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

Foreword to Part III

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. Thus, in Part II, he proceeded to examine the various ways in which Aristotle and Aquinas understood the notions of unity and of measure. In so doing, he showed how these thinkers understood these principles of measure to be capable of being analogically transferred to measure both quantities and qualities of various sorts.

After having done all the above as a foundation, in Part III, Crowley turns his attention to the Law of Inertia in order to explain both its truth and its metaphysical foundations.

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

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Aristotelian-Thomistic Principles for Understanding Newton's Law of Measuring Change in Motion

When Aristotle and St. Thomas point out the common notions which fall under the conception of all peoples (such as: being and non-being; whole and part; equal and unequal; the same and the diverse), they say (n. 2210) that these notions are the consideration of First Philosophy; and, in regard to these relative ones, they add it is necessary that common propositions which are composed of self-evidents of this kind (that is, the relative ones) be principally the consideration of First Philosophy.

Keeping in mind two principles (first, that a one has the notion of a measure (*ratio mensurae*) and is a principle of measuring; and, second, that the contraries of relative ones are the pluralities of these ones—that is, their many), then what Aristotle and Aquinas say next provides a fundamental principle for solving the problem of the nature of the Law of Inertia—namely, that the mathematician uses common principles insofar as they are appropriate to some particular matter. For example, "If from equals are taken equals, what remains are equal," is common to all quanta in which there are found the equal and the unequal; but the mathematician assumes such principles for his proper consideration of some part of a quantum subject which is suitable to the matter itself. For the mathematical sciences consider those things that are of this or that quantity, as arithmetic considers things which are of

number; and geometry, things that are of magnitude; and mechanics, things which are of virtual quantity. Whence the arithmetician takes the above principle as it pertains to numbers only; the geometrician, on the other hand, according as it pertains to lines and angles.(63)

From this it can be said that, similarly, all the relative ones (such as the most swift; the regular; the uniform; the unchanging) are "contracted" by the various mathematical "physical" sciences of some virtual-quantity-subject of measure, and are stated in propositions as laws or unprovable principles (as ones—that is, as principles for measuring their contrary pluralities in that particular matter). A few examples from the various mathematical sciences of propositions embodying these relative ones should suffice to make this point manifest.

Examples of Relative Ones Transferred to Various Mathematical Disciplines

I. Equality and Inequality

A. Geometry:

The first principle on which all mathematics is based is the truth that a whole is equal to the sum of its parts. Thus in Euclidean geometry is found the principle that a whole is greater than any one of its parts; and its converse that a part is less than a whole. In addition, also is found as common principles that things equal to the same thing are equal to each other; that if equals be added to equals the wholes are equal. If

equals be subtracted from **equals**, the remainders are **equal**; when a straight line set up on a straight line makes the adjacent angles **equal** to one another, each of the angles is right. The pseudo-Aristotelian work, *Mechanics*,⁽⁶⁴⁾ states that **equilibrium** is the cause of rest (a **uniform** state), and a right angle is a type of **equilibrium**, and so produces immobility (a **uniform** state). That is, "the angles at the foot of the perpendicular are both right angles."⁽⁶⁵⁾ Since the right angle is the state of **equilibrium**, then it is an **one**, and it is the first measure or first principle of measuring **changes** in all angles; and must enter their definition; for an obtuse angle is greater than a right angle and an acute angle is less than a right angle.

B. Astronomy:

Kepler's three laws state **uniformity** and **equality** and **sameness** (that is, ways of being **one**) of proportion. (1) The planets encircle the Sun in ellipses (that is, **more or less** circularly, and so **more or less uniformly**). The fact that their motions are ellipses, rather than perfect circles, should not be of concern, for relatively (that is, measuring from the viewpoint of **foci**), a circle and an ellipse can be defined in terms of each other--for an ellipse is a circle according to the **more** (it has two foci); whereas, a circle is an ellipse according to the **less** (it has only one focus point), and because ellipses are **more or less uniform** they are to that degree **one**. (2) The radius of the planets with the Sun sweeps out **equal** areas in **equal** times. (3) The **ratio** of the square of the planet's mean distance from the Sun is the **same** for all planets (that is, there is a **oneness** in ratio.)

C. Mechanics:

According to Archimedes, **equal** weights at **equal** distances are in **equilibrium**.⁽⁶⁶⁾ Today we call this truth the **equilibrium** of forces, on a balance scale.⁽⁶⁷⁾

According to Galileo, all bodies (regardless of weight) fall with **equal** speed in a vacuum. Galileo uses this principle to the measure rate of change of speed in a fall; and this "law" includes a **state of uniformity** (that is, in a vacuum).

According to Sir Isaac Newton the Third Law of [measuring change in] Motion is that every action is accompanied by an **equal** and opposite reaction.⁽⁶⁸⁾

In electricity, the number of electrons in an atom is **equal** to the number of protons in the nucleus.⁽⁶⁹⁾

D. Chemistry:

In chemistry Avogadro's hypothesis states that **equal** volumes of all gases contain an **equal** number of molecules, under the **same** conditions of temperature and pressure.⁽⁷⁰⁾ Note, this hypothesis contains **uniformity** (that is, the **sameness**, or **constancy** of temperature and pressure).

II. Uniformity

A. Geometry:

Euclid defines a straight line as one which lies **evenly** (that is, **uniformly**), with the points on itself. Furthermore, a plane surface is defined as one which lies **evenly** (that is, **uniformly**), with the straight lines on itself. These definitions are examples of the transference of relative **ones** to geometry. For the **uniform** is a relative **one**.

B. Mechanics:

In mechanics Galileo defines uniform motion and acceleration⁽⁷¹⁾ as motion and acceleration in which a mobile

being, starting from a state of **rest** traverses **equal** distances during **equal** intervals of time. A motion, that is, is said to be **equally** or **uniformly** accelerated when, starting from **rest**, its momentum acquires **equal** increments in **equal** times.⁽⁷²⁾

Similarly, Newton's First Law of [measuring change in] Motion (that is, the "Law" of Inertia) asserts that a body at **rest** (that is, in a **state of unchange** or **oneness**), or in **uniform** motion, will continue at **rest** or in motion in a **straight line** unless acted upon by an external force. Note, both **rest** and **uniform** motion are, in a way, in a **state of unchange**; and, therefore, are in a state of **uniformity**.⁽⁷³⁾ The **straight line** is not only **uniform** but it is the **first magnitudinal measure**. Mathematically all this **uniformity** is **zero** (0) change.⁽⁷⁴⁾

Furthermore, all statements about objects *in vacuo* are about objects in a "surrounding" state of **uniformity**--for example, free falling bodies *in vacuo* and frictionless surfaces (Galileo); the speed of light *in vacuo* (Einstein) and Einstein's elevator; the principle of **least action**; all principles of **conservation** (for instance, of mass, energy, and angular momentum); and all statements of **symmetry** in particle physics.

C. Chemistry:

In Chemistry "Ideal gas" (that is, a volume of gas under **constant** pressure and temperature), is gas that is in a state of **uniform** pressure and temperature. Similarly, **all idealization states** are states of **uniformity**.

III. Regularity

All periodicities (for example, simple harmonic motions of the pendulum and of waves, and so on) and all scientific statements of measure concerning cycles are instances of regularity.

It should be evident from these few examples from astronomy, geometry, chemistry, and mechanics that the propositions referred to in these disciplines contain relative **ones** and appropriate these **unit (una) measures**, as principles, or **una** states (or states of unchange) to their own special measurable subject matter in order to measure deviations or changes (that is, their contraries or "pluralities") from their respective **ones**, in much the same way as arithmetic and geometry appropriate the common notions such as **equals** to their matter. For example, the proposition, "If, from **equals**, **equals** are taken, the remainders are **equal**," is used by the arithmetician in relation to numbers; and by the geometrician in relation to magnitude.⁽⁷⁵⁾

The above examples indicate but a few of the propositions containing the relative unit measures that Aristotle and St. Thomas have mentioned.⁽⁷⁶⁾ These are stated as "laws," or propositions--that is, as unprovable principles--in the various measuring sciences. They are found in every mathematical physical science, and anyone (such as, the Aristotelian-Thomistic philosopher) who knows that mathematics (as the science of quantity as measured) is the mason. Theoretical reason is concerned with the **universal** and **necessary** and when dealing with entities of this sort, particularly while using the tool of mathematization it is capable of splendid accomplishments. **But this method is not equally applicable in all areas of human life. One of the great achievements in the thought of Simon** is his realization of the crucial importance that contingency plays in human affairs in general, and in particular, in moral philosophy. With contingency science has nothing to do. But all of the really

important matters of human life involve a radical contingency. This element of contingency will sharply limit the usefulness of moral philosophy. To be sure Simon was never of the opinion that the study of moral philosophy was waste of time. To say that would be absurd. But it did mean that he was not subject to any illusions about infinite human perfectibility through the advance of scientific knowledge, nor did he share in the youthful optimism or naiveté that emerged in the late on), can be measured; which "laws" of measuring (which are used today in physical science) are not *physical or ontological principles* about reality (any more than the principles of reasoning are physical or ontological laws); but, rather, they are mathematical principles, or statements of unchanging or **uniform** states of unchange from which quantitatively to begin measuring **changes or deviations**. That is, a **disturber** produces within a quantifiably measurable being a **change or deviation** from a prior **uniform** state. From the deviation or change from this prior uniform state one can **quantitatively** begin to measure the change or deviation initiated by the disturber--such changes or deviations being the **pluralities** of their respective **ones**.

This observation is particularly necessary in regard to Newton's First Law of [measuring] Motion (that is, of measuring **change in motion**), or his Law of Inertia. This Law, if interpreted or understood **physically, or ontologically**, is an illegitimate passing from the mathematical order (the order of measuring), to the ontological, or physical-causal order; and, if so interpreted, it destroys entirely the classical Aristotelian, realist, philosophical analysis of motion as a continuous **repetition of changes from potency to act**, and with it the principles of efficient causality. In addition, it reduces motion from a continuous repetitive "becomings," or as a Thomist might say, *mutata esse(s)*, to that of a single "permanent state."(77)

It is due to the fact that Newton's First Law of [measuring change in] Motion, historically, has been misinterpreted by many scientists and philosophers to be a **physical law** of motion, rather than a **law of measuring change** in motion, that it has often been thought to contradict Aristotle's **physical law** of causality relative to motion.(78) Just such a sort of misinterpretation prompted Fr. Garigou-Lagrange to consult Pierre Duhem, as was referred to above. Furthermore, all the authors referred to in the beginning of this article were clearly trying to show that the Law of Inertia is not a physical law of motion, and, so, in no way affected Aristotle's physical law; but they could not resolve the difficulty because they did not consider the metaphysical nature of that law, as a law of measuring change in motion.

As was seen above, Pierre Duhem was of the opinion that the Law of Inertia is in no way in conflict with the philosophical principle, "Whatever is moved is moved by another," because for him the laws and theories of physics are but "free" creations of the human mind" and are accepted by the physicists, not as being **true** (that is, as being principles of the **real**), but because they "save the appearances" and they "work."(79)

In regard to this opinion of Duhem, that the laws and theories of physics are "free creations of the human mind, that save the appearances and work," it must be said that the arguments given by St. Thomas in his *Summa theologiae*(80) on the eccentrics and epicycles of the movements of the heavenly

bodies (which movements, in the *Metaphysics* (n. 416), he calls "repugnant to nature") "save the appearances and work" and may satisfy the **geometric astronomer** (who studies and measures merely **changes in the configurations, or figures, of the movements of those bodies**). Furthermore, the **measuring mechanical scientist** who studies and measures the virtual quantity (*quantitas virtutis*) of the changes in those motions might also be satisfied with Duhem's answer simply as a measuring scientist. Nonetheless, it cannot satisfy the realist philosopher--Thomist, Aristotelian, or of any other sort. Such a philosopher, in particular a Thomist, needs to ask, especially relative to the Law of Inertia (which seems to contradict the philosophical First Principle of Motion, "Whatever is moved, is moved by another," upon which the Thomistic first proof for the existence of God rests): Why does it work? Moreover, even measuring scientists themselves should be concerned; for Duhem's answer makes their science of mechanics rest on "a free creation of the human mind," and upon "an appearance" which, while it can be imagined mathematically, does not even appear in reality! Furthermore, a question arises: Why do principles of measuring science save appearances and work? Or, in virtue of what do they work? For if "they work," then the mechanical scientist must be doing something right in virtue of which his laws "work." Beyond this, the Thomistic philosopher must ask: What necessitates the mind of the measuring scientist "freely to create" this and other laws of measuring changes that are not found in reality, but which are imagined for measuring in the various sciences?

Knowing that the Law of Inertia is not a "physical" law (that is, knowing that there is no motion in reality that is "force free") Antonio Moreno goes to the opposite extreme and calls that law a "fiction." He says: "A typical example of the fictitious character of physical laws and their philosophical implications is the Law of Inertia, called by Whitehead the first article of the creed of science."(81) He also quotes Galileo to the effect that "any velocity once imparted to a moving body will be rightly maintained as long as the external causes of acceleration or retardation are removed, a condition which is found only on horizontal planes..."(82)

In calling this Law, and, as he says, "all physical laws," fictitious, Moreno seemingly admits of only two orders of principles (namely, those of the physical or real order and those of the logical or fictitious order, unless by "fictitious" he means **imaginary as mathematicians** use "imaginary"--namely, where mathematical beings have *esse*).(83) Be that as it may, what is striking to note is that neither he nor any of the above authors have recourse to metaphysics to solve this problem. Yet it is in metaphysics, as was seen, that the principles of measure and measuring are found. It is in this order of measuring that the Law of Inertia is found to be a **true law** of measuring ("True" here meaning, not a conformity of the mind with some such motion in reality, for there isn't any to which the mathematically conceived motion conforms; but a conformity of the mathematical **unit** measure principle of measuring change (**mathematical law**) with a relative *unum* measure as a first metaphysical principle of measuring change (**metaphysical law**)). The Law of Inertia is a **true** principle of measuring change from the **uniform** state of unchange. Just as in Thomistic metaphysics, the Uncaused Cause is the cause of all causes, and,

transferred to natural philosophy, the Immobile Mover is the cause of all motion; so, in measuring science, the uniform, or the unchanging, is the measure of all changing, or a **one** is the measure of its corresponding plurality.

If one examines Galileo's "thought experiment," which suggested this principle to him, one can see him using the following **unit measures (una)**: (1) **A sphere**--the complete geometric quantum **unit measure (unum)** body, having a minimum--that is, **one surface**--which is **uniform (one in form)**; and all lines drawn from that surface to a **point** called the **center**, are **equal (one in quantity)**; (2) **uniform (one in form) motion**; (3) **an ideal frictionless surface**, (that is, a non-resistant, flat, or **uniform surface**); (4) **a state free from external causes of acceleration and retardation** (that is, a **uniform, or force free state**). It should be noted that none of the elements of Galileo's "thought experiment" is real; and all are imagined states of **uniformity**--"imagined" as **ones** for measuring any change, the **plurality** of uniformity, and which plurality suggested or indicated to Galileo, as a measuring scientist, the need for an **unit measure principle** for determining that plurality, or change (that is, the "Law of Inertia"). Similarly, one can also observe Newton positing absolute space and absolute durational time, both of which are **uniform states** (which have no real physical existence as such) but which are **true unit measures** for determining space and time for a measuring scientist. Consider, for a moment, the following Newtonian states of uniformity: **The Law of Inertia**--that is, the state of **uniform rest or motion in a straight line; absolute durational time; absolute space**. All of these are considered by Newton as **undisturbed states** (that is, as **uniform states**). From a philosophical viewpoint, all these **undisturbed unit measure (una) states** have some sort of being (*esse*--that is, mathematical *esse*); and so, at the very least, subsist in the imagination of the mathematician, where, for a Thomist, mathematical knowledge terminates.(84) Furthermore, what is to be noted about Newton's absolute space and absolute time is that they are in the mathematical order what place and time are in Aristotelian-Thomistic natural philosophical order (that is, extrinsic quantitative measures).

From a Thomistic understanding, the philosopher of measure explains the approaches of Galileo and Newton as ones of measuring mathematically the virtual quantity (*quantitas virtutis*) of change in motion (the plurality of unchange). Indeed, in actuality, *there is no other possible way of mathematically measuring such change, or plurality, without the concepts of motion as a uniform-unum-permanent state, as found in the "Law of Inertia," and without the concepts of absolute space, absolute time as una-undisturbed states*. That is, **such motion, because it is imaginary**, does not require a physical cause to be continually and constantly producing new being (that is, new act), but only needs something (that is, another virtual quantity "force") to disturb or simply to change the qualitative state of uniformity, or of "unchange," to that of "change,"(85) be that state of uniformity one of rest or one of continuous motion in a straight line (as the Second Law of [measuring change in] Motion clearly states). In the order of measuring the change of the virtual quantity of motion, the Law of Inertia is a *true mathematical measuring principle or law*, and this is why it works. It is not a true physical law of motion in reality, nor is it a fictitious law, nor is it a mere saving of appearances. By inserting into

Newton's "Laws of Motion" the phrase "mathematically measuring change in motion," his laws are then understood to be what in reality they are--that is, the mathematical laws of *measuring change in motion*.(86) Such being the case, since *there is no other possible way of mathematically measuring such a change or a "plurality," then the scientists have a metaphysical basis for the mathematical principle of Inertia, following from the metaphysical principle that an unum (the uniform) is a principle of measure of the plurality--change*.

