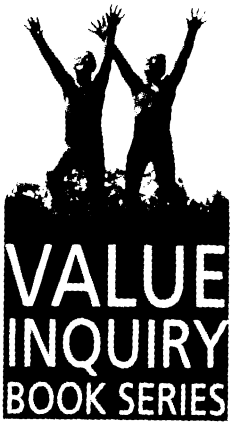
FORMAL AXIOLOGY AND ITS CRITICS



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FORMAL AXIOLOGY AND ITS CRITICS

Edited by

Rem B. Edwards

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For our unique granddaughter:

Sara Louise Saad

CONTENTS

EDITORIAL FOREWORD

Robert S. Hartman responded in print only twice to his many critics. The first of these is the first essay to follow in this volume titled "Axiology as a Science." This article appeared originally in *Philosophy of Science*, 29:4, (1962), pp. 412-433, as a rejoinder to Hector Neri Castañeda's scathing review of *La estructura del valor: fundamentos de la axiologia cientifica*, published in Mexico in 1959, the Spanish version of *The Structure of Value*. The second, also included here, was the short "Reply to Eckhardt and Brumbaugh," in *The Journal of Human Relations*, 21:2 (Second Quarter 1973), pp. 220-225, a rejoinder to William Eckhardt's "The Place of Values in Human Relations" and Robert S. Brumbaugh's "Robert Hartman's Formal Axiology: An Extension" that appeared in the same issue of that journal. Hartman's reply to Eckhardt and Brumbaugh is incorporated into Hartman's "Formal Axiology and Its Critics" to follow in Part I. Several years ago, the incomplete manuscript of this article was called to my attention by Frank G. Forrest, who gave me a copy.

Although he did not *publish* most of his responses to his critics, Robert S. Hartman nevertheless was a prolific *writer* of such responses. Many of these rejoinders were in letters, copies of which now exist in the Hartman archives in the Special Collections Library of The University of Tennessee, Knoxville.

Hartman clearly *intended* to respond in print to his critics. Near the end of his life, he worked on a manuscript, unfinished unfortunately, titled "Formal Axiology and Its Critics," published in edited form here for the first time as Chapter Four of this volume. This extensively edited version of Hartman's responses to his critics is not a comprehensive rejoinder to all critics of formal axiology, but it covers most of them. An incredible and almost inexhaustible wealth of unpublished documents authored by Hartman in English, German, and Spanish exists in the archives at the Special Collections Library at The University of Tennessee. My sincere thanks to the librarians in that unit for their immense assistance and patience with my research efforts! I also want to thank other Hartman scholars like John W. Davis, Robert E. Carter, and Frank G. Forrest for providing me with essential research materials. I also express my deep appreciation to Frank G. Forrest and Mark A. Moore for the essays they contributed to this volume.

The responses and other essays to follow are prefaced in all instances by my introductory editorial comments *in italics*, which should help to place them in historical and philosophical perspective. I have completed, as best I could, Hartman's very incomplete footnotes. Interpretive footnotes of my

own are placed within brackets [ ], as are important transitional words in the main text that I found it necessary to supply. In editing the letters, as integrated into the centerpiece article in Part I, "Formal Axiology and Its Critics," I changed all second person references to third person references, as Hartman himself would have done had he finished the article. I also consistently refer hereafter to myself in the third person. For persons unfamiliar with Hartman's revolutionary approach to understanding human values, I include the following "Introduction," which was originally published informally in January 1995 in *Center ⊙ View*, the newsletter of The Center for Applied and Professional Ethics, here at the University of Tennessee.

Part I of the present volume consists of one critical article and two additional articles in which Hartman himself replied to his critics. All of the material in Part I was written before Hartman's death. Part II consists of articles presented in recent years at annual meetings of the Robert S. Hartman Institute for Formal and Applied Axiology. These articles show that the critique of formal axiology goes on, and that, in response to critical challenges, slow but steady progress is being made with the Hartmanean project of developing a formal science and calculus of values. I hope and believe that the foundations and the future promise of formal axiology will be much more secure with the publication of this book.

I want to thank my colleagues in the Department of Philosophy at the University of Tennessee, including especially George Brenkert our Department Head, for a faculty research leave during the spring semester of 1995 which made it possible for me to complete this book. I also thank Marie Horton, a departmental Secretary, for helping me so cheerfully with much of the scanning and typing. Finally, I thank the publishers and copyright owners listed in the following "Acknowledgments" for permission to use the lengthier material included in this book.

Rem B. Edwards
The University of Tennessee
May 1995

ACKNOWLEDGMENTS

I wish to thank the following publishers and copyright owners for their kind permission to reprint articles, or quotes from, or summaries of sections of, the following.

1. *British Journal for Philosophy of Science*, David Papineau, Editor:
G. R. Grice, "Review of Robert S. Hartman, *The Structure of Value*," 19 (1969), pp. 179-180.

2. *The R. S. Hartman Institute for Formal and Applied Axiology,* Rem B. Edwards, Secretary, and *Mrs. Rita Hartman:*
For all the unpublished and previously published writings of Robert S. Hartman included here.

3. *The Journal of Human Relations*, Ed Chamness, Office of University Communications, Central State University, Wilberforce, Ohio:
a. Robert S. Brumbaugh, "Formal Value Theory: Transfinite Ordinal Numbers and Relatively Trivial Practical Choices," 21:2 (Second Quarter 1973), pp. 211-215.
b. William Eckhardt, "The Place of Values in Human Relations," 21:2 (Second Quarter 1973), pp. 216-219.
c. Robert S. Hartman, "Reply to Eckhardt and Brumbaugh," 21:2 (Second Quarter 1973), pp. 220-225.

4. *The Journal of Value Inquiry*, Robert Ginsberg, Executive Editor: Summaries and quotes from the following are reprinted by permission of Kluwer Academic Publishers.
a. Robert W. Mueller, "The Axiology of Robert S. Hartman: A Critical Study," 3:1 (Spring 1969), pp. 19-29.
b. Gordon Welty, "Transfinite Cardinality and Hartman's Axiology," 4:4 (Winter 1970), pp. 293-301.
c. P. Y. A. Gunter, "Hartman: Three Criticisms," 7:2 (Summer 1973), pp. 136-140.
d. George Kimball Plochmann, "Robert S. Hartman on the Structure of Creativity: A Critique," 7:2 (Summer 1973), pp. 129-135.
e. Rem B. Edwards, "The Value of Man in the Hartman Value System," 7:2 (Summer 1973), pp. 141-147.

5. *Prentice-Hall, Inc.*, Michelle Johnson, Permissions Editor:
Nicholas Rescher, *Introduction to Value Theory*, (1969), pp. 58-60.

6. *Philosophy of Science*, Christine A. Kaye, Administrative Assistant:
a. Hector Neri Castañeda, "Review of Robert S. Hartman, *La estructura del valor: fundamentos de la axiologia cientifica*," 28 (1961), pp. 89-93.
b. Robert S. Hartman, "Axiology as a Science," 29:4, (1962), pp. 412-433.

7. *Southern Illinois University Press*, Walter Kent, Editor:
Robert S. Hartman, *The Structure of Value: Foundations of Scientific Axiology*, 1967.

One

INTRODUCTION

Rem B. Edwards

An initial bit of explaining may be helpful to readers who are unfamiliar with Robert S. Hartman's unique and highly creative approach to value theory. In early fall of each year, the Department of Philosophy at The University of Tennessee in Knoxville is temporarily invaded by "Hartmaniacs" as they sometimes call themselves, though "Hartmaneans" is preferred, who are attending the annual meeting of the *Robert S. Hartman Institute for Formal and Applied Axiology*. Robert S. Hartman was a Research Professor of Philosophy at The University of Tennessee from 1968 until his untimely death in 1973. During that period, his thinking about values had an enormous impact on many of his graduate students and a few of his younger colleagues, who formed the *R. S. Hartman Institute* and who, with others attracted to his work, have continued over the years to apply and further develop Hartman's formalistic perspective on values.

Annual meetings of the *Institute* are held regularly at the University of Tennessee in Knoxville, since this is where Hartman last taught in the United States, and his papers are in the University of Tennessee Special Collections Library, thanks to the generosity of Mrs. Rita Hartman. From 30 to 40 persons usually attend the annual *Institute* meetings. Some Hartmaniacs are philosophers, some psychologists, some business consultants, some college professors or administrators, and so on. About a third of the active members are Hartman's former students or colleagues. Many of his former students have developed flourishing consulting businesses based upon the personality test, the Hartman Value Profile [HVP], which Hartman developed. Hartmaniacs consider both the psychological and philosophical aspects of Hartman's work. Several Hartmaneans have developed prosperous investment businesses applying the intensional logic which they learned from Hartman to stock and commodities markets. Hartmaneans come from as far away as Sweden, Mexico, and Spain to attend the annual meetings.

Very few of the present faculty and graduate students in Philosophy at The University of Tennessee seem to understand what the *R. S. Hartman Institute* is all about. Each Hartmaniac is regarded, perhaps, in something

resembling the way that Nathanial Hawthorne viewed the Transcendentalist in the early 19th Century--as a "terrible giant" who:

> ...makes it his business to seize upon honest travellers and fatten them for his table with plentiful meals of smoke, mist, moonshine, raw potatoes, and sawdust. He is a German by birth, and is called Giant Transcendentalist [or Giant Hartmaniac, perhaps]; but as to his form, his features, his substance, and his nature generally, it is the chief peculiarity of this huge miscreant that neither he for himself, nor anybody for him, has ever been able to describe them...[He looks] somewhat like an ill-proportioned figure, but considerably more like a heap of fog and duskiness. He shouted after us, but in so strange a phraseology that we knew not what he meant, nor whether to be encouraged or affrightened.[1]

Let me try to make Robert S. Hartman, his ideas, and the members of the *Robert S. Hartman Institute* a bit less mysterious. Robert S. Hartman was a German by birth, forced to flee for his life from Nazi Germany in 1933. His fascinating autobiography, *Freedom to Live: The Robert Hartman Story*, edited by Art Ellis, was published in 1994.[2]

Throughout this short introduction to Hartman's formal axiology and its applications, I must greatly oversimplify. Let me begin with a few of Hartman's most important and original ideas. First, unlike most 20th-Century moral philosophers, Hartman believed that a science of values could be developed. It would be a formal science, akin to logic and mathematics, rather than a natural or empirical science, like biology and astronomy. The Axiom of this formal science is: Value is concept (or standard) fulfillment.

The meaning of this axiom, and how it applies in practice, is best understood in relation to another fundamental Hartmanian notion, the Hierarchy of Value. The Hierarchy of Value is very simple and common-sensical. It says, basically, that people are more important than things, and that things are more important than ideas or blueprints of things. Hartman incorporated these simple and obvious substantive value commitments into an incredibly powerful and profound philosophical (or scientific) system of axiology. Hartman recognized three kinds of value, intrinsic, extrinsic, and systemic, which he often symbolized as I, E, and S respectively. Individual people are intrinsic values; useful things, actions, and social roles in public spacetime are extrinsic values; and conceptual constructs like mathematics, logic, moral rules, cultural conventions, institutional structures,

philosophical ideas, religious dogmas, and all thoughts as such, are systemic values. Degree of value depends on richness in properties, Hartman thought; unique persons are richer in properties than things and social roles, and things and social roles are richer in properties than ideas about them, or any ideas as such. Thus, in the hierarchy of values, people (intrinsic values) rank first; things, actions, and social roles (extrinsic values) rank next; and ideas, rules, constructs (systemic values) rank last.

How does the Hierarchy of Values relate to Hartman's basic Axiom? There are three kinds of concepts that may or may not be fulfilled—Singular Concepts or Unicepts of unique individuals, Analytic or Empirical Concepts abstracted from things, processes, actions, and social roles, and Constructed Concepts of a great variety of systemic objects and relations. Concepts or meanings are the standards by which valued objects or entities are measured. Using "thing" broadly to mean any kind of entity, we can say that: *Good* things completely fulfill their concepts; *fair* things mostly fulfill their concepts; *average* things are fifty fifty; *poor* things fulfill less than half of their meanings; and *no good* things hardly fulfill their meanings at all.

For example, a really good car has all the good-making properties that we could want in a car—a fuel-efficient engine, adequate power, an automatic transmission, cruise control, good brakes, many safety features, ample room for passengers and luggage, a stylish and pleasingly colored body, an AM-FM radio/cassette system, and so on; and everything works. A fair car has almost all of these; an average car has enough properties to get by; a poor car with very few desirable properties is very troublesome; and a no good one is a junker. A no good car can be a very good junker! If an automobile is defined as "a vehicle used for passenger transportation with its own engine," then an entity must exemplify the definitional properties of being a vehicle, being capable of transporting passengers, and having its own engine, in order to be a car at all; but if it has *only* the definitional properties, it is not much of a car. To be a *good* car, it must have all of the additional expositional properties just mentioned—and then some. Hartman thought that we can measure the goodness, fairness, poorness, or no-goodness of things by determining the degree to which they measure up to the normative set of their expositional properties.

Consider our own Singular Concepts of ourselves as unique individuals. Our intrinsic goodness consists in living up to, or being true to, the concepts that we have of ourselves. Conscience, that part of ourselves that sets standards for ourselves, is the normative core of our self-concept. We are true to ourselves, true to authentic conscience—as opposed to socially or personally distorted conscience—in varying degrees. Thus, we may fulfill,

or fail to fulfill, concepts of self in varying degrees. The Hierarchy of Value is the universal substantive normative core of conscience, Hartman thought. Some Hartmaniacs today give this insight an interesting empirical twist and argue that the long course of human evolution selects for individuals who put people first, things, acts, and roles second, and ideas and constructed forms third; and evolution selects against individuals who do not accept and live by this natural value hierarchy.[3] Extensive cross cultural studies of human subjects in many cultures provide powerful support for this evolutionary hypothesis,[4] but how can such things be measured?

The degree to which individual persons, and groups of persons, exhibit the Hierarchy of Values can be measured precisely with one of Hartman's most fruitful discoveries—a personality test based upon the Hierarchy of Values—The Hartman Value Profile or [HVP]. Hartman discerned that the structure of a person's values is the real key to the structure of that individual's personality; and he developed the HVP to measure the degree of conformity to or deviation from the Hierarchy of Values.

The HVP measures this conformity or deviation in two different dimensions, Self and World. To what extent do people value themselves in their total uniqueness, or in their possessions, products, actions, and roles, or in their cognitive or conceptual capacities? To what extent do they value such things in their own social, physical, and conceptual environment, and to what extent do they value them in other people? To answer these questions, test subjects are asked to rank from best to worst two sets of eighteen carefully constructed items that manifest the Hierarchy in both the Self and World dimensions.

The three basic items in the Hierarchy (persons, things, and constructs) may be combined with one another in inexhaustible variety, both positively and negatively. Hartman called positive combinations that enhance value "Compositions;" and negative combinations that detract from value are "Transpositions." For example, newborn babies may be given a number that matches the number on their mothers' identification bracelets; and the result is the positive combination of the baby, an intrinsic value—I, or $\aleph_1$, with a number, a systemic value—S, or n. This combination can be symbolized as I^s; and it has the numerical value in transfinite set theory of $\aleph_1{}^n$. Or convicts (intrinsic values) may be given both numbers (systemic values) and striped clothing (extrinsic values—E, or k) to debase their worth. This can be symbolized as I_{E_s}; value combinations can be endlessly complex. The eighteen items on both Self and World parts of the HVP differ from these illustrations, but they represent all possible positive and

negative binary combinations of basic intrinsic, extrinsic, and systemic values. The HVP measures the test subject's rankings against the ideal or objective rankings dictated by the system.

Ideally, test subjects should manifest the objective value order rankings in both Self and World dimensions. Deviations in either or both dimensions indicate personality and performance deficiencies; and if these are sufficiently severe, deviations are diagnostic of particular mental illnesses or personality disorders. For example, persons who consistently regard and treat other persons (intrinsic values) as mere things (extrinsic values) are psychopaths, or schizophrenics; those who are well developed in the Self dimension but poorly developed in the World dimension are "atychal" or accident prone; and persons poorly developed in the Self dimension have low self-esteem that may manifest itself in drug and alcohol abuse, or in excessively docile, dependent, or conventional behaviors.[5] Evolution selects for development and balance in both Self and World dimensions.[6]

Since the HVP was developed, it has been, and continues to be, extensively verified and used for many interesting purposes. In the hands of clinical psychologists, it is an invaluable tool for diagnosis, for setting therapeutic goals, and for measuring therapeutic progress. Clinicians and counselors use it to determine compatibility or incompatibility and weaknesses and strengths in social relations like marriage or employment. Studies of jail and prison inmates have identified personality types likely to engage in criminal behaviors like murder, rape, and pedophilia. Business consultants use the test to determine if potential employees match job descriptions and requirements, or whether present employees should be moved or promoted into new positions, and in designing training programs to compensate for employees' weaknesses. In the medical setting, the HVP is used to measure personality and value changes associated with serious or even terminal diagnoses and illnesses. During 1995, the test is being employed to study terminally ill patients who have had near death experiences, with patients not having these experiences serving in control or contrast groups. Patients who have had unexplained spontaneous remissions from terminal illnesses will also be studied. These studies should reveal something very important about the personalities and values of persons who find themselves in such circumstances. The potential for putting the HVP to good uses is limited only by the human imagination! More detailed information about the Hartman Value Profile and many other aspects of Hartman's work is available in the book on formal published in 1991 by a number of Hartmaniacs titled *Forms of Value and Valuation: Theory and Applications*, edited by Rem B. Edwards and John W. Davis.[7]

Needless to say, Hartman's work is also extremely fruitful in dealing with philosophical approaches to value theory. The emphases, strengths, and weaknesses of philosophical ethical theories may now be assessed and measured, given the conceptual framework of formal axiology. For example, Kant and other deontologists overvalue the systemic (rules); the Stoics undervalued the extrinsic; and almost all philosophers undervalue concrete individual persons in favor of abstractions like pleasures, desires, volitions, rationality, or constructs like society, the state, truth, beauty, duty for duty's sake, and so on.

Hartman promised that a logical calculus of values could be developed from his seminal ideas; but his tragic premature death prevented him from fulfilling that promise. In recent years, Hartmaniacs have made giant strides in carrying this project to completion. One of the most controversial features of Hartman's formal axiology is his correlation of the Hierarchy of Values with transfinite mathematics and set theory. Intrinsic values, persons, have a non-denumerable infinity of properties, Hartman argued, so their characteristic number is Aleph-sub-one ($\aleph_1$); extrinsic values, things, roles, and so on, have a denumerable infinity of properties, so their characteristic number is Aleph-sub-zero ($\aleph_0$), although this becomes k (for finite but indeterminate) in Frank G. Forrest's development of the formal axiological calculus; and conceptual constructs have a finite number of properties, so their characteristic number is n. When rules of inference in transfinite mathematics are brought to bear upon combinations of these numbers, a calculus of value results that can be used to determine, among other things, which choices and courses of actions will bring about the most (or the least) value. An applied value calculus using transfinite mathematics was finally worked out by Frank G. Forrest, an exceptional Hartmaniac, and published in 1994 in his book entitled *Valuemetrics™: The Science of Personal and Professional Ethics.*[8]

Hartmaniacs are now assessing the strengths and the weaknesses of this approach, as the essays in Part II of this book will illustrate. An alternative finitistic calculus of values, also centered on the Hierarchy of Value, involves the mathematics of quantum wave mechanics. This calculus was developed recently by Dr. Mark A. Moore. His article, "A Quantum Wave Model of Value Theory," is published in Part II.

Hartmaniacs are making steady progress in the development of formal axiology. Soon we will know whether it is all just smoke, mist, moonshine, raw potatoes, sawdust, fog, and duskiness—and whether we should be encouraged or affrightened.

ENDNOTES

1. Nathaniel Hawthorne, *The Works of Nathaniel Hawthorne*, Vol. II, (New York: Houghton & Mifflin, 1882), p. 224.

2. Robert S. Hartman, *Freedom to Live: The Robert Hartman Story*, ed. by Arthur Ellis, (Amsterdam - Atlanta: Editions Rodopi, 1994).

3. See: Leon Pomeroy and Arthur R. Ellis, "Psychology and Value Theory," p. 298, and Leon Pomeroy and Richard Bishop, "Behavorial Axiology: Cross Cultural Study of Values," pp. 315-318, 325-326, in Rem B. Edwards and John W. Davis, eds., *Forms of Value and Valuation: Theory and Applications*, (Lanham, Md.: University Press of America, 1991).

4. Pomeroy and Bishop, "Behavioral Axiology: Cross Cultural Stuey of Values."

5. Pomeroy and Ellis, "Psychology and Value Theory," pp. 300-309.

6. *Ibid.*, p. 298.

7. Rem B. Edwards and John W. Davis, eds., *Forms of Value and Valuation: Theory and Applications*, (Lanham, Md.: University Press of America, 1991).

8. Frank G. Forrest, *Valuemetrics®: The Science of Personal and Professional Ethics,* (Amsterdam - Atlanta: Editions Rodopi, 1994).

