz
Professor of Philosophy, Emeritus Emory University

P.S.--Before I mail this I want to add to nineteenth century neglected thinkers the name of Mazzini, whose masterpiece is the *Duties of Man*. Why? Because he's as eminent a "liberal" as the Idealists like Bradley, whose "My Station and its Duties" is loved by "Conservatives." What I've found is that there is a concern with responsibility that transcends most of the Liberal/Conservative lines of demarcations.

Editorial Reply:

We are most happy to accede to Professor Kuntz's request and to devote two future issues of *Contemporary Philosophy* to the topic of "Rights and Responsibilities." The first issue is planned for the fall of 1995. Anyone wishing to submit a paper on the topic may contact Professor Kuntz by writing to him c/o *Contemporary Philosophy*.

Request for Papers

*CRIME AND PUNISHMENT: NATURAL LAW, POSITIVE LAW AND
NATIONAL/INTERNATIONAL MORAL NORMS*

THE 1994 ANNUAL CONFERENCE
INSTITUTE FOR ADVANCED PHILOSOPHIC RESEARCH

Windcliff Condominiums/YMCA of the Rockies
Estes Park, Colorado
August 17-23, 1994

Suggested Topics:

- Crime Without Punishment
- Punishment Without Crime
- War Crimes/International Justice As A Special Case
- Terrorism and Counter terrorism
- Collective Responsibility - Are Nation States Moral Agents? If So, How Should They Be Punished?
- Deterrence: When Punishment Has a Purpose In International Affairs
- Sovereignty - Does It Have Limits? If So, How Are These Determined?
- Incarceration - What Is Its Purpose?
- Judicial Responsibility - What Do The Courts Owe To Society?
- Corporate Responsibility - Are Corporations Moral Agents? If So, How Should They Be Punished?
- Capital Punishment - Is It Ever Justified?
- Vigilantism And The Common Good - Can They Ever Coincide?
- Bias Crimes - Are They A Special Case?

Final Draft of Paper should be approximately 12 pages in length.
Presentation time: 20 minutes

Please submit a 1 to 2 page abstract of between 250-500 words by **June 30, 1994**.

To: Dr. Peter A. Redpath
Philosophy/Theology Division
St. John's University
300 Howard Avenue
Staten Island, New York 10306

Announcement

United States Attorney General Janet Reno
has been formally invited to attend the
1994 Annual Conference in Este Park, Colorado
on Crime and Punishment.

Quote of the Day

"Clarity is the form of courtesy that the philosopher owes."

Jose Ortega y Gasset

Founder's Corner

"Scientists have done their job, now it is up to the philosophers." -John Chancellor, NBC News

(From *Contemporary Philosophy*, Vol. XI, No.9):

Where does Philosophy come from?

Without human beings, there would be no such thing as "philosophy." It is a select part of the human situation. It arises out of that human situation, particularly the human needs that are expressed as cries for help. Help that is needed from professionals in the form of rational, realistic, and usable answers. Answers that would be meaningful in the human situation.

What is the purpose of philosophy?

The purpose of philosophy is to help humankind with meaningful and realistically usable answers to the fundamental questions that arise as cries-for-help and that contribute to the realization of the greater potentials of man.

What is the responsibility of philosophy?

Society pays for the existence and maintenance of philosophy. Therefore, society has a right to expect helpful returns. It would be immoral for philosophy to take social support, and then to not justify that support. Those people who are able to alter the human course of events in the furtherance of higher social potentials, and who are able to respond (response-able) are thus expected by society to exercise that responsibility. If those who are able, do not do so, then the course of events will be determined by those who are less able. And society will be the worse for it. Further, there is no service to society, if there are no solutions to its problems. Thus, philosophy is responsible to man, society, civilization, and the species for solutions to cries-for help.

Calendar:

June 15, 1994 - All materials due to Managing Editor for sublcation in May/June 1994 issue.

June 30, 1994 - All abstracts due to Dr. Peter A. Redpath for presentation at the 1994 Annual Conference in August.

August 17-23, 1994 - 1994 Annual Conference in Estes Park, Colorado - (If you plan to attend please register soon.)

It was brought to my attention that in Vol. XV No.6 , of *Contemporary Philosophy*, there were errors made in the printing of Dr. William O. Stephens' paper titled "The Fate Debate: Stoic Responses to Contemporary Reflections." The very first line of the paper read, " The debate over the concas for the human condition is as..." It should have read "The debate over the concept of fate and the meaning it has for the human condition is as..." We apologize for this error.

Managing Editor

In upcoming issues:

"Human Dignity in Public Art or Human Nature

Caught in the Act"

by Deal W. Huson

"Hume's 'Proof' Against Empiricism: A Paradigm of
Philosophy"

by Nino Langiulli

"Newton's First Law of Motion and Aristotelian-
Thomistic Principles of Nature"

Part III - by Charles B. Crowley

"The Mind/Brian Relation: PartIII - A Scientifically
Neutral Monism"

by Karl H. Pribram

Past articles of interest.

Contact your local library.

"Defining the Phenomenon of Terrorism"

Prof. Robert G. Pielke

Vol. X, No. 5, Sept. 1984

"Self-Actualization, Economic Justice, and Constitutional
Guarentee"

Alcott Arthur

Vol. XIII, No. 2, March/April 1990

"American Civil Rights and Ecological Crisis"

Stanley State

Vol. XII, No. 10, July/August 1989

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