To support our position that Newton's three "Laws of Motion" are laws of measuring change in motion, and are not physical or fictitious laws, or just "working laws," consider the three "Postulates" of Archimedes, in his work "On the Equilibrium of Planes, or On the Centers of Gravity of Planes,"(87) against the background of Newton's Laws.(88)

Archimedes' Postulate I reads: **Equal weights at equal distances are in equilibrium, and equal weights at unequal distances are not in equilibrium, but incline towards the weight which is at the greater distance**. His Postulate II asserts: **If, when weights at certain distances are in equilibrium, something be added to one of the weights, they are not in equilibrium, but incline towards that weight to which the addition is made**. His Postulate III holds: **If anything be taken away from one of the weights, they are not in equilibrium, but incline towards the weight from which nothing was taken**.

Newton's First "Law" of Motion holds: **Every body is in a state of rest or of uniform motion in a right [that is, straight] line, unless it is compelled to change that state, by forces impressed on it**. Law II states: **The change of motion is proportional to the motive force impressed, and is made in the direction of the right [that is, straight] line in which that force is impressed**. Law III states: **The interaction of the two bodies is opposite and equal**. (This is not pertinent to the discussion of inertia, although it is quite necessary in measuring; for it is a law stating the **unit measure equality**. What is pertinent is what can be seen in the contrast under discussion).

Archimedes' three "Postulates" are in the order of **equality or equilibrium, the one in quantity, together with its changer into inequality**.(89) and the **direction of that change and changer**. Newton's First "Law" is in the order of **uniformity, or unchange, the one in quality**. His Second "Law" does in the order of the **changer of that uniformity into non-uniformity and the direction of that change** what Archimedes' three "Postulates" do relative to **equilibrium**.(90)

What is of note here is that in each of his three "Postulates" Archimedes includes what requires two "Laws" for Newton--namely, the statement about the state of **uniformity**, its **changer**, and the **direction of that change**. Archimedes, however, does not mention the **first uniform mathematical magnitudinal measure "straight line,"** as does Newton, which indicates that Archimedes is not in working in the order of mathematics, and that Newton is.

Moreover, Archimedes calls his statements about **equality (the one in quantity), "Postulates,"** just as Euclid called his statement that "between two points a straight line can be drawn," a postulate; whereas, Newton calls his statements "Laws." The reason why both Euclid and Archimedes called their principles of measuring "Postulates" is because all true postulates are accepted as a "given" in a lower science, but

proved in a higher science. Archimedes' statements about **equality** and **inequality** are real quantitative relations which are considered by the higher science of Metaphysics; and Euclid's postulate about the straight line is proven in Natural Philosophy, or the Philosophy of Nature.

Newton, however, does not call his principles of measuring motion "Postulates"; rather he calls them "Laws." The reason for this is that while the **uniform state of rest** is found in reality, and is considered in Natural Philosophy, the state of **uniform straight line--force free--motion** mentioned therein, **is not found in reality**;(91) and, therefore, his "Laws" are not "Postulates" that can be proved or considered in a higher science. His First and Third Laws are simply statements of **uniformity** (First Law); and **equality** (Third Law); knowingly or unknowingly based on relative **ones** as principles of measure found in Aristotle's *Metaphysics*. They are principles of **unit measuring**, the relative **parts of one** that are the measure of their contraries as **pluralities**. Hence he calls them "Laws." These "Laws" are laws of **measuring change in motion**. They contain four things: (1) The relative **una--uniformity** and **equality** (First and Third Law); (2) the geometric, magnitudinal **formed unum--the straight line** (First Law); (3) a **changer**, the quantity **force** (Second Law); (4) **change**, the **plurality** of their respective **ones** (Second Law). These things are not found in reality. They are **unit principles of measuring**; and while they may be more akin to the laws of reasoning (in logic) still they are not fictitious laws--any more than are the laws of logic; but just as the laws of reasoning in logic are not found in reality but direct the mind of the natural philosopher how to reason correctly about reality, so these laws of measuring change in motion are not found in reality but **direct the mind of the mathematical philosopher how correctly to measure change in reality**. Hence it is clear that Newton's Laws are not laws of nature or of physical reality, nor are they "fictitious." They are laws of measuring change, starting with two **unit principles of measuring** (that is, the **una states** of uniformity, and the mathematical magnitudinal **one** (a straight line); then a **changer** (that is, the virtual quantity--*quantitas virtutis--force*), of those **unit measure** states, to non-**una** states, that is, deviations from them--the **pluralities** of those **ones**. Only the philosopher who understands analogy and that **ones** are principles of measure of **plurality** and who can grasp **change** as the **plurality** of the **ones** uniformity, rectilinearity and equality, can truly understand these "laws of measuring change in motion." Such a person can see that these "Laws" pose no threat to the philosophical principle that "Whatever is moved is moved by another." He will also understand that, just as in logic there are laws of reasoning correctly, **based on the nature of the universal as a one** (namely, the principles: *dictum de omni*, and *dictum de nullo*) so also in the mathematical sciences there are laws of measuring change correctly, **based on the principle of a one as a measure** (namely, principles enunciating **uniform**

states and states of **equality or equilibrium**). Moreover, one will see no conflict between his physical and metaphysical principles of motion, but rather will see an **instantiation** of his metaphysical principle that a **one** is a principle of measure.

Finally, in support of our position that Newton's "Laws" are laws of measuring motion (more strictly, of measuring **change** in motion), it should be noted that Newton himself declares this in Book III, of his work *The Systems of the World* (in mathematical treatment). He says, "in the preceding books,(92) I have laid down the principles of philosophy,(93) principles, *not philosophical, but mathematical.*" As the preceding indicates, the Great Scientist knew to what **order of being** (that is, the quantitative and mathematical order), his Laws of measuring change in motion belonged. He knew they were not physical laws, and that they were not "fictitious" laws. They were and are mathematical laws--laws, that is, of measuring change. Knowingly or unknowingly these Laws put to use the Aristotelian-Thomistic metaphysical principle of measure--that is, of a **one** as the principle of measuring **pluralities**, or **deviations of those ones**. Indeed, it is in virtue of and because of this metaphysical basis that those scientists who depend upon and use these true principles of measuring change in their respective sciences are successful.

The philosopher who understands the metaphysical principle of measure (that is, that a **one** is a principle of measure), and who understands that, analogically, the opposites of the relative **ones** (**uniformity, equality, and so on**), are the "pluralities" of those **ones**, will readily understand that all the relative **ones** are stated as unprovable propositions (as first principles) for measuring their contrary **pluralities**.(94) Furthermore, he can grasp the proportionality between the continuum **one--the principle of origin of number** (that is, quantitative plurality) and that of the relative **ones** to their **pluralities** as seen in the following proportionalities: As the continuum **one** is to division relative to number properly speaking (that is, to quantitative plurality), so the relative **ones** (that is, all states or statements of **uniformity, equality, and so on**) are to the disturbers of those states of **uniformity** to their analogical **pluralities**; and as division of the continuum **one** causes deviations from that continuity (or, number properly speaking), so a **disturber** of the states of **uniformity** causes **deviations or changes** (the analogical **pluralities** of those **uniform** states).

In this regard, it is fruitful to compare the one-to-one relation between the **continuum, one, division, number**, of Aristotle and St. Thomas, to the **state of equality** (the **one** in quantity), **addition, subtraction, and inequality** of Archimedes, to the **state of uniformity, disturber and its plurality** of Aristotle and St. Thomas, to Newton's first **Two Laws of Measuring change in motion**:

Aristotle and St. Thomas	Archimedes	Aristotle and St. Thomas	Newton
Continuum one	State of Equilibrium (the one in Quantity)	State of Uniformity (the one in Form, or Quality)	Inertia
Division	Addition/Subtraction	A Disturber	Force
Number	Inequality (Plurality)	Change (Its Plurality)	Change

In addition, the following **ones** should be noted by the philosopher of measure: To measure **change in motion** in itself (*in se*): Newton's Three laws. To measure the **rate of change** in motion: Galileo's vacuum. To measure time **instrumentally** in science: **cyclic motion**; to measure time as **rate of change**: **speed of light**. To measure time as **rate of exchange of energy**: $E = mc^2$.

From all the preceding it should now be clear that **deviations from the relative una states** are the analogical **pluralities**, or the **changes**, that are to be measured and that all the measuring sciences start with some **state of uniformity** (according to the diverse subject matter to be measured). Then some **disturber of that uniformity** is introduced to produce a **change of that uniformity**, which change is the **plurality** that is to be measured.

Thus Newton's "Laws of Motion" are, strictly speaking, not laws of motion, but are mathematical laws of measuring **changes** in motion--the plurality of unchange, or the plurality of the **ones**, or uniformity of motion; and they do not affect the Aristotelian-Thomistic metaphysical first principles of motion; for these principles are in different orders of being (that is, the order of measuring change, on the one hand (Newton); and the ontological order of cause (Aristotle/Thomas), on the other). Also, one can now see that just as Aquinas, in his day, showed that there was no incompatibility between supernatural Faith and philosophical science, because they are in different orders of being, and of knowing, with different principles for each order (in the order of supernatural Faith, the principles are derived from Revelation; whereas in philosophy the principles are derived from natural reason alone), so today one can show similarly that there is no incompatibility between all the measuring sciences, and particularly between Newton's Laws of Motion and true physical and metaphysical principles of motion, because they, too, are in different orders of being and of knowing, with different principles (that is, the order of quantitative being as a measure of substance and the principles of measuring quantities, based on **ones** for the measuring, or mathematical, sciences; and the metaphysical, philosophical order of potency and act, of physical reality, and the principles of causality of motion based on the nature of motion, for philosophy).

From all that has been said, it should be clear to the realist philosopher, in particular the Aristotelian or Thomist, and to the mathematical philosopher as well, why Newtonian physics "works" or has been so successful. It works and is successful first of all because Newton, and all those scientists who posited their various **ones** or uniform principles or laws--whether knowingly or not--have made use of the Aristotelian-Thomistic philosopher's metaphysical principles of measuring change in quantities, which change, as was said earlier, is analogically the plurality of the **one--unchange**, which is the principle of measure.

Furthermore, far from being incompatible and threatening to each other, all the measuring sciences depend upon and use the Aristotelian-Thomistic philosophical principles of measure; and, finally, because quantity is the measure of substance, and because **in the order of learning**, all the mathematical sciences are sciences of the measures of physical reality, and are **prior** to natural philosophy and metaphysics,(95) then they are related to Thomistic philosophy of physical reality as measures to the measured (*mensurae ad mensuratum*). In this order of learning, the mathematical scientists, as mathematical philosophers, then present to both the natural philosopher and the metaphysical philosopher real **qualitative physical reality**, completely measured as virtual quantity (*quantitativa virtutis ut quantum*). Then, with nature as measured, the natural philosopher studies that same nature through the philosophical principles of motion.(96) This means that the mathematical scientists hand over to the natural philosopher all of reality, or nature, now completely measured as virtual quantity and so *ut quantum*. The natural philosopher, in turn, with his philosophy of that same nature, investigates it as mobile; and the metaphysical philosopher studies this nature *qua* being (*ut ens*). In this way, finally, it is possible not only to restore unity to the sciences and to the philosophical disciplines but also to make nature fully understandable once again, in accordance with the classical Aristotelian division of speculative philosophy (wherein Ancient mathematics was a **third philosophy** (that is, a philosophical science of the beings of measure--quantities); and metaphysics was a **first philosophy** of the principles of being as such; and natural philosophy was a **second philosophy** of the principles of being *qua* mobile).(97)

ENDNOTES

63. See *Metaph.*, n. 2208.
64. *Minor Works of Aristotle*, "Mechanics," Loeb Classical Library, 405.
65. *Ibid.*
66. Archimedes uses this statement as a principle of measuring **unequal** weights at **unequal** distances related to the **equilibrium** of planes, or the **center** of gravity of planes.
67. The principle of measuring **unequal** forces.
68. Newton uses this principle to measure **unequal** forces.
69. In the theory of electricity, this **equality** is found in the "neutral" atom, where in order to have electrification such **equality** must be overcome, either by having an "excess" of electrons, or a "deficiency" of protons. Mathematically all these are **zero** (0) change.
70. Chemists use this principle to measure changes in gases due to changes in temperature and pressure, whose total mathematically is **zero** change.

71. Galileo uses **equality** to define **uniformity**.
72. This **uniform** motion, like Newton's Law of Inertia, is not found in reality--that is, in nature.
73. Mathematical mechanical scientists use this principle to measure all changes in motions--that is, both that of acceleration, deceleration, direction, and so on.
74. Newton's absolute space and absolute time are **uniform** states.
75. See nn. 2207-2208.
76. See n. 2208.
77. William of Ockham was one of the first Medieval philosophers who, with his "razor," "cut" the constant production of new being (or act) in motion, to that of motion as a permanent state; thus also "cutting" out the need of a cause constantly producing that new being, and in effect destroying the principle of causality--that is, that nothing can be reduced from potency to act except by being in act.

78. In this regard, see William A. Wallace, "Newtonian Antinomies against the Prima Via," 151 ff.
79. Cf. Stanley Jaki, "The Physicist and the Metaphysician" and Pierre Conway, "Defusing Science."
80. St. Thomas Aquinas, *Summa theologiae*, I, q. 32, a. 1, ad. 2.
81. A.N. Whitehead, *Essays in Science and Philosophy*, 171.
82. Antonio Moreno, "The Law of Inertia and the Principle *Quidquid Movetur ab Alio Movetur*," 307. Moreno's reference is to Galileo, *Two New Sciences*, IIIrd day, 215-16.
83. St. Thomas Aquinas, *De trinitate*, Q. VI, art. 2., in *The Division and Method of the Sciences*, ed. Armand A. Maurer (Toronto: Pontifical Institute of Mediaeval Studies, 1963); see also Maurer's "Introduction" to this text, XXXVIII-XXXIX and *Metaphysics*, nn. 1145, 1475, 1480, and 1494.
84. St. Thomas Aquinas, *De trinitate*, q. VI, a. 2.
85. That is, in a way, change is the "plurality" of the unchanging--which is, in some way, **one**.
86. More strictly, they are laws of measuring "change" in motion, from a state of unchange.
87. *Great Books, Britannica*, vol. 11.
88. *Ibid.*, vol. 34.
89. That is, the plurality of equality.
90. That is, the pluralities of their respective **ones**.
91. A fact upon which all scientists and philosophers of science are agreed, and which prompted the famous quip by Eddington, that "Every body continues in its state of rest or uniform motion in a straight line, except insofar as it doesn't." Sir Arthur Eddington, *The Nature of the Physical World*, 123-24. Cited by Antonio Moreno in "The Law of Inertia and the Principle *Quidquid Movetur ab alio Movetur*," 309, and William A. Wallace, "Newtonian Antinomies against the *Prima Via*," 179.
92. Wherein he had stated his Laws of Motion.
93. That is, as I see it, he laid down the principles of mathematical philosophy. See footnote 14 above.
94. See, *Metaphy.*, nn. 2208-2210.
95. St. Thomas, *In VI Ethics*, L. 7, also *Librum de causis*, L. 1; and, *In I De caelo et mundo*, L. 2, where St. Thomas points out that the natural philosopher assumes from mathematics the proof that a natural body can have only three dimensions.
96. Cf., *In I De caelo et mundo*, L. 1, and 2, especially where St. Thomas says that mathematics and natural philosophy have the **same subject**--namely *ens quantum*, but mathematics studies it through the principles of quantity, and natural philosophy studies it through the principles of motion.
97. For Aristotle and St. Thomas, there were *three ultimate speculative philosophical sciences*: Natural Philosophy, Mathematics and Metaphysics, and there was **no fourth** philosophy. *De trinitate*, Q. V, art. 1, c., especially the last sentence. I have inserted the term "Ancient" in the text because, since Descartes, mathematics has become a **system** of measuring--that is, a coordinate system of measuring, rather than a philosophy.

HUME'S "PROOF" AGAINST EMPIRICISM: A PARADIGM OF PHILOSOPHY

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A careful, if only surface, reading of Hume's *Enquiry concerning Human Understanding* discloses an interesting albeit curious argument against that theory of the origin and basis of knowledge called "empiricism." What becomes evident from a study of Hume's argument (in particular his remarks on the "missing shade of blue") is the following set of considerations.¹

1. Contrary to empiricist and more recent behaviorist versions of knowledge, thought possesses a necessarily active aspect.²

2. If Hume's argument and the present analysis of it be correct, then "the empiricist doctrine," whether naive or sophisticated, "hard" or "soft" -- cannot be sustained.

3. Depending as it does on the term "difference," Hume's treatment of the "missing shade" cannot be sustained -- because he denies that "difference" designates something real.

4. If we are to take seriously Hume's complaint against philosophy, as well as his endorsement of "custom" over "reason," as the "guide" of human life, then the clearly reasonable and reasoned character of his endorsement must be taken at least ironically.

In short, it is the modest voice of reason that guides us (in the discussion of shades of blue and elsewhere) and not "custom" through the treacherous waters of unsustainable theories and consoling fictions.

Hume has been classified among the foremost empiricists.³ Yet as a serious and genuine philosopher, and not merely an ideologue, he offers his readers a trenchant objection against one of the bases of the empiricist theory of knowledge -- that basis which has been called a "dogma," namely that every idea is derived from and reducible to a sense datum.⁴ Unfortunately, Hume does not take his objection seriously enough and does not seem to be aware that it can be expanded in such a way as to be an even more damaging argument against the empiricist account of knowledge.