PART ONE

EARLIEST CRITICS

Two

AXIOLOGY AS A SCIENCE: REPLY TO HECTOR NERI CASTAÑEDA, 1961

Robert S. Hartman

A version of Robert S. Hartman's The Structure of Value *was originally published in Spanish as:* La estructura del valor: fundamentos de la axiologica cientifica, *(México, D.F., Fondo de Cultura Económica, 1959). In 1961, Hector Neri Castañeda reviewed the Spanish version in Volume 28 of* Philosophy of Science, *pp. 89-93.*

In his hypercritical review, Castañeda charged that Hartman's belief that a science of values could be constructed "is naive, his wholesale attack on moral philosophy...blind and unjust, his talk of a science vague, and his actual theory of value...inadequate, his view of what is to be imitated from natural science is very sophisticated."[1] *Castañeda contended that "Hartman's definition of 'good' is both counter-intuitive and useless" and "makes the term 'good' completely redundant"*[2] *because a good thing like a chair has to have its properties to be a chair, and the question of its goodness is an entirely different matter. Where Hartman held that to be a chair, an object must have only the definitional properties of "chair," and that its goodness depends on its possession of additional expositional properties, Castañeda found this distinction "too obscure. There is no satisfactory way of distinguishing between exposition and definition."*[3] *Castañeda concluded that Hartman should have learned from Subjectivists, Emotivists, and Imperativists "their great insight—that values are not just redundant relations among comprehensions of concepts, but are intimately related to human feelings, attitudes, decisions, and choices."*[4]

In his unfinished manuscript on "Formal Axiology and Its Critics," reprinted in edited form as Chapter Three of this book, Hartman wrote that:

> The Structure of Value *appeared in Spanish in 1959, in English in 1967, with a revised paperback edition in 1969. The Spanish edition met with unanimous applause throughout the continent; that is, there*

were no negative reviews but rather enthusiastic positive ones—except by Neri Castañeda. The English edition met with the whole spectrum [of responses]. Of the thorough critiques of the book, I have answered one, namely, that of Neri Castañeda in Philosophy of Science.

Hartman's rejoinder, the following essay, was published in Philosophy of Science, *29:4 (October 1962), pp. 412-433. The first four sections give an excellent summary of his position on the nature of science in general and value science in particular. This will be especially useful to persons who are unfamiliar with Hartman's formal axiology. He finally gets around to Castañeda beginning with Section 5, on "Science and Philosophy as Methods."*

A Rejoinder Note to Professor Neri Castañeda's Review of *La Estructura del Valor: Fundamentos de la Axiologia Cientifica.*

With a new subject and, indeed, a new conception of a scientific subject matter, misunderstandings are natural. They usually arise when an old frame of reference is applied to the new approach; for the approach would not be new if it did not presuppose a new frame of reference.

Professor Neri Castañeda applies the positivistic frame of reference to *La estructura del valor*, even though a section in the book entitled "Logical Positivism and Axiological Positivism" spells out the difference between the two approaches.

1. The Argument of the Book

The argument of the book may be summarized as follows. There is a difference between philosophy and science, which consists in the method and not in the content of the two disciplines. This difference is a *logical difference*, based on the nature of the concepts used in philosophy and those used in science. The former have been called, historically, analytic, the latter, synthetic. The former are categories (abstracted, implicative, and material concepts), the latter are axioms (constructed, deductive, and formal concepts). In the former, intension and extension vary inversely; in the latter, intension and extension vary directly.[5] The properties of things corresponding to this distinction are called, respectively, "secondary" and "primary" properties. Natural philosophy has changed, historically, from the use of philosophical concepts to the use of scientific concepts, in the

sense defined. The result has been the transition from natural philosophy to natural science, which is based on the distinction between "facts" of secondary properties, and "facts" of primary properties. The latter are "facts" on the level of pure theory (formal facts), the former are "facts" on the level of observation (material or phenomenal "facts"). In science both kinds of "facts" are combined; indeed, science is the combination of these two kinds of "fact." Thus, there is, beside formal and material fact, a third kind of "fact," scientific fact, as the combination of both formal and material facts. The distinction between the various kinds of "fact" in science showed up methodological fallacies in natural philosophy, as in alchemy, astrology, *etc.*, which arose by confusing the various kinds of fact, especially, the confusion of analysis and the analyzed when, for example, a pure heart was called for as condition for a chemical reaction (the fallacy of method) or the confusion between different sciences, *e.g.*, theology and chemistry, when the boiling of the substance had to be preceded by a prayer (the naturalistic fallacy), and others.[6]

Value philosophy—the traditional moral philosophy—has to pass through the same development as natural philosophy. This development would give for value results analogous to those which the corresponding development gave to fact, namely, the distinction between "value" as category and "value" as axiom; "value" as analytic and "value" as synthetic concept: "value" as consisting of secondary value properties and "value" as consisting of primary value properties. "Value," then, would have to appear on three levels, that of pure theory (formal value), that of value sentiment (material or phenomenal value), and the combination of both (axiological value). These distinctions have to clarify methodological fallacies contained in moral philosophy, in particular the confusion between analysis and the analyzed, that is to say, between formal value and material value (between the analysis of valuation and valuation itself: the fallacy of method), and the confusion between different moral sciences such as ethics, aesthetics, economics, psychology, theology, and of all these with natural sciences (the naturalistic fallacy).

The principal task of today's scientific axiology is the development of the first level, that of the pure theory of value, and the determination of formal value. In the book, this task is being approached in four ways: first, through the axiology of G. E. Moore; second, through the logic of Bertrand Russell; third through the method of Galileo Galilei; fourth through the polyguity or homonymity of the term "good." A fifth approach, through Edmund Husserl's phenomenology, is suggested.

(1) The paradox of Moore of that "two different propositions are both

true of *goodness*, namely: (a) that it does depend *only* on the intrinsic nature of what possesses it...(b) that, *though* this is so, it is yet not itself an intrinsic property" is solved in the way of all paradoxes, namely, by showing the different logical levels in question: the negative proposition—concerning what goodness is *not*—refers to the thing itself; and the positive proposition—concerning what goodness is—refers to the concept of the thing. If 'good' is a property which indicates a thing's possession of its class properties, then good is *not* a natural property of the thing itself but is a property of the concept of the thing, namely, its intension's being fulfilled by the thing.

(2) According to Russell, a number is the class (extension) of all classes (extensions) similar to a given class (extension). There also ought to be a concept which is defined as "the intension of all intensions similar to a given intension." This is the concept of value. If there is given an intension of n predicates (a set of predicates) determining a certain extension (class) then the things belonging to the class (the class members) having n properties are *good* such things (good class members), and all those having less than n predicates are *less than good* (fair, bad *etc.*) such things. The value "good" then is the intension similar to the intensions n, and the values "less than good" are intensions similar to intensions $<n$. The set of predicates (intension) of all sets of predicates (intensions) which contain *all* their predicates (n) is the value "Good," and the set of predicates (intension) of all the intensions not containing all their predicates is the value "Less-than-good." The intension (set of predicates) of all these intensions similar to a given intension, then, is Value—rather than this or that value—just as the class of all extensions similar to a given extension is Number—rather than this or that number.

(3) The third deduction compares Galileo's approach to the problem of motion with a possible axiological approach to the problem of value. In both cases the problem is one of finding a standard of measurement. Galileo found the standard of measurement of motion by disregarding the secondary qualities of the phenomenon and concentrating on its primary qualities, that is, qualities accessible to measurement; so that what was measured was not the sense phenomenon of ordinary life with secondary properties but a construct consisting of primary properties. What is to be measured in value measurement is the ordinary sense object, not only as possessing its secondary properties: but this very possession is what measures its value. Hence for value measurement the *secondary properties must be used as primary properties*. This means that the standard of a thing's value measurement is the intension of the thing's concept.

(4) The fourth deduction leads to the same result, and demonstrates, moreover, the purely formal and non-naturalistic character of the theory. 'Good' is, as axiological writers from Aristotle to Paul Edwards have suggested, a homonym applicable in many different contexts, with a different set of criteria for its employment in each. This is an exact description of the logical nature of a variable. 'Good' is a variable and its values are actually fulfilled intensions. It is that variable the logical values of which are axiological values. (5) The fifth approach, through Husserl's phenomenology, would regard the fulfillment of intentionality as intrinsic valuation. This would convert phenomenology into axiology. The use of the logical concept as axiological measure presupposes the elaboration of intensional logic, which has been neglected during the development of extensional logic in the last hundred years. Such elaboration leads to the notion of intension as a set of predicates and to the structurization of this set according to the logic of sets. *Any set of descriptive qualities defines a fact, any subset of such a set defines a value.*[7] The result of such elaboration is the inversion of the relation between fact and value. Fact is that set of predicates, p, in terms of which the totality of subsets of predicates (that is to say of values) V_t, is ordered, according to the formula of the combinatorial calculus, $V_t = 2^p - 1$. Fact appears thus as the ordering norm of value. This means that in valuation one leaves out of account the *normal* set of secondary properties (of fact or of the thing in question) and freely combines and re-combines the *elements* of this set. Such combinations and recombinations of secondary properties *are values*. As *elements of* values the secondary properties of fact become the primary properties of value. The combinatorial calculus applied allows the exact measurement of values. Denumerable intensional sets measure extrinsic value, non-denumerable intensional sets measure intrinsic value. In the book, only the first kind of measurement is discussed in detail. The complete presentation of the calculus is reserved for another book, *The Measurement of Value*.[8] The approach to value presented in the book is called "axiological positivism."

2. Logical Positivism and Axiological Positivism

It is clear in which respect this approach to value differs from, and in which it coincides with, that of logical positivism. The strict logical positivist believes that an intelligible theory, let alone a science of value, is impossible. The reason is that the subject matter of value does not fit his frame of reference, based as it is on extensional logic. Rather than

extending his frame of reference and creating a new one which *will* fit value phenomena, he denies their intelligible existence. His logic is a bed of Procrustes. What is within it is being stretched, and what is outside it is either amputated or contorted. An example of the stretching is that of quantifiers into elements of "metaphysics." An example of amputation is the negation of the propositional nature of value judgments. Examples of contortions are the many auxiliary and *ad hoc* devices—"persuasive definitions," "contextual implication," *etc.*—by which positivists want to save the appearances, that is, talk about value, and yet not give up the old framework or construct an entirely new one.

Against all these, the axiological positivist advocates a genuinely new logic which will account for value phenomena with the same precision with which extensional logic, in the form of mathematics, accounts for natural phenomena. The axiological positivist thus agrees with the logical positivist in his critical view of philosophy, but disagrees with his negative conclusion. The traditional philosophical disciplines are indeed vague and meaningless and ought to be regarded as species of logic. But this does not mean that they ought to disappear. On the contrary, it means that they ought to be reconstituted on the basis of a new logic. The counterpart in physics to the positivistic attitude in ethics would be Albert Einstein's decision, since it was proved that the ether did not exist, to lean back and pronounce all natural science as "nonsense." Instead, he designed a new frame of reference for the old that had rendered things nonsensical. Not so the radical logical positivist. Observing that traditional philosophy appears nonsensical in the frame of reference he applies, he leans back and pronounces all such philosophy nonsensical. He never for a minute doubts his frame of reference. Like a man with blue glasses he swears the world is blue. Although he supposedly applies the scientific method he never once applies the truly scientific procedure of changing the frame of reference when it renders the subject matter absurd. Old nonsense, the history of science has amply demonstrated, makes sense in new frames of reference.[9] In the fashion of naive scholastic realism, our positivists condemn the subject matter rather than critically examine their instrument of inquiry.

The axiological positivist differs from the logical positivist in one decisive point: his conception of logic. For the strict logical positivist there is only one logic, extensional or class logic; and as he sees clearly that the concepts of metaphysics, ethics, aesthetics, *etc.*, do not fit into this logic, he concludes that these disciplines are no disciplines at all, and "literally nonsense." The view of the less strict positivist is somewhat more sophisticated. He does see that a new logical instrument is necessary. But

what he produces are snatches of logic, *ad hoc* devices which, being logically neither here nor there, are, for the axiological positivist, no more than gimmicks bound to disappear, as have similar devices in natural philosophy, such as phlogiston or Tycho Brahe's cosmological speculations.

What the axiological positivist envisages is a full-fledged intensional logic in the traditional sense of the term, that is, one based not on modalities of copulas but on predicative sets. In distinction to the logical positivist, therefore, he recognizes two logics, not merely one, an extensional and an intensional, the former based on sets of subjects, the latter based on sets of predicates. The elaboration of the former is the frame of reference of natural science; the elaboration of the latter is the frame of reference of moral science. The latter frame of reference is called *formal axiology.*

The positivistic point of departure—that the philosophical disciplines are species of the genus "logic"—thus leads the axiological positivist to the conception of a moral science. He is an *axiological positivist* for—*mutatis mutandis*, namely, substituting intensional for extensional logic—he considers *moral* philosophy the same way the logical positivist considers *natural* philosophy. But he cannot afford the dogmatism of the logical positivist; he cannot declare that since his is the only true logic and natural philosophy appears in it as nonsense, natural philosophy is a psychosomatic phenomenon, a kind of grunt, like "Hm" or an ejaculation like "Aha," and a natural science a hallucination.[10] Since there are two different kinds of logic, both interrelated, applicable to two kinds of reality, that of nature and that of morals, he concedes to the logicians of the former their right to deal with natural philosophy, reserving for himself the right to deal with moral philosophy. The efforts of the logical positivists of amputating half of philosophy because it does not fit the bed which they think is the only one there is, is not only against all scientific but also against philosophical tradition. All philosophy has aspired to specify its general concepts, even though this effort up to date has succeeded only in natural philosophy. But the moral philosophers were no less industrious and methodologically correct simply because they were less successful. On the contrary, this tradition is in the field of moral philosophy as old as philosophy itself--and older than in the field of natural philosophy. As late as 1695 John Locke believed *natural science* to be impossible, in spite of the works of "the incomparable Mr. Newton";[11] but he never doubted the possibility of a scientific *ethics* as obvious and precise as mathematics. In doing so he continued a tradition going back to Plato—that of the elaboration of the good as measure in *diairesis*, the division and organization of the ideas.[12] The concepts which these philosophers wanted to determine with Scientific

precision, and in the precision of which they saw the very core of the philosophical method and the only justification of the philosopher, were the concepts of moral philosophy, in particular, "goodness."

This old quest must be taken up anew. For the axiological positivist, ethics has declined in the last hundred and fifty years rather than progressed. It has become more and more irrational rather than rational; and this irrationality has been mirrored in the social and moral events of the corresponding age, culminating in what *The New Cambridge Modern History* calls "The Era of Violence."[13] Philosophers who further and abet this irrationality not only surrender the eternal aspirations of philosophy, they further and abet the era of violence. For this reason Ferrater Mora could rightly say of Ludwig Wittgenstein that he, "an obscure Professor at Cambridge symbolizes more exactly our troubled times than a famous playwrite in Paris," Jean Paul Sartre,[14] and Bertrand Russell that "the desire to understand the world is, the Wittgensteinians think, an outdated folly...The later Wittgenstein...seems to have grown tired of serious thinking and to have invented a doctrine which would make such an activity unnecessary."[15] These and other remarks contained in *La estructura del valor*, discussing the present nadir of ethical theory, are not "personal attacks" as Professor Neri Castañeda has it, but the truth of the present intellectual and moral situation in ethics, as the axiological positivist sees it. The philosopher today, in this view, must combine logical rigor with historic conscience. The various positivistic schools, in their ethical endeavors, show, according to that same view, neither the one nor the other.

They do not see the true lesson natural science has taught us: that one can *think with precision in generality and with generality in precision.* The transformation of natural philosophy into natural science has not changed the generality of the *object* of knowledge; the physics of today, as that of Galileo and Sir Isaac Newton, deals with the most general problems of space, time, matter, knowledge, *etc.* But it does so with precision, scientifically and not philosophically. What has changed since Aristotle is the method, not the content, of natural philosophy. Thus, in order to know with precision, it is not necessary to limit the object one wants to examine. One can think in the largest possible categories and yet can do so with precision. The sciences typical of most general and at the same time most precise thinking are mathematics and logic; their application to natural phenomena enables us to think about nature both with generality and with precision. By means of an axio-logic, an intensional logic, one could think with equal generality and equal precision in the traditional moral sciences,

in ethics, aesthetics, metaphysics, epistemology, and others. To take the example of ethics, what would it mean to think with both generality and precision in the moral field? What is the kind of precision that could be applied to ethics? How would ethics as a philosophy differ from ethics as a science?

3. Ethics and Meta-Ethics

The answer is not difficult, in terms of the difference between philosophy and science given above. Scientific ethics would be not categorial but axiomatic, not substantial but functional, not abstractive but constructive, not material but formal. It would use not analytic but synthetic concepts, not imply at random but deduce systematically, not lose specificity in the degree that it gains generality, but gain specificity in the degree that it gains generality. And while philosophical ethics, in its totality, is a largely unconnected aggregate of general assertions made by individual thinkers, scientific ethics would be a cumulative process within one and the same frame of reference, the axiological, resulting not in general statements but in the development of a method for conducting life—a method which ought to be as comprehensive and as deep as life itself.

This transformation would be brought about by the establishment of the axiological framework. It would contain a precise definition of the field of ethics: Ethics is the application of intrinsic value to the human person.[16] Since the formal system contains a precise definition of "intrinsic value"[17] the application of this definition to the human person originates an exact science, namely Ethics, just as the application of, say, the notion of a straight line in geometry to a ray of light originated an exact science, namely Optics.

Scientific ethics, then, is a particular application of the axiological framework to the human person; and other such applications are other scientific moral disciplines, such as aesthetics (the application of intrinsic value to things), sociology (the application of extrinsic value to human persons), economics (the application of extrinsic value to things), *etc.*[18] Scientific ethics is the combination of pure ethical value ("intrinsic value applied to the human person") and material ethical value or ethical phenomena, that is, those phenomena, *e.g.*, sincerity, observed in human persons. The phenomenon observed, analyzed in terms of the definition of ethical value, produces the ethical value, namely, sincerity as an intrinsic value. "Intrinsic value" is defined with precision in the formal frame of reference; and a special formal deduction from it yields the scientific notion

"Sincerity." Its application is the observed phenomenon elaborated in all the details the system allows. "Sincerity" then is part of the system of scientific ethics. Scientific ethics does not *deal with* this or that ethical phenomenon, *e.g.*, sincerity; it contains *the definition* of the phenomenon, "Sincerity"; and it must *in turn* be applied whenever the phenomenon of sincerity is to be examined in a particular case—just as the science of Optics does not deal with this or that phenomenon of light but with the definition of light; and it must be applied in any particular case to phenomena of light. Just as optics is the frame of reference for light phenomena, so scientific ethics is the frame of reference for ethical phenomena. And just as geometry, and mathematics in general, is the frame of reference for optics—and hence a meta-optics—, so formal axiology is the frame of reference for scientific ethics, and hence a meta-ethics.

Where, then, in this picture, fits the old philosophical ethics? In exactly the same place that the old Aristotelian optics fits in the present picture of science. Starting with Christian Huygens' *Traité de la Lumière* and Newton's *Optics*, scientific optics took the place of Aristotelian optics. But what does it mean "took the place"? It means that Aristotelian optics was examined in the light of the new optics; the parts that fitted were adapted; those that did not were discarded. This means, however, that scientific optics *served as frame of reference for Aristotelian optics*, and hence was a meta-Aristotelian optics, which means that mathematics was a meta-meta-Aristotelian optics.

The same relationship holds between traditional ethics and scientific ethics—the latter being a frame of reference for the treatment of the former, and hence a meta-Aristotelian ethics—only that Aristotelian ethics is still regarded as a part of Ethics today, in contradistinction to Aristotelian optics which is extinct. In creating a scientific ethics in the sense defined, one therefore is creating a meta-ethics with respect to traditional—and still prevailing—ethics. The relation between scientific ethics and traditional ethics, then, is that between a meta-system to its object system. This means that, with respect to traditional ethics, scientific ethics not only defines the ethical terms with precision, but first determines how ethical terms *can* be defined with precision. When traditional ethics speaks of "norms," "values," "duties," "sincerity," *etc.*, scientific ethics analyzes these terms, determines their meaning, their interrelationships, and establishes a network of *formal relations* which can be used in ethics, as mathematics can be used in physics or astronomy. The terms in question then appear as formal relations within the system of scientific ethics. This ethics, then, is a propaedeutic, a discipline anterior to ethics; it is not ethics but the

determination of ethics, and even of the possibilities of ethics. *It is* not ethics but *deals with* ethics. It has ethics as its subject matter, just as ethics has human conduct as its subject matter. Scientific ethics, thus, deals with human conduct *by means of* ethics: it analyzes ethics as the knowledge of human conduct and makes this knowledge precise. It brings about the precision of ethics by synthetic formulation. In the process, it transforms ethics from a philosophical discipline into a scientific method.

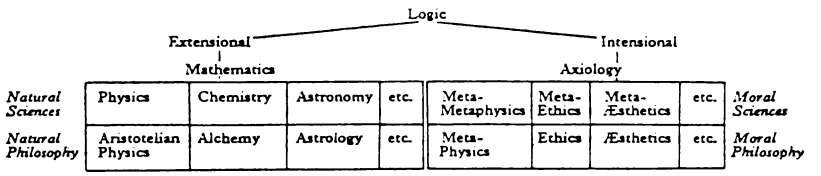
Since scientific ethics *deals with* ethics rather than *is* ethics, it is on a higher logical level than ethics. There appears then here, again, the necessity of distinguishing logical levels in value theory, as it did in the solution of the Moorean paradox of goodness; (one of the "two different propositions that are both true of goodness" was found to be of a higher logical order than the other). The neglect of distinguishing logical levels in moral philosophy is, precisely, what we called the fallacy of method, that is, the fallacy of confusing form and content of axiological reasoning. As a result, ethics has been plagued by fallacies, only one of which has been seen by G. E. Moore.[19]

Since the meta-discipline is always more general than the disciplines it deals with it has a wider extension than the latter. If, moreover, it is synthetic rather than analytic it also has a richer content or intension. Thus scientific ethics is not only more extensive but also more precise than philosophical ethics. It applies to the totality of all ethical philosophies and is an instrument of their analysis and interrelation.