He is not squeamish about the "first proposition" of empiricism, stating it boldly, simply and clearly. Here, therefore, we may divide all the perceptions of the mind into two classes or species, which are distinguished by their different degrees of force and vivacity. The less forcible and lively are commonly denominated *Thoughts* or *Ideas*. The other species want a name in our language and in most others; I suppose because it was not requisite for any, but philosophical purposes, to rank them under a general term or appellation. Let us, therefore, use a little freedom, and call them *Impressions*; employing that word in a sense somewhat different from the usual. By the term *impression*, then, I mean all our more lively perceptions, when we hear, or see, or feel, or love, or hate, or desire, or will. And expressions are distinguished from ideas

which are the less lively perceptions, of which we are conscious, when we reflect on any of those sensations or movements above mentioned.⁵

Now there are several points in this passage that deserve our attention. In the first place, Hume uses the universal quantifier "all" in the statement "...we may divide all the perceptions of the mind into two classes or species ...," i.e., ideas and impressions. Consequently we must conclude that the entire class of perceptions of the mind is exhausted by ideas and impressions.

In the second place, we may also conclude that while Hume does not use the categorical form -- i.e., all the perceptions of the mind are divided into two kinds, ideas and impressions -- he clearly intends it from our reading of the paragraph itself and from the two preceding paragraphs. The use of the term "may" in the phrase "we may divide" is either rhetorical or expresses logical permission (since it follows the term "therefore"). It is not modal, i.e., it does not express possibility -- such that it would be possible also not to divide "all perceptions" into those two kinds, or that it would be possible to divide "all perceptions" in another manner.

In the third place, Hume expresses some reservation about the fact that a name is lacking for one of the two kinds -- the more fundamental of the two. He supposes that the reason for the lack is that such a name was not needed except for philosophic purposes. But this suggests that a philosophic account of knowledge may be little more than a fabrication instead of a description or explanation, given the fiction-like quality of philosophy's basic terms. Still Hume had other alternatives open to him with respect to the absence of a name for what he claims to be the basic "elements" of knowledge. Indeed the absence of a name (not a definition) for something so fundamental could have been a clue that perhaps such "elements" did not exist, at least in the way he conceived of them. There may not be such things as "impressions" or "sense data" as they came to be called, hence the absence of a name. Or he might have considered a term which did exist in English and in other languages, a term which would seem to be an obvious choice and whose non-selection is somewhat puzzling -- the term "sensations." One would expect that someone who ends up grounding the principle of causality on "custom" would take "custom" (in the form of received linguistic usage). Unless it be that Hume, as an actor in the founding of modern philosophy, needed to reject the old term "sensations" as part of the revolution against ancient teleological thought and to propose another term -- "impressions" -- using it in a free and unusual way.

Furthermore, Hume claims that the difference between ideas and impressions is the degree of force and vivacity that they possess, the less "forcible and lively" being ideas. It would seem that the difference between ideas and impressions is solely one of degree -- a quantitative difference -- the difference between more or less force and liveliness. As Hume put it, "the most lively thought is still inferior to the dullest sensation."⁶

Yet Hume says that "impressions are distinguished from ideas, which are the less lively perceptions of which we are conscious when we reflect on any of those sensations," and that the memory and imagination "may mimic or copy the perceptions of the senses," thereby implying that the difference between them is other than mere quantitative difference. If ideas "reflect" or "mimic," or "copy" impressions, they are not the mere weak residue of impressions but are either themselves active elements or factors in the act of knowledge or they are the result of some third, very active power of the understanding, a factor other than impressions and ideas. Consequently the difference between ideas and impressions is not solely quantitative but also qualitative -- a difference between activity and passivity, not merely one of more or less "vivacity." Indeed it would seem that in this account, sensation is passive in the act of understanding, whereas thought is somehow active. Such a difference is a difference in kind and it is in terms of the reality of this difference that Hume offers us his "proof against empiricism."

Before he gives the well-known objection which constitutes what we have called "Hume's proof against empiricism," Hume makes the qualitative difference between ideas and impressions even more obvious when he argues for the limits and limitations of thought.

Nothing, at first view, may seem more unbounded than the thought of man, which not only escapes all human power and authority, but is not even restrained within the limits of nature and reality... What never was seen, or heard of, may yet be conceived; nor is there anything beyond the power of thought, except what implies an absolute contradiction... But though our thought seems to possess this unbounded liberty, we shall find, upon a nearer examination, that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience. When we think of a golden mountain, we only join two consistent ideas, gold, and mountain, with which we were formerly acquainted... In short, all the materials of thinking are derived either from our outward or inward sentiment: the mixture and composition of these belong alone to the mind and will.⁷

At this point it has become evident that both Hume's account and ours have either overlooked or left implicit something extremely important in the discussion about ideas and impressions. A careful scrutiny of the passage we have just quoted would reveal that there are three factors involved at this stage of the act of understanding, not two. Besides ideas and impressions, there is the activity of thought itself. Hume's breakdown of the contents of the mind into "impressions" and "thoughts" (or "ideas") requires a further refinement if we are to take the texts seriously. In addition to the products of thought (i.e., thoughts or ideas in the usual sense) some mention must be

made of the activity of thought itself, the thinking which constitutes or at least results in "compounding," "transposing," "augmenting," or "diminishing" the primal "impressions" and their residues. The "products of thought" would be any idea, concept or thought whatsoever, as, e.g., the idea of a mountain, or of gold, or even of a golden mountain. The "acts" of thought would be those of "compounding," "transposing," "augmenting," or "diminishing" the "impressions." Hume's fondness for duality -- e.g., "ideas" and 'impressions,' "relations of ideas" and 'matters of fact,' "is" and 'ought'" -- may have kept the awareness of this further distinction from him. This lack of awareness, however, did not prevent him from formulating an objection against the purely passive nature of understanding and the reduction of "ideas" to "impressions." Hume presents his simple but cunning objection in the following manner:

There is, however, one contradictory phenomenon, which may prove that it is not absolutely impossible for ideas to arise, independent of their correspondent impressions. I believe it will readily be allowed, that the several distinct ideas of colour, which enter by the eye, or those of sound, which are converted by the ear, are really distinct from each other; though at the same time resembling. Now if this be true of different colours, it must be no less so of the different shades of the same colour: and each shade produces a distinct idea, independent of the rest. For if this should be denied, it is possible, by the continual gradation of shades, to run a colour insensibly into what is more remote from it; and if you will not allow any of the means to be different, you cannot without absurdity, deny the extremes to be the same. Suppose, therefore, a person to have enjoyed his sight for thirty years, and to have become perfectly acquainted with colours of all kinds except one particular shade of blue, for instance, which it never has been his fortune to meet with. Let all the different shades of that colour, except that single one, be placed before him, descending gradually from the deepest to the lightest; it is plain that he will perceive a blank, where that shade is wanting and will be sensible that there is a greater distance in that place between the contiguous colours than in any other. Now I ask, whether it be possible for him, from his own imagination, to supply this deficiency and raise up to himself the idea of that particular shade, though it had never been conveyed to him by his senses. I believe there are few but will be of opinion that he can; and this may serve as a proof that the simple ideas are not always in every instance, derived from the correspondent impressions; though this instance is so singular, that it is scarcely worth our observing, and does not merit that for it alone we should alter our general maxim.⁸

Hume is so very right and he is so very wrong. He is right that his "proof" demonstrates that "the simple ideas are not always, in every instance, derived from correspondent impressions"; he is wrong that "this instance is so singular, that it is scarcely worth our observing," and he has missed the point of his "proof" when he denies that the "proof" is such "that for it alone we should alter our general maxim." Furthermore there are two important concepts (i.e., "same" and "different") in the proof which are not explicable within a naive empiricist theory and whose articulation would have strengthened the proof, thereby inducing him, perhaps, to have taken it more seriously.

Let us begin with the end of the passage, Hume uses the phrase "general maxim" but this specific argument as well as the

entire empiricist argument itself would indicate that the phrase should have been "universal maxim." For Hume does not mean that most ideas, or ideas for the most part, are "copied" or derived from "impressions" but that all of them are -- either "mediately or immediately," as he puts it in *A Treatise of Human Nature*. The point of his "proof" concerning the shades of blue is that it is an "exception" -- an instance "so particular and singular" that we need not alter the empiricist maxim because of it. In other places both in *An Enquiry* and in *A Treatise*, Hume makes it extremely clear that he is talking universally. For example he asserts in both books that all the perceptions of the human mind may be divided or resolved into two kinds, i.e., ideas and impressions.⁹ In *A Treatise*, furthermore, he explicitly employs the statement in its universal form, i.e., "all our ideas are copied from our impressions." Moreover, Hume's intention is manifest in his warning against meaningless ideas.

When we entertain, therefore, any suspicion that a philosophical term is employed without any meaning or idea (as is but too frequent), we need but enquire from what impression is that supposed idea derived? And if it be impossible to assign any, this will serve to confirm our suspicion.¹¹

It is obvious that Hume intends the "maxim" to be universal and not merely general. Yet the foregoing quotation merits another remark. For while we cannot but applaud the value of his laxative for meaningless philosophical or metaphysical terms, we must worry that it would eliminate such ordinary and unpretentious ideas as "same" and "different" -- ideas which do figure prominently in Hume's argument against the "maxim," and whose purgation would severely damage the viscera of speech.

The second comment we must develop concerning Hume's argument is that the instance is not "so singular that it is scarcely worth our observing." We have said that Hume was wrong in thinking that it was. For if we were to consider not only the sense of sight to which his argument pertains, but the other senses as well, i.e., the senses of touch, smell, taste and hearing, we would find that we could construct arguments similar to Hume's and conclude thereby that the instance which he regards as so singular is not so, but extends to the entire field of sensory experience.

Let us apply Hume's argument, *mutatis mutandis*, to each of the other senses. Suppose, for example, a person to have enjoyed the sense of touch for thirty years and to have become acquainted with textures of all kinds except one. Let all the textures (think of grades of sandpaper or emery cloth) except that single one be placed before him descending gradually from the roughest to the smoothest. He would perceive a blank where that texture is missing and will be aware that there is a greater distance in that place between the contiguous textures than in any other. Now we ask whether it be possible for him, from his own imagination, to discover this deficiency, and conceive the idea of that particular texture, though it had never been conveyed to him by his senses? We must admit that he could.

This extension of Hume's "proof" to the sense of touch could be duplicated for the sense of smell using the range of odors from acrid to sweet, for the sense of taste using the range of flavors from sweet to bitter, for the sense of hearing using the range of sounds from loud to soft -- allowing us to infer that the

instance is not so singular and that we should alter the empiricist maxim.

If someone, in defense of empiricism, were to complain that the discovery of gaps in sensory experience by an act of thought would not be possible unless the whole range of colors, sounds, textures, flavors, or odors were present and available to the senses, we would have to agree, for we do believe that sensation is a necessary condition for human thought and that the context of the range or sensations makes possible the discovery of the gaps by the mind. But we hasten to add that the empiricist claim is not that sensation is merely a necessary condition for thoughts or ideas but that it is the sufficient condition. Moreover, the range of sensations does not of itself create, supply, or convey the missing idea to a perceiver. Rather the perceiver, who is not merely a passive receiver of impressions, discovers the gap, interprets and understands it, i.e., by the activity of thought, he both conceives of and imagines the missing element.

Consequently Hume's "proof" and our extension of it permit us to draw the following inferences. The first is a refutation of the purely passive notion of the understanding; the second is that all simple ideas are not simply derived from or reducible to impressions (sensations); the third is that the instance in Hume's argument is not so singular that we should not alter the empiricist maxim.

But this is not the end of the affair. For Hume's argument employs two concepts whose understanding would have supported the proof and might have "caused" him to be less resistant to alterations in "the empiricist maxim." The two concepts are those of "same" and "different." Throughout the proof Hume uses such terms as "same," "resembling," "different," and "distinct." We are aware, moreover, of the importance of the concept of "resemblance" in Hume's thought. It is one of the three ways of associating ideas -- a concept so fundamental that it rules the formation of other ideas. It is, to use an old term, a category. In *A Treatise of Human Nature*, Hume says of "resemblance" that it "is a relation, without which no philosophical relation can exist; since no objects will admit of comparison, but what have some degree of resemblance."¹² Unfortunately, "difference" does not have the same dignity for him, since he regards it as "rather a negative of a relation, than as any thing real or positive."¹³ We must insist that while it is true that "difference" is the negative of "same," it does not follow that it does not designate something real. And we need not reproduce Plato's argument in the *Sophist* on the reality of difference to prove the point that "difference" is equivalent and reciprocal to "same." We need appeal only to our Humean "proof" to satisfy ourselves that, despite himself, he too believes that difference is real. For he speaks very clearly and distinctly about the "really different" ideas of color and shades of blue, adding that if the differences were not real, then "by the continual gradation of shades," a color would run "insensibly into what is most remote from it"; and that "if you will not allow any of the means to be different, you cannot, without absurdity, deny the extremes to be the same."¹⁴

It is eminently clear that Hume's "proof" is heavily dependent on the concepts of "sameness" and "difference." These very concepts (on which the "proof" depends) support even further Hume's contention (in the "proof") that not every idea arises from a correspondent impression. We need but paraphrase

another of Hume's arguments¹⁵ -- one concerned with proving the fictitious nature of the concept of substance and apply it, *mutatis mutandis* to "sameness" and "difference." Let us ask whether these ideas are derived from the "impressions of sensation or reflexion." If they be conveyed to us by our sense, we ask, by which of them; and after what manner? If they be perceived by the eyes, they must be colored; if by the ears, they must be sounds; if by the taste buds, flavored, and so on for the other senses. But none will assert that sameness or difference is a color or a sound, or a flavor. The ideas of "sameness" and "difference" must, therefore be derived from a "reflexion" if they really exist. But the "impressions of reflexion" resolve themselves into our passions and emotions, such as fear, anger, desire, none of which can possibly represent "sameness" and "difference" but presuppose them. From this argument we may conclude either that "sameness" and "difference" do not exist or that not every idea -- not only shades of blue we have never seen yet conceive but also categorical concepts such as "sameness" and "difference" -- is derived from sensation. Since "sameness" and "difference" are not especially controversial (as is "substance") and since the denial of their existence would fly in the face of both common sense and critical reason, we would not be foolish or dogmatic if we chose the second alternative. With Hume's "proof" as our guide, we are drawn by its compelling character both to make that choice and to reject also, empiricists, as a true account of knowledge.

There is another side to this issue. Hume has reasoned that "custom" is the great guide of human life, not reason¹⁶ and he recommends to us the tonic of a mitigated skepticism¹⁷ which braces us against the pride of theoretical reason while at the same time providing us with the practical luxury of permitting us to believe in our daily lives that the clouds of unknowing can be dispelled -- that the timeless and spaceless random impressions which mean nothing to no one are covered over in the flush of ordinary daily life when we "dine," "play a game of backgammon," "converse" and are "merry" with our friends,¹⁸ or even when we write books of history. Having destroyed the idol of Reason, he assuages our loss with the balm of "as if."

But another alternative exists for those who are not idolaters and who cannot be consoled with a world of "as if" and make-believe. That alternative lies hidden in Hume's little

NOTES

¹ Nicholas Capaldi has graciously called my attention to the fact that in the *Rules for the Direction of the Mind*, Rule XIV, Descartes offers an argument that is remarkably similar to Hume's. Descartes states that "If a man has been blind from his birth it is not to be expected that he shall be able by a train of reasoning to make him perceive the true ideas of the colors which we have derived from our senses. But if a man has indeed once perceived the primary colors, though he has never seen the intermediate or mixed tints, it is possible for him to construct the images of those which he has not seen from their likeness to the others, by a sort of deduction." While Descartes can lay first claim to such an argument, it has a much greater impact when Hume employs it in view of his position on the origin of simple ideas. Robert Cummins has written recently about this argument of Hume's concerning the missing shade of blue (Cf. *The Philosophical Review*, LXXXVII, No. 4: October, 1978). Cummins contends that the argument does not count seriously against the empiricist or verificationist position; rather the argument strengthens the position. Indeed he suggests that Hume's view is that "the real test" of whether or not someone has an idea of blue, and

"proof" about the missing shade of blue. For in the discovery of the missing shade, the modesty and effectiveness of reason are disclosed.

Finally, how must we regard that passage early in the *Enquiry* wherein Hume sets the stage for the work of philosophy in his report of the admonitions of a benevolent and motherly Nature?

Indulge your passion for science, says she, but let your science be human, and such as may have a direct reference to action and society. Abstruse thought and profound researches I prohibit, and will severely punish, by the pensive melancholy which they introduce, by the endless uncertainty in which they involve you, and by the cold reception which your pretended discoveries shall meet with, when communicated. Be a philosopher; but amidst all your philosophy, be still a man.¹⁹

This strange caution in a work so eminently philosophical seems to contrast markedly with the classical view of philosophy as embodied in the Socratic dictum, "Life without inquiry is not a human life."²⁰ In a sense this very "admonition of Nature" which opposes being a man with philosophizing is itself a caricature of philosophy; because the prescription for the malady of philosophy includes not only the healing fictions of practical life along with a quarantine of "vain theory" but the exercise of reason as exemplified in the little "proof" which is philosophical in the best self-critical tradition -- aimed as it is toward discovering the truth even at the expense of doctrine.²¹

On deeper reflection and in order that the soul of Socrates rest in peace, we must say that the admonitory opposition of philosophizing and being human is not only at variance with a tradition of which Hume himself is an important member, but is also fundamentally trivial (to which its very popularity should alert us). His use of it, i.e., the opposition, must be regarded, especially in the light of his own philosophical practice (as exhibited in the little "proof") as ironic or else as heedless abstraction. Being human is not just vain theorizing, philosophical or otherwise, nor mere dining and playing backgammon. By revealing in this "proof," however modestly and briefly, the effectiveness of true philosophy in challenging even his own doctrine, Hume exemplifies the convergence of reason with courage, restraint, and justice, thereby manifesting humanity in the proper and traditionally philosophic sense.²²

therefore can understand the word "blue" is whether or not that person "can recognize" blue.