As there is scientific ethics as a metaethics for traditional ethics, so there are—and ought to be—meta-aesthetics, meta-metaphysics, meta-epistemology, and other scientific meta-disciplines which analyze and interrelate the corresponding philosophical disciplines, aesthetics, metaphysics, epistemology, *etc.* And "beyond" these meta-disciplines there is the meta-meta-discipline which analyzes and interrelates the meta-disciplines themselves, namely formal axiology. This discipline is metaphilosophy, that is to say, *meta-philosophia-moralis*, which is on the same logical level as *meta-philosophia-naturalis*, or mathematics. As mathematics is the natural meta-philosophy, which contains the patterns for natural sciences, so formal axiology is the moral metaphilosophy, which contains the patterns for moral sciences. As the mathematical patterns can be applied to the various disciplines of natural philosophy—physics, chemistry, astronomy, and so on—so the axiological patterns can be applied to the various disciplines of moral philosophy—ethics, metaphysics, aesthetics, and so on. And as the mathematical applications by Sir Isaac Newton, Antoine Lavoisier, *etc.*, constituted, respectively, physics as a

meta-discipline "beyond" Aristotelian physics, chemistry as a meta-discipline "beyond" alchemy, astronomy as a meta-discipline "beyond" the earlier astronomies and astrologies, so the axiological applications ought to constitute meta-ethics beyond traditional ethics, meta-aesthetics beyond traditional aesthetics, meta-metaphysics beyond traditional metaphysics and so on. These meta-disciplines ought to differ from the traditional disciplines in being more exact and more comprehensive—in possessing greater generality joined with greater precision; that is, in their *scientific* character. They would be more *systematic*; "systematic," "scientific," and "meta-" discipline being synonymous.[20] *Systematic ethics* is *scientific ethics* or *metaethics*. It is a part of formal axiology.

We have then the following historico-logical scheme of the development of science, a scheme which confirms the assertions of philosophers of science, such as Pierre Duhem, that historical analysis of science is in many respects the same as logical analysis:



As is seen, the traditional moral philosophies are transformed, through the establishment of moral science, into historical disciplines with the same methodological position as the traditional natural philosophies, Aristotelian physics, alchemy, astrology, and so on. This does not mean, however, that they would become obsolete. Although for the practicing scientist of today the natural philosophies of the past have little interest, for the philosopher trying to understand—rather than apply—these sciences they are indispensable. The moral philosophies are even more important to the moral scientist—the axiologist—for there will not be in morality the external transformation of the world which natural science has effected through technology. The moral sciences are going to bring about an internal transformation of man; they are going to relate intensions rather than extensions, meanings rather than objects. For this transformation the insight of moral philosophers of the past into the nature of man is going to be more useful than that of the natural philosophers of the past into the nature of matter. But there is another, and most significant reason why the new moral science will not change moral philosophy so radically as natural

science has changed natural philosophy: *natural philosophy was in a large degree moral philosophy.*

4. Physics and Ethics—Metaphysics and Metaethics

It is for this reason that the scientists of the Renaissance had to proceed so drastically. Galileo, for example, had to invert completely the relation between form and matter of Aristotelian physics, that is to say, between the method of analyzing nature and the object of this analysis. To express it pointedly, *Aristotle used nature to explain logic; Galileo used logic to explain nature.* The fundamental categories of explication of Aristotle were the teleological categories of the physical process: potentiality and actuality, connected into unity through movement, as cause which converts potentiality into actuality. Through these categories Aristotle not only solved physical problems but also logical ones.[21] Galileo, on the other hand, used logic to solve physical problems. To do this he had first to "degrade," to "de-meta-physicize," or "secularize" the metaphysical categories of Aristotle. In particular, he had to convert "movement" from a metaphysical concept to a *physical phenomenon.* In consequence, he had to find new explicatory categories for this *phenomenon.* He found them in mathematical relations. Thus, the "degradation" of movement meant at the same time the elevation of mathematics and of sense observation—both anathema to the medieval mind.[22] Since mathematical relations are specific logical relations, it is correct to say that he used logic to explain nature and thus inverted the Aristotelian method.

Thus, Galileo wrote the true metaphysics, in the logical sense explained above, to the physics of Aristotle. The latter then appeared largely as a collection of methodological, and consequently factual errors. It is, of course, methodologically speaking more correct to explain nature by logic than logic by nature. For logic is an explanatory system, while nature is a "system" to be explained. But this was by no means obvious to the philosophers of the Middle Ages. And it is by no means obvious to the value philosophers of today. There is a large literature on the value of logic but very little on the logic of value.[23]

Thus, although formal axiology discovers similar methodological errors in moral philosophy and actually inverts some of the traditional ethical arguments in the same way that Galileo inverted some of the Aristotelian arguments,[24] this inversion will not have as radical a character as the Galilean inversion of Aristotle. The difference between the inverted elements in moral philosophy is not as great as it was in natural philosophy.

Galileo had to invert the Aristotelian relation between movement and logic. Supposing we have a similar situation in axiology and have to invert the relation between value and logic: that traditional axiology had used the *category* of value in order to explain features of logic, and that we had to invert this relation and use logic in order to explain the *phenomena* of value.[25] This inversion, although logically as radical as the Galilean, is not so actually because value is not something as obvious and sensory as movement. We do not know as clearly with our senses what value is as we know what movement is—and as the Aristotelians knew better than Galileo, since their physics was based on common sense while Galileo's was not. We do not know, then, what value is, whether it is a category or a phenomenon. Hence, what axiological science is going to determine about value will not be such a shock against our senses and our image of the world as what Galileo determined about motion. The new position of value within the frame of reference of axiology will not be felt as a "degradation," at least not in the same degree that was felt the new position of motion within the frame of reference of Galilean mechanics. To be sure, and as also appears in Dr. Neri Castañeda's review, the denouement of the fallacy of method does cause a feeling of degradation of value, which makes difficult the acceptance of formal axiology. But the methodological shock to our knowledge is very much softer than was the theological shock to the emotions of Galileo's contemporaries. Value and logic are very much closer than motion and logic. Thus, the substitution of logic for value, though offensive to some degree, is not comparable in severity to the shock suffered by medieval man. What he had to give up he lived with all his soul. What we have to give up are some methodological errors which, moreover, concern mostly professional philosophers and are of no interest to ordinary people. Philosophical ethics—precisely for being philosophical—has never been relevantly used for understanding moral reality.

For this reason, a reconstruction in ethics, and in value theory in general, is necessary; and the positivistic denial of this necessity, or the somewhat desperate positivistic production of pseudo-logical substitutes, will not do. What is necessary is a new logic applicable to value; and this is not a new insight but a demand voiced from Plato to Susanne Langer. What was needed was only to take it seriously.[26]

5. Science and Philosophy as Methods

The question, then, is not *that* but *how*; not that a new logic is necessary but

how to construct it. This is a task which is only outlined in my book; the book is not the new formal axiology but only tries to lay its "foundations." All it tries to make clear is that the limitation of the notion of science—prevalent in the Anglo-Saxon countries rather than the Continent of Europe or Latin America—to *natural* science is illegitimate, and that "science," *Wissenschaft*, may mean both natural *and* moral science. Once this is conceded the argument of the book is obvious. It follows that the difference between philosophy and science is not one of subject matter but one of method, and that *any* material may be the subject matter of philosophy or the subject matter of science. Thus, natural phenomena ("facts") and moral phenomena ("values") may both be the objects of either philosophy or of science. In the first case, when natural phenomena are the objects of philosophy or of science, we have *natural philosophy* and *natural science*. In the second case, when moral phenomena are the objects of philosophy or of science, we have *moral philosophy* and *moral science*.

Today, we have *natural science* and *moral philosophy*, but not *natural philosophy* or *moral science*. While natural philosophy has developed into natural science, moral philosophy has not developed into moral science. From today's juxtaposition of natural science and moral philosophy follows a fivefold confusion, which can be formalized in terms of fallacies, two of which were mentioned above. This confusion concerns partly natural science, partly moral philosophy. From the fact that "science" today is natural science it is concluded (1) that no other kind of science is possible; the species "natural science" is taken for the genus "science" (the "moral fallacy"). Consequently, (2) the characteristics of natural science are taken for the characteristics of science in general. These characteristics arise, however, from the specific subject matter of natural science; hence the *object* of science is confused with science itself ("the fallacy of method"). The characteristics of "science" are said to be observational verification and prediction. Actually, these are characteristics only of *natural* science, arising from the *subject matter* of this science, the natural phenomena, which can be "observed," because they are in space and time, and "predicted," because the theory to be verified precedes the verification. A science which does not deal with spatio-temporal phenomena neither "observes" nor "predicts" in the sense of natural science, and yet is science. Examples of such sciences are mathematics, logic, musical theory, and axiology.[27] The claim of natural science to be science pure and simple, thus, is illegitimate.

A similar illegitimacy arises on the side of moral philosophy. From the fact that there is no moral science it is concluded (3) that there can *be* no

such science, and this conclusion is applied (4) to the *objects* of moral philosophy, values, which, as emotions, *etc.*, are held to be subject to psychology, sociology, and the like but not to "ethics" (the "naturalistic fallacy"). In particular, it is held to be impossible to account for values *as such* by a science, where by "science" is meant again natural rather than moral science. Thus there is added a fifth confusion, (5) that between natural science and moral science (the "metaphysical fallacy").

All this follows from the mere conception of a science of values. If one does not share this conception, of course, nothing follows. And then either one should not read my book, or else, if one does, one should attack its thesis. Failing either the one or the other, the result must be misunderstanding. Professor Neri Castañeda's principal misunderstanding, not being "in sympathy" with the conception advanced, is that he does not discuss the thesis of the book. According to this thesis, as has been stated above, value appears on three different levels which must be kept strictly apart: the formal, the material, and the axiological. The first is the level of the system of value concepts, the level of "value"; the second is the level of the unsystematized chaos of value phenomena, or of value; the third is the combination of the two levels, the application of the system to the phenomena.[28] The book deals with the first dimension exclusively,[29] that is, it tries to lay the foundation of the system of value concepts or "value." It does not deal with value phenomena or with the application of the system to the phenomena, except in outline, especially in the last section entitled "Summary and Outlook."

Objections should be directed against what the book is about rather than against what the book is not about, namely, against the system of "values" and not against either the value phenomena or their ordering by the system. The most powerful objection against a system is that it is no system; that it is inconsistent, illogical, that the axioms are not clear and the deductions do not follow from them. No such objection against the *logic* of the system is being brought forward by *the reviewer*. Neither does he object against the analogy between natural science and moral science. His objections concern almost exclusively the *relevance* of the system for the *value phenomena*. He regards the system as "irrelevant," "useless" *etc.*, because he cannot see how it *can be applied* (even though the last section outlines applications to some twenty different sciences). He further objects against the very essence of a system, namely, its tautological nature (which he calls "redundancy"), and, again, concludes from it that the system is inapplicable to value reality. The thesis of the book is precisely that the value phenomena ("human feelings, attitudes, decisions, and choices") can be systematized on a higher

logical level, but that this logic, at first glance, has as little to do with the value phenomena as, say, number theory, at first glance, has to do with the nature of the universe. Thus, it may well be that the reviewer does not see any application of the system. He is not supposed to. He is supposed to pass judgment on the system *qua* system. And objections against its applicability are not objections against the system. It is no objection against the "formulas for adding and multiplying values *etc.*" deduced from the definition of value, that they are "ingenious but fruitless, since the fundamental definitions are irrelevant to most actual evaluations."[30] Even if they are—and the reviewer cannot possibly know this since he cannot have tried to apply them "to most actual evaluations"[31]—he should have seen that these formulae were introduced not for a material but for a purely formal purpose: in order to determine, as fully as possible, the hitherto unknown relation between description and valuation in the Moorean sense—and this is a most relevant subject within the theory of value, that is, the book's subject matter.[32]

From the main error of confusing the subject of the book, "value," with what is not its subject, value—and interpreting what the book says of the former as if it were said of the latter—there follow subsidiary errors, many of which evince the reviewer's tendency of changing logical levels in mid-argument and thus committing the fallacy of method. Of these, only one shall be singled out for discussion, since it is an objection against the system itself—an objection, however, which loses its power by committing the fallacy in question.[33]

6. The Fallacy of Method

The objection is directed against the core of the system, the definition of Goodness. Professor Neri Castañeda says, in discussing the distinction between (P) "x is a C" and (Q) "x is a good C" that of the three expressions defining x's Goodness—namely

(I) x is a C
(II) C has the comprehension Φ which consists of the properties ϕ;
(III) x has all the properties ϕ,

> (I) is strictly synonymous with the conjunction of (II) and (III) so that his...logic simply reduces (Q) to (I), *i.e.*, (P), and we are again confronting a theory which makes value absolutely redundant. Hartman, of course, asserts that (I) does not imply (III)...X is a C, in other words, does not necessarily mean that x must have *all* the

> properties contained in C (or Φ) (p. 229). *But, obviously, e.g.*, a knee-high structure with a seat but no back support is *not* (called) a chair; it may be a stool or a bench or just a seat, but once we have decided not to call it a chair, it would be absurd to say that it is a bad chair since it is not really a chair.[34]

As is seen, Professor Neri Castañeda counters a purely logical argument by a certain way of naming a chair. Even if a chair without a back would not be called a chair, there are plenty of chairs that lack some chair characteristics and, for that matter, are not called something other than chair but are called *bad chairs*, (as Professor Neri Castañeda himself concedes later in discussing the distinction of exposition and definition). But it is irrelevant for the *logical* argument how things are actually called. What counts is the logical notion of an intension as a set of predicates. To object against this notion by the status of chairs is like objecting against the rule that $2 + 2 = 4$ by saying that a drunk recently saw two people as four, and hence $2 = 4$. This mixing of logical levels is, precisely, what the book calls the *fallacy of method*, and to which it traces most of the confusions in axiological thinking. The book tries to be "an attempt to introduce orderly thinking into moral subjects," meaning by disorderly thinking committing the various fallacies, especially the fallacy of method, the leaping back and forth, without being aware of it, between different logical levels. This means, in value theory in particular, mixing up the concept "value" with the phenomenon of value, or, in other words, confusing value theory with its subject matter, value. As a result, valuers believe they analyze value, value analysts believe they value, philosophers of value believe they must be involved, committed, *etc.*, and valuers who are committed, involved, *etc.*, believe they must philosophize, *etc.* Thus philosophy and value, value and ideology, commitment and rationalization, are all being mixed up.

The fundamental distinction disregarded is the self-evident one between thinking and the object thought. This implies the following distinctions: between thinking and doing, between content and form, between subject matter and method, between practice and theory, between use and meaning. These distinctions, in turn, determine those between order and disorder, between clarity and confusion, between coherence and fragmentation (incoherence), and between relevance and triviality. In other words, the fundamental distinction between thinking and its object is the condition *sine qua non* for the order, clarity, coherence, and relevance of a theory; while the fusion of thinking with its object leads, in different degrees, to the disorder, confusion, fragmentation, and triviality of a theory. All this, of

course, is too obvious for natural science even to be mentioned. But for value theory this clarification is of importance. For much of value theory is based on the confusions in question.

As a result, the three levels of value, formal value, material value, and the combination of both, axiological value, are not distinguished. This means, simply, that value has not been made an object of orderly thinking. It is not, really, the subject of a *theory*; and value "theory" is a euphemism.

For the formal axiologist, value ought to be an object of knowledge like any other, no different in this respect from the rose for the botanist or the electric current for the physicist. The botanist does not smell like a rose, and the physicist does not give off sparks. They analyze smells and sparks. In the same way, *the axiologist does not value, but analyzes value.* When the botanist hands a rose to his fiancée or the physicist pulls the bread out of the electric toaster, they do not act as either botanist or physicist. They act as human beings in everyday situations. These situations happen to exemplify certain features of their professional subject matter. But as botanist and physicist, respectively, their task is not to hand roses to fiancées or pull bread out of toasters. It is to be professionals and experts in roses and currents, that is to say, to be familiar with the *fundamental principles and general laws* that underlie *all* roses and *all* currents.

The axiologist is the expert in Value. When he values he does not act as an axiologist but as a human being in an everyday situation. This situation happens to exemplify certain features of his professional subject matter. But *as* axiologist his task is not to value but to be the professional and expert in value, to be familiar with the *fundamental principles and general laws* that underlie *all* valuing.

The book then is for experts or professionals in value, not for valuers (as a book in botany is for botanists, not for roses). It is to value as a treatise on pulmonary physiology is to breathing. The lung specialist is not a yogi or a fakir specializing in breathing exercises; he has—as a specialist—no commitment to a particular way of life of which breathing exercises are a part; he breathes like anybody else. In breathing he is not a specialist in breathing. On the contrary, if there is something wrong with his breathing, he will probably go to consult a colleague. The value specialist is not a saint or a fiend specializing in valuing exercises; he has no commitment—as a specialist—to a particular way of life of which value exercises are a part; he values like anybody else. In valuing he is not a specialist in valuing. And it may well be, when the science of valuation is as fully developed as is the science of medicine, that the axiologist, if there is something wrong with his valuing, will have to consult a colleague.

The book, then, does not give exercises in valuation, but the principles of value. It is about "value," not value.

All this is put pithily in a passage by Theodor Lessing, used as motto for a Chapter of [his] book:

> He who confuses the study of the object value with the study of the concrete valuable objects or even with the study of the acts of valuational attitudes, is in the position of a man who assigns the study of arithmetic to the botanists because he learned to count with apples and nuts, or who confuses higher mathematics with the psychology of counting because there would be no theory of numbers without people who know how to count.[35]

Logic as such has nothing to do with chairs, and value logic as such has nothing to do with the value of chairs.

7. The Logical Difference Between Valuation and Description

Thus, the objection should have been directed against the *logical* considerations given in the book for the non-redundancy of the three formulae. Dr. Neri Castañeda says "His...logic simply reduces (Q) to (I), *i.e.* (P)." But this is not my logic but his. For me, reduction, and reducibility, are not at all the simple things in logic that Dr. Neri Castañeda makes them out to be. The logical argument of the book—which is passed over by the reviewer in favor of the chair example—examines the *logical* difference between (P) and (Q), between "C is a chair" and "C is a good chair." It is as follows.

In "x is a C" every predicate contained in C (or Φ) is one of x. But in "x is a good C," the predicate "good" is *not* a predicate of x, even though it may look as if it were, but a predicate of the predicate(s) of x, a predicate of C (or Φ)—if not a predicate *of* a predicate, or predicates, of C (or Φ). "X is a good C" thus is at least a second-order function, that is, a function of a first-order function. In other words, a thing that is what it is, is what it is, and that is the end of the matter. But a thing that *fully* is what it is not only is what it is but is well what it is: value has been added to its factuality. A thing that has all the chair qualities is not only a chair but also a good chair. To be fully a chair and to be a good chair is the same thing; but to be fully a chair and to be a chair are different things. To be a chair is a function of the form "ψx," to be fully a chair is a function of the form "$(\psi)\psi x$."[36]

"Fully a chair," "a real chair," "a good chair," "ah, a chair!" *etc.*, are not the same as merely "a chair." That they seem to be the same is due to a fundamental characteristic of language, not always recognized in its universality, although Bertrand Russell has touched upon it in his Axiom of Reducibility (introduced for purely mathematical reasons): that language contains an infinity of words which appear as first-order functions, or as predicative functions of any order, which are equivalent to functions of a higher order. They are higher-order functions "reduced" to predicative functions.

"Good," now, is such a "reduced" function; it hides within it a whole hierarchy of logical orders. "*X* is good" is a first-order function equivalent to a function, or functions, of higher orders. It is this higher-order content in the seemingly simple predicative function "good" that has been hidden so far, and which is being made explicit by formal axiology.[37]

G. E. Moore's paradox of the "two different propositions both true of goodness," namely that (1) good is not a natural intrinsic property and (2) depends only on the natural intrinsic properties of the thing that has it, may be stated logically as follows: (1) "*x* is good" is not a predicative function, but (2) it appears as one. And the book's addition to Moore's statement, and the solution of its paradox—that the value of a thing depends on the correspondence of its properties with those contained in its concept—may be rendered by saying that (3) value is a second-order function. The secret of value, then, is *not to be a predicative function but to appear as one* (Moore) or *to be (at least) a second-order function reduced to a first-order function* (formal axiology). In one statement: *the secret of value is to be a reduced higher-order function.*

"Good" is only one of an infinity of such functions throughout all realms of language. A whitewashed house, in the second-order sense, may or may not be actually whitewashed in the first-order sense; a nurse on duty, in the second-order sense, may actually be asleep; a ship at anchor may actually drag its anchor; an article in stock, in the second-order sense, may actually be out of stock in the first-order sense, *etc.*, *etc.* Such double-edged—indeed, multiedged—expressions have recently been called "continuous states."[38] Actually, they are multi-order logical statements capable of reduction to predicative statements. Their mercurial character,making them capable of now appearing as predicative functions, now as higher-order functions makes them highly disturbing elements of language, like comets swishing through their well-ordered circles. Like comets, they appear as harbingers of disorder, of linguistic confusion: second-order (and higher-order) statements appearing misleadingly in the

form of first-order statements, statements about *concepts* appearing in the misleading form of statements about *instances*. Like comets, they were hard to discover, and it seems W. J. Rees—following glimpses and preliminary reports of Gilbert Ryle on occurrences in one particular field—is the first to have discovered them. Like comets, their regularity and orderly nature was not immediately seen. Rees says that "these expressions fall under some new and independent category." Like comets, they were regarded as signs of the times. Rees subsumes them under the category of temporality. Actually, they belong into logic as comets into mathematics. Their category is a logical, not a temporal one. In all cases, the ambiguity of the expression is due not, as Rees says, to the fact "that they may signify either an event or a continuous state initiated by the event" and the like, but to the fact that they may appear as either conceptual or instantial expressions. Rees thus sees only specific cases but not the general law. Actually, "continuous states" are *classes of* events, *of* dispositional, relational, or other characteristics "normally associated" with them. They are of a higher logical order *than* these events, characteristics, *etc.* Hence, Rees says the same of them that Moore says of the value property in relation to the descriptive property—and this in itself is a proof of our argument: "If my furniture is in storage no amount of *inspection* of my furniture will reveal that it is in storage;"[39] "We cannot meaningfully *describe* any of these [states] in the language which is appropriate to the description of events,"[40] *etc.* But he does not see the logical nature of the "category." Indeed, Ryle seems to be closer to it, for his "frame of mind" is a subjective version of "frame of reference"; and his "mock murder" theory actually calls these states "a class of higher order events, that is, ordinary events involving in some way the thought of other events, just as a stage murder is not a real murder but an ordinary event which involves in some way the thought of real murder."[41] This doctrine, says Rees, "is now unnecessary." It is, not because the events mentioned by Ryle are "continuous states," but because they represent *second-order functions reduced to predicative functions*. They are, in all cases, conceptual expressions capable of appearing in instantial form. It may be that all instances when regarded in conceptual form, or all predicative functions when regarded non-predicatively—*e.g.*, "Her nose is red" (because of the cold) as against "She's got a red nose"[42] or "Deaf-mute burglar refuses to talk"[43]—are valuations of some sort; and some of Rees' examples seem to bear this out, *e.g.*, "Their doctors are no doctors at all" or "We live our lives from the day we are born until the day we die, but in another sense we do not really *live* unless we engage in life's normal activities and enjoy its

normal enjoyments."[44] With other examples this is not so clear; yet, our axiom shows that once the "continuous state" is regarded as a concept with respect to its instantial "events," this state serves as *norm* for the events or the things in the events. These things then are members of the continuous state, having its intension, but not fully. Thus, a whitewashed house that is not actually white, a nurse on duty that is asleep, a ship at anchor that drags its anchor, an article in stock that happens to be out of stock, and a person in love that happens not to feel tender, or one "in prison" that happens to be at home—without *being* at home, in the second-order sense—all these do not fulfill their respective concept and hence are not, in the instant in question, good whitewashed houses, nurses on duty, ships at anchor, articles in stock, lovers, prisoners, or people at home. And those who only vegetate and do not live "fully" do not fulfill the intension of "life" and are not good "livers."