In response to this suggestion one is forced to reply that to say thinking and knowledge begin in sense perception is different from saying that thinking and knowledge are or are reducible to sense perception. The empiricist or verificationist wishes to make the second claim. Hume's argument forbids that wish.

² See Robert Paul Wolff's "Hume's Theory of Mental Activity," *The Philosophical Review*, LXIX, No. 3: July, 1960 for a discussion of the propensities and dispositions to think -- propensities which precede experience and the disposition to form dispositions.

³ Calling Hume an empiricist is a convention of handbooks in the history of philosophy. Although the convention has merit, some recent scholarship on the issue tends to minimize or even deny the convention. See Nicholas Capaldi's *David Hume the Newtonian Philosopher*. Boston: Twayne Publishers, 1975. See also Richard Popkin, "Did Hume Ever Read Berkeley?" *Journal of Philosophy*, Vol. LVI, No. 12: June

4, 1959 as well as Pop kin's, "So, Hume Did Read Berkeley," *Journal of Philosophy*, Vol. LXI, No. 24: Dec. 24, 1964.

⁴ Willard Van Orman Quine, "Two Dogmas of Empiricism," *From a Logical Point of View*, New York: 1953, pp. 20-46.

⁵ *An Enquiry Concerning Human Understanding*, ed. L. A. Selby-Bigge, Oxford: Clarendon Press, 1902, 2nd ed., Section II, § 12.

⁶ *Ibid.*, Section II, § 11.

⁷ *Ibid.*, Section II, § 13.

⁸ *Ibid.*, Section II, § 16; Cf. *A Treatise of Human Nature*, Bk. I, Part I, Sec. I.

⁹ *A Treatise*, Bk. I, Part I, Sec. I; *An Enquiry*, Sec. II, § 12.

¹⁰ *A Treatise*, Bk. I, Part III, Sec. I.

¹¹ *An Enquiry*, Sec. II, § 17.

¹² *A Treatise*, Pt. I, Bk. I, Sec. V.

¹³ Jacques Derrida, whose influence among philosophers and literary critics has been considerable in recent years, makes precisely the opposite point (which he and his disciples would call a non-point). This is to say that, in addition to his effort to bespeak the metaphorical nature of all language, he attempts to express the primacy and the radical nature of "difference" by denying sameness, unity, and philosophy in a virtuoso display of the non-sense of sense. Treating "difference" as absolute and employing it in an infinite regress is what gives him his desired results. See Derrida, *Writing and Difference*, tr. A. Bass, Chicago, 1978). Such a treatment of "difference" in contemporary philosophy is comparable to Gorgias' efforts in ancient philosophy ("Nothing exists... If anything exists, it is incomprehensible. If it is

comprehensible, it is incommunicable." See Kathleen Freeman, *Ancilla to the Pre-Socratic Philosophers*, Cambridge, 1966, p. 128). The difference (pun intended) between Gorgias and Derrida is that Gorgias, for rhetorical and probably political purposes, defends nonsense whereas Derrida, for anti-philosophical and political purposes, embodies or incorporates it.

¹⁴ *A Treatise*, P. I, Bk. I, Sec. V.

¹⁵ *Ibid.*, Bk. I, Part I, Sec. VI.

¹⁶ *An Enquiry*, Sec. V, Part I, § 36.

¹⁷ *Ibid.*, Sec. XII, Part III, § 13Q.

¹⁸ *A Treatise*, Bk. I, Part IV, Sec. VII.

¹⁹ *An Enquiry*, Sec. I, § 4.

²⁰ Plato, *Apology*, 38 a. It should be noted that the rendering of this text herein differs from the conventional but inaccurate translation, viz., "The unexamined life is not worth living."

²¹ The following passage from the *Enquiry* which Hume intends as the remedy for books of "divinity and school metaphysics" may be applied to "empiricist" doctrine as well. "Accurate and just reasoning is the only catholic remedy, fitted for all persons and all dispositions; and is alone able to subvert that abstruse philosophy and metaphysical jargon, which, being mixed up with popular superstition, renders it in a manner impenetrable to careless reasoners, and gives it the air of science and wisdom." (*An Enquiry*, Sec. I, § 7).

²² This convergence is an allusion to the virtues which Plato argues to be characteristic of philosophers. (*Phaedo*, 68c - 69b.).

Yves Simon in his moral philosophy carefully distinguishes the function of theoretical and practical reason. Theoretical reason is concerned with the universal and necessary, and when dealing with entities of this sort, particularly while using the tool of mathematization, it is capable of splendid accomplishments. But this method is not equally applicable in all areas of human life. One of Simon's great achievements was his insight into contingency and the crucially important part that it plays in his moral philosophy. Science cannot, to be sure, deal with contingency. But all of the really important matters of human life involve a radical contingency, and it is this element in moral life, its contingent nature, that Simon stresses. But moral science, as science, cannot come to grips with this. It is only practical wisdom, prudence, which can adequately do this. It is the role of practical wisdom in moral philosophy that was lost in the post-Cartesian approaches to moral matters when the conviction developed among philosophers that morals could be treated in a strictly "scientific" way. It was the restoration of practical wisdom to its rightful place in moral philosophy that Simon saw as one of his principal tasks as a philosopher.

THE ROLE OF CONTINGENCY IN THE MORAL PHILOSOPHY OF YVES SIMON

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That contemporary moral philosophy is in a state of disarray bordering on total incoherence is obvious to even the most casual observer of the current moral scene. It is therefore at a particularly opportune time that the philosophical writings of Yves Simon are receiving renewed, and well deserved interest. This is especially true of his moral theory because it meets an especially urgent need, given the deplorable state of affairs in contemporary moral philosophy. One of the central insights in his moral theory is the central role which he accords to contingency.¹ Moral philosophy from Descartes to the present day, Simon believes, in the interest of rendering itself unshakably certain, attempted to ape the method of the positive sciences which were producing such stunning achievements. The only problem with this was that in their efforts to do for man's moral life what the physicists, chemists and mathematicians were doing for his material conditions, moralists failed to take note of two quite different areas of human endeavor -- the theoretical reason, the realm of the universal and necessary, and the practical reason, the domain of contingency, and things that can be otherwise. Simon argues, as we shall see, that it was precisely the confusion, or better, the conflation of these two realms which has produced the lamentable conditions in moral philosophy which are everywhere apparent.

I. Theoretical Knowledge

If one wishes to understand Simon's moral theory it is essential to grasp the distinction which he makes, and the importance which he gives to the distinction, between theoretical and practical knowledge. Many of the problems which have beset efforts in moral philosophy, particularly in the last four centuries, Simon believes, can be traced precisely to the confusion which has reigned in moral theory between theoretical and practical knowledge. All too frequently in the time since Descartes moral philosophers have mistakenly thought of their task as a theoretical work in which practical wisdom or prudence and contingency had no role to play. Moral philosophy could proceed in elegantly mathematical fashion, *more geometrico*,

according to the well known expression of Spinoza, blissfully heedless of the often messy details of existential moral life. To distinguish clearly practical knowledge from theoretical was a task that seemed especially important to Simon because it has been confusion on this point that has been such a fruitful source of error in moral philosophy.

Let us start by clarifying precisely what Simon understands by theoretical knowledge. Theoretical knowledge, according to Simon, is the realm of the necessary, the non-contingent. Theoretical knowledge, that is science, already in Aristotle's writings is characterized by two things: one, it is certain; and two, it has an explanatory power. On these points Simon remarks in *Practical Knowledge: ... in the Posterior Analytics* (science) is defined by the union of certainty and explanation. A science is a discipline whose explanations are certain and whose certainties are explanatory.²

But if certainty is a requirement for something to be a science, then it is clear that it cannot have as its object the non-necessary, the contingent. This notion of certitude as a prerequisite of science was expressed by Thomas Aquinas in his well-known formulation -- *scientia est certa cognitio per causas* -- science is certain knowledge through causes.³

A decisive change in the understanding of science took place, according to Simon, at the time of Descartes and Galileo. Henceforth mathematics will be the tool by which nature is understood.⁴ This will mean that nature is mathematized, that is, the beings of nature that in the older Aristotelian tradition were rendered intelligible and the object of science by an abstraction from individual sense characteristics are now subjected to a second degree of abstraction and turned into mathematical entities. This will have the advantage of allowing the physicist to proceed in his investigation of physical nature with the precision of a mathematician. But it will also necessitate the banishment of the familiar world of our daily experience, the real world, into a permanent exile. It will produce what Charles De Koninck called "the hollow universe."⁵ One of first casualties in this

mathematized universe is the notion of finality.⁶ The abstract entities of mathematics have nothing to do with purpose or finality.⁷

Because of the tremendous and tangible results which the method of mathematization has allowed the physical sciences to produce, there was of course an inevitable temptation, one impossible to resist, to extend this method, so demonstrably fruitful in the physical sciences, to other areas as well. Since the tool of mathematization proved so fecund in the physical sciences, why could it not be employed with equal success in other areas of human endeavor, especially society and its problems? And so many new social sciences, aping the mathematical methods of the physical sciences, were born, especially in the latter years of the eighteenth century and following. If the mechanical and chemical engineers were producing such enviable results, it seemed clear that the social engineer could be relied upon to do for society and its problems, such as war, crime, exploitation, repression and so on, what the other engineer were achieving in the world of science and industry.⁸ This naive optimism was at flood tide in the mid-nineteenth century. Karl Marx was a product of it, as was Sigmund Freud.⁹ But then on April 14, 1912 an event of such awesome symbolic power took place that it continues to cast its lengthening shadows as the twilight of the twentieth century turns to night -- the sinking of the unsinkable Titanic. Here it seemed human hubris had reached a level unexampled since the erection of the tower of Babel. But on the morning of April 15, 1912 as the Titanic, unsinkable by God or man according to man's proud boast, plunged beneath the icy waters of the Atlantic, it sounded a warning bell to the ardent enthusiasts of unlimited progress through science, soon to turn into the deafening cacophony of World I and the rest of the almost unimaginable horrors to the twentieth century.

The fatal error of the rationalistic optimists from the last quarter of the eighteenth century to our own days was that they failed to recognize one very important element in human affairs -- contingency.¹⁰ While it is true that purely material beings can be mathematized and made to yield tremendous advantages to man, man himself with his spirituality, and the freedom consequent upon it,

cannot be controlled and manipulated with such perfect predictability.¹¹ Social engineering which attempted to replicate for society the successes of the physical sciences was doomed, in principle, to failure, and it ran aground on the inescapable reef of contingency. Another way of putting this is to say that they failed to recognize the two distinct and very different realms of the theoretical and practical intellect.

II. Practical Knowledge

While it is undeniably true that the truth achieved by theoretical reason can greatly enrich the material conditions of human life, if the history of the twentieth century has demonstrated anything, it has been that such progress in no way guarantees moral progress. Where moral issues are concerned, the domain of the contingent, it is practical reason that must be adequately understood. In other words, the fundamental problem with which we are confronted is with the problem of truth in the practical judgment. Simon notes: The problem of truth in practical judgment is best approached by asking in what sense a

judgment immediately relative to action, a command, can attain certainty.¹²

This truth and certainty in the practical judgment is not achieved in the same way that truth and certainty are attained by the theoretical reason, that is, by the logical connection with self-evident principles, principia per se nota.¹³ Rather, it must be remembered, the practical reason, reason in its concern with human affairs, is the realm of contingency, and therefore any such tight logical connection with the first principles of the moral order is impossible. Then how is moral certainty achieved? In answering this question we come to one of the most important elements in Simon's moral theory. For Simon, certainty in moral matters does not come about purely in the cognitive order.¹⁴ Rather moral certainty is achieved through inclination.¹⁵ It is virtuous inclination that makes moral knowledge certain and this certainty comes about through affective connaturality.¹⁶ Simon notes concerning this affective aspect of moral truth: Answer to the ultimate question was obtained by listening to an inclination. The intellect, here, is the disciple of love. The object of the practical judgment is one that cannot be grasped by looking at it. It is delivered by love to the docile intellect.¹⁷

But why should it be the case that the practical reason which is employed in moral matters cannot proceed as the theoretical reason does, purely through cognition? The answer, in a word, is contingency. Theoretical reason can achieve its object through cognition alone because it is dealing with necessary things, but practical reason in considering moral matters is involved with the non-necessary, with things that could be otherwise, with the contingent. Therefore a purely cognitive approach to moral knowledge can never be adequate.¹⁸ In addition to the cognitive elements, affective connaturality which comes to pass through virtuous inclination is much more fundamental. As with other truth, moral truth will also involve an agreement, an adaequatio intellectus et rei, but in moral truth the agreement will not be with a thing (rei) or factual state of affairs, but rather the truth of the practical judgment will be agreement with right desire. Simon states: The practical judgment, whose proper perfection is truth by agreement with right desire, is ultimately determined not by cognition but by inclination...¹⁹

One of the very considerable advantages of Simon's teaching on the role of knowledge by inclination is that it enables him to deal with one of the most intractable problems in moral philosophy since the time of Hume, and that is the fact/value dichotomy. Simon is able to make the transition from facts to values, which Hume had declared impossible, through the place which he gives to inclination in his moral philosophy, the inspiration for which he finds in St. Thomas. Thus he notes concerning the section of the Summa Theologiae in which Aquinas treats of inclinationes naturales:²⁰ In the celebrated passage in which he shows what principles should be followed in the division of the natural, St. Thomas gives a simple and convincing demonstration of transition from facts, met empirically considered, to values realistically understood.²¹

But while knowledge by inclination is the starting point for moral philosophy it is not itself moral philosophy, but rather a preamble to it. The transition from judgment by way of inclination to cognition is the transition to moral science.²² The notion of such a thing as moral science, as Simon sees it,

presents some formidable difficulties. Concerning the purpose of ethics Aristotle of course states quite clearly in the beginning of the *Nicomachean Ethics* that the goal in practical matters is not understanding but action.²³ By stating that the purpose of practical science is not knowledge but action, Aristotle stresses what pertains to the practical sciences in a unique way, but at the same time he cautions against setting requirements in the name of science which are not appropriate to moral science.²⁴ Moral science, ethics, is, as Aristotle rightly observed, practical, that is, its purpose is action. But it is not, nor could it be, totally practical. It could not be totally practical by treating actual contingencies. To deal with the actual contingencies of daily moral life would be to compromise it as science, since science must be about the universal and certain, the exact opposite of the ever changing flow of existential moral conditions. To think that moral philosophy could actually come to grips with the constantly shifting flux which presents itself for moral decisions would be to confuse moral philosophy with prudence or practical wisdom, phronesis. It is only prudence that can make judgments about the concrete moral singular as it gives itself in the full concretion of all of its moral circumstances.²⁵ But while it is the strength of prudence that it can take into account the concrete moral singular with its full array of circumstances, all of which must be weighed in moral decisions, this also renders prudential knowledge incommunicable²⁶ because the moral act with which it is concerned is singular, unique, never to be repeated, while science, moral as well as any other, must be about the universal. It is impossible, in principle, that moral science could be about the concrete individual contingent since science, by definition, must be communicable.

Moral philosophy, as Simon understands it, has as its primary purpose the understanding of moral essences. These moral essences are not the concrete singular which is the object of moral decision -- this is the object of prudence -- but rather they are disengaged from these by abstraction, so that a universal moral essence emerges.²⁷ The primary task of moral philosophy is an understanding of these moral essences.²⁸ This means of course that moral philosophy as a practical science can only be practical in a rather limited way. As practical, it must have the capacity of directing action, and this it does -- in a way. The requirement of universality which science imposes on it, however, means that its direction can only be indirect, direction from a distance. Since as moral science it can only deal with moral essences that have been abstracted from the stream of the immediately given of moral life, it can direct moral action only from a distance, sometimes quite considerable, while the full implementation of its moral principles will require the virtue of prudence. But prudence in Simon's moral philosophy is not a virtue that functions in isolation. It can only do its tasks when it is interconnected with the other moral virtues, that is, justice, temperance and courage.²⁹ Or, according to the old Scholastic axiom: "prudence presupposes a well ordered appetite." Which brings us full turn, because when it is stated that prudence requires a well ordered appetite this is exactly what Simon has in mind when he speaks about "virtuous inclination," "affective connaturality," and "agreement with right desire" in the texts cited above.³⁰ The virtuous person becomes "habituated" to the object of virtue. He or she not only does the virtuous act, but loves doing it, e.g. the temperate person not only does temperate

acts but loves them. Therefore when we use an expression such as "habituated to" a cautionary note must be added, because in Simon's theory of virtue, virtues most definitely are not simply good habits. For Simon "habit" is on the infra rational level,³¹ the level of mechanical rote,³² and does not guarantee the "steadiness," to use a favorite word of his,³³ that virtue in the plenary sense requires. Therefore Simon prefers to leave the Latin term "habit us" untranslated, insisting that to translate habit us by habit can only lead to confusion and misunderstanding. A virtue in the full sense is actually a state of being. In the case of prudence it is a quality of the practical reason, an accidental "to be" (esse), which causes the moral judgment to consistently, steadily, possess practical truth. But further, in order to possess practical truth it must be united with the other three moral virtues of justice, temperance and courage, because these are required to set the appetites in order, and in their perfected state this gives rise to affective connaturality with the object of the virtues.