Even though this analysis seems to be true the book does not insist on it; and rather than saying that all reducible higher-order functions—or reduced predicative functions—are valuations, it says that all valuations are such functions; and hence that they form part of a large and fundamental department of language, the one glimpsed by Russell in his axiom of reducibility. It does not say, although it seems almost certain, that this department is the department of valuation; and that any reduced function, that is, any predicative function equivalent to a higher-order function, is a valuation.[45]

The transition from I: x is a member of C, to II: C contains properties ψ, to III: x has all the properties ψ contained in C, then, is a transition from a lower to a higher logical type, and back again, and to a higher logical order.[46] The relation between I and II, taken together, and any of the propositions in III—x is α, x is β, x is γ, *etc.*,—is that of entailment. This entailment, as Kant has shown—in *Die falsche Spitzfindigheit der vier syllogistischen Figuren* (which may well be translated as "The Synthetic Subtlety of the Four Syllogistic Figures," in both the early Kantian and the modern sense of "synthetic" as "artificial")—represents the original and natural function of the human mind, expressed by the rule *nota notae rei ipsius nota*—itself a nice formulation of the axiom of reducibility.

As is seen, if the expressions (I), (II), (III), are "strictly synonymous," "absolutely redundant" in the sense of the reviewer, and "simply reduce" (Q) to (I), then every syllogism, every deduction, and indeed, the whole of logic is so. In some sense, of course, every logical system is tautological; but we do not therefore dispense with logic, or with mathematics. Neither do we dispense, for this reason, with value logic. Like logic and

mathematics, it is a purely formal framework which is justified by its inner consistency. As such, it is a new departure in theory. If, moreover, it is an instrument for the ordering of the phenomena to which it refers, values, then it is, in addition, a new departure in science; and its justification is its relevance. But whether it is the latter depends on its being the former. Hence the former must be established, by constructive and critical thought, before the latter can be determined.

ENDNOTES

1. Hector Neri Castañeda, "Review of Robert S. Hartman, *La estructura del valor: fundamentos de la axiologia cientifica*," in *Philosophy of Science*, 28 (1961), pp. 89-90.

2. *Ibid.*, p. 90.

3. *Ibid.*, p. 92.

4. *Ibid.*, p. 93.

5. See on this point Ernst Cassirer, *Substance and Function*, (Chicago: The Open Court Publishing Co., 1923), Ch. I.

6. See also Robert S. Hartman, "Value Theory as a Formal System," *Kant-Studien*, 50:3 (1958-59), pp. 290 ff.

7. For details see Robert S. Hartman, "The Logic of Description and Valuation," *Review of Metaphysics*, 14:2 (December 1960), pp. 191-230.

8. [Hartman never published a book with this title. An unpublished manuscript titled *The Measurement of Value*, originally given in 1959 as a management course to executives at General Electric, exists in the Hartman archives in the Special Collections Library at The University of Tennessee.]

9. See Werner Heisenberg, *Physics and Philosophy: The Revolution in Modern Science*, (New York: Harper & Row, 1957).

10. Actually "Aha" is of profound scientific significance. See on the "Aha experience" in science, for example, Normal L. Munn, *Psychology*, (Boston: Houghton Mifflin, Co., 1946), pp. 109, 187; Jacques Hadamard, *The Psychology of Invention in the Mathematical Field*, (Princeton: Princeton University Press, 1945); Michael Polanyi, *Personal Knowledge*, (Chicago: University of Chicago Press, 1958).

11. Locke wrote that:

> Natural Philosophy, as a speculative science, I imagine, we have none: and perhaps I may think I have reason to say, we never shall be able to make a science of it. The works of nature are contrived by a wisdom and operated by ways far surpassing our faculties to discover, or capacities to conceive for

us ever to be able to reduce them into a science.

From John Locke's, *Some Thoughts Concerning Education*, as reprinted in *John Locke, Selections*, ed., Sterling Lamprecht, (New York: Charles Scribner's Sons, 1928), p. 11.

12. See in particular Plato's *Philebus*, which in turn was the model for the ethics of Aristotle and hence of that of all the Middle Ages.

13. *The Era of Violence, 1898-1945, The New Cambridge Modern History*, Vol. XII, (Cambridge: Cambridge University Press, 1960).

14. J. Ferrater Mora, "Wittgenstein, A Symbol of Troubled Times," *Philosophy and Phenomenological Research*, 14 (1953), pp. 89-96.

15. Bertrand Russell, "My Present View of the World," *Encounter*, (January 1959), p. 9.

16. Hartman, *La estructura del valor*, pp. 307ff; and Hartman, "Value Theory as a Formal System," pp. 312 ff.

17. See Robert S. Hartman, "The Logic of Value," *The Review of Metaphysics*, 14:3 (March 1961), pp. 408-423.

18. Hartman, *La estructura del valor*, pp. 307ff; and Hartman, "Value Theory as a Formal System," pp. 312 ff.

19. G. E. Moore himself commits the fallacy of method in calling Ethics what he should have called Axiology. For, in *Principia Ethica*, he deals with goodness in general, rather than with the particular kind of goodness called moral goodness, which alone is the subject of Ethics.

20. This means that philosophical "systems" are not *systems* in the sense here defined, but pseudo-systems. That is to say, they are not axiomatic constructions using synthetic concepts and being cumulatively applied to their subject matter generation after generation. Rather, they are individual creations by individual thinkers, consisting of the analytic spinning out of some fundamental category. (See *La estructrua del valor*, pp. 52 ff).

21. As for example, that of the unity of the definition, Aristotle, *Metaphysics*, H, vi.

22. Cassini in his sermon on the text: "Ye men of Galilee, why stand ye gazing up into heaven?" thundered against Galileo that "geometry is of the devil" and "mathematicians should be banished as the authors of all heresies." To the heresies of using mathematics and sense observation, and the degradation of "movement" which apparently degraded the moral and divine world itself, Galileo added the ultimate heresy of sponsoring the Copernican system which dethroned man from his moral and divine position in the universe. Considering the mortal blows Galileo dealt the medieval world, it is a wonder he fared as well as he did.

23. Some of this literature advocates the procedure of explaining logic by value disciplines rather than value disciplines by logic. Logic then appears as "generalized" economics, sociology, psychology, jurisprudence, *etc.* Methodologically, this corresponds to the Aristotelian as against the Galilean procedure. The corresponding proposal in natural philosophy would be advocating that mathematics and natural science be abolished and mathematics be understood by the categories of natural philosophy, rather than natural philosophy by the axiomatic relations of mathematics. It would mean, in other words, going back to alchemy and astrology. Strangely enough, this parallel is not only not seen, but such proposals are made in the names of Kepler, Galileo, Newton, and Lavoisier. (For example by Stephen Toulmin, *The Uses of Argument*, [Cambridge: Cambridge University Press, 1958], esp. pp. 257 ff).

24. See Hartman, "The Logic of Description and Valuation," p. 205; Hartman, *La estructura del valor*, pp. 257ff.

25. As we are actually doing. The Aristotelian procedure of applying the *category* of value to the *system* of logic is, of course, again that of the logical positivists. They regard extensional logic as the highest philosophical value, but do not analyze value.

26. Especially in Susanne Langer, *The Practice of Philosophy*, (New York: H. Holt and Company, 1930), pp. 203 ff.

27. Prediction, in particular, is not so much a matter of time as a matter of applying a formal frame of reference. I can *predict* what note Heifetz will play next when I know the score of the concerto.

28. Hartman, *La estructura del valor*, pp. 11 ff. and *pass*.

29. *Ibid.*

30. Castañeda, p. 92.

31. See, for applications to some one hundred value situations, Hartman, "Value Theory as a Formal System," pp. 301 ff.

32. See also Hartman, "The Logic of Description and Valuation."

33. Other examples in the review of the fallacy are the following: (1) The non-natural character of "good" is based on the *logical* nature of "good" as a second-order quality and not on an example, as cited by the reviewer. This objection against a *logical* argument by means of objecting against an example is an instance of the fallacy of method. (2) The reviewer confuses the book's definition of the *value term* "good" with that of the *value relation* "good for." While "*x* is good" means that *x* has the properties of its conceptual intension, "*x* is good for *y*" means that "*x* and *y* are in different classes but that their intensions overlap" (p. 238). Again, instead of discussing the logical definitions, the reviewer deals with examples. (3) There is given an exact way of distinguishing between exposition and definition. Exposition is said to contain a denumerably infinite number of predicates, whereas definition contains a finite such number (pp. 130, 283). Again this logical distinction is not discussed. What *are* discussed are examples. (4) The relation between the position of emotivists and subjectivists, on the one hand, and that of the book, on the other, is not left up in the air ("not a single argument is offered..."). It is shown that these schools either are content with the chaos of value phenomena rather than attempting its systematic ordering, or that their attempts at ordering are futile since they use imprecise, namely analytic, rather than precise, namely synthetic, concepts.

34. Castañeda, p. 92.

35. Theodor Lessing, *Studien zur Wertaxiomatik*, (Leipzig: Verlag von Felix Meiner, 1914), pp. 104 ff.

36. Considering not only "good" but the other value terms as well, we may say that the difference between *x is a C factually* and *x is a C valuationally* is represented by the difference between "ψx" and "$\psi !x$", the latter being the matrix for the second-order functions $(\psi)\psi x$, $(\exists\psi)\psi x$, *etc.*, which define one aspect of the value terms.

37. That there is a relation between the theory of types and value theory has been mentioned by recent writers in ethics and aesthetics. Cf. Rosamond Kent Sprague, "Negation and Evil," *Philosophy and Phenomenological Research*, 11 (1951), p. 566 and Morris Weitz, *Philosophy of the Arts*, (Cambridge, Mass.: Harvard University Press, 1950), p. 142. There are writers in axiology who come close to the solution without seeing the logical connection (*e.g.*, W. D. Ross, *The Right and the Good*, [Oxford: Clarendon Press, 1930], pp. 121 f.) and writers in logic who

come close to it without seeing the axiological connection (*e.g.*, Bertrand Russell and Alfred North Whitehead, *Principia Mathematica*, [Cambridge: Cambridge University Press, 1910] p. 56; Bertrand Russell, *An Inquiry into Meaning and Truth*, [New York: W. W. Norton & Co., 1940], pp. 250 ff; Bertrand Russell, *Introduction to Mathematical Philosophy*, [London: G. Allen & Unwin, 1938], p. 189). Although the predicates which Russell discusses in connection with the axiom of reducibility are all value predicates—Napoleon's greatness or viciousness, the typicalness of a Frenchman or an Englishman—he makes no use of this in his axiological writings.

38. W. J. Rees, "Continuous States," *Proceedings of the Aristotelian Society*, 58 (1957-1958), pp. 223-224.

39. *Ibid.*, p. 226.

40. *Ibid.*, p. 235.

41. *Ibid.*, p. 241. Also cf. Ryle's "second order" inclinations, motives, *etc.*, in Gilbert Ryle, *The Concept of Mind*, (London: Hutchinson & Co., 1949), pp. 443 ff.

42. See Maria Ossowska, "*Qu'est ce qu'un jugement de valeur?*," in *Proceedings of the International Congress of Philosophy*, (Amsterdam: North Holland, 1949), pp. 443 ff.

43. "Headline of the Week," *Time*, (1 September 1958), p. 46.

44. Rees, p. 233.

45. The higher-order function would be one disclosed by axiology, as in the definition of "good," or one appearing openly in language; in which latter case any higher-order function might be regarded as a valuation. To do so would, for example, solve the value questions connected with adverbs. In: *He drove slowly, He ate with his hands*, "slowly" - and "with his hands" obviously are valuations, *qualifications* of "he drove" and "he ate." A value theory, of course, must account for this value character of adverbial expressions. The expansion of our theory in regarding all higher-order functions as valuations, would take care of this. Moreover, there seems to be no example of higher-order functions that is not charged with value content. Cf. the suggestive example of Franz Crahay and its instructive explanation:

> "Y., a mediocre poet, to be sure, but for a poet, a very skillful politician, and, among those most skillful, the least obnoxious."

To type t_0 (individuals) belongs: "Y."
To type t_1 (predicates of individuals or classes) belong: "poet," "politician."
To type t_2 (predicates of predicates or classes of classes) belong, classified in orders:
Of order O_0: "mediocre," which qualifies "poet" and does not explicitly refer to the totality of poet-individuals.
Of order O_1: "skillful," which qualifies "politicians" and explicitly refers to the totality of politician-individuals.
Of order O_2: "the least obnoxious," which explicitly refers to the totality of "most skillful politicians."

From: Franz Crahay, *Le formalisme logico-mathématique et le problème du non-sens*, (Paris: Les Belles Lettres, 1957), p. 48. Yet, we are not prepared to identify all non-predicative functions, or even all "reduced" predicative functions, with valuation. To do so may constitute the next step in formal axiology.

46. If the genus of the definiens is said to be of the same type as the definiendum, then the differentia is of a higher type than the definiendum. If x is human, to be human, means to be rationally animalic, and to be animalic means to possess a certain set of properties, then *x is human, x is animalic*, and *to be human is to be rational* are predicative functions; but *x is rational* is a "reduced" predicative function. Cf. David Garcia Bacca, *Introduccion a la logica moderna*, (Barcelona: Editorial Labor, 1936), pp. 59 ff; Henry Lanz, *In Quest of Morals*, (Stanford, Calif.: Stanford University Press, 1941), pp. 57 ff.

Three

SOME SPURIOUS PROOFS FOR THE PURE EGO

Rem B. Edwards

Robert S. Hartman joined the faculty of the Department of Philosophy at The University of Tennessee, Knoxville, as a distinguished Research Professor in January, 1968 with plans (which did not always work out) to spend half of each year at The University of Tennessee and the other half at The National University of Mexico, where he was also Research Professor. During the winter quarter and the following spring quarter of 1968, Hartman taught graduate courses in Value Theory, using his then newly published book, The Structure of Value, *as the primary text. These courses had an immense effect on the lives and thoughts of many people, including Rem B. Edwards, who at the time was Hartman's junior colleague and an Associate Professor at The University of Tennessee.*

Edwards audited these courses (and several of Hartman's later courses) and had many lively debates with Hartman over pertinent issues. In the spring quarter of 1968, they had an open forum debate, attended by Hartman's students and many other faculty and students at The University of Tennessee. At this debate, Edwards presented his paper titled "Some Spurious Proofs for the Pure Ego," here published for the first time. On this occasion, Hartman gave an oral response; but he did not write his response until 1971. The following chapter of this book, Hartman's "Formal Axiology and Its Critics," includes his response to this critique and to many others.

In the following critique, Edwards gave no direct quotes from Hartman's works, so relevant quotes will be given below in this introduction. Edwards addressed four of Hartman's arguments that appear to show that Hartman's doctrine of the timeless intrinsic self is equivalent to Kant's doctrine of the Real or Pure Ego that is not in space or time. For Kant, space and time are merely forms of appearances, not of realities; and, on some interpretations of Kant, underlying the seeming plurality of persons, there is only one real person, a single Pure Ego. Kant wrote that "Commerce between the soul and phenomenal matter is quite inconceivable, for it could only take place in space. But the soul is not an object of

perception...Bodies as bodies cannot affect the soul and the converse, because bodies can have no relations with a thinking being."[1]

Edwards objected to (1) Hartman's argument from unique timeless experiences, according to which we experience timelessness and spacelessness in our most profound experiences of intrinsic valuation. As expressed by Hartman:

> *There is a delightful tale of the Persian poet Firdusi where a man experiences a whole life while putting his head in a bucket of water and right away pulling it out. Extrinsic time here is a few seconds, intrinsic time the qualitative infinity of a life.*
>
> *You also know the famous relativity of sitting two minutes on a hot stove, and on a park bench with your sweetheart. The richer intrinsic time is, the shorter appears the corresponding extrinsic time; the poorer intrinsic time (the time of experience) is, the longer appears the corresponding extrinsic time.*[2]

> *The subjects of intrinsic valuation are non-empirical things, or rather, empirical things in their non-empirical aspects. They are, as such, neither in time nor in space. When a thing is regarded as unique, all there is is this thing. Since time and space are defined as succession and interrelationship of things, where there is only one thing there is no time and no space in this sense. The thing itself is the world.*[3]

> *The inner self, we said, is not in space and time. Where then is it? Everywhere. In other words, in the inner core of our Self we are intrinsically one with every other Self. The cones of our Selfhood all meet at the vertex. There is one community, one core, of all mankind. This reality Jesus called The Kingdom of God that is within us, Kant called it the Kingdom of Ends, Royce and others called it by other names. In it, intrinsically, we are all one; and when we do a bad thing everybody* has *done it with us and through us.*[4]

Edwards also objected to (2) the argument from meta-awareness, according to which the self-awareness of the total temporality of the self cannot be in time. As expressed by Hartman:

> *I can reflect upon my reflection of myself, and upon my reflection* of *myself, and so on* ad infinitum...*The whole succession of my reflection*

upon myself, thus, is an infinite denumerable series with cardinality $\aleph_0$*..For both thinkers [Josiah Royce and Richard Dedekind][5] whatever a thinker thought, the thinker himself was not a part of the set of thoughts he thought. Thus although all the reflections upon myself, and the reflections upon these reflections, and the reflections upon the latter,* etc., *differentiate myself infinitely, they never cover the totality of myself, since there always remains the Self which must do the thinking.*[6]

Next, Edwards critiqued (3) the argument from Bertrand Russell's theory of types, which says that whatever involves all of a collection cannot be a member of that collection. Applied to time, this means, Hartman believed, that the self which refers to the totality of time cannot itself be in time. As he put it:

According to the fundamental axiom of the theory of types, whatever involves all *of a collection must not be one of the collection; the thinker must not, logically, be part of the set of his possible thought objects, in particular, not of the set of his auto-reflections - the set of his reflection upon the reflection upon...the reflection of himself. That which thus refers to all of a collection is of a higher logical order than the collection. If the collection itself is of order* $\aleph_0$*, the higher order is* $\aleph_1$.[7]

Finally, Edwards protested against (4) the argument from the infinite divisibility of time, according to which any part of a Self's infinite time is as rich in properties as the whole of its time. Hartman wrote:

What is the "I"? It is that which makes one person out of the infinite fractions of your life in time and space...How many moments do you have in time? Fifty-two years, we'll say. How many days? 52 times 365, or 18,980 days. How many hours? 455,520. How many minutes? How many seconds? There is an infinity of subdivisions we can make. So you have an infinity of life moments, and all of them have to be pulled together.[8]

For a particularly clear illustration of the principle of transfinite cardinality, that the part equals the whole, see the parable [of Jesus] of the Laborers in the Vineyard.[9]

After telling the parable of the Laborers in the Vineyard, in which laborers who work all day, for several hours, and for only one hour, are all promised and paid the same wage (which irritates those who work longer), Hartman asked:

> *What on earth does it mean? It does look unfair. And from the point of view of finite arithmetic, it is unfair. No business in the world is conducted this way. But this is infinity business that Jesus is talking about — this is the Kingdom of Heaven. No space or time. If there is no time, what difference does it make how long a man has worked? Everybody is there in eternity. One eternity is as eternal as another eternity, and the so-called ten-minute eternity is as eternal as the so-called twelve hour eternity; there are neither minutes nor hours. There is no space either. If there is no space, then there is no separation, because what separates you and me is the space between us. If there is no separation, then there are no separate pockets. If there are no separate pockets, what you have everybody has. What you don't have, nobody has. So it makes no difference who gets what. The dollar that goes to anyone goes to everyone. At the bottom of our spiritual Selves we are one community. All of us are one.*[10]

Whiteheadian process philosophers deny that any segment of time is divisible into an infinite number of real parts. It is potentially divisible into an infinite number of parts only in human thought or imagination, but real temporal occasions are finite atomic durations, shorter than which nothing can be real. At the level of human consciousness, these atomic durations are about a tenth of a second long; at the level of sub-atomic events, according to quantum physics, temporal occasions must endure minimally for as long as Planck time, 10^{-43} seconds, in order to exist at all. In lesser intervals, nothing can exist; so time is not divisible into an infinite number of real units.

I wish to explain as clearly as I can why I do not accept the doctrine of the non-spatio-temporal Self which Professor Hartman has been urging upon us, and in the process of doing so I hope to show that it is not through sheer obduracy or lack of perceptiveness that I reject the doctrine. I wish to state first a general reason for rejecting the doctrine and then to examine some of the arguments which Professor Hartman has used in class and in his

published writings to support the doctrine.

As a general reason for rejecting the doctrine, I offer the consideration that a non-spatio-temporal Self could have no relevance to ethics or value theory if the usual Kantian strictures are placed upon it. According to the Kantian position (to which Professor Hartman has not yet explicitly committed himself in class), the categories of cause and effect apply only to the realm of phenomena, including the realm of the empirical self, and do not apply at all to the realm of noumena or things in themselves, including the Real Self. If this causal doctrine is held in conjunction with the doctrine of non-spatio-temporality, then the Real Self could have no relevance to morality or value theory in the sense that such a Real Self could never be acted upon, could never be an effect; and it could never act, could never be a cause. No matter what the word "value" may ultimately turn out to mean, I do not think that we human beings are able to value anything unless that thing can affect us in some way. Also, it is only the kind of self which can function as a cause that can have moral duties. A cause-less self could never *do* anything, and if we accept the "cannot implies ought not (not obligated)" principle, then it could never have any moral duties *to do* anything. In what then could moral duty consist? Finally, if we define moral responsibility as being the originative cause of our actions, then a non-causal self could never be responsible for anything.

Now I wish to examine briefly some of the arguments used by Professor Hartman to prove the existence of a non-spatio-temporal-self, which will be called henceforth the "Pure Ego."

1. The Argument from Unique Timeless Experiences

According to this line of argument, we know that there is a Pure Ego because certain unique experiences occur in which we are not aware of spatio-temporality. As instances of this type of experience, Professor Hartman cited the cases of being in intense pain, like sitting on top of a hot stove, and of being reduced to silence, of being at a loss for words, and the experience of being in love. There is an ambiguity in the concept of "atemporality" which makes it initially plausible that in these experiences of timelessness we are transported into the realm of the Pure Ego. "Atemporal" may mean on the one hand "not being aware of time," and on the other hand it may mean "not being a datable event in time." Professor Hartman seems to move from the one to the other as if they were identical, but this is not the case. Many times I have had the experience of concentrating so completely on the book I was reading that I was unaware

of being in my office, but it does not follow that I was not in my office simply because I was unaware of being there. Similarly, it does not follow that my experience of excruciating pain, or of being at a loss for words, is not a datable event in time simply because I am not *aware* of its being a datable event in time. Such magic moments do doubtless occur, but they are *moments* all the same.

When asked if it makes sense to ask "When do these unique experiences occur?" Professor Hartman answered affirmatively. It would appear that an affirmative answer to this question concedes that these experiences are events in time. I doubt that we ever have an experience of anything which cannot, upon later reflection, be recognized to be earlier than some experience and later that some other experience in the time series, even though the experience in question is one in which we are not aware of or attending to temporality. It is with the intent of avoiding this conclusion that Professor Hartman offers the next argument, which is not so much as argument as it is a postulate.

2. The Argument from Meta-awareness

It is contended that if our awareness of timelessness is an event in time, then this is only the awareness of the empirical self, not the awareness of the Pure Ego, which can be so dated. In order to arrive at the Pure Ego we must postulate an Awareness of awareness, a meta-awareness; and it is this meta-awareness which cannot be dated. Presumably, it is only when we arrive at this meta-awareness that it no longer makes sense to ask and answer: "When did it happen?"

About this argument, several remarks are in order. First of all, we must be clear that none of the appeals to unique experience discussed in Argument (1) provide any evidence for the existence of this meta-awareness *as long as we are willing to date them as events in time.* Has anyone ever had an experience of excruciating pain or a magic moment of love for which it was absolutely impossible for her or him to give at least a *rough* answer as to *when* it happened (for example, after I was born, or after I reached the age of puberty, and before I came to class today)? I doubt very seriously that anyone (including Professor Hartman) could give an *honest* affirmative answer to this question!

Second, it is precisely at the point where we have to postulate this non-datable type of awareness that philosophers from David Hume through Alfred North Whitehead and Charles Hartshorne have maintained that our theories lose contact with experience altogether. If this is the case (and I

believe that it is), then no appeal to unique timeless experiences, and no appeal to any empirical evidence whatsoever, could be employed to support the Pure Ego theory. The only kind of experience which could support the theory would have to be an absolutely undatable experience.

Third, if the meta-experience about which we are perplexed does not happen at a certain time, then what is left of the claims that we have it, or that it happens to us? Is not all this talk about timeless meta-experience simply about happenings which do not happen? Is not the theory thus trapped in a contradiction?

Fourth, it should not be inferred that the expression "awareness of awareness" is shown to be a totally senseless expression by the above arguments. In one sense, it is senseless, totally foreign to experience and to logic, to say that we have non-datable experiences of datable experiences. But it is true to experience to say that we have *datable* experiences of datable experiences. Today my "self of the moment" remembers the pains, and loves, and silences of the self of yesterday or yesteryear. Memory is experience of experience, awareness of awareness, a type of meta-experience; but a memory is an event within time, a datable experience of a datable experience. There is no need whatsoever to postulate the existence of a Pure Ego in order to make sense of such expressions as "I am now aware that sometimes I am not aware of myself." The distinction between present and past self is all that we need. This simply means that "The self of the present moment remembers that the past self was attending to or concentrating upon something else (such as a book, or a pretty girl), not upon itself." The past self is identified as *my* past self because it belongs to the same causal series of conscious experiences as that to which my experience of the present moment belongs, and because it is remembered to have many if not most (but not all) of the properties that my present self has. Whiteheadians subscribe to a theory of *relative* self-identity through time.

3. The Argument from the Theory of Types

Just how much metaphysical mileage can we get out of the theory of types? Professor Hartman apparently believes that we can get a great deal! It can be used to prove that a non-spatio-temporal self is a *logical* (we are now out of the realm of empirical arguments) requirement of the spatio-temporal self.

The theory of types has been offered by certain philosophers as a way of avoiding the logical paradoxes or contradictions which arise when a property

is predicated of itself, or when a sentence is permitted to refer to itself, for example, the paradox of the Cretan who said that "All Cretans are liars." The theory of types forbids the type of self-reference which breeds such paradoxes. A property cannot be a member of the class of things to which it is predicated; a sentence cannot be a member of the class of things to which it refers.

I am not well enough versed in logical theory to argue in detail that there is something wrong with the *metaphysical* application of a *logical* theory such as that expressed in the previous paragraph, though I suspect that such an argument could be constructed. I wish to urge only that the following difficulties seem to arise if we attempt to get the sort of metaphysical mileage out of the theory of types that Professor Hartman attempts to get.

First, if I must be un-spatial in order to talk about the whole of space, and un-temporal in order to talk about the whole of time, would not the same pattern of reasoning prove that I must be un-real in order to talk about the whole of reality? I am not at all sure that *I* have much use at all for these "whole of X" expressions, but presumably Professor Hartman does. I am simply saying that this seems to create a difficulty for him since the same pattern of argument which proves the non-spatio-temporality of the Pure Ego also proves its unreality!

Secondly, the line of argument which Professor Hartman has initiated seems also to generate an infinite regress of Pure Ego's (if it is admitted that the Pure Ego can talk or think about, know about, or have beliefs about itself). If a Pure Ego is required before I can talk about my empirical self, then what is required before I can talk about my Pure Ego? The obvious answer is that a Meta-Pure-Ego is needed! And then A Meta-Meta, and a Meta-Meta-Meta, and so on to infinity!

Finally, even if we admit that the theory of types does have metaphysical applications, an alternative account of self-knowledge can be provided which does not require a Pure Ego. Professor Charles Hartshorne, for example, contends that the self of the present moment, in the strictest intelligible sense of "present moment," can never literally know or talk about itself, since all introspective experience is actually retrospective experience on immediately past states of the present self, and since the self which begins the thought "my present self" is already in the past by the time that this thought is completed.[11] Self-reference can thus be avoided without introducing a "Pure Ego."

4. The Argument from the Infinite Divisibility of Time

The relevance of this one is awfully difficult to see, but Professor Hartman apparently wants to contend that the Whiteheadian theory of selfhood is mistaken because time is infinitely divisible. Some more elaborate re-construction of the argument is doubtless required, since the conclusion here does not follow from the stated premise in any obvious way. And there is always the danger, in re-constructing an argument which was only incompletely stated, that it will be misconstructed. But allow me to make an attempt.

The argument seems to be that the Whiteheadian view that the self (in the broad sense of the series of causally continuous experiences which have temporarily terminated in the present moment of consciousness) has a beginning (somewhere close to birth) and an end (at death) is mistaken, since if the self endures for a short time, (as Whitehead admits), it therefore endures forever (because even a short period of time is infinite, is infinitely divisible). To put the matter another way, if the self endures for five minutes, it endures for eternity since five minutes has just as many parts as eternity, namely an infinite number. Thus, the self is eternal.

I am no expert in trans-finite mathematics, but I sense that there is something wrong with this argument somewhere. I can illustrate the difficulty by producing a parallel argument: If we have had five minutes of Professor Hartman's course in Value Theory, we have had it all, since there are as many parts in five minutes of the course as there are in thirty-five hours of it! Shall we adjourn?!

ENDNOTES

1. Quoted by Harald Höffding, *A History of Modern Philosophy*, Vol. II, (New York: Dover Publications, 1955), p. 572, n. 15.

2. Robert S. Hartman, "Formal Axiology and Its Critics," this volume, p. 64.

3. Robert S. Hartman, "The Logic of Value," *The Review of Metaphysics*, 14:3 (March 1961), p. 422.

4. Robert S. Hartman, "The Value Structure of Personality," unpublished manuscript, p. 24.

5. [Hartman's reference here is to:] Josiah Royce, *The World and the Individual*, Vol. I, (New York: Macmillan, 1923), pp. 501 ff; and Richard Hocking, "The Influence of Mathematics on Royce's Metaphysics," *Journal of Philosophy*, 53 (2 February 1956).

6. Robert S. Hartman, "Four Axiological Proofs of the Infinite Value of Man," *Kant-Studien*, 55:4 (1954), p. 433.

7. *Ibid.*, pp. 433-434.

8. Robert S. Hartman, *Freedom to Live: The Robert Hartman Story*, (Amsterdam - Atlanta: Editions Rodopi, 1994), pp. 75-76.

9. Robert S. Hartman, *The Structure of Value: Foundations of Scientific Axiology*, (Carbondale, Ill.: Southern Illinois University Press, 1969), p. 353, n. 33.

10. Hartman, *Freedom to Live*, p. 138.

11. Charles Hartshorne, *Creative Synthesis and Philosophic Method*, (La Salle, Ill.: The Open Court Publishing Co., 1970), p. 109.

Four

FORMAL AXIOLOGY AND ITS CRITICS

Robert S. Hartman

Before his death in 1973, Robert S. Hartman was working on a reply to his many critics and left behind a manuscript titled "Formal Axiology and Its Critics." Although unfinished, this manuscript contained many instructions for completion, including details on how to integrate specific sections of Hartman's unpublished letters into the existing gaps. In a letter to James Wilbur, (then Editor of The Journal of Value Inquiry*) dated 30 April 1972, Hartman wrote:*

> *I propose a paper which is a kind of "Reply to My Critics" although this will probably not be the title. There have been quite a few papers on formal axiology, especially in your* Journal, *but also in other journals, as well as in books, in the U. S., Asia, and Europe, especially Russia,* etc., *all of which demand a reply.*

In a letter to Rem B. Edwards dated 6 June 1972, Hartman wrote that "Jim Wilbur...has accepted my article 'Axiology and its Critics' sight unseen." Unfortunately, Hartman did not live to complete this manuscript and get it to this publisher.

In completing "Formal Axiology and Its Critics," the editor tried to follow Hartman's instructions as best he could; but occasionally he had to go beyond them. In many unpublished letters and papers, Hartman responded to critics and questioners other than those who were designated in this essay to receive a response—like John W. Davis, Paul Weiss, Charles Hartshorne, William Eckhardt, Robert S. Brumbaugh, Marvin Katz, Robert E. Carter, and Stephen Byrum. Only four of these—Robert E. Carter who reviewed The Structure of Value, *Charles Hartshorne, William Eckhardt, and Robert S. Brumbaugh—are included below. This essay, Hartman's letters, and his posthumously published essay titled "Reply to Eckhardt and Brumbaugh," are the primary sources for the contents of "Formal Axiology and Its Critics."*

Hartman never considered himself above the battle; he delighted in

philosophical polemics; and he constantly urged his colleagues and students to make improvements on his foundations for formal value theory. To Marvin Katz's objection that axiology will some day be obsolete, made at the meeting of The Society for Philosophy of Creativity in St. Louis in 1972, Hartman retorted: "What Professor Katz says is certainly true—that axiology will be obsolete—I hope the earlier the better—because if this system has any dynamic in it, it should be overcome within at least a generation, or, at most a generaton."

In completing Hartman's "Formal Axiology and Its Critics," the editor followed the strategy, where possible, of presenting Hartman's replies in the order in which the critiques were originally published or made public, even though this was not Hartman's own order (the plan of which was never discerned).

Formal axiology as I understand it is the science which plays with respect to the social and humanistic disciplines the role that mathematics plays with regards to the natural sciences. It orders them, quantifies them, makes them predictable. It is, in modern terms, the analogue these disciplines follow, or in Kantian terms, the *a priori* which rules the value disciplines, universally and necessarily. In this sense it is the essence of these disciplines; it is the pure science of value or the science of pure value, of the variable "value" rather than value, or the science of the *concept* "value" rather than of any phenomenon of value. It follows a strict logic which I call intensional rather than extensional, for it is based on the set-interpretation of intensions or meanings. It deals with sets of predicates rather than sets of properties—which latter are of doubtful nature—but it orders the latter, the sets of properties, and, moreover, *constructs* them as primary value properties. In doing so it brings about the sciences of value, as mathematics does those of nature.

[I do not say that] value is the degree in which a thing possesses a set of properties corresponding to the set of *attributes* in the intension of its concept. [Instead], value is the degree in which a thing possesses the set of properties corresponding to the set of *predicates* in the intension of its concept. The difference between properties and predicates is that the predicates are the *names of* the properties. Thus, we have the property *red* and the name of this property, "red," which is a predicate. Intensions consist of predicates. If I should use the word "attributes" I mean it the same as "predicates." But I always try to steer clear of words which have

an ontological or metaphysical connotation, as does the word "attribute." It is possible that in *The Structure of Value* I do not make the distinction between predicates and properties clear enough, but in other writings I think I do.[1]

Every set of predicates is defined to be one particular *value concept* or "*value*." The definition of "value," in other words, is "a set of predicates." Any set of predicates is a "value." Any set of properties is a *value*.

This definition and treatment of the value realm has appeared to me so simple, natural, and fruitful—not only in my life but in the lives of all those who have been touched by it, a subject a following discussion will deal with —that I have dedicated the past three decades to it. I have found a satisfactory echo throughout the international philosophic community, of which the *festschrift*: *Value and Valuation: Essays in Honor of Robert S. Hartman*[2] is a tangible expression.

1. Critical Reception of the Theory[3]

[My work is being well received] in applied fields such as psychology, aesthetics, anthropology, *etc.* Among philosophers, in spite of its framework, which hinders philosophy, the reception was astonishingly good. I say in *The Structure of Value*:

> The transition from *moral philosophy to moral science*... has much of the excitement today that the corresponding transition had in natural philosophy—strenuous opposition of philosophers and laymen to the adventurous spirit of new scientists and laymen.[4]

On the other hand:

> The difference between moral philosophy and the new moral science is very much less radical than was the rupture between natural philosophy and natural science. While this has practical advantages—a modern axiologist is in no danger of being burned alive—it has certain intellectual disadvantages. Since the differences in question (namely between *fact and value*) are so subtle, and merely on the logical and perhaps the phenomenological but not on the sensory plane, there is a danger that these differences may be underestimated and looked upon as irrelevant hairsplitting. But the differences between moral philosophy and moral science are *logically* of the same importance as

> those between natural philosophy and natural science. This logical character is what determines the nature and efficiency of the new moral science, as it does that of any science.[5]

My [point of] departure then has been often misunderstood; in particular, there has not been a single *criticism* of the system as such, namely, the identification of sets of properties as values, or of the system [as a whole]; but the criticisms have either been against the application of the system, as Robert W. Mueller's, or against the system in terms of applications of it, as Hector Neri Castañeda's, or mere name calling, as G. R. Grice's or the Soviet reviewers.

The system as such has not been criticized; on the contrary, even by its greatest critics, the system as such has been called truly beautiful. In general, the spectrum of reviews reaches from "fantastically ingenious and challenging" (Charles Hartshorne),[6] and "one of the most constructive and revolutionary undertakings suggested in modern time" (Henry N. Wieman),[7] to "absurd" (G. R. Grice), and a "fetishistic apology for capitalism,"[8] with the vast majority of reviews positive and complimentary.

In a way, the emphasis of critics on the applicability of the theory is justifiably legitimate in view of what is said in *The Structure of Value* in the last section, "The Value of a Value Theory."[9] Value seems to touch people deeply, and hence a value theory involves them greatly either in delight or disgust. This accounts, on the one hand, for the raving reviews the book has received, but also for the expressions of disgust that have come its way. "There are philosophers," says Brand Blanshard, "whose philosophy has become a sort of fanaticism, making them to head like a bad onion..,"[10] and who therefore only react [emotionally] against a new value theory, especially one that is as incisive as formal axiology.

It has been experienced with the [Hartman Value Profile—hereafter "HVP"] test that people, on just seeing the words, begin to vomit, to shout, to crumple it in their hands, to stamp on it with their feet, and by the simple view of it to become completely enraged, especially where it is used in hospitals. Curiously enough, a similar reaction has occasionally been observed with philosophers who read, or read about, formal axiology. In one case, in Canada, a doctoral candidate who had a chapter on formal axiology was denied the doctorate by one member of his [dissertation committee] unless he extirpated "this nonsense" from his dissertation. He dismissed the testimony on formal axiology by men such as Paul Weiss, Charles Hartshorne, and Henry Wieman by saying that these were not philosophers but theologians.

In another case, a paper on formal axiology, again in Canada, was submitted to a professor; and the student wrote me as follows:

> I submitted a paper to one of my professors who appeared profoundly disturbed by me, it, your theories, and you...According to this professor, I have a methodological disease which is not relevant to philosophy as a mature endeavor, and if I would grow out of and up from this disease, my philosophical progress would undoubtedly accelerate.

These are irrational reactions to the theory, which in these cases is seen as an intrinsic dis-value; and they are amazingly frequent. This may be due to what Bertrand Russell says:

> Many people have a passionate hatred of abstraction, chiefly, I think, because of its intellectual difficulty; but as they do not wish to give this reason, they invent all sorts of others that sound grand...The power of using abstractions is the essence of intellect and with every increase in abstraction the intellectual triumphs of science are enhanced.[11]

Or it may be due to the reason that Albert Einstein mentioned:

> When the basic concepts of a theory are comparatively "close to experience"...its speculative character is not so easily discernible. If, however, a theory is such as to require the application of complicated logical processes in order to reach conclusions from premises that can be confronted with observation, everybody becomes conscious of the speculative nature of the theory. In such a case an almost irresistible feeling of aversion arises in people...who are unaware of the precarious nature of theoretical thinking in those fields with which they are familiar.[12]

Value theory is still "close to experience;" hence, precise logical formulation gives rise to suspicion and "an almost irresistible feeling of aversion." The programmer who was to program the axiological formulae of the value calculus into a computer actually got a nervous breakdown because, as she said, of the power of the calculus, and had to interrupt the work for six months for this reason.

Actually, the Canadian professor in the second case was quite right. From the point of view of philosophy, science is a methodological disease;

but from the point of view of science, philosophy is a disease of obfuscation. There is no "maturity" in philosophy because philosophy is aporetic, and the questioner never matures; only the answerer does; and if he is an answerer, he will become a scientist, as did Galileo Galilei, Sir Isaac Newton, René Descartes, and G. W. Leibniz.[13]

Another form of objection against formal axiology, *especially the value calculus*, at first sight seems reasonable, but on closer examination becomes somewhat irrational or emotional; it concerns the *use of transfinite numbers*. Although logicians such as Benno Erdmann, and ethicists such as Edwin T. Mitchell, have used these numbers, there is a kind of aversion against them, partly of intuitionist origins, partly because they are regarded as unnecessary.

It would have been very easy for me to leave out these numbers from the theory and simply state the rules of composition and transposition of S [systemic value], E [extrinsic value], and I [intrinsic value] following the pattern of n, $\aleph_0$, and $\aleph_1$, without ever mentioning these numbers. I could have used [only] S, E, and I instead of alephs. Thus, I could have said that denumerably infinite values are the limits of exponentiations of finite values, that is, that the limit of exponentiations of n-values is E, and that E to the E is I, E to the n is E, E plus E is E, E times E is E, *etc.* But I felt that this would have a been a deception since I *did* base my considerations on the theory of transfinite numbers, and since Georg Cantor himself in particular felt that there is a value application to transfinite numbers.[14]

Intuitionists who deny the possibility of transfinite numbers and a great deal of other mathematical inventions would regard the axiological calculus as impossible, even though works. On the other hand, there are mathematicians who, more or less legitimately, try to make a bridge from mathematics to value and ethics, but do so in a way that is either too inarticulate, or on the basis of everyday concepts, to which mathematics is inapplicable.

[I turn now to my] critics, who deserve a full answer.