Because the virtuous person loves the object of virtue, he or she chooses the object by inclination even in totally unprecedented sets of circumstances. The temperate person chooses the proper mean of the temperate act because he or she is made one with it, that is, con natural to it, through affectivity and inclination. But the affective, non-logical element renders the judgment of prudence incommunicable.³⁴ Moral science on the other hand, as science, must be communicable. In order to satisfy this requirement, therefore, moral science must deal with universals, that is, moral essences. But, it would seem, to say that moral philosophy is both practical and science is to place an intolerable burden upon it. As practical, it must be capable of directing activity. But human activity is concerned with the ever changing flow of the contingent. Science on the other hand is concerned with the necessary, the universal, the exact opposite of the practical. How can moral philosophy be both practical and science? In order to solve these seemingly irreconcilable exigencies Simon sets forth his notion of a theoretically practical science. Moral philosophy according to its fundamental essence is theoretical. Simon states: No matter how practical it may be in other respects, moral philosophy is a theoretical science as far as its fundamental ways are concerned. Its own way of being practical is a theoretical one. It is a theoretically practical science.³⁵

Moral philosophy is the work of the theoretical intellect.³⁶ Its basic task is to understand moral essences. This means that while it is both synthetic and analytic, it is fundamentally analytic rather than synthetic.³⁷ Moral analysis, according to Simon, has two phases. The first of these is to trace an effect back to its proper cause; the second to break up, hence analyze in the strict etymological sense of the Greek word, the accidental wholes into the essential wholes of which they are composed. Moral science, i.e. moral philosophy, does both of these. But there is also a synthetic element in it because the moral essences with which moral philosophy has to do always presuppose judgments.³⁸ Unlike the theoretical realm where the order is idea, then judgment,³⁹ in the practical domain the moral essence always presupposes an antecedent judgment. Thus the moral essence murder of which an existential judgment is made that it ought not exist, presupposes an antecedent judgment such as, "do harm to no man."

Therefore it is correct to say that for Simon the fundamental task of moral philosophy is understanding moral essences. This will, of course, strictly limit the usefulness of moral philosophy. There is no trace of any rationalistic illusions in Simon's thought about "salvation through knowledge."⁴⁰ Thus he remarks: There exists a system of psychological illusions and social desires which incline the moral philosopher to underrate the restricting power of contingency and to overdo the possibilities of scientific accomplishment in moral affairs...This intellectualistic optimism again assumed youthful naivete in the eighteenth century, and in spite of many disillusionments it is still active in the mythology that often accompanies the theory of psychological, "behavioral," and social sciences.⁴¹

So the ability of moral philosophy will be quite sharply limited. Its knowledge will be abstract, one step removed, and frequently a very long step at that, from existential moral decision. For the actual implementation of the universal moral principles the virtue of prudence, united to justice, temperance, and courage is required. And the judgment of prudence is unique, never to be repeated and incommunicable. Of course this strictly limits the usefulness of moral philosophy, but these limits are imposed by the nature of its material object, human action, which are, as Simon never tires of stressing, contingent.

Therefore by stating that moral philosophy is theoretically practical science, Simon stresses the scientific aspect of it more than, and at the expense of, its practical side. In this, of course, he differed with his good friend and teacher Maritain who, in developing his notion of moral philosophy as a practically practical science wished to preserve more the capacity of moral philosophy to direct action.⁴² The correspondence between Maritain and Simon in 1961, shortly before Simon's death, indicates that this was an irreducible difference.⁴³ Simon felt that a discipline which is practically practical cannot be a science. To claim that there is such a thing as a practically practical science, as Maritain does, is to confuse moral

philosophy and prudence⁴⁴ Simon states, underscoring his words for emphasis: Our conclusion is that a discipline describable as practically practical cannot be a science.⁴⁵

The practically practical science can direct activity to be sure, that is, its practical character has been preserved, but in so doing it can no longer be considered a science.

Conclusion

We have now seen the salient elements in the moral philosophy of Yves Simon. Simon sharply distinguishes the function of theoretical and practical reason. Theoretical reason is concerned with the universal and necessary and when dealing with entities of this sort, particularly while using the tool of mathematization it is capable of splendid accomplishments. But this method is not equally applicable in all areas of human life. One of the great achievements in the thought of Simon is his realization of the crucial importance that contingency plays in human affairs in general, and in particular, in moral philosophy. With contingency science has nothing to do. But all of the really important matters of human life involve a radical contingency. This element of contingency will sharply limit the usefulness of moral philosophy. To be sure Simon was never of the opinion that the study of moral philosophy was waste of time. To say that would be absurd. But it did mean that he was not subject to any illusions about infinite human perfectibility through the advance of scientific knowledge, nor did he share in the youthful optimism or naivete that emerged in the latter part of the eighteenth century and whose myths continue to enchant us to this very day. In Simon's moral philosophy contingency has a very large role, and only practical wisdom, prudence, can deal adequately with this. The role of practical wisdom was exactly what was lost from the moral systems that developed after Descartes when it was thought that moral matters could be treated in a strictly scientific way. It was the restoration of practical wisdom to its rightful place in moral philosophy that Simon saw as one of his principal tasks as a philosopher.

FOOTNOTES

¹ On the importance of contingency in the thought of Simon see for example *Nature and Function of Authority* (Milwaukee: Marquette University Press, 1948), pp. 30-31; *The Tradition of Natural Law* (New York: Fordham University Press, 1992), pp. 54, 155; *Practical Knowledge* (New York: Fordham University Press, 1991), pp. 30, 35, 53, 71, 79, and *passim*; *The Definition of Moral Virtue* (New York: Fordham University Press, 1986), p. 112.

² *Practical Knowledge*..., p. 85.

³ *Practical Knowledge*..., 101.

⁴ *Tradition of Natural Law*..., pp. 48-49.

⁵ *The Hollow Universe* (London: Oxford University Press, 1960).

⁶ *Tradition of Natural Law*..., p. 47.

⁷ *Practical Knowledge*..., pp. 117, 143.

⁸ *Philosophy of Democratic Government* (Chicago: University of Chicago Press, 1951), pp. 291-292; *Definition of Moral Virtue*..., pp. 8, 87.

⁹ *Definition of Moral Virtue*..., pp. 9, 12.

¹⁰ *Practical Knowledge*..., p. 30.

¹¹ *Philosophy of Democratic Government*..., pp. 291-292.

¹² *Practical Knowledge*..., p. 11.

¹³ See for example *Summa Theologiae*, I-II, q. 94, a.2.

¹⁴ *Philosophy of Democratic Government*..., p. 219.

¹⁵ *Tradition of Natural Law*..., pp. 117, 127; *Practical Knowledge*..., pp. 17, 20, 35, 73.

¹⁶ *Practical Knowledge*..., p. 20.

¹⁷ *Practical Knowledge*..., p. 17.

¹⁸ *Philosophy of Democratic Government*..., p. 219.

¹⁹ *Practical Knowledge*..., p. 17.

²⁰ *Summa Theologiae*, I-II, q. 94, a.2.

²¹ *Practical Knowledge*..., p. 124.

²² *Practical Knowledge*..., p. 43.

²³ *Nicomachean Ethics*, 1095a4; *Practical Knowledge*..., pp. 112-113.

²⁴ *Nicomachean Ethics*..., 1094b25; *Practical Knowledge*..., 46.

²⁵ *Nature and Function of Authority*..., p. 5.

²⁶ *Practical Knowledge*..., p. 70.

²⁷ *Introduction to the Metaphysics of Knowledge* (New York: Fordham University Press, 1990), p. 120; *Nature and Function of Authority*..., p. 4.

²⁸ *Practical Knowledge*..., p. 53.

²⁹ *Definition of Moral Virtue*..., pp. 126-127.

³⁰ *Tradition of Natural Law*..., p. 85; *Definition of Moral Virtue*..., pp. 101-102.

³¹ *Definition of Moral Virtue*..., p. 55.

³² *Definition of Moral Virtue*..., p. 60.

³³ *Definition of Moral Virtue*..., pp. 159-160.

³⁴ *Practical Knowledge*..., p. 24.

³⁵ *Practical Knowledge*..., p. 57.

³⁶ *Practical Knowledge*..., p. 70.

³⁷ *Practical Knowledge*..., p. 56.

³⁸ *Practical Knowledge*..., pp. 52, 65-66.

³⁹ *Introduction to the Metaphysics of Knowledge*..., p. 136, note 55; *Practical Knowledge*..., p. 67.

⁴⁰ *Tradition of Natural Law*..., p. 155; *Practical Knowledge*..., p. 119.

⁴¹ *Practical Knowledge*..., p. 30.

⁴² *Practical Knowledge*..., pp. 81, 86-87.

⁴³ *Practical Knowledge* contains the relevant parts of the correspondence concerning this point, pp. 100-114.

⁴⁴ *Practical Knowledge*..., p. 109.

⁴⁵ *Practical Knowledge*..., p. 86.

The Mind/Brain Relation: III. A Scientifically Neutral Monism

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Ontology

The advent of the cognitive revolution in experimental psychology made mind respectable once again. Simultaneously a surge of data in the neuro- and computer sciences such as the nature of perception and the mechanisms of memory began to converge on psychological issues. Thus, we are currently faced with a resurgence of interest in the mind/brain relationship. The time is ripe to address this relationship in terms of scientific theory based on, but not limited to, philosophical inquiry. Unpacking the mind/brain issues reveals, on the one hand, an epistemological pluralism and, on the other, that concepts such as information, entropy, and energy are neutral to the mind/brain dichotomy. These concepts constitute the ground for a "neutral monism" that can be conceived of as a potentiality and thus ontologically prior to the epistemological, relationship between mind and brain.

A Pluralistic Monism

Before I proceed with a precise delineation of the experimental and theoretical basis for the approach to a scientific neutral monism, it may be helpful to summarize what has been proposed thus far: a "monism," which states simply that the truly basic components of the universe are neither material nor mental, but neutral. The dematerialization of energy at the level of analysis that concerns modern physics (which I will review shortly) supports such a "neutral monism" (James, 1909; Russell, 1948). Critical philosophers (e.g., Herbert Feigl, 1960), who were steeped in linguistic analysis, developed this monistic view by suggesting that the "mental" and "material" are simply different ways of talking about the same processes. Thus "mind" and "brain" come to stand for separate linguistic systems, covering different aspects of a basic commonality. The problem has been to find a neutral language to describe the commonality without being either mental or material in its connotations.

I have taken this "dual aspects" view a step further by proposing that each aspect not only is characterized linguistically but in fact is a separate "realization" or "embodiment" (Pribram, 1971b). As noted, I have further proposed that what becomes embodied is informational "structure." Thus, in essence I have stood the critical philosopher's approach on its head. The enduring "neutral" component of the universe is informational structure, the negentropic organization of energy. In a sense, this structure can be characterized as linguistic or mathematical, musical, cultural, and so on. Dual aspects become dual realizations--which in fact may be multiple--of the fundamental informational structure. Thus, a symphony can be realized in the playing at a concert, in the musical score, on a record or on a tape, and thence through a high-fidelity audio system at home.

Mind and brain stand for two such classes of realization, each achieved, as described earlier, by proceeding in a different direction in the hierarchy of conceptual and realized systems. Both mental phenomena and material objects are realizations and therefore realities. Both classes of reality are constructions from

underlying "structures," which it is the task of science to specify in as neutral a language as possible (neutral, i.e., with respect to connotations that would suggest that the "structures" belong in one or the other class). I note elsewhere the relationship of such a constructional realism to critical realism, pragmatism, and neo-Kantian rationalism (Pribram, 1971a).

The Dematerialization of Energy

The fundamental assumption that has given rise to the mind/brain problem is that mental phenomena and the material universe are in some essential fashion different from each other. As we have seen, in the ordinary domain of appearances, at the Euclidean-Newtonian level of analysis, this view is certainly tenable. But at the levels of the macro- and microphysical universes dualism becomes awkward. Niels Bohr's complementarity and Werner Heisenberg's uncertainty principle emphasize the importance of the observer in any understanding of what presumably is observed (Bohr, 1966; Heisenberg, 1959). Eugene P. Wigner (1969) stated the issue succinctly: Modern microphysics and macrophysics no longer deal with relations among observables but only with relations among observations.

An objection can be entered that such difficulties of distinguishing observables from observations encountered today by physicists are temporary, superficial and of no concern to philosophers interested in the eternal verities. But that is not the message these thoughtful pioneers in physics are attempting to convey. They have been exploring universes where the everyday distinction between material and mental becomes disturbingly untenable at a very fundamental level. As I proceed, I shall tender some explanations that may help account for their views.

The dematerialization of energy can be traced in some sense to earlier formulations. For instance, physics was conceptually understandable in James Clerk Maxwell's day when light waves were propagated in the "ether." But then physicists did away with the "ether." Still, they did not rid themselves of Maxwell's wave equations or the more recent ones of Erwin Schrodinger (1928) or Louis Victor Prince de Broglie (1964). One readily can conceptualize waves traveling in a medium, such as when sound waves travel in air, but what can be the meaning of "light" or other electromagnetic waves "traveling" in a vacuum? Currently physicists are beginning to fill that vacuum with dense concentrations of energy, potentials for doing work when interfaced with matter. It is this potential that, I propose, is neutral to the mental-material duality.

Energy and Entropy as the Neutral Potential

In science, such potentials are defined in terms of the actual or possible work that is necessary for realization to occur and are labeled energy. Thus, multiple realizations imply a neutral monism in which the neutral essence, the potential for realization, is energy. And, as stated in the second law of thermodynamics, energy is entropic, that is, it has structure.

Heisenberg (1959) developed a matrix approach to understanding the organization of energy potentials. Currently,

this approach is used in s-matrix, bootstrap theories of quantum and nuclear physics by Henry Stapp (1965) and Geoffrey Chew (1966). These investigators (among others, i.e., Dirac, 1951) have pointed out that measures of energy potential are related to measures of location in space-time by way of a Fourier transform. The Fourier theorem states that any pattern of organization can be analyzed into, and represented by, a series of regular waveforms of different amplitudes and frequencies. These regular waveforms can in turn be superimposed, convolved, with one another and, by way of the inverse Fourier procedure, can be retransformed to obtain correlations in the original space-time configuration. Thus, the Fourier transform of a set of patterns displays a spectral organization that is, of course, different from that which is displayed after the inverse Fourier transform has again converted the pattern into the space-time order.

In terms of the proposition put forward by Stapp and Chew, this means that the organization of energy potentials is considerably different from the space-time organization of our ordinary perceptions that can be expressed in Euclidean, Cartesian, and Newtonian terms. David Bohm (1971, 1973, 1976) has identified these nonclassical organizations of energy potentials as "implicate," that is, enfolded, and has used the hologram as an example of such enfolded orders. Dennis Gabor (1946, 1948), the inventor of the hologram, based his discovery on the fact that one can store interference patterns of waveforms produced by the reflection or refraction of light from an object on a photographic film and reconstruct from such a film the image of the object. The description of the enfolded organization of the stored potential for reconstruction is related to the unfolded space-time description of the object by a Fourier transform.

More Neuroscience

The Fourier theorem has also played an important role in the recent discoveries in the brain sciences that were reviewed in part in the section on the neural microstructure of Part I of this publication. In the late 1960s, several groups of investigators found that they could explain their findings in visual research when they realized that their results indicated that encoding of spatial patterns in the visual system involved what they called spatial frequency. This term describes the spectral domain that results when a Fourier transform is performed on space-time organizations and was coined by Fergus Campbell and John Robson (1968) of Cambridge University when they discovered unexpected regularities in their data. Responses to gratings of different widths and spacings adapted not only to the particular grating shown but also at other data points. These additional adaptations could be understood by describing the gratings as composed of regular waveforms with a given frequency and the regularities in terms of harmonics. The spectral frequency was determined by the spacings of the grating, and thus the term spatial frequency. Spatial and temporal frequencies are related of course: Scanning by a steadily moving beam would describe the grating's temporal frequency. Physicists therefore use the term wave number or spectral density to denote the spectral form of description of patterns.

In the late 1950s and 1960s, David Hubel and Thorsten Wiesel (1959, 1968) had discovered that single cells in the visual cortex responded best when the visual system was stimulated with lines at a certain orientation. In the early and mid 1970s, Daniel Pollen and his colleagues (Pollen, Lee, & Taylor, 1971; Pollen & Taylor, 1974) noted that when such lines were drifted

across the visual field, the response of the cell was not uniform but described a waveform similar to that which described the gratings used by Fergus Campbell. Campbell (1974) meanwhile showed that the responses of single cells in the visual cortex also adapted to the harmonics of the gratings that were presented, much as did the organism as a whole. Finally, Russell and Karen DeValois and their collaborators, (DeValois, Albrecht, & Thorell, 1978a, 1978b; DeValois & DeValois, 1980, 1988; DeValois, DeValois, & Yund, 1979) demonstrated that the response of these visual cortical cells is only poorly described by the orientation of a line, whereas it is accurately described in terms of the orientation and spatial frequency of a grating: that is, the cell is tuned to a spatial frequency range of approximately one-half to one octave. Furthermore, these investigators showed that when checkerboards and plaids were used to stimulate the visual system, the cells responded maximally to the Fourier transform of the space-time patterns, as determined by computer display, and that the cells were essentially unresponsive to the orientation of the individual lines that composed the checkerboards and plaids. In short, it appears that the visual system performs a Fourier transform on the optical image produced by the lens of the eye.