2. Reply to Charles Hartshorne, 1965, 1967

Sources of critique: Charles Hartshorne, Anselm's Discovery: A Re-examination of the Ontological Argument for God's Existence, *(LaSalle, Ill.: Open Court Publishing Co., 1965), Part II, Ch. 18, and a letter from Charles Hartshorne to Robert S. Hartman, 21 December 1967.*

In 1961, Robert S. Hartman published his "Prolegomena to a Meta-

Anselmian Axiomatic," in The Review of Metaphysics, *14:4,32 pp. 637-675. In this essay, he applied his developing ideas about axiology to St. Anselm's Ontological Argument for God and to Anselm's conception of the nature of God. The Process Philosopher/Theologian Charles Hartshorne at the University of Texas, the world's most able defender of the Ontological Argument, published his* Anselm's Discovery *in 1965 and included a chapter on Hartman, among others.*

Hartshorne remarked that how Hartman would handle the Findlay paradox, discussed below, is not clear; and he formulated two objections to Hartman's position: (1) if God is understood to be that being richest in properties, as Hartman espouses, "One can still object that 'richest conceivable' thing means, that which would, if it existed, be richest..." The reality of this being can be denied without self-contradiction, just as the reality of a triangle can be denied without self-contradiction even though it necessarily has three sides if it exists. Perhaps Hartman did not pay sufficient attention to the distinction between mere or ordinary existence and God's unique mode of necessary existence. As Hartshorne indicated, "Only inconceivability-of-nonexistence, as a property, can rule out this escape." Hartshorne also objected (2) that the concept of an "absolute maximum of richness" is not a consistent notion.[15] *Many things are possible separately, but incompossible together, as Leibniz showed.*

In 1967, Hartshorne wrote to Hartman on 7 November and again on 21 December about issues raised in The Structure of Value *and asked where Hartman stood on a number of questions of interest to process thinkers—like (3) whether there is any process or temporality in God, or in human self-identity. In the following letter to Hartshorne, written on 29 January 1968, Hartman seems to affirm a process view of both God and human selfhood, one that attributes temporality, process, or development to both God and human persons. Hartman concluded this letter to Hartshorne with: "I very much enjoyed your letter, and it gave me a great deal to think [about]."*

There isn't really much mathematics in my book except a little transfinite calculation, which to a mathematician will be commonplace; but the applications of it will be seen by him with great skepticism. Actually, they are not his business, as long as there are no mathematical mistakes. Otherwise, it is the value theoretician rather than the mathematician who must judge the use of these instruments. Also, I do not bother with the various problems and disputes of mathematicians on the calculus used;

sufficient unto the day is the rigor thereof. But I would be very, very much interested to know what Nicolas Goodman[16] has to say. The main thing of my theory is its coherence and consistency, and that the results that follow from the axiom are correct. I see these as a confirmation of the axiom, and am happy that Professor Hartshorne agrees with so many of them. Also, on those that Hartshorne does not agree with, we are closer than it seems.

As to past, future, and present classes, they are not all identically extensional. A class is an extensional set; but these sets have different intensions, which in turn produce different extensions. It seems to me that individuation is not merely a matter of extension but even more so of intension. The more properties you give a class member the more you individuate it, until in the end it is not a member of any class, but itself. Both past and future classes, and their individuals, are in the mind only, which means that they cannot have the same number of properties that present class members have. They cannot be either extrinsic or intrinsic values, but only systemic values, having the definite number of properties which I remember or project. In other words, they are on the same level as imaginary individuals, such as Hamlet, which have the finite number of properties of the work in which they appear, not beings in time and space, but in imaginary time and space.

The time and space of memory and anticipation are imaginary too. Moreover, there does not seem to be more individuation in memory than in anticipation. Memory fades; and anticipation may be very explicit, as in Jules Verne, and in Bacon's (*sic*) *Utopia*.[17] All these have a finite number of properties (systemic value). Things in space and time have a denumerable and infinite such number (extrinsic value). Yet, an imaginary thing may have, depending on the force of the imagination, more than systemic value, namely, extrinsic value. Thus, if my imagination reaches the intensity of extrinsic value cardinality, then *I produce things in space and time*. Here belongs the whole field of psychosomatics, *Fata Morganas*, sexual[18] phenomena, *etc.* And if my imagination reaches the intensity of intrinsic value, I produce things in aesthetic space and time (F. S. C. Schiller's *Schein*, Susanne Langer's semblance)—I project my intrinsic being in a work of art.

I don't think I accept Spinoza's view that the actual details of the world follow necessarily from the eternal nature of God. On the contrary, I do believe as you do, that particulars and empirical classes are contingent additions to the nature of God. I have developed this axiologically in an essay on the relation of "The Good as a Non-natural Quality and the Good

as a Transcendental."[19] I there say that good as a transcendental is a second-order property of the maximum intension possible, whereas good as a non-natural property is a second-order property of any intension. A thing that in the scholastic terminology would be valuable or perfect in the degree of its participation in God's perfection would be perfect in the degree of its participation in the ultimate richness of properties. The world itself, which has the value good (extrinsic value, aleph_0 properties) has the *total* value aleph_1 (intrinsic value), since the *total* value of something is the totality of all the subsets of properties something has ($2^{\aleph_0} = \aleph_1$). This total value, infinitely richer than the value of the world itself in goodness, is supplied to the world by the existence of beings. Existence adds infinite richness to the world. The world, theoretically, may be existing as a whole with a certain number of properties; but it is only the existence of beings in it that adds to these given properties infinitely. Thus, while the world has an infinity of properties, the existence of beings in it adds to it a higher infinity. Every existent thing is a subset of the world's set of properties and as such a *value* of the world. Counting all the value possibilities in it, the world has intrinsic, not extrinsic value.

But this intrinsic value of the world is infinitely poorer than God, who is the value of values, rather than eternal or necessary predicates, which hardly do justice to His nature. He is the infinity of infinite values, $\aleph_\omega$. This being so, He is infinitely removed from anything we can conceive; He is that than which nothing higher *can* be conceived even by a being with infinitely infinite powers of conceiving—even by Himself. This means that He, by the necessity of His nature, is continuously surpassing Himself—a necessary, ever self-surpassing, self-concretizing Energy. For since God is the infinity of value infinities, He is the most concrete of all concretenesses, Concreteness or Reality itself. He is necessary concreteness and, by the nature of infinity, necessarily inexhaustible and ever (self)creating concreteness: He is concret*ing*, both Himself and, contingently, worlds. The necessity of his (self)concreting arises thus both from the nature of His conceiving His being, and that of His being itself. His world creating is contingent only from our point of view; for God, world creating is a necessity of His nature, the means of His self-surpassing; even though the nature of the world created is up to a point contingent.

Now the ontological proof. A systemic concept can reach this nature of God only in the systemic dimension, which is infinitely poorer than the nature of God. To enter into His truth we need infinitely infinite powers of conception, which by definition we cannot have since only God has them. The maximum understanding of God for a contingent human being is in the

loss of his self, his stretching his self to the breaking point to come as close to God as possible—and this is still infinitely remote from Him, though it may also be infinitely remote from the world. In this state, there is no need of a proof of God's existence, just as there is no need of a proof of my own existence. If, however, I want to give an intellectual proof of God's existence, then first I have to define existence and show that from God's nature there follows his existence. This is possible when existence is defined as a kind of intension (or value). Since God is the value of values (the intension of intensions) He must *include* this existence in His nature, even though, of course, this existence does not exhaust His nature. It is an infinitesimal part of His nature. This does, I think, take care of the Findlayan "paradox" [that "the concrete cannot be deduced from the abstract,"—yet the Ontological Argument seems to do just this].[20] When I prove that God exists, I prove only an infinitesimal part of His being—for His Reality is infinitely higher than His existence. I prove that part of His being that corresponds to my conception. The nature of proof itself, and of the *a priori*, rises with the fullness of what I want to prove—so that in the end *I myself am the proof*, not of God's existence in the sense of proved systemically, but of God's infinite reality in the degree of my own power of conception.

I agree with Hartshorne that it is not individual things or persons which are the final concrete reality, but states or unit events which are alone fully concrete. I also agree that all value is in "actual entities," not in enduring changing individuals. My reason is that the intrinsic value aspect of the individual thing or person, which is eternal and immortal, is not identical with the thing or person in space and time.

Human beings, as with all intrinsic values, cannot be put into classes at all, for in doing so one makes them into extrinsic values. All intrinsic values are selves, and each self is unique, *i.e.*, has at least one property no other being has. (The property "uniqueness," of course, is not one of the properties in question but a second-order property of the set of these properties). Thus, members of the class of human beings, of negroes, *etc.*, are extrinsic values. As intrinsic value I am neither "a human being," nor "a negro," nor any kind of "so-and-so."

The human individual, by virtue of his capacity of reflecting upon himself, is a continuum within himself, whereas God is a continuum only when a human being regards him as an intrinsic value. From this difference results a difference in the continuum nature of man and God; man's is a higher cardinality.[21]

Properties must harmonize for an intensional set to be such a set. If they

do *not* harmonize, the set is a transposition, and the thing a disvalue. Harmonization thus is implied in richness of properties.

The definition of "human being" of course, excludes the notion of murderer. If this notion is included, then the definition is of a human being who is a murderer, that is, of a murderer. It can be shown that the actuality of murdering is contradictory to the definition or exposition of a Self.

Relation to a concept is *the* meaning of value only in the sense that a formal axiology can be built on it. Any other meaning that could do this would be *the* meaning of value in a different sense, just as there are two different meanings for electrons, a corpuscular and a wave meaning.

I should not say that every analytic concept implies every other, but rather that all form chains of implications, which are intertwined. Beside the relation of implication (fox-animal) there are those of differentiation (animal-fox). While *fox* implies *animal* because "animal" is contained in the concept "fox," the concept "fox" is also contained, in a different sense, in the concept "animal."[22] Differentiation is the intensional counterpart to division.

3. Reply to Rem B. Edwards, 1968

Source of critique: Rem B. Edwards, "Some Spurious Proofs for the Pure Ego," 1968, published as Chapter Three of this volume, pp. 41-50.

On 2 July 1971, Raymond M. Pruitt, while writing a Master's Thesis in Philosophy at The University of Tennessee, wrote to Robert S. Hartman in Mexico and invited him to respond to questions raised by Rem B. Edwards in his essay on "Some Spurious Proofs for the Pure Ego" concerning the nature of, and the spatiotemporality, causality, and finitude of individual persons. Many of Hartman's remarks in his writings and in his classes led Edwards to believe that Hartman identified the Person or the Self with a Kantian Pure Ego that is totally nonspatial, nontemporal, and beyond all legitimate applications of concepts of "effect" and "cause." Raymond Pruitt asked Hartman: "When we are valuing a person, what is it that is of infinite value—the actual person? the potential person? or the Pure Ego? If it is Pure Ego, what happens to the individual *person?" Hartman's rejoinder to Edwards was given in a letter to Raymond M. Pruitt dated 17 July 1971.*

In this rejoinder, Hartman said (1) that although he does not use the term "pure ego," he does speak of the "transcendental self," and this is the real

person, (2) that this transcendental person or self is the reality to whom all its properties belong, (3) that the transcendental self is non-spatio-temporal; and only the empirical self, with which ethics has nothing to do, is spatio-temporal and involved in causation, and (4) that Edwards confuses the time that is within intrinsic experience with extrinsic time that is outside the intrinsic. Hartman does not clarify how speaking of intrinsic time can be reconciled with (3), or how this Kantian view of the real self can be reconciled with the process view of the real self that he affirmed in the preceding reply to Charles Hartshorne.

(1) A thing has the value which is determined by the cardinality of the number of predicates in the intension of its concept. The person, in my "Four Axiological Proofs of the Infinite Value of Man,"[23] is defined by various intensions; and it is the person thus defined which is of infinite value.

I don't think that anywhere I use the notion of Pure Ego, either in that article or in *The Structure of Value*. I might use the notion of *transcendental self*, and I would identify this with the person as far as value is concerned. Thus, I speak of the person that fulfills the definition given in the various proofs. *What is of infinite value, then, is the person* as fulfilling the intension by which it is defined, *e.g.*, in the epistemological proof, the definition "man is a rational being." Anything that is a rational being is, according to this proof, of infinite value. And it says there, as also, *e.g.*, in *The Structure of Value,* that "every individual person is as infinite as the whole space-time universe."[24]

(2) The question whether we make a distinction between the individual and the properties of the individual is the old question of Berkeley, and it refers to anything, *e.g.*, a chair. Do we make a distinction between the chair and the properties of the chair? *I think we do.* The chair is the subject of which the properties are predicated. The individual is the subject of which its properties are predicated. The properties are that which is had by the subject. Since there is a difference between the properties of the thing and the predicate in the intension of the thing's concept, the thing possesses value in the degree in which it has the properties that correspond to the set of predicates in the intension of its concept.

A chair may not have the properties of a chair, and a person may not have the properties of a person, *e.g.*, a moron, or a criminal who defines himself as "I am a non-rational being" or "I am not I." Depending on how

many or how few properties the person or the thing has, he may be a good, a so-so, a bad, or a no good person or thing. Read my article in the *Review of Metaphysics*, March 1961, entitled "The Logic of Value," where I speak of the degrees of intrinsic valuation and the differentiation of intrinsic values.

(3) *The transcendental Self* in Kant is non-spatio-temporal. Only the empirical self is spatio-temporal. But intrinsic ethics has nothing to do with the empirical self; nor does it apply the categories of cause and effect. In Kant, ethics is based on the notion of freedom *from* cause and effect, on the autonomous self-determination of the person, and the same is the case in formal axiology, as [explained] in *The Structure of Value*.[25] Here, beside Kant, I mention Karen Horney, Abraham Maslow, Erich Fromm, Ludwig Binswanger, and Victor Frankl. These are the ones whose teaching brings about intrinsically defined ethics. One could also add the ethics of Søren Kierkegaard, Max Scheler, and Emmanuel Levinas, and in general the notion of a person in existential psychology and psychiatry.

In other words, the ethics which appears when we define it as the application of intrinsic value to the individual person is existential ethics, the relation of the person to himself in self-reflection. There is also [another] kind of ethics, logical ethics; but this belongs to extrinsic rather than intrinsic value and is more psychology (extrinsic value applied to the individual person) than ethics in the intrinsically defined sense, as in the paperback [edition] of *The Structure of Value*.[26]

Thus, the intrinsic aspect of psychology overlaps with ethics as intrinsic value applied to individual persons. There are very subtle distinctions here, as for example in the teleology of Nicolai Hartmann, in what he calls the backward determination from the future to the present of the three-fold finalistic nexus where intrinsic time determinations take place. But these distinctions depend on the distinction between intrinsic time and extrinsic time and are not discussed in any of my published writings. I am preparing an article, "The Universe of Intrinsic Value," where I discuss this; and it is part of a new book, *The Universe of Intrinsic Value: An Axiological Introduction to Ethics and Aesthetics*.[27]

(4) *Mr. Edwards* mixes up the time within the intrinsic experience with the time outside of the intrinsic experience. *These are two entirely different times*, intrinsic and extrinsic, respectively. From the outside, an intrinsic experience can be said to endure a certain number of minutes or hours, measures which belong to extrinsic time. So we can say that a person has had an intrinsic experience for five minutes. But then we speak of the temporal length of the experience measured from the outside. Within the

experience, the measurements are not minutes and hours but *intrinsic measures which are differentiations of the infinite.*[28]

There is a delightful tale of the Persian poet Firdusi where a man experiences a whole life while putting his head in a bucket of water and right away pulling it out. Extrinsic time here is a few seconds, intrinsic time the qualitative infinity of a life.

We also know the famous relativity of sitting two minutes on a hot stove, and on a park bench with your sweetheart. The richer intrinsic time is, the shorter appears the corresponding extrinsic time; the poorer intrinsic time (the time of experience) is, the longer appears the corresponding extrinsic time. Intrinsic experience can, of course, be both positive and negative. When it is negative, *i.e.*, of an intrinsic transposition rather than composition, then it is intolerable, *e.g.*, torture or deep grief (I_E, I_I); and extrinsic time appears endless (but not infinite, as against ℵ). We want the negative intrinsic experience to cease, not to exist; and we anticipate with all our body and soul this cessation. We are thus aware of the flow of extrinsic time, and such awareness makes it flow slowly (as when we anticipate arriving at an address we have not been to before. Going, therefore, always appears slower than returning, when we know the way and don't pay attention to the extrinsic time flow).

The reason that the awareness of the extrinsic time flow makes time go slowly is that *in that case our transparency to time is obscured.* Our body and our senses, including the sense of time, must be transparent, that is, must not obstruct us, for our transcendental Self to experience. On the other hand, with a positive intrinsic experience, extrinsic time flies. We are so involved in the intrinsic experience that we pay no attention to the extrinsic time flow. We are completely transparent (Maslow calls these peak experiences) and so fully experiencing. In a negative intrinsic experience, our empirical self resists this time flow with all its powers. By the way, while intrinsic and extrinsic time are thus in inverse proportion to their experiencing, or rather being experienced, systemic time goes unconcernedly along; the watches keep on ticking and ticking.

I think the whole clue of the relationship between extrinsic and intrinsic value is in the sentence by Husserl: "Fact is one of the possibilities of varying the given in imagination."[29] We must get away from the idea that the space-time world *is reality.* It is only one of at least three realities; and that of intrinsic value is by far the richest. *Every intrinsic experience is a world in itself.* You might actually define intrinsic valuation as *the creation of alternate worlds.*

Such a creation is only possible to the being which by its own nature is

infinite in the sense of my proofs. The infinity of the person rests in the last resort on its self-reflexivity, that is, the definition of the person as that being which has its own definition of itself within itself. From this follows everything. The predicates, therefore, by which the quality of the person is measured are at the same time properties within the person—as is not the case with a non-reflective thing. I refer you in this respect to my article "Belief as a Value Quality."[30]

An inner intrinsic experience is the identification of the person *with his own thoughts*. A person may have, to his own thoughts, all three value relations, systemic, extrinsic, intrinsic. He may just think about his thoughts, or he may classify them, or he may identify himself with them:

$$(I^S)^S,\ (I^S)^E,\ (I^S)^I.$$

The latter is the intrinsic experience of one's own thoughts. The more one does this the more one loves oneself and creates oneself as an intrinsic universe within oneself.

4. Reply to Robert E. Carter, 1968, 1969

Sources of critique: Robert E. Carter, "Review of: Robert S. Hartman, The Structure of Value," *in* Dialogue, *8:4 (1970), pp. 727-730; and letter of 21 October 1968 from Carter to Hartman.*

While completing his graduate degrees, Robert E. Carter began corresponding with Robert S. Hartman and struck up a lively friendship with him. He visited the Hartmans in Cuernavaca, Mexico, in 1968 on a Canada Council Doctoral Fellowship and consulted with Hartman almost daily for a period of six months while writing his Ph.D. thesis on value theory. In later years, he and Hartman worked on a jointly written book; and he corresponded with Hartman extensively up to the time of his death.

The first section of the following is from a letter from Hartman to Carter on 29 October 1968. It answers two very important questions, among others raised by Carter in his letter of 21 October 1968:

> *[1] Would it be outrageous to hold that the intrinsic value realm is not in space but IS IN TIME?; and [2] How does one judge whether what one thinks he ought to be is what he REALLY OUGHT TO BE? How do we get beyond the individualistic concerns of Existentialism where each man "does his thing"?*

In dealing with Carter's question about the temporality of the realm of intrinsic value, Hartman seems to, but perhaps did not, contradict what he usually said. He usually categorically denied without qualification that the intrinsic is in space or time, as in the citations presented in the preceding introduction to Edwards' "Some Spurious Proofs for the Pure Ego, pages 41-44 of this book. In responding to Carter, Hartman further developed a theme presented at least once in The Structure of Value[31] *that the intrinsic dimension has its own space and time and is not absolutely spaceless and timeless after all. Intrinsic spacetime is just different from public extrinsic spacetime. Hartman's denials that the intrinsic is in spacetime can be reconciled with a process (here Bergsonian) metaphysics if Hartman is only talking phenomenology, not metaphysics, as Edwards assumed. Extrinsic timelessness characterizes experiences of intrinsic valuation, not the actually existing intrinsic values that are the intentional objects of these experiences; (Hartman frequently confused intrinsic valuations with intrinsic values,[32] identification with identity.) When we totally love, empathize with, or identify ourselves with some I, E, or S, public spacetime is irrelevant, unnoticed; and intrinsic spacetime becomes our whole experiential universe. Hartman's most thorough and convincing expression of this phenomenology of intrinsic valuation may be found in his posthumously published article titled "The Axiometric Structure of Intrinsic Value",[33] but this theme is nicely expressed in section (1) of the following reply to Carter.*

The third and fourth sections below are Hartman's response to the objections raised in Carter's 1970 review that (3) a single account of "good" is sufficient, and that (4) there is a mystery surrounding our capturing the concept of something.

(1) Yes, it *would* be outrageous to hold that the intrinsic value realm is not in space but is in time. Remember that space and time are themselves subject to the value dimensions and that we must never mix dimensions. Thus, when we speak of intrinsic value we must speak of the time and space which belong to this dimension, namely, intrinsic time and space.[34] Intrinsic value is thus outside both extrinsic space and time and systemic space and time, but it is within intrinsic space and time. The time in which the mind is, according to Augustine, is the same as Henri Bergson's: it is intrinsic duration; it is not the time of the sun and of everyday, nor the time of clocks and of physics. Immortality means being beyond extrinsic and systemic space and time (the universe); but it means to be in intrinsic space

and time, precisely in *eternity*.[35] Very interesting in this connection is J. B. Priestley, *Man and Time*.[36] Also, of course, Arthur Eddington, *The Nature of the Physical World*.[37] There are many works on: Time in Homer, Time in Thomas Mann, *etc.*, on the various Time-dimensions. Space is not so popular.

When we define Ethics as "intrinsic value applied to persons," then from the notion of intrinsic value it follows that the person is not in space and time, hence is not different from any other person, hence that all persons are one (the Kingdom of God., *etc.*).[38] Compassion, conscience, and other intrinsic phenomena follow necessarily from the non-spatial, non-temporal, or intrinsically spatio-temporal, character of personality. Thus, egoism is self contradictory, as already G. E. Moore saw,[39] although he doesn't prove it as easily and simply as do I by the mere notion of intrinsic value; (actually his argument is based on the notion of extrinsic value and is thus invalid).

(2) How does one judge whether what one thinks he ought to be is what he *really* ought to be? If he defines himself *intrinsically*, then this is what he really ought to be, since extrinsic and systemic value ought to be intrinsic value. See?! Thus from a cell, I ought to become a physical, and from a physical a social being; and from a social being, I ought to become a moral being. In doing my own thing, I then do everybody's (Kant: "humanity in thyself").

Why does Carter say the precise mathematical standard of the intension of a concept is missing in ethics? Not at all. It is the non-denumerably infinite nature of the self-concept. This I must fulfill.[40] In the degree that I fulfill it, I fulfill humanity in myself, even the whole universe, *a la* St. Francis.[41] In the degree that I do not fulfill it, I am remote from this norm, and the distance can be measured by the axiological calculus; (this is precisely what the [HVP] Test does). For this reason, it is so important to remember that the whole of formal axiology is axiometry.

(3) The main criticism which Professor Carter brings against *The Structure of Value* is that I assume "that a single account of the use of good—good-of-its-kind—is sufficient for all types of contexts in which it occurs."[42] I do not agree with this formulation. I start my presentation with good-of-its-kind; but I show that this is only one specific case of a much wider logical matrix of *Good*; and that *Good* itself is only one kind of value. Thus, my theory is not so much concerned with *Good* as with *Value*; and value is defined as the intensional counterpart to number. Just as the class of all classes of extensions similar to a given extension is Number, so the set of all sets of intensions similar to a given intension is

Value.

If there is given a set of *n* predicates determining a certain extension (class), then the things belonging to the class (the class members) having *n* properties are good class members; and all those having less than *n* properties are less than good such class members. The value *Good*, then, is the totality of intensions similar to intension *n*; and the value *Less-than-good* is the totality of intensions similar to intensions less than *n*. An intension is a set of predicates and structured according to the logic of sets. Any set of descriptive qualities defines a fact; any subset of a set defines a value. This is a much wider subject than good-of-its-kind.

Good-of-its-kind refers to only one kind of value, namely, extrinsic value. When the arithmetic of sets is applied to the set of predicates, that is an intension; and, in particular, when transfinite sets are considered, then the kind of which good-of-its-kind speaks becomes something which no axiology has so far considered: on the lower scale of finite predicative sets appears systemic value, and on the upper scale of transfinite [predicative] sets, intrinsic value. Good-of-its-kind is only the starting point of the theory, perhaps the central part of it; but it is by no means all the theory is about. This is rather *set theory applied to sets of predicates*.[43]

Although, thus, I do not accept that the subject of my book is good-of-its-kind, I still would like to say a word on Mr. J. O. Urmson's approach [discussed by Carter], for it illustrates well the difference between logical and linguistic analysis of value. The linguist sticks to words, whereas the logician penetrates to the meaning of what is being said. The same is true of the axio-linguist and the axio-logician. The former adheres to words; the latter penetrates to the meaning of words. Thus, Mr. Urmson, in Chapter 9 of *The Emotive Theory of Ethics*,[44] makes the distinction between "good of a kind" and "good from a point of view" and notes that while it is usually possible to determine that a "good x" is independently a "x," it is far from clear how it is to be shown that a "good thing" is independently a "thing" in any clear and unambiguous sense. Mr. Urmson's examples are (a) "This is a good road from the farmer's point of view" and (b) "This is a good thing from the farmer's point of view."

In a first course of logic, a student is told that in ordinary language the terms of propositions are frequently inverted, its parts separated, or words used in such a way as to obscure its true logical meaning, to which the student is taught to penetrate. The linguistic philosopher works on the pre-logical level of the student who has not yet learned logic, and this is especially true of the value linguist. He still hangs himself up on words without penetrating to their axiological meaning. Thus, Urmson's example:

"This road is a good thing from the farmer's point of view," *means*, in value logic: "This road is good for the farmer." It belongs to the notion "good for," which is examined in detail in *The Structure of Value*. "A good thing" has no meaning in formal axiology because there is no intension of "thing" that makes any sense; hence "a good thing" is not an axiological but a pseudo-axiological term; it means "something good," as discussed in *The Structure of Value*. It means that something is good. "Something" is a variable, and "something good" means simply: "*X* is good." When we insert for "*x*" a name that has meaning, the phrase becomes axiologically meaningful. Such considerations are closed to the linguistic philosopher, since language does not disclose them. "For *x* to exist or come about would be a good thing" means: "It would be good that *x* exists."[45] The analysis of the phrase can be made analogous to that of Moore's open question test.[46] In my *El Conocimiento del Bien*, it is shown that the meaning of "It is good that *x* exists" follows from the fact that the intension of "the existence of *x*" coincides partly with the intension of "*x*."[47]

(4) The next objection of Professor Carter concerns the "mystery" surrounding the capturing of a concept of something.[48] Formal axiology is based on the principle that valuing goes as far as conceptualization, and that valuing is possible in the degree that there is conceptualization. Where there is no conceptualization, there no valuation is possible. It is not the matter [or business] of axiology to discuss the capturing of concepts (even though Carter says I have gone pretty far in showing the structure of concepts). It is the matter of axiology to show that valuation depends on conceptualization. Thus, when two persons have a different concept of a painting or, for that matter, of democracy, *etc.*, then their valuations must correspondingly be different. This is a fundamental fact of valuation and hence must also be accounted for in value theory.[49]

In sum, I have never yet come across an example of linguistic value philosophy which did not yield to axiological analysis. Thus, for me, it is neither an open question nor a contentious issue whether axiologic can account for value situations. The thing one has to do is to *apply* value logic, to penetrate to the meaning of value words, and not content oneself with their surface appearance.

5. Reply to G. R. Grice, 1969

Source of critique: G. R. Grice, "Review of Robert S. Hartman, The Structure of Value: Foundations of Scientific Axiology, *in* The British Journal for the Philosophy of Science, *19 (1969), pp. 179-180.*

The first two reviews of Hartman's The Structure of Value *by Castañeda and Grice were very contentious. Hartman himself wrote the following reply to Grice in the third person—as if it had been written by someone else, and titled it "Hartman and Simplicio: A Rejoinder to G. R. Grice." Apparently, he hoped to persuade someone else to publish it in his own name; but this was never done. In the following text, the editor has converted all third person references back to first person references.*

Grice protested (1) that Hartman procrastinates in facing the difficulty that if a thing has to be an x in order to be a good x, then every x is good because every x fulfills its definition; and there cannot be a fair or bad x. Grice also claimed (2) that Hartman's definition of "good" is mistaken, (3) that he lacks feeling for plausibility, and (4) that his distinction between definitional and expositional properties is untenable.

Concerning these difficulties, Hartman responded:

In the following, I will discuss G. R. Grice's review of *The Structure of Value*.

1. Grice objects with "an elementary reflection" against my definition of "good," which he claims to show "will not do; and when this definition is swept away, the whole of Hartman's thesis is swept away with it." Grice claims that on page 51 of my book, I give a definition of "good," the difficulties of which I do "not notice...for a hundred further pages and it is not tackled for forty more."[50] This statement is incorrect in several respects.

(a) On page 51, I do not even discuss or give a definition of "good." I discuss a necessary intensional counterpart to the definition of Number in extensional logic and find it also in the notion of Value. After examining the shortcomings of a merely extensional logic, which culminates in the definition of Number, I state: "There also ought to be a concept which is defined by 'the class of all intensions similar to a given intension.' This concept happens to be the concept 'a value,' as it will be elaborated from the determination given by G. E. Moore."[51] Then follows what Mr. Grice cites, namely, the concept of "good" as an instance of "value" and as part of the program I set for myself, "*to be elaborated from the determination given by Moore.*" In pursuing this program, I first discuss the meaning of a science of ethics in Moore's sense; second, I develop the axiom of valuation from Moore's paradox of intrinsic value;[52] third, I show the corollaries of the axiom; fourth, I apply the axiom to Moore's own axiology

(in what I regard as a brilliant exposition); and immediately thereafter, fifth, I proceed to the elaboration of the axiom. The "hundred further pages" are thus used in developing the program announced on page 52. It is false that I do "not notice the difficulty" until then.

(b) The difficulty, according to Grice, consists in the following. According to my definition, a thing is a good member of its class if it has all the class properties, and is a less-than-good member if it does not. This definition, says Grice, "has the consequence that a thing is a good x if and only if it is an x, with the further consequence that there cannot be a fair or bad x."[53]

Mr. Grice here uses precisely the kind of logic which—and this is the whole point of my discussion—must not be used in the discussion of "good." Grice overlooked my fundamental argument. Using extensional logic to account for values, the procedure of positivistic "axiologists," I say,[54] results in the nonsense of holding value judgments to be nonsensical because they do not fit into this kind of logic. The positivist, rather than designing a new logic that would fit the notion of value, Procrustes-like amputates the larger part of philosophy and throws it away as senseless. [As I indicate,] "The counterpart in physics to the positivistic attitude in ethics would be Einstein's decision, since it was proved that the ether did not exist, to lean back and pronounce all natural science as 'nonsense.' Instead, he designed a new frame of reference..."[55]

[This is what I do] for the field of value. My discovery is a *universal instrument for the measurement of value*: the measure of the value of a thing is the intension of the thing's concept, I say as early as page 19:

> The use of the logical concept as axiological measure presupposes the elaboration of intensional logic, which has been neglected during the development of extensional logic in the last hundred years. Such elaboration leads to the notion of intension as a set of predicates and to the structuralization of this set according to the logic of sets.[56]

Extensional logic, therefore, can be applied to the phenomena of moral philosophy as little as could scholastic logic to those of natural philosophy; but precisely this logic is what Mr. Grice applies in criticism of my definition.

(c) Grice has not noticed the basis on which I apply set theory to the predicative set of the intension and show that the three cardinalities—finite, denumerably infinite, and non-denumerably infinite—*give different sets of intensions*. "The first kind of sets are called *definitions*, the second

expositions, the third *descriptions* (or *depictions*). Each of these kinds of sets defines a specific kind of concept; and the fulfillment of each such concept defines a specific kind of value."[57] "Exposition" thus is a technical term in my system, following from my fundamental procedure of applying set theory to predicative sets. If this notion is held to be untenable, as Grice claims, one must attack the procedure from which it follows and, in particular, come to grips with the historical sources on which I base it, G. W. Leibniz, Hermann Lotze, and Benno Erdmann.

(d) Instead, Grice attacks the notion of exposition with an example—his "elementary reflection"—and applies to it precisely that logic which I exclude from the subject of exposition, namely, the logic of *definition*. The three kinds of values originated by the fulfillment of the three kinds of intension are characterized as follows. The first kind, systemic value, belongs to constructions of the human mind, such as geometric circles, electrons, *etc.* The second kind, extrinsic value, belongs to abstractions where properties common to at least two things are "drawn off" one by one. Such things may lack one or more properties of the class and still be such things, though not good ones. The third kind, intrinsic value, belongs to singular things. The value of the first kind is *Perfection*, that of the second kind *Goodness*, and that of the third kind *Uniqueness*. To each of them belongs a specific logic; extensional logic belongs only to the first kind. Grice, unaware of all this, uses the logic of systemic value to contradict my definition of extrinsic value.

(e) The notion of exposition, which defines extrinsic value, and extrinsic value alone, is introduced systematically on page 112, not on page 197, [as Grice suggests.] Even earlier it is discussed in various contexts, [especially] in connection with the Kantian distinction between the synthetic and analytic methods,[58] on which I, like Cassirer, base the logical distinction between philosophy and science. Grice does not notice any of this. He finds my distinction between expositional and definitional properties[59] "untenable" due to his limited view of logic, rather than because of any difficulty inherent in the notion or its axiological consequences. Grice's example in this connection shows his error. "If one racing man said to another, 'She's a good filly' and the other replied, 'No she's not: no chestnuts', he would not have disputed what the first said."[60] But he would have, because for him a property of a good filly is having chestnuts on the inner sides of both pairs of legs.

According to Grice, this view of a filly makes one "guilty of irrelevance." But it is not up to Grice to judge what a racing man regards as a good filly. Nor has this judgment of a good filly anything to do with

the logic of goodness. Rather, the example confirms my theory, for this theory is about the logic of value judgments, not about the justifications for making such judgments. The racing man calls the filly "no good" because she lacks some of the properties which, according to him, fillies should have. Another racing man, or a philosopher for that matter, may regard this as a property not needed by a good filly. But both use the term "good" for the possession of those properties that they regard as goodmaking. In my terminology, Grice confuses a variable ("good") with one of its logical values. This I call The Fallacy of Method.[61] Grice's "reflection" is not only elementary but formally fallacious. Moreover, it is materially false. Horsemen tell me that the lack of chestnuts in a filly is a serious matter.

(f) Mr. Grice's reflection does not jibe with the phenomena of valuation. A truly elementary reflection would show that, for example, a chair which lacks a seat is still a chair and is not thrown away but sent to a carpenter for repair, or that a review, Grice's, for example, which lacks expositional criteria of a review is still definitionally a review since it is about a book and in a journal section entitled "Reviews." His is a review, but not a good one; and as the shortcomings of the chair must be repaired, so those of a review must be corrected. These elementary facts are accounted for in my axiology by the distinction between expositional and definitional properties.

(g) This distinction is as old as logic itself; and so is the notion of the intension as a measure of value, going back to Plato and Aristotle. My definition of value

> is the formulation in *logical* terms of a principle common to all classical value theory. It has been expressed in ontological, teleological, epistemological, and other terms. Ontologically, a thing has been called good in the degree of its *perfection*, teleologically, in the degree of fulfilling its *purpose*, epistemologically, in the degree of possessing its essential *properties*. It has been called good in the degree that its actuality corresponds to its ideality, or its ideality is fulfilled by its actuality (Paul Weiss), or in the degree that there is "fulfillment of its essential nature" (Paul Tillich), or that it has "the special complex of characters which justify us in calling it good" (G. E. Moore), *etc.* Surveying the history of axiology we have here a general consensus which may be called "*axiologia perennis*."[62]

(2) Anyone familiar with the subject of my investigation will understand that I have tackled successfully a problem which had not been solved in previous philosophy. The classical problem of value—in the form of

Goodness—has been: How to define Good-in-general, rather than this or that specific good. The problem, in other words, has been to find out what it is that all good things have in common. This problem, which is that of the Socratic dialogues, of the *Republic*, of Aristotle, of Aquinas, *etc.*, has never been solved. It is stated by Nicolai Hartmann in a passage that he uses as a motto to his Chapter 3:

> Ethics in all its forms comes down to the question, What is the principle of the "good"?...Positive morals cannot be appealed to, for each answers the question materially in a different manner. One sees happiness, another satisfaction, a third justice, a fourth love, as the Good...Philosophy has early recognized the complete onesidedness of positive morality and consequently searched for the Principle of the Good as something more general, superordinated to these fragmentary insights. It was looked for as the genus to the manifold of the species. The Platonic "Idea of the Good" was the most radical such attempt. But what is the content of such an "Idea of the Good"? It has been looked for in vain. Neither Plato nor any later philosopher has been able to determine it.[63]

The naturalistic fallacy consists precisely in the faulty substitution of definitions of specific goods, such as satisfaction, pleasure, *etc.*, for the definition of good in general. I show that the reason for this fallacy does not lie in the subject matter of axiology; rather, it lies in its philosophical instead of scientific method. The same kind of fallacy appears in every case in which a philosophy is converted into a science. From the point of view of the new science, the arguments of the old philosophy—like Grice's "elementary reflection"—appear fallacious.[64] [As I indicate,] "The history of science shows that whenever the philosophical definition of a subject matter is replaced by a scientific one, the philosophical one appears as a methodological fallacy such as the naturalistic fallacy."[65]

The unfolding of Moore's naturalistic fallacy into five methodological fallacies is one of the most fascinating sections of my book. The basis of it is the transformation of philosophical into scientific axiology, in the sense defined in 1:e above. In the process of solving the problem of Good, I was driven to a scientific, that is a formally synthetic, rather than a materially analytic, procedure (in the Newtonian-Kantian sense). I had to develop Moore in the very direction Keynes foresaw.

Indeed, as Keynes said, in *Principia Ethica*, Moore "carried the use of

> ordinary speech as far as it would ever be possible to carry it, in conveying clear meaning. *For still greater precision one would have to proceed by mathematical symbols.*" This kind of procedure I have been driven to employ in this book.[66]

I was driven to a formal axiological view of value in the same way that the creators of natural science were driven to a formal mathematical view of nature.

Anyone who is familiar with this problematic will, as Ludwig Wittgenstein said to C. H. Waddington, be grateful to anyone who tries to tackle it.[67] I not only tackled but, as far as I can see, successfully solved it. Of course, my book, being a *scientific* one, must appear as implausible to a *philosophical* mind who has not followed my argument carefully, as the arguments of Copernicus and Galileo appeared to the scholastics. Grice is my Simplicio. It is a confirmation rather than a criticism of my position when Grice finds "bizarre machinations," "weird conceptions," and "lack of any feeling for plausibility" in my book.

Those, however, who have struggled with the problematic and have racked their brains trying to follow the convolutions of contemporary axiology will welcome my book as a true liberation. They will find it exceedingly clear, my formulations ingenious, my conceptions to the point, and my feeling for plausibility of that fundamental simplicity which Bertrand Russell calls "'logical common sense'—*i. e.*, that it should seem in the end, just what one ought to have expected all along."[68]

Professor Charles Hartshorne has written that my book is "fantastically ingenious and challenging."[69] At the same time, its formal simplicity, yet explicitness, applied to the fundamental subject of value, makes it, in the words of Professor Henry N. Wieman, "one of the most constructive and revolutionary undertakings suggested in modern times."[70]

6. Reply to Nicholas Rescher, 1969

Source of critique: Nicholas Rescher, Introduction to Value Theory, *(Englewood Cliffs: Prentice-Hall, 1969), Ch. V.*

In his chapter on "Axiology: The General Theory of Values," Nicholas Rescher at the University of Pittsburgh charged (1) that Hartman's axiology deals only with value of a kind or class, but not with value in general, (2) that he incorporates an essentialist metaphysics (things have essences) into his value theory, (3) (a) that bad things as well as good things have

properties, and (b) that complex things need not be better than simple things, (4) that Hartman treats all properties as being on a par, (5) and that he neglects degrees of property possession.

Hartman gave the following reply to Rescher in a letter to him dated 7 November 1970.

Concerning the section [Professor Rescher was] kind enough to grant me in his book, *Introduction to Value Theory*, I have one major objection against his presentation, and from this other objections follow. The main objection is that he presents one small part of my theory as if it were the whole. Actually what he presents as my theory is only a third of it. He then criticizes what he presents; only, what he presents is not my value theory!

[Rescher explains] only that part which I call extrinsic value, but not systemic or intrinsic value, nor value in general. After his words, "Hartman says, 'A thing is good if it fulfills the definition of its concept,' and that the more complex and property-laden this concept becomes, the better the things that instantiate it,"[71] Rescher might have added:

> However, "goodness" characterizes only one of the three value dimensions in Hartman's view, the extrinsic. Things can be called "good" and "bad" only if they can vary in the possession of their properties and yet retain their capacity for being the kind of things they are. This is the case only for things in space and time, which remain such things even though they can vary their properties. Things that are thought constructions change their being when predicates are added or subtracted. Hence, to thought construction, the predicates "good" or "bad" cannot be applied. There are no good or bad geometrical circles or square roots of -1. The values of such things Hartman calls systemic values. They are characterized by the finite and definite number of predicates in their concepts. "Good and "bad" are only applicable for things in classes. Thought constructions are represented by their schemata and do not appear in classes. There is a third dimension of value, the intrinsic, where "good" and "bad" are not applicable either, when a thing, namely, is regarded in a class by itself and unique. In this case the set of its properties, and that of the predicates in its intension, forms a continuum, and is non-denumerably infinite. Hartman thus defines intrinsic, extrinsic, and systemic value as functions of the cardinality of the number of predicates in a thing's

concept. Each of the value types, thus, is quantitatively defined, and the three can be put in an hierarchical order: extrinsic value is richer in qualities than systemic value, intrinsic value richer in qualities than extrinsic value. Since "richer in qualities" is the definition of "better," extrinsic value is a better value than systemic value, and intrinsic value a better value than extrinsic value. Moreover, since what is worse ought to be better, systemic value ought to be extrinsic value, and extrinsic value [ought to be] intrinsic value. All valuation, in other words, ought to be directed toward intrinsic value. Every intension, according to Hartman, is a value measure or *axiometric*. The names of things thus are used as their norms. Hartman shows that value is of the same structure intensionally as number is extensionally. This leads to his definition of *Value in General* as *the set of all sets of intensions similar to a given intension*. Value is that variable the logical values of which are axiological values, *i.e.* axiometric intensions.

This, more or less, would be a short and fair description of my value theory. It is summarized in *The Structure of Value*[72] and in my article on "Formal Axiology and the Measurement of Value" in *The Journal of Value Inquiry*.[73]

In view of this description, Rescher's major criticisms disappear; and the minor do so as well. Let me now take them up one by one, starting with the major criticism.

(1) "The theory does not get at value-in-general, but only at value *sui generis*—the value of something as an instance of a specific kind with well-determined characteristic properties."[74]

[I reply that] value *sui generis* is only extrinsic value. Neither systemic nor intrinsic value are the value of something as an instance of a specific kind. Rather, we have three kinds of value quantitatively defined and hierarchically ordered.