What this means is that the optical image is decomposed into its Fourier components: regular waveforms of different frequencies and amplitudes. Cells in the visual system respond to one or another of these components and thus, in aggregate, comprise an image processing filter or resonator that has characteristics similar to the photographic filter comprising a hologram, from which images can be reconstructed by implementing the inverse transform.

There are, however, important differences between ordinary photographic holograms and the visual nervous system. Ordinary holograms are composed by a global Fourier transform that distributes the information contained in a space-time image throughout the transform domain. In the visual nervous system, distribution is limited anatomically to the input channeled to a particular cortical cell. There are holographic techniques that use similar "patch" or multiplex constructions. Bracewell (1965) at Stanford University pioneered these techniques in radioastronomy by stripping together the holographic transformations of limited sectors of the heavens as viewed by radiotelescope. When the inverse transform is applied, space-time images of the whole composite can be viewed in three dimensions.

Thus, the transform that best describes the process in the visual system is a Gabor, not a Fourier. The Gabor transform (1946, 1948; Daugman, 1985; Marcelja, 1980) is formed by placing a Gaussian envelope on the otherwise unlimited Fourier transform. This is another way of stating that the transformation is not global, and it gives mathematical precision to the limits involved.

Finally, the arrangement of the visual channels and the cortical cells is not haphazard with regard to one another. A clear retinotopic to cortical spatial arrangement is maintained. Therefore, the gross grain of the visual filter determines space-time coordinates, whereas its fine grain describes the Fourier components.

What advantage is gained by this fine-grain holographic-like organization? Recall that in the transform domain correlations among patterns are readily performed. This is why

the Fast Fourier Transform (FFT) as performed by computer is such a powerful tool in statistical analysis and in computerized tomography (CT scans). The brain is an excellent correlator by virtue of its fine-grain processing potential.

The dual properties of an enfolded fine-grain (technically, the within-receptive field organization) and a gross-grain (among receptive field) space-time organization applies to other sense modalities as well, although the experimental evidence is not as complete. Georg von Bekesy (1967) performed critical studies in the auditory and somesthetic modalities, Walter Freeman (1960) conducted studies in the olfactory, and Pribram, Sharafat, and Beekman (1984) have shown that cells in the sensorimotor cortex are tuned to specific frequencies of movement. At the same time, in all these sensory systems the spatial organization of the receptor surface is topographically represented in the gross-grain arrangement of the cortical cells that receive the sensory input.

In summary, there is good evidence that another class of orders lies behind the ordinary classical level of organization, which we perceive and which can be described in terms of Euclidean and Newtonian views and mapped in Cartesian space-time coordinates. This other class of orders is constituted of fine-grain organizations that describe potentials that had been poorly understood because of the radical changes that occur in the transformational process of realization. When a potential is realized, information becomes unfolded into its ordinary space-time appearance; in the other direction, the transformation enfolds and distributes information as this is done by the holographic process. Because work is involved in transforming, in terms of energy are suitable, and as the structure of information is what is transformed quantitative descriptions (though, of qualitatively different substrates), descriptions in terms of entropy (and negentropy) are also suitable. Thus, complete understanding involves a duality different from that describing mind and brain: On the one hand, there are enfolded orders manifested as energy potential; on the other, there are unfolded orders manifested in negentropic spacetime.

Is Information Material or Mental?

Furthermore, when forces are postulated to exist between material bodies, the forces are often conceptualized as "material" even though they themselves are not constituted of matter. When matter and energy are related by the equation $E = MC^2$, energy is commonly assumed to be "material." But this is a misreading of the equal sign. The equal sign does not indicate sameness: For instance, $2 + 2 = 4$ and $2 \times 2 = 4$. If the equal sign indicated sameness, "X" and "+" would be the same, but they are not: $2 + 2 = 2 \times 2$ because they are equal though different. This is a point I have had to make repeatedly when I present evidence that men and women are biologically and psychologically different: I am not arguing, therefore, that they are unequal.

Energy is not material, only transformable into matter. It is measured by the amount of work that can be accomplished by using it and the efficiency of its use depends on its organization as measured by its entropy. The invention of the vacuum tube and subsequent devices have shown that properly configured minute amounts of energy can control large expenditures and that these minute organizations provide "information," that is, they inform and organize energy. Measures of information and entropy thus were seen as related (see, e.g., Brillouin, 1962; von Weizsacker, 1974). Computers were constructed to process information, and

programs were written to organize the operations of computers. Is the information contained in a program "material" or "mental"? If it is either, what then of the information in a book? Or the entropy that describes the behavior of a heat engine or of a warm-blooded mammal? Clearly, we have come to the limit of usefulness of a distinction between the material and the mental.

Conclusions

A New Duality: The World of Appearances Versus the World of Potentiality

The point was made earlier in this essay that the dualism of mental versus material holds only for the ordinary world of appearances--the world described in Euclidean geometry and Newtonian mechanics. An explanation of dualism was given in terms of procedural differences in approaching the hierarchy of systems that can be discerned in this world of appearances. This explanation was developed into a theory, a constructional realism. But it was also stated that certain questions raised by a more classical dualistic position were left unanswered by the explanations given in terms of a constructional realism.

What are these questions? Recall that Popper and Eccles proposed entirely different--and, in a fundamental sense, opposite--views of how mind and brain interact. In Popper's view, mind is an emergent from brain functioning; according to Eccles, mind operates on the intrinsic "liaison" formations of brain cortex. Still, these authors managed to publish a book together. Each must have felt some affinity for the other's views. What is it that they may have sensed to be in common? What deep feeling did they fail to articulate adequately in their book?

I believe that the analysis provided earlier in this essay may help clear up this issue. Note that when one looks downward in the hierarchy of systems that compose the ordinary world of appearances, essentially reductive analyses are engaged. To take account of new properties that arise, when components become organized into higher order, more complex structures, "emergence" is proposed; the proposal is essentially descriptive of what is observed. The upward look in the hierarchy, as in the phenomenal and existential approaches, simply takes these "emergents" as the fundamental achievements of observations. Constructional realism is compatible with such views of emergence, and as noted earlier, I believe Popper was attempting to achieve a similar end by his construction of World 3.

Eccles by contrast was holding out for a very different sort of formulation. He insisted that mind transcends brain function in that mind operates upon brain, not because mind emerges from the functioning of the brain. As noted above, articulated in this fashion, Eccles's formulation makes no scientific sense.

But now consider the brain as a spectral analyzer and the general characteristics of the transforms that occur. These characteristics have been appreciated fully only recently. The recording of spectral patterns by holography has provided a visible artifact whose properties can be readily conceptualized.

Essentially, space and time become enfolded in the holographic domain. This accounts for translational invariance, the fact that transformation into the ordinary domain can be accomplished from any part of the encoded record. In the holographic record, information becomes distributed, spread over the entire surface of a photographic film, or brain module, much as the waves produced by throwing a pebble into a pond spread to its edges. Several such waves initiated by several pebbles will

interact or "interfere," and the record of these interference patterns constitutes the hologram. If a moving picture were made of the origin and development of the interference patterns, the movie could be reversed and the image of the pebbles striking the pond could be recovered. Image reconstruction by holography accomplishes much the same effect by an operation that performs an inverse transform on the record. Thus image (and object) and holographic record are transforms of each other, and the transformations involved are readily reversible.

Consider further the fact that in the holographic domain space and time are enfolded. Only the density of occurrences is manifest. These densities can be recorded as wave number or in scattering matrices representing n-dimensional (Hilbert) domains such as have been used in quantum physics. Holography has become a window through which we are able to conceptualize a universe totally different from that which characterizes the world of appearances. David Bohm (1971, 1973) pointed out that most of our conceptions of the physical world depend on what we can observe through lenses. Lenses focus, objectify, and draw boundaries between parts. Lenses particularize. Holograms by contrast are distributive, unbounded, and holistic. Bohm referred to our lens-given ordinary perceptions and conceptions as explicate and those that are holographic as implicate. Thus, there are at least two discernible orders in the universe: an explicate and an implicate. The explicate order gives an account in terms of particles, objects, and images. The implicate order, still poorly cognized, begins with densities of the fluctuating properties of waveforms.

Bohm and other physicists have become excited by the similarity of conceptualizations of the implicate order and those described by mystics who have experienced a variety of religious and other "paranormal" phenomena (Bohm, 1976; Capra, 1975). The lack of spatial and temporal boundaries, the holographic characteristic that the whole is represented in every part, and the transformational character of shifting from explicate to implicate order are all beyond ordinary human experiencing, which apparently is limited to the everyday, explicate, Euclidean-Newtonian universe to which we have become accustomed.

It is probably no accident that holograms were a mathematical invention (by Dennis Gabor) that used a form of mathematics, the integral calculus, invented by Gottfried Wilhelm Leibniz, who also came to a vision of the implicate order. Leibniz's monadology (1714/1951) is holographic: his monads are distributed, windowless forms each of which is representative of the whole. Substitute the term lensless for windowless, and the description of a monad and a hologram is identical.

The fact that the brain is, among other things, a spectral analyzer, that it encodes information in a distributed fashion akin to that which characterizes a hologram, also means that the structural boundaries that characterize the ordinary limits of "brain" and "body" can, on occasion, appear to be transcended. Take as an example our current-day world in a large city. The space surrounding us is filled with spectral forms generated by radio and television stations. We are insensitive to these spectral forms unless we obtain the use of a receiver tunable to one or another of the spectral forms. Only then do we "explicate" into the everyday domain the spectral forms broadcast and enfolded in the space about us. The "mystery" of mind is resolved not by holding to the neo Cartesian view that Eccles has taken, which is

inappropriate to Popper's formulation, nor by adhering to either the materialist or the mentalist stance. Rather, we must recognize the transformational and potential nature of the implicate domain and the fact that our sense organs "make sense" by tuning in (and out) selective portions of this domain.

Summary

In concluding, I will attempt to summarize my position as developed in this article. I began by accepting a dualistic view of everyday experience: We humans can distinguish clearly between the process of experiencing and the contents of that experience. In the centuries since Descartes, this led to the view that the process of experiencing is mental whereas the components of experience, if not themselves material, are at least indicators of a material, physical, world. I then went on to show that modern physicists, working both at the microphysical quantum and nuclear level and at the macrophysical "universe" level, have called into question the material basis of energy. Rather, it is matter that is constituted of energy, which in several forms interacts to produce that which we normally experience in ordinary perception. Normal experience is characterized by Euclidean geometry and Newtonian mechanics. Thus, the material nature of matter is limited to the ordinary world of experience, unless one wants to adopt the bias that energy is material because it can be converted to matter as indicated by Einstein's equation, $E = mc^2$. But then why would we have to call such a transformation a conversion? Does not such a materialist bias cloud rather than clarify the fact that, as yet, we do not know how to properly characterize many energy forms? And by this question I do not wish to suggest that they be characterized as mental.

Beginning from the other end of the mental-material dichotomy, we run into a similar limitation on its usefulness. Information and information processing, as when a computer is programmed or a brain is informed by sensory signals, are shown to involve minute amounts of energy that can organize or reorganize large-scale systems. The configurations that energy systems display rather than their raw amount are shown to be critical. Are such figural changes to be conceived as mental or material when they involve narratives, musical compositions, and so on? Once again, a limit is reached where the mental-material distinction becomes useless.

Next I analyzed the issue of dualism on its own ground, that is, within the purview of ordinary experience. Here dualism is found to be based on mirror-image views constituted by different analytic procedures. The reductive materialistic view held by most scientists is found by looking downward from one's experience into the hierarchy of components that constitute that experience. This reductive view is balanced ordinarily by the recognition that novel properties "emerge" when specific configurations of components are formed.

Looking upward from one's experiences involves validating the experience with that of others. Experienced "phenomena" are described and compared. Emphasis is on the existence of the experience per se, its existential nature, and when precision is attempted the emphasis is on the structural relationships among phenomena. Consensual validation, enactment, and structural analysis of relationships constitute the tool of enquiry, not separation into parts causally related to one another as in the reductive sciences. Thus, the language of phenomenology, existentialism, and structuralism is "mental"

because it is experience per se that constitutes the focus of interest.

Recognition of the procedural difference that is responsible for dualism in the ordinary world of experience allows one to transcend this dualism without denying its usefulness to deal with the problems of that ordinary world. I propose that dualism can be transcended by carefully combining the techniques and results of both the reductive and the phenomenal approaches to enquiry. Structure is made the central, enduring, single quality of a pluralistic monism. Thus, both reductive entities and phenomena are seen as realizations derived from a more basic existential given.

Once this constructional realism is formulated, however, it has to face another issue. True, dualism is not denied; it simply is shown to operate in a limited sphere. But transcending dualism with a structural monism violates the very spirit of what dualists and mentalists believe in and are trying to articulate: the unique character of mental processes and their contents.

My final proposal meets the requirement of this aspect of dualism. Brain physiologists have shown the nervous system to be, among other things, a spectral analyzer. Furthermore, input apparently becomes distributed and stored in the transform domain in the manner of a holographic record. And physicists have suggested that a holographic-like order may well characterize the microstructure of the physical world. In this domain, space and time become enfolded; only density of occurrences is represented.

Descriptions of this domain and other similar orders that account for the observations of modern physics seem to be remarkably similar to mystics' descriptions of paranormal and religious experiences. I propose, therefore, that the duality between the normal, everyday domain of appearances and the

transform domain captures the concerns of mentalists and dualists and accounts in a specific and precise mathematical fashion for what hitherto has been incomprehensible.

Structural realism is thus primarily a neutral monism that deals with a number of dualities of which two are especially significant for unpacking the issues involved in a mind/brain dualism: (a) a procedural duality that faces upward and downward in the hierarchy of systems discerned in the ordinary world of appearances and (b) a transformational duality that apposes the ordinary world of appearances to that viewed through the window of spectral transformation: a domain characterized by descriptions akin to those of the experiences of mystics. It is this domain that provides the basis for insights into various religious traditions.

Other dualities may well be discovered to underlie as yet unarticulated premises of a constructional realism. What appears clear at the moment is that a dualism based on the distinction between mental and material is too limited to deal with the very issues that it poses. Other dualities can be articulated to answer the problems raised and can deal not only with their substance but also with their spirit. Furthermore, these duals can be specified by scientifically sound procedures and mathematically precise formulations. These are encompassed by an ontological neutral monism from which an epistemological plurality of such duals are constructed. Finally, their constructions are known to stem directly from discoveries in the physical, information, and behavioral sciences. Thus the often-made argument that the results of scientific research have no bearing on philosophically framed issues has been shown to be wrong. In fact, what has been shown is that only through the results of scientific research can philosophical issues, even at the ontological level, be refreshed.

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Human Dignity in Public Art Or Human Nature Caught in the Act

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If any idea can lay claim to the ground-floor of our moral discourse it is human dignity. Like the great moral ideas of the past human dignity acts as a question-stopper. Appeals to human dignity make rebuttals seem ill-mannered. In an age of moral unbelief, human dignity is one of the few moral concepts which remains sacrosanct.

For those who value consensus in public morality this respect is both welcome and worthy of defense. Its loss would severely weaken the philosophical justification of human rights. Human dignity and human rights entail one another; rights derive from the kind of beings we are, not from our place of birth. Like human nature itself, rights are universal not regional or cultural. Thus no single concept is more basic to upholding these rights than human dignity. The 1948 Universal Declaration of Human Rights, the premier human rights statement of this century, declares in Article 1 that "all human beings are born free and equal in dignity and rights."

Nothing embossed the politics of the last generation more deeply than the demand for equal rights based upon the recognition of a shared humanity. Champions of equal rights called upon us to disregard accidents of birth, gender, ethnicity, religion, and class, to affirm our common humanity, and to recognize the ground of human dignity.

Times have changed, or, at least, so it seems. The voices of Gandhi and King have receded and have been replaced by voices clamoring for more attention to diversity and difference than to commonality and identity. In fact, these proponents of ethnocentricism and multiculturalism are often hostile to the very idea of a shared human nature which undergirds human dignity.

Universal ideas of human nature, it is argued, function as a smoke screen for the powerful to impose their view of the normatively "human" as an objective, dispassionately-held, ideal. Some multiculturalists view human nature as the tool of a dominate white Western culture, while some feminists agree arguing that ideas of human nature have furthered patriarchal domination and insured the subordination of women.

Meanwhile the debate over human nature has become the topic of international politics. In June, 1993 representatives of 161 countries attended a United Nations World Conference on Human Rights in Vienna. Its aim was to assess progress in human rights since the 1948 Universal Declaration. The conference faced a challenge from countries who have begun to espouse cultural relativism to protect their customs from Western interference. Two months prior to the meeting, thirty-four Arab and Asian governments issued the Bangkok Declaration stating that the notion of human rights is relative to the cultural, religious, and historical diversity of nations, and that the Western powers should not use human rights "as an instrument of political pressure." [1]

During the conference representatives from countries such as China, Syria, Indonesia, and Iran, invoked an inalienable "right to development" without interference. The Universal Declaration, they argued, as formulated by industrialized countries, reflects the values of colonialism. [2] The ensuing debate was described as a

"battleground" between the universalists and the relativists who recognize human rights according to the standards and practice of particular culture and tradition. [3]

In spite of the controversy a consensus was reached: the final document affirmed the universalist position on rights: "Human rights and fundamental freedoms are the birthright of all human beings. . . . All human rights are universal, indivisible and interdependent and interrelated." [4] It went further than previous documents in emphasizing the rights of women, children, ethnic minorities, and the disabled. And it specified that the "right to development" can never justify the infringement of human rights: "the human person is the central subject of development." [5] It is significant, however, that the language of the document did not solely address human beings *qua* human but highlighted the rights of marginalized groups.

That Western nations found themselves defending a universal view of human nature is somewhat ironic. The debate itself has been generated by scholars in the West who have been calling for a reassessment of the idea of human nature, particularly those taking a postmodern approach to studies of gender and ethnicity. The reasons behind this call for reassessment are in large part historical and political: the idea of a universal human nature has been associated with injustice, with the exclusion and domination of people who fail to measure up to a fully "human" standard. In sum, the idea of human nature has been employed as an instrument of power and coercion by those who are politically dominant.

The same argument can be heard in the resistance of some Third World nations to the idea of universal human rights; they see it as another means by which Western nations can interfere with their sovereign states. Whether or not an idea becomes intrinsically unsound by being put to an unjust use is a doubtful assumption. Needless to say, such a challenge, regardless of its historical justification, adds another obstacle to international cooperation and dims our awareness of a universal human dignity.

It is difficult to say whether or not this challenge will amount to anything more than a temporary disruption in international cooperation on human rights, but the fact that it reflects the major intellectual debate of this decade in the West is not comforting. The debate has now emerged in international politics, in part, because of a long-standing agreement to disagree about the theoretical basis for human dignity and human rights. In the late 1940s, the signers of the Universal Declaration agreed to pursue their practical agreement on human rights and put aside their religious, philosophical, and speculative disagreements.

What we are seeing now is the bitter harvest of that decision. For international cooperation, in any form, to be feasible there must exist some degree of consensus about the basic ends and purposes of human life. Jacques Maritain's important distinction between practical and speculative agreement on human rights opened the door to a half-century of cooperation, but, as he saw clearly, without a theoretical agreement trouble could lie ahead. [6] The Universal Declaration of Human Rights testified to a postwar agreement among developed nations which is now jeopardized by

insistence on "cultural rights." The logic of such a claim contradicts the trans-cultural character of rights and the human dignity which grounds them. As the political consequences of ethnocentrism are becoming apparent, the question becomes whether or not these the trajectory of ideas can be deflected. It is one thing to bypass speculative agreement for prudential reasons, quite another to give up on it altogether. Maritain, for one, never came close to insinuating intellectual sloth of that sort.

It is easy to forecast that the same fate awaits human dignity. Recent discussions on the concept of human dignity agree that it remains vague, undefended, and unjustified. [7] It is doubtful, for example, if many of us are immediately alive to the classic statements on human dignity found in Immanuel Kant. Five of his reasons for positing human dignity can be paraphrased as follows: 1) that which cannot be bought for an price has a dignity 2) that which constitutes an end in itself does not have relative worth but an intrinsic worth which is dignity 3) that which is capable of morality has dignity 4) that which has autonomy, belonging to every rational nature, has the basis of dignity 5) persons should be treated as ends, never as means. [8] To simplify, Kant appears to link dignity with the ability of man and women to be moral agents, to act in voluntary ways toward their fulfillment and well-being.

But just why one human being should show respect for another, given the fact of their distinctive freedom from instinctual urges, is not immediately apparent. Certainly we understand by human dignity some quality unique to rational natures, that is, to persons. No doubt at the core of our uniqueness and difference from other animal natures is the freedom and autonomy of the individual, the ability to act, to choose ends and purposes apart from the vegetative and sensible determinations common to the lower animals.

This transcending capacity was expressed in the original Greek statement of the human difference: the unique immaterial power of the human intellect to abstract concepts of entities that are not sensibly present (like human dignity, for example). Samuel Johnson (in *Inch Kenneth*) puts it this way, "Whatever withdraws us from the power of our senses, whatever makes the past, the distant, or the future, predominate over the present, advances us in the dignity of thinking beings." [9]

Johnson's remark points toward the deep roots the idea of human dignity has in the Western tradition, with sources in the intellectualism of antiquity, in the sacramental vision of the Middle Ages, and in the humanism of modernity. There is no need to make much fuss about the differences between these sources since they each added another dimension to the meaning of human dignity as we know it. The classical world represented human nature as rational, possessing a superior intellectual power to other animals; the medieval world revealed human nature as both relational and personal, created in the image of God. While the modern world affirmed human nature as free and autonomous, capable of creating its own ends, often in revolutionary fashion. All these sources can be seen as aiding in the growth of the Western moral conscience toward uncovering the full meaning of human dignity and its political consequences.

However it is crucial to remember that the dignity of human nature while proper to the species itself was not always applied to individuals regardless of their actual accomplishments. It is only in our post-Enlightenment world that individual dignity was established by birth alone. In the classical world such a valuation would have been applied only to meritorious individuals whose character and accomplishments won them the title of *dignitas*. Dignity and honor were considered synonymous. The transition

from an ethic of meritorious honor to an ethic of universal dignity is a distinctive mark of the modern age.

Nevertheless it is the more ancient notion of dignity we normally associate with public monuments: the prophet, the soldier, the Civil War officer on his horse, the Revolutionary soldier with his musket, the Emperor on his throne, the composer with his pen, these are individuals whose dignity consists not in the act of being human but in the act of actual accomplishment. When one meditates on the differences between these two depictions of dignity, which can termed *natural dignity* and *acquired dignity*, certain tensions arise. These tensions are the same as those which pervade our society, for example, in questions about the role of self-esteem in education. Should teachers grade actual accomplishment, or should they concerns themselves more with a student's self-image?

One way of resolving these tensions is to pose questions raised the apparent clash of values embodied in the these differing forms of dignity. One philosopher, for example, asks how can individual can be said to have dignity by virtue of his being human and then be said to gain or lose that dignity by virtue of his action or someone else's? [10] The answer, I think, lies in the relation of these two acts of human dignity to one another, what in the Aristotelian tradition is called *first act* and *second act*, or *first nature* and *second nature*. All this means is that the first act of a human being is to exist with a human nature; our second act is what we make out of this existence, what we become and what we achieve.

This distinction between the first nature represented by the human species and the second nature represented by our individual and collective actualizations of first nature is often ignored in the contemporary discussions. But we still employ this distinction when we speak, like Prof. Henry Higgins, of an action or inclination as being "second nature to me now, like breathing out and breathing in." [11] Second nature is an act that does not exist at birth except potentially; it comes into being over time as a product of a person's countless acts, both conscious and unconscious.

As far I can tell, most of our public monuments honor the dignity of those of whose chosen destiny has been admirable for one reason or another. Although we may forget why this or that historical figure or group is honored in the public square, it takes only a brief consultation with the nearest encyclopedia to resolve the question. But what if one were to encounter a monument to human beings, that is, no particular human being but human beings in the abstract? How is it possible to speak of, and therefore to represent, the dignity of first nature, of a natural dignity apart from all achievements, from all merit? This question takes us back to Kant and to the problem of justifying the universal sense of dignity.

The key to justification lies in seeing that the ability to achieve dignity in the acquired sense requires respect for dignity in the first. In other words, by treating people who without respect for the natural dignity, for their natural capacities, we risk depriving them of their ability to realize an acquired dignity. This is precisely the reason we defend human rights: we are obliged not to interfere unjustly with another persons access to the basic goods of life, and in some case are enjoined to provide those goods to people in need. Why? The reason can be simply stated: *so that basic human capacities can be realized, so that people can live with the acquired dignity promised by natural dignity.*

This explains why the artistic representations of human dignity are so various, ranging from tributes to natural dignity, to genres of acquired dignity, to individual exemplars of acquired dignity. By genres of acquired dignity I mean representations of persons by classes, for example, the mother, the soldier, the worker, the policeman, the fireman. We understand at a glance the dignity

of these persons because we recognize that without their accomplishments both their lives and our lives would be diminished. Their often-unheralded achievements makes our journey through life possible – their activities protect and defend us as we pass toward those ends of life we deem as good. Their dignity is manifest every day by action in the face possible harm and death, action exemplifying the very essence of courage. But once again the dignity of those who merit our recognition can only be understood against the backdrop of shared human potentiality.

Here someone might object to the concept of natural dignity by saying that an awareness of it can destroy motivation toward acquired dignity. To this we can reply that the awareness of natural dignity is sometime crucial to the pursuit of acquired dignity. Take the story of the 5th century philosopher Boethius (476-524 A.D.) who was unjustly convicted and imprisoned for treason against the Roman Emperor Theodoric. At the time of arrest, it is safe to say that Boethius was the most accomplished and fortunate man in the Roman world, born to a Consul of the Roman senate, adopted after his father's death by an even more distinguished family, he became the most renown scholar of his age, the official teacher of the Imperial court, a consul in the Roman senate at age 30, and at the time of his arrest he was Master of the King's Offices while both his sons had become Consuls as well.

Boethius who wrote his *Consolation of Philosophy* while in prison awaiting his execution tells a story that is surprisingly modern. In the opening scene Boethius is found being trying to escape his suffering and his suicidal longings by indulging his appetites for the "muses of poetry." The figure of "Lady Philosophy" suddenly arrive and drives out the muses who "nourish him only with their sweet poison" (Bk.1, Pr.1). [12] "You have forgotten yourself," she declares and sets out to remind Boethius of who he is.

The manner in which Lady Philosophy accomplishes this task demonstrates the remarkable convergence of the classical, religious, and humanistic views regarding human nature and its essential dignity. Lady Philosophy does not merely remind Boethius of what he has accomplished, but rather what kind of being he is, what his unique capacities and ends are. In fact part of his problem is that he identifies too closely with his acquisitions, many of which been taken away from him (Bk.1, Pr.6). The *Consolation* ends with the philosopher released from his despair by remembering what cannot be taken from him against his will, specifically, the dignity of his rational nature, his eternal end, and his moral freedom.

This story has been retold many time in less dramatic ways. The self-conscious awareness of natural dignity can be decisive in urging people toward their acquired dignity, just as the confidence a student has in his or her ability to learn is a major factor in their actual learning. To be reminded of natural dignity is to come face-to-face with distinctive capacities, capacities which cry out, as it were, for actualization, for the acquired dignity of firm character. Thus to be reminded of natural dignity does not necessarily elicit sloth, an indifference to personal actualization, but elicits hope that good lies in our future. Aesthetic and philosophical reminders of natural dignity play an important role in combating the cynicism that is becoming the moral chic of the nineties.

The relation between natural and acquired dignity also provides the perspective from which we can make sense of so-called violations of human dignity, such as the "extreme poverty" discussed in the Vienna conference on human rights. [13] Extreme poverty violates human dignity simply because it creates often insurmountable obstacle to the realization of human potential. Such poverty, like other extremities of homelessness, ignorance, sickness,

and malnutrition, is a indignity in the sense that it frustrates human growth and the acquisition of dignity.

But what if, someone might say, this indignity is to a certain extent one's own making? We must remember that as human beings are always in-the-making, stretched as it were, between potentiality and actuality – we are a work that is finished only at death. Often we are individually and collectively responsible for the indignities we suffer, which doesn't make them any less indignities, but may affect the obligation that we owe others in relieving it. While not wanting to pursue this specific point, which is extremely controversial, the general point is that natural and acquired dignity are inextricably bound together as potency is to act, as youth is to age. This tension places the notion of responsibility, what the philosophers would call voluntary action, at the heart of both dignities. This is why we feel greater compulsion to relieve the indignities suffered by children than those of adults, because we believe that children are less responsible for them.

As Kant said, natural dignity derives from the capacity for autonomous and free action. We instinctively do all we can to protect and to nurture that potentially in children. We seek to offset the accidents of birth and breeding by removing obstacles to the full development of the human mind, heart, and body. The recognition of natural dignity involves protecting the dignity we hope for, while the recognition of acquired dignity expresses the admiration for responsibility discharged. Seeing this connection provides a clue to the meaning of natural dignity and perhaps to its rational justification.

But as I said at the outset natural dignity now faces its most substantial challenge. And it comes from the more radical proponents of diversity who want to remove all judgments about quality from differences in second nature, that is, in moral and cultural accomplishments. In other words, there is no life, no society, no artifact which is better than any other, all of equally authentic expressions of personal and cultural preference.

Much of the recent work of the Canadian philosopher Charles Taylor is devoted to tracing the origins and implications of the radical egalitarianism in what he calls the "culture of authenticity" and its investment in the principles of difference, diversity and multiculturalism. [14] Generally he traces it to a loss of meaning, a loss of freedom, and a loss of a common human nature as reflected in individualism and social fragmentation. Value is increasingly understood entirely in terms of choice itself -- there is no external or preexisting measure of worthwhile choice and action. In other words, it is a culture without agreement on the first, or normative, nature of human nature. Yet, as a culture with an operative concept of human dignity, how long can its usage be sustained without collapsing?

The reason for this concern arises from Taylor's forecast that where all values are authentic none are authentic, or by extension, where all lives are dignified, none are dignified. Why is this? Even if we agree with the argument that the significance of my life comes from its being chosen by me, that argument "depends on the understanding that *independent of my will* there is something noble, courageous, and hence significant in giving share to my own life." [15] Even authenticity demands some sort of measure external to the self, some measure of meaning that is given, that is, a first nature.

The cultural situation, as Taylor describes it, is one where the only necessary external factor to possessing dignity is recognition by others. Since this recognition creates worth it must be offered irrespective of merit, any individual or community, along with its values and its artifacts, must be considered equally worthy

to any other. To deny recognition is considered tantamount to a form of oppression. The recently reported incidents of violent attacks on people whose eyes seem disrespectful -- the slang term is "diss" -- illustrate the growing need for recognition. It is ironic that in what seems to be a highly individualistic age that one's choice is not enough to validate one's identity, that recognition by others, even strangers, is required.

The consequences here for artists and those who design public spaces is enormous. Controversy over public monuments has already erupted in some neighborhoods, not over their aesthetic quality but over their dignifying what to some is not dignified. It is well-known that Plato would have kept a tight reign on the artists in his utopian state. He recognized that the stories, images, and sounds of youth and adolescence have an abiding influence in the adult years. Plato would say, if he were here, that what is being asked of artists and designers in the name of recognizing diversity is second only in importance only to those who make laws -- our legislators.

Taylor argues, and I agree, that such a recognition cannot be honestly given where there is no shared view of what counts for being human. As I have argued to understand the meaning of a monument to someone with acquired dignity requires the backdrop of universal dignity. We are making a mistake when we narrow our focus to a single concern, namely, recognition. As Taylor comments, "A favorable judgment on demand is nonsense. . . . No one can really mean it as a genuine act of respect." [16] This, I think, is the legitimate complaint against "political correctness" -- the insistence that everything be considered as being of equal worth can result in a socially-enforced uniformity. In such an environment not only do our tributes to acquired dignity risk losing their force, but artists will feel pressure toward producing politically-motivated kitsch.

If we are moving toward greater uniformity in our moral and political opinions, it contradicts the fact that individual choice alone has become the reservoir of human dignity. Individual creativity, arising from the depths of each person's inscrutable subjectivity, not responsiveness to the unique capacities of one's human nature, forms the heart of this generation's investment in authenticity. This rage for innovation relies upon its short memory and its ignorance of history to bolster its sense of freedom. Of course, there is nothing wrong with originality, but one laments the loss of hard-won wisdom that can provide culture with a head start. The whole point of tradition is that we don't have to reinvent the wheel with every generation, that we learn from the mistakes and successes of our elders. The overthrow of humanistic traditions entails the loss of our knowledge about human nature and its dignity.

Tradition contains those thoughts about humanity and its institutions that have stood the test of time and experience. Academic theorists in the humanities have gotten in the habit of caring only about how their theory relates to other theories, considering it progress if they correct one abstract theory by the application of another. Asking whether or not their theories correspond to what is "out there," in the reality under discussion, is a question rarely heard.

Nowadays many seem to prefer the job of shaping human nature to merely understanding it. Nature has become the enemy; whatever is given by nature can be redesigned by science. Since the nature of human nature is no longer considered fixed and stable, a clear invitation is issued to those theorists who feel compelled to change social structures under a banner promising a more perfect and happier world. One wonders, however, if we would be able to recognize human dignity in this world-to-come.

Indeed, there seems to me to be something about the depiction of both natural and acquired dignity that requires a tradition. Judgments about dignity strike me as being out-of-sync with those of judging fashion. The former looks for perennial appeal, the latter for the passing satisfaction. Recognizing natural and acquired dignity requires an eye for enduring qualities, qualities that will be admired by the not-yet born, because they too will be led by the very bent of their nature to recognize the dignity of humanity caught in the act.

Notes

1. "Universality of Rights Is Defended by U.S. : Protest Over Dalai Lama mars Vienna Talks," *The Washington Post*, June 15, 1993, Sec. 1, P. 15.
2. "Differing Views on Human Rights Threaten Forum," *The New York Times*, June 6, 1993, Sec. 1, p. 14. The 1948 Declaration was signed by 55 member countries with eight countries of the Soviet Block and South Africa abstaining. Since then 18 Third World countries have incorporated the Declaration into their constitutions.
3. "U.S. Rejects Notion That Human Rights Vary With Culture," *The New York Times*, Sec. A, P. 1.
4. *World Conference On Human Rights: The Vienna Declaration and Programme of Action*, June 1993 (New York: United Nations Department of Public Information, 1993), pp.28-29.
5. *Ibid.*, p. 31.
6. Jacques Maritain, *Man and the State* (Chicago: The University of Chicago press, 1951), p. 281.
7. See Willard Gaylin, "In Defense of the Dignity of Being Human," *The Hastings Center Report* 14/4 (August 1984), pp. 18-22.
8. Immanuel Kant, *Foundations of the Metaphysics of Morals*, trans. Lewis White Beck (Indianapolis: Bobbs-Merrill, 1959), pp. 53-54.
9. *The Oxford Dictionary of Quotations*, 3rd ed. (New York: Oxford University Press, 1979), p. 281.
10. Herbert Spiegelberg, "Human Dignity: A Challenge to Contemporary Philosophy" in *Human Dignity: This Century and the Next*, eds. Rubin Gotesky and Ervin Laszlo (New York: Gordon and Breach, Science Publishers, 1970), pp. 54-55.
11. See St Thomas Aquinas, *Summa Theologica*, I-II. Q.32.a.2, on custom as "second nature."
12. Quotations are taken from Boethius, *The Consolation of Philosophy*, trans. Richard Green (Indianapolis: Bobbs-Merrill, 1962).
13. *World Conference on Human Rights: The Vienna Declaration and Programme of Action*, June 1993, p. 38.
14. Charles Taylor, *The Ethics of Authenticity* (Cambridge: Harvard University Press, 1991); for historical background, see his *Sources of the Self: The making of Modern Identity* (Cambridge: Harvard University Press, 1989).
15. *The Ethics of Authenticity*, pp. 38-39.
16. *Multiculturalism and the "Politics of Recognition,"* p. 70.

Addendum



The 1994 Annual Conference
Institute For Advanced Philosophic Research

Located in Estes Park, Colorado
At the foot of Rocky Mountain National Park

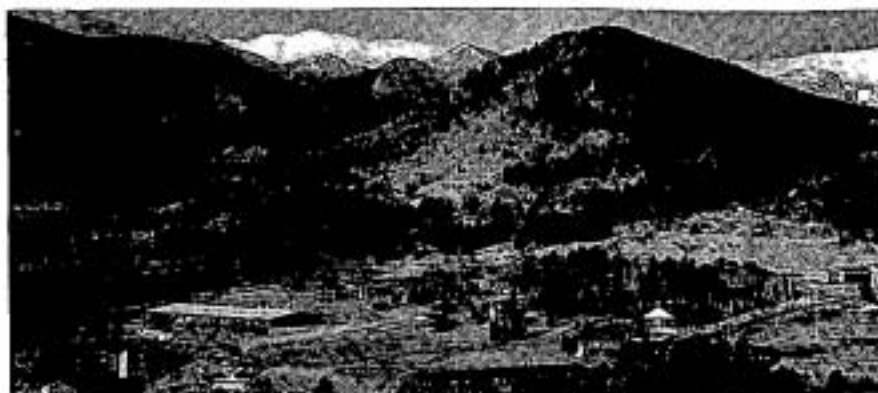
*Crime and Punishment: Natural Law, Positive Law, and
National/International Moral Norms*

August 17-23, 1994

YMCA in the Rockies

This year's annual conference will once again be held at the 860 acre YMCA in the Rockies. The YMCA, located across from the Windcliff Condominiums off Route 66 just outside of Estes Park, adjoins the Rocky Mountain National Park and Features some of the most fabulous scenery in the world - including Trail Ridge Road, which runs some twelve miles above Timberline and is accessible by automobile during the summer.

The YMCA is a spectacular place to hold a conference. We encourage presenters and participants to bring their families to the conference because of the wide variety of activities available at the YMCA. Activities include: a swimming pool, mini-golf, basketball, volleyball, complimentary evening programs, nautilus and weight rooms, mountain bikes, craft shops, youth and outdoor educational programs, horseback riding, and hayrides.



Partial List of Presenters:

- Forrest Wood Jr.**, University of Southern Mississippi
Topic: *Averting Violence, Domestic, Social and Personal*
- Michael Anton Dila**, University of Toronto
Topic: *How Angelique Lavallee Became an Object of Knowledge*
- Effie Raymond**, Sarah Lawrence College
Topic: *The Remains of the Night*
- Curtis Hancock**, Rockhurst College
Topic: *Machiavelli and Cicero at the Nuremburg Trials*
- Johann Klaassen**, Washington University in St. Louis
Topic: *The Question of Punishment*
- R. W. Brimlow**, St. John Fisher College
Topic: *A Justification of Terrorism*
- John D. Musselman**, Indiana University
Topic: *Critical Race Theory on Hate Speech as a Bias Crime*
- Donald Hanks**, University of New Orleans
Topic: *Statistical Victims and Their Rights*
- Francis Slade**, St. Francis College
Topic: *What Happened to Sovereignty: The Universal and Homogeneous State*
- Joel Rosenthal**, Carnegie Council on Ethics and International Affairs
Topic: *International Ethics and International Law: From Morgenthau to Moynihan*
- Peter A. Redpath**, St. John's University
Topic: *Socratic Reflections on Ethics and Punishment*

For more details about this year's conference, please contact:

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

IT'S A BOY.....

Walter L. Koenig, C.E.O. of Realia is a grandfather!!!!!!!!!!!!

Hunter Patrick Koenig Hunter was born to Amy Twombly and Walter's oldest son William Koenig on April 12, 1994 and weighed in at 8 pounds, 14 ounces.

Congratulations.

Quote of the Day

Its Importance

"There are those who would say, using the words of philosophers to prove it, that it is the characteristic illusion of the tender-minded that they believe in philosophy. Those who can, do; those who cannot, teach and theorize. And being theorists by profession, they exaggerate the efficacy of ideas, which are mere airy nothings without mass or energy, the mere shadows of the existential world of substance and of force, of habits and desires, of machines and armies.

Yet the illusion, if it were one, is inordinately tenacious. It is impossible to remove it from the common sense in which we live and have our being. In the familiar daylight world we cannot act as if ideas had no consequences."

Walter Lippman

Contributors Profile

Karl H. Pribram is currently affiliated with the Center for Brain Research and Informational Sciences at Radford University where he is James P. and Anna King University Professor and Eminent Scholar. He is also a former Professor (Emeritus) at Stanford University.

Born in Vienna, Austria in 1919, Pribram received his medical training at the University of Chicago--where he received both his B.S. and M.D. degrees. He is member of the American Board of Neurological Surgery and the American Board of Medical Psychotherapists, as well as a host of the professional societies and Editorial/Consulting Boards--including: American Academy of Arts and Sciences (Fellow); New York Academy of Sciences (Fellow); Professors for World Peace Academy (President, 1982-85); *Neuropsychologia*; *International Journal of Neuroscience*; *Interamerican Journal of Psychology*; and the *International Journal of Psychophysiology*. He has lectured nationally and internationally, has delivered numerous keynote addresses at prestigious meetings, and has been a Visiting Scholar and Honorary Lecturer at such renowned institutions as: MIT; Harvard; Clark University; Haverford College; (Phillips Lecturer); University of Southern California; University of Moscow (Pavlov and Sechenov Lecturer); University College, London (Freud Memorial Professor); the University of Chicago (Spencer Lecturer); Queens College (Lashley Lecturer); Simon Fraser University (Programs of Excellence); Oakland University (President's Club Lecturer); Colorado School of Mines (AMAX Distinguished Visiting Lecturer); Augustana College (J.E. Wallace Wallin Lecturer); Macalester College (Hubert H. Humphrey Lecturer); and Wayne State University John M. Dorseh Lecturer in Psychological Physiology). Among his many awards are the following: **Realia Laureate**; **Realia Honors**; Honorary Doctorate (Department of Psychology, University of Montreal); NIH Lifetime Research Career Award in Neuroscience; Paul Hoch Award (American Psychological Association); Manfred Sakel Award (Society for Biological Psychiatry); Samuel Weiner Distinguished Visitor Award (University of Manitoba); Humanitarian Award, INTA; Honorary Life Membership, New York Academy of Sciences; Outstanding Contributions Award, American Board of Medical Psychotherapist; Henry Guze Award (Society for Clinical and Experimental Hypnosis); and a 70th Birthday Festschrift Issue of *Neuropsychologia*.

Members Forum

The Meaning of Life

Beginning statements of "How Reason Can Make Our Lives More Meaningful."

The most reliable way to add meaning to life is to be as rational as possible. Reason is defined here as human ability to think in terms of ideas. It alone knows what is meaningful. This fact proves that reason or thinking ought to be our main guide in making our lives more meaningful.

Reason can help us to live a more meaningful life by giving us ideas about important things we can do with our lives. These things may not be very important from the point of view of the entire universe, but they can affect the lives of people and society.

Being as rational as we can be will give us ideas about how to get more meaning in life from all the major sources of meaning: Social contribution, work, relationships, art and religion. Ideas are precisely what is needed to think of how to make life more meaningful.

Robert H. Lichenbert

Dawn of Consciousness

For sensitive and perceptive intelligence, the world begins as a blurry question, a chaos of diffuse possibilities and strangely magnetic feelings... Was it not Epictetus who asserted: "Education is the readjustment of our preconceptions"? Did not the word education by itself mean classically: "a drawing out"? Remember the basic construction which was very simple: e-duct.

In an aboriginal sense, it is the business of philosophy to create ideas and systems of knowledge answering primeval yearnings of vital it unclear AWARENESS. Marcus Aurelius Antonius rode not only his horse in battle for the declining Roman Empire, but an eternally sustaining Stoic philosophy as well....whose ride did not finish in old Italy, but provided spurs even to a late American youth (1) with his galloping love for Plato, Emerson and Bach! Thomas Jefferson deeply honored the good thought-work of John Locke and his several students. George Washington respected the Roman Cato and gave plays for his soldiers based on that notable Stoic example; the subconscious debt which Henry Thoreau and Waldo Emerson owed Wordsworth, Carlyle and Plato is fairly self-evident. Thoreau, after reading Emerson's essay on "Nature", was personally motivated to study with more intimacy the woods and water and morning time.... even as his instincts were nourished by ancient Hindu speculations. Ah, but here is an intriguing circle: that modern "Hindu" Gandhi based a large element of his social philosophy on a reading of Henry Thoreau! But Franklin Roosevelt misquoted Henry Thoreau --- even as he wronged American culture.

An "idea" is the dawn and sustainment of worthy human consciousness as it sets out to fathom its own primary depths. It may be true that national cultures do in fact modulate the beauty and style of our general social thought. You may well assert that the philosophy of John Locke was indeed very English; or that the shape of Ralph Waldo Emerson was strictly English in its supremacy of balance; or that Henry David Thoreau was a bit of an impressionist, lending French quality to the delight of his reflections --- yet riding over all was his typically "American" love for exuberant wilderness!

Nevertheless we see in nature only what is our --- to claim otherwise would be shallow and naive. As Emersonians used to say: 'Would you find the wealth of the Indies? Then you must carry the wealth of the Indies out with you!'

Richard Hoehler

In upcoming issues:

Interiority and Exteriority

By Joseph Pappin III

Cicero Versus Machiavelli: Does the End Justify the Means

By Curtis Hancock

Crime and Punishment Papers published after the 1994 Summer Conference.

Open Topic Papers

Accepted Anytime
Details Inside of Front Cover

Founder's Corner

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

TO SOLVE PHILOSOPHICAL PROBLEMS

Right and Wrong Ways

There are better (right) ways and worse(wrong) ways to go about accomplishing any task. This includes the task of the solution of philosophic problems. Obviously mere opinionating, exhorting, and pressure debating are not acceptable ways. Nor is the mere presentation of the opinions of historical personages. Nor is the presentation of merely formal logical argumentation. Critical thinking and reasoning are different from, and independent of, the doing of formal logic. They can outdo a formal logician anytime.

Ping Pong in Abstractia

Many of the younger generation of would-be philosophers seem to believe that all that is necessary to do philosophy is to debate conceptual structures. They philosophize as though concepts, symbols, mathematics, etc. exist in a world apart from the realm of reality. They seem to become engaged in conceptual ping pong, playing in the realm of "Abstractia," the imaginary incorporeal asomatic realm of abstracts. Just as linguists manipulate their symbols in "Symbolia," the asomatic realm of symbols; and as mathematicians conduct their operations in the asomatic realm of

"Mathematia." Playing conceptual ping pong will not solve real problems. The mere presentation of self-defined conceptual structures, however, necessary at times, will not solve our contemporary philosophic problems.

Reality and "Non-Reals"

Contemporary philosophic problems can only be solved by philosophers being down to reality. The problems are based on influential reality, and the solutions must also be based on the same influential reality. Relative reality, with which most philosophical problems are concerned, is all those identifiable relations that depend upon the influential reals, and without which the identifiable themselves would not be notable. Thus, statistical reality, a relative reality, enters philosophy. A simile, "non-reality," is a conceptual structure, whose reality status is only that of a mental operation, or linguistically that of a grammatical negation, and as such, "it" cannot exist "out there." If "it" did exist "out there," then it too would be real. To discourse the possible solution of a real philosophical problem on any such "non-reals," or the equivalent, cannot help solve any real problem.

Relevant past articles:

Contact your local library.

On the Objectivity of the Value of a Work of Art

By Prof. Yuhui Park
Vol XI, No. 9, April 1987

Nature and Culture

By Ynhui Park
Vol. X, No. 7, 1985

Brain Mind Dualist-Interactionism

By Prof. Lawrence DeSaulniers
Vol. X, No. 3, April 15, 1984

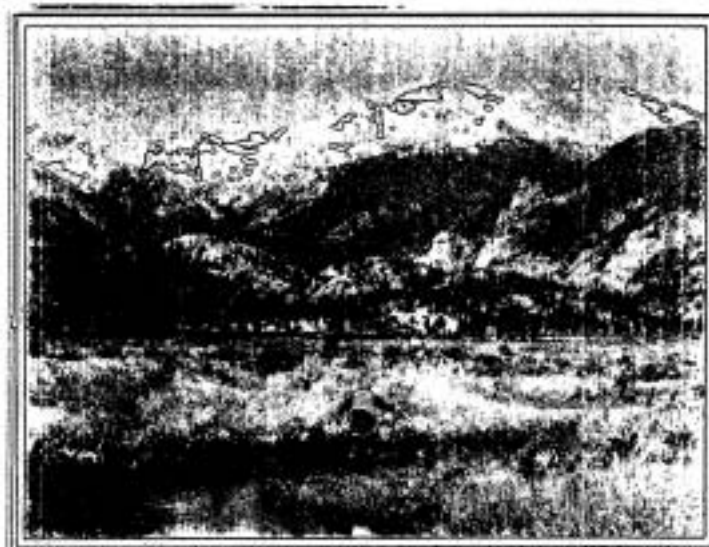
Restitutive Justice

By Henry B. Sendaydiego
Vol XI, No.4, June 1, 1986

Calendar:

August 17-23, 1994 - 1994 Annual Conference in Estes Park, Colorado

August 26, 1994 - All materials due to Managing Editor for publication in July/August issue.



Colorful
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for a Conference

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Mission Statement

Our mission is: "This Institute will be a private, non-profit organization with a general course of action, such as to attempt to solve the most pressing philosophical problems priorly, developing the highest that a person is capable of, avoiding duplication, conflicts or competition with existing institutions, publishing its findings, teaching its subject matter, and putting its findings into practice."

Realia is a non-profit organization which was initiated in 1954, receiving its proper constitution in 1960. Realia is tax exempt under IRS 501 (c)3 for educational, scientific, religious and charitable activities, as of 1967.

The Institute for Advanced Philosophic Research is the work arm of Realia, which is the parent of non-profit fundraising for all other activities. The A.E. Koenig Trust was formed in 1988 which is the primary funding source, and is designed to produce funds solely for Realia.

The A.E. Koenig Conference Center in Lyons, Colorado, now being built, will house the Academy of Philosophy, including the office for all activities, is the physical plant. The Conference Center will be completed as funds become available.

The Institute publishes the *Journal of Contemporary Philosophy - Philosophy In Service to Humanity*. Each summer, the Institute holds an annual conference of Contemporary Philosophy, in the Rocky Mountains at the YMCA in Estes Park, Colorado, whereby papers are presented and philosophic ideas are society-tested.

Fellows of the Philosophy of Man is a new organizational arm for the purpose of integrating all persons who are interested in a future-oriented, human meaningfulness philosophy, growing out of the realities of the current human situation, and apply appropriate discoveries of the past. Realia will support this fellowship until it is self-sufficient enough to stand on its own.

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The institution intends to remain small as is consistent with its tasks. It does not intend to do the world's work, merely for the sake of the activity. It will remain a "soft-sell" effort. Its purpose is to solve problems, generally leaving it to others to employ the solution.

If it accomplishes its mission, then it will become obvious in its own way. If it has something to contribute, it must be rewarded. It will not "push its products," on any unwanting public. It is not a social action agency.

No member of the Institute receives any pay or remuneration of any kind whatsoever.

Papers, essays, and manuscripts will be welcomed for the *Journal*, that expedite the foregoing mission and policy.

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