(a) There are two sections in *The Structure of Value* on the relation of Value in General and specific values, Ch. III, Sections 1 and 3. Section 1 is called "Generic and Specific Value," and Section 3 is "Axiological Specificity." The difference between generic and specific value is explained in detail, and it is shown what is meant by each. Under the generic there are two logical levels, the particular and the singular. General value is called "Value," specific value "value." Both are combined in *valuation*. The first is elaborated in the logic of value or formal axiology (axiologistic or axiologic), the second in applied formal axiology or pure theoretical axiology, the third in applied value sciences.[75] Value *sui generis* does not

belong in this logical series; it is not the opposite of value in general. Value *sui generis* may either be general or specific value. Value in general is what all value phenomena have in common;[76] and if all value phenomena have in common that they are instances of a specific kind with well-determined characteristic properties, then this kind of value is value in general. As mentioned, this is not my definition of value in general, but the definition of extrinsic value only.

The definition of *a* value in general is rather the *set of intensions similar to a given intension.*[77] That is, the value "good" is had by all things the set of properties of which corresponds to the set of predicates in their intension. The set of sets of predicates (intensions) which contain *all* their predicates is the value *good*, and the set of sets of predicates (intensions) which do not contain all their predicates is the value *less than good*. Value is that variable the logical values of which are axiological values.[78] The latter are defined, also, as *any subset of a set properties.*[79] The set of all these sets of intensions similar to given intensions then is Value in General.

(b) Since the three kinds of value, intrinsic, extrinsic, and systemic, are hierarchically ordered, it is not true that whereas "We can use the property inventory to evaluate, say, a pearl *qua* pearl, but we cannot use it to evaluate pearls *versus* diamonds."[80] We can, once we have determined the *tertium comparationis*, say, "jewelry," and the property inventory of the latter. We can then show which of the two, pearls or diamonds, have more and which less of the jewelry properties. We cannot, however, compare things in different classes unless we can show that the class concept of the one is richer in properties than that of the other. Thus, we can show that all intrinsic values are better, that is richer in properties than, extrinsic values; and all extrinsic values are better than systemic values. This leads to the reversal of the classical hierarchy of values, [where] thought is the highest value, and to the existential hierarchy [intrinsic values—persons, are highest; extrinsic values—things, roles, actions, are next; and systemic values—ideas, constructs, come last].[81]

(2) "It bases the process of evaluation upon an outmoded—and in fact untenable—essentialistic perspective that treats pearls and apples as characterized by a constellation of *essential* properties that denominate them as the sorts of things they are."[82]

The word "essence," in Rescher's sense, does not appear in my book. My approach is logical, not ontological, or even epistemological. All I say is that things are defined and explained by the intensions of their concepts; and that the intensions are sets of predicates to which the properties of the things may or may not conform. I show the difference between the logical

and other perspectives.[83] Of course, if apples and pearls did not have different properties, they would not be apples and pearls, for it is the corresponding sets of predicates that define "pearl" and "apple" respectively. Rescher projects into my book an epistemological or metaphysical perspective which I explicitly distinguish from my own logical one.

(3) "It overlooks the fact that complex types of things (with many properties) need not be inherently better than simple ones, and that 'bad' things too have their characteristic definitions that incorporate a multiplicity of properties (sinners as well as saints, poisons as well as medicines)."[84]

This objection is a conjunction of two themes.

(a) To take the second [point] first, it seems Rescher missed the section in my book that deals with Transposition.[85] The difference between a good thing with the number *n* of properties, and a bad thing with the same number of properties is the transposition of the latter's properties; that is, some or all of them are *bad for* the others, in accordance with the definition of "*bad for*," which is: "*x is bad for y* means that x is contrary to some part of the intension of y."[86] My example is, precisely, that of arsenic used as either poison or medicine. A transpositional intension is "a collection of predicates without a uniting tie."[87] A thing with a transpositional concept is a thing with an inner contradiction, and a plurality of things in transposition contradict one another.

> A good Buick and a good Ford transpose each other when they collide; and the wreck may be called a transposition in the literal sense of the word...The wreck, however, is a good wreck, fulfilling the definition of "wreck," which in turn means a combination of two bad cars...[88]

This section [of my book] shows all kinds of transpositions and compositions of values, some of them enumerated on page 297. A look at the index under "bad," "bad for," and "badness" would show the many ways in which I discuss this subject.

(b) Rescher's first theme states that "Complex types of things (with many properties) need not be inherently better than simple ones."[89]

This is a problem due to vagueness of language. If Rescher means things of the same class, then what he says is false since of two things in the same class, say, chairs, one with many chair-properties is better than one with less chair-properties and will, for example, cost more. If, however, he means things of different classes, then the word "simple" becomes relative, for what is simple in one class, *e.g.*, a simple airplane, is different from

what is simple in another class, say, a simple person or a simple chair; obviously a simple person is more complex, richer in properties, and hence better than a complex airplane, and a simple airplane more complex, better and more expensive than a complex chair. Thus, without defining what "simple" means in his statement, the sentence is too vague to make sense. Also, it is not explained [by Rescher] what the difference is between "inherently better" and "better."

Now let me go to the minor criticisms.

(4) "It treats all the properties of the thing being evaluated as fully on a part with one another."[90]

This leaves out of consideration a whole section of my book which deals with the weighing of properties, "The Logical Pattern of the Value Terms."[91] [This section] gives a pretty detailed study of what sets of properties mean in each thing, and how they relate to one another:

> The higher the differentiation of the thing, the less *each* property is worth *for* the thing: but the more properties the thing itself has, that is, the more differentiated it is, the more the thing *itself* is worth *for* something that has it. For this reason, the horse's foot is worth more for the horse than its tail, and its mouth is worth more for it than its foot and so on; any more differentiated part is worth more for the whole than is a less differentiated part...Thus the mouth has more properties than the foot and the foot more than the tail...Hence the value of these respective sets of properties for the horse is proportionate to the number of properties contained in each.[92]

(5) "It neglects the fact that possession of a property can be a matter of degree (*e.g.*, the rotundity of the pearl), while others are on-off matters, (*e.g.*, the chemical composition of the pearl...)"

This subject has been treated in the same section of my book. Rescher continues that the chemical composition of the pearl "represents an absolutely crucial consideration because an item deficient in respect of this particular property is not a poor pearl, but no pearl at all."[93]

This again is treated fully in my book, in the distinctions between systemic and expositional properties in the section: "The Dimensional Pattern of the Value Terms."[94]

> The *distinction* between definitional and expositional properties of an empirical class must only be made when the loss of an intensional property means loss not of the goodness but of the particular existence

of the thing. For, if x does not have the *definitional* properties of C, then x is not a C. Whereas, when x has none of the *expositional* properties but *does* have the definitional properties then x is a C but a no good one.[95]

Please excuse the length of this [response], which is prompted by the importance I give to Rescher's writings, and to my appearance in them.

7. Reply to Robert W. Mueller, 1969

Source of critique: Robert W. Mueller, "The Axiology of Robert S. Hartman: A Critical Study," The Journal of Value Inquiry, *3:1 (Spring 1969), pp. 19-29.*

Robert S. Hartman's reply to Robert Mueller, who was then at Marquette University in Milwaukee, comes partly from the manuscript "Formal Axiology and its Critics" and partly from a letter to Mueller written on 28 October 1969.

Mueller objected (1) that Hartman can not tell us where to find the expositional properties that measure goodness, (2) that this leaves us without an objective measure of the goodness of man—and everything else, including sincerity, honesty, and authenticity, (3) that dictionaries, social consensus or common consent, and experts are inadequate sources of expositonal standards for measuring value, (4) that Hartman reduces valuing to knowing and would turn geniuses into saints, (5) that his position reduces ethical disagreements to disagreements in belief, (6) that he projects a utopia in which all people agree about norms, (7) that he presupposes the attainability of crystal clear knowledge in both physical and ethical science, (8) that Hartman's hierarchy of value, which includes the infinite value of man, is unjustified, (9) that Hartman's theory is inapplicable to practice, especially the [HVP] value test.

Hartman concluded his 1969 letter to Mueller with: "I have very much enjoyed your article. It is one of the very best so far written on the subject. I thought that my comments on it will interest you."

Of the thorough critiques of the book, I have answered one, namely, that of Neri Castañeda, in *Philosophy of Science.* I would like here to answer...others which appeared in *The Journal of Value Inquiry.* Professor

Robert W. Mueller states that "This paper will attempt to evaluate Hartman's system with its test."[96] [I will reply to Mueller's many objections.]

(1) Where do we find the expositional properties in practice? [Mueller says:]

> In practice, Hartman uses: 1) dictionaries; 2) common consent or agreement; 3) experts. Precisely in the value disciplines (aesthetics, ethics, *etc.*, these sources prove inadequate, which means that unless some other source is available in his system, Hartman's theory proves inadequate.[97]

Against this I say, first, that where there are no expositional properties beside the definitional properties, then no valuation is possible. For example, in political science, when an American and a Russian discuss democracy, and one says to the other, "Your democracy is bad," each has a different definition and exposition of "democracy" to which the definition and exposition of the other does not measure up. This does not mean that my theory is inadequate; *it means that the understanding of democracy is inadequate*. Value theory says precisely that I cannot value if I do not have a clear and distinct knowledge of the object to be valued, that is, of its concept. If I am asked to value the goodness or badness of "*triugolnaia grusha*," I will be at a loss if I don't know what *triugolnaia grusha* is; and this is precisely what the theory says that I will be.

(2) Mueller asks: How shall we judge a good man? Where are his definitional and expositional properties? He says that here dictionaries do not help us.[98]

Indeed, in cases where definitional and expositional intensions are unclear, some other source must be available in the system. With respect to man, the system defines "man" as "That being which has its own definition of itself within itself, the self-reflective being." This is not a very original definition; and anyone who knows ethics ought to know it and ought to be able to judge who is a morally good person and who is not. Someone not versed in ethics, of course, would not be able to do so, but would take extraneous properties of man as standards, as the norm for man.

Mueller says that manuals of ethics and moral theology are not representative of consensus and hence cannot constitute the objective criterion which I seek, specifically in regard to what makes a man good.[99]

But *nowhere do I speak of seeking an objective criterion* for the goodness of a particular object. I give a method whereby a criterion can be found,

a method which defines "criterion" as such, namely as "predicate of an intension," but not a method for finding a particular criterion. *That is a matter of the application of the theory, not of the theory itself*, as explained in my discussion of "The Fallacy of Method."[100]

There are all kinds of goodnesses of man: "A man is a good man" is entirely different depending on whether man is regarded as a systemic, extrinsic, or intrinsic value. [When regarded as] an extrinsic value, as in Mueller's example "a good man," then *good* is meant axiologically but not morally; and the same would be the case, only more so, in a systemic notion of man, for example, as *homosapiens*. But if "man" is meant intrinsically, that is, morally, then we have to define man (1) as a person, (2) and a person as that being which has its own definition of itself within itself, (3) this definition being "I am I," and (4) the fulfillment of this definition as a person's actually being himself, *i.e.*, honest, sincere, genuine, *etc.*,...as discussed in *The Structure of Value*.[101]

Mueller continues: "By what justification does one arrive at statements such as: 'To be sincere, honest, or authentic in whatever one does is infinitely more important than what one does' (p. 115)?"[102]

The predicates "sincere," "honest," "authentic," *etc.*, are not unexplained in the Hartman system. Rather, they mean that a person is himself, fulfills the definition "I am I."[103] Since goodness is conceptual fulfillment, moral value will appear as the fulfillment by a person of his own concept of himself. This is the singular concept "I" whose intension, axiomatically structured according to the logic of singularity, will appear as the axiological measure of a person's moral worth. A person will be more moral the more he fulfills his concept of his Self. Hence, moral terms such as "honest," "sincere," "genuine" will receive an exact axiological meaning, as will their opposites "dishonest," "insincere," "not genuine." The structure of a person will become the axiometric structure of his or her self-concept applied to her or his situational actuality. Thus, it is not true that I borrow these terms from other systems or presuppose them in the reader by way of common consent.

It is thus not correct when Mueller says that these predicates—"sincere," "honest," and "authentic"—are unexplained in my system and quite obviously borrowed from other systems or presupposed in the reader by way of common consent. They mean the four steps just outlined [in explaining "man" as understood intrinsically]. Also, with respect to manuals of ethics and moral theology, *etc.*, I say the kind of ethics that results from formal axiology is that of Kant. I could have added Kierkegaard and Scheler. But, as I say, "the majority of traditional ethics

do not belong here but in the fields of value psychology, sociology, and metaphysics."[104]

(3) [Mueller says that] dictionaries do not provide the relevant sets of expositional predicates; common opinion does not; neither do experts; and there is no source for them in Hartman's system.

But it is not part of my system to find sets of properties, that is, applications—just as it is not part of the system of hydrodynamics to find waterfalls. It is, however, part of the system of axiology to construct prototypes of, to give the norms for, whatever objects are found—namely that *they have to have properties if they are to be valued*—just as it is a matter of norms for hydrodynamics to be applied if and when waterfalls are present.[105]

A formal rule of axiology says that "Each thing ought to be good." The corresponding formal *norm* explains what is the particular thing in question, how to find its exposition or description, how to fulfill its exposition or description, *etc.*, and thus how in actuality such a thing ought to be good. What is asked about here is the formal procedure, not the actual procedure; for this we have the facultative material norm[106] which refers to the application of the rule in general, for example, the application to a person by himself. The formal norm says that a person, like anything else, ought to be good; that is to say, he ought to fulfill his concept. In the formal norm, "person" is an element of an applied axiological science, to wit, ethics.

Axiology does not establish that a certain person must be good, but directs itself to all those who apply axiology, saying that *if* they are going to apply axiology, then they must apply it correctly. But it does not say that anyone *has* to apply axiology. If a user wants to apply axiology to himself, or to a thing, regards himself as a person, or a particular thing as such a thing, then the facultative material norm says that he has to use the axiological rules and formal norms concerned with persons or with things. This means that he has to be morally good, or that the thing ought to be good in the way it is; in turn, this means that he has to fulfill his concept of himself, or that the thing has to fulfill its name, to be a good such thing, *etc.* Thus, to find lists of expositional properties, or a norm for a thing, is a matter of application; whereas axiology only says in general what a norm is; it gives norms for norms; it does not give norms for things.

[Mueller says that] we find two kinds of words in the dictionary—value-laden words, and non-value-laden words, examples of the former being "murder," "rape," and "sin."[107] It is precisely the purpose of formal axiology to attune the valuer to the difference between value-laden words

and non-value-laden words, and to show in which sense value-laden words are value-laden, that is, to what value discipline they belong.

In general, the precision of our valuation corresponds to that of our vocabulary. We cannot, in general, value more precisely than we think. This is a principle formal axiology must establish and substantiate. But it is irrelevant to the theory of formal axiology what our vocabulary is, for this is a matter of the interpretation of the theory, and not of the theory itself—just as it is irrelevant to mathematics how people add, and what mistakes they make; these are matters of the application of mathematics, not of mathematics itself.

A value-laden word, of course, is an axiological rather than a descriptive word, as I mention in *The Structure of Value* with respect to such words "in which the logical predicate implies an axiological predicate."[108] I do not seek the objective criterion for valuation in manuals of ethics and moral theology, as Mueller says;[109] rather, as I say, this criterion is the axiom of value itself, which is objective; whereas its application is subjective.[110] The manuals of ethics and moral theology as well as the dictionary are all applications of formal axiology, as is made clear, or so I thought, when I distinguish the three levels: 1) of the system, 2) of the applied science produced by the application of the system, and 3) of the actual situation for which the applied science accounts.[111] Only the first of these levels is the "objective criterion" or rather the norm; for the words "objective criterion" nowhere appear in my book. A criterion is always something of application and thus cannot possibly, in my system, be "objective."

I thus completely agree that common opinion in these matters is not common to more than a small group at a given time in a given culture; and such a given time and given culture is to be measured by its application of, or deviation from, the norm—which is the system. Of course, there are no experts in value unless there are experts in axiology. And I populate that slot, as Mueller says, by trying to produce a system which in turn can produce experts in axiology, experts of value.

As for aesthetics, an axiological theory of aesthetics has yet to be written, just as with a detailed ethics. I am doing so in a book which I am writing at present, *The Universe of Intrinsic Value*,[112] where I start with aesthetics, then ethics, religion, and political science. *The Structure of Value* gives the *foundations* of formal axiology, not the total system; it gives a method and directives about how value sciences can be written. Thus, aesthetics is the application of intrinsic value to things. An axiological aesthetics would first have to define in detail the structure of intrinsic value, and then apply this structure to things, which thus would be recognized as

works of art.

(4) Next, [according to Mueller,] the "reduction of valuing to knowledge would make a test for the ability to value into a test for intelligence, would make geniuses into saints, *etc.*"[113]

Indeed geniuses in axiology may well be saints, "saint" being defined as an axiological genius both in knowledge and action. To be a saint is a profession, like any other; it is the identification of self with every other self.[114]

The more intelligent a person is the better he or she will know how to value, for the more and wider concepts he or she considers; the most intelligent sees all *sub specie aeternitatis*. The narrower one is, seeing more and more of less and less, as does the specialized scientist—Ortega's specialist barbarian—the less will one be able to value. The *saint* is the genius of intrinsic valuation, of ethics, applied to people.

Only saints can fully live [the] infinite range of the self. A saint is a person who puts his whole power, all the resources of himself, into his own goodness, a man who has discovered his oneness with all creation, all men, all animals, even all things. He lives within the depth of everybody and everything. He is a man of infinite compassion. The deepest intrinsic goodness is to live so deeply and transparently within ourselves that we live deeply and compassionately within every human being, indeed every living being—indeed, every being. As St. Francis said to Brother Leo when he tried to extinguish the fire on St. Francis' coat: "Brother Leo, be careful with Brother Fire." Or as Albert Schweitzer, who felt pain at having to kill the bacteria when he did an operation. *Compassion is one touchstone of moral value.*[115]

(5) Mueller calls Charles L. Stevenson's distinction between disagreement in beliefs and disagreement in attitude "classic" and says that: "For Hartman, any axiological judgment would differ from man to man only because one man did not know the expositional properties of the thing in question. Hence, seemingly, all disagreements in attitude would resolve to disagreements in belief.[116] Here he thinks that Charles L. Stevenson has remained closer to reality. Thus, "When disagreement is merely in belief, the resolution of the difference is made by checking out the facts, by improving our knowledge, (*e.g.*, whether it is raining)."[117] One man says it is, the other it is not; and then they just look out the window. But "When the disagreement is in attitude, that is, when there is agreement about the fact but difference attitudes regarding those facts, (*e.g.*, "I like rain" vs. "I dislike rain,") then checking the facts will not help."[118]

As to disagreement in belief and disagreement in attitude, we have the

same problem of objective as against subjective value, as above. This particular matter is discussed [when I explain] "It is good that" applied to fact and to value.[119] Approval is attribution of goodness to the attribution of goodness. "I like rain" means "It is good that it rains;" and "I dislike rain" means "It is not good that it rains." It is not the case that axiological judgement would differ from man to man only because one man did not know the expositional properties of the thing in question, but rather because one man does, and another does not, approve of these properties as exhibited by a phenomenon.

What does it mean to say "It is good that it rains"? "It is good that x-R-y" means that the relation R is part of the intension of one or the other of its terms. Thus, "It is good that John reads Ivanhoe" means that reading Ivanhoe is good for John, or that such reading agrees with the nature or intension of John. "It is good that John loves Betty" means that love is good for either John or Betty, or both.[120] In all cases of "It is good that," *e.g.*, "It is good that x is c," goodness is attributed to the referent of a proposition, a situation, or a state of affairs; whereas, in the case of good, *e.g.*, "X is a good c," goodness is attributed to the referent of the concept, an object, *e.g.*, a chair. These are attributions of goodness to facts. Attribution of goodness to values is approval, that is, I am finding the rain good, and I find it good that it is good.

Now, in which sense is the rain good? There are in *The Structure of Value* eight forms of such approval, that is, a logical pattern for approval and disapproval on the basis of value composition. Thus, "The rain is good, and it is good that the rain is good; the rain is good, and it is good that the rain is and as the rain ought to be; the rain is good, and it is as it ought to be that the rain is good as the rain ought to be," *etc.* By "The rain is good" I can mean either that it is a very good rain, or that the rain is good for something, for the crop, for the freshness of the air, *etc.*; and in this case I would have to refer to the definition of "good for."

"X is good for y" means that x and y are in different classes but have overlapping intensions such that the intension of x is part of that of y. In this case, I would approve, find it good, that the rain is good for the crops, meaning that the intension of the rain and that of the earth complement each other. I could also mean that the rain is good for me since it gives me fresh air, so that the intension of my body, namely its breathing apparatus, and of the rain, complement each other, *etc.*

Formal axiology thus gives an exact and articulate pattern to what Stevenson calls attitude and by no means merely resolves agreements or disagreements in attitude to disagreements in belief.

(6) Mueller says that I project "An ethic-utopia in which all men agree about the expositional properties of a concept."[121]

Nothing is further from my mind, and nowhere do I say that I do this. On the contrary, *I speak explicitly of disagreements which are differences in knowledge* rather than in attitude or approval. In a section called "Axiological Agreement and Disagreement,"[122] I explicitly recognize agreement and disagreement in belief, namely, in either the expositional properties of the thing in question or other features of the value judgment. Disagreements may be either perceptual or conceptual: one can see a thing wrongly; one can believe that it has another name from what it has; one can misunderstand the definition of the concept; one can wrongly apply the concept to the thing; one can misunderstand the dependence of the value predicates on the natural predicates of the thing, and so on. Each of these cases has again sub-cases, all of which can be systematically studied. Thus, in every case of disagreement, axiology can be applied and the disagreement defined by it.[123]

I also speak of disagreements based on *confusions of logical orders*, which, since good is a second order property, are most certainly value disagreements. One such confusion gave rise to an international incident during WW II on 24 November 1944. British Field Marshall Alanbrooke recorded in his diaries, published after the war, [that there was] a "very unsatisfactory state of affairs in France, with no one running the land battle." [This involved a confusion between Eisenhower as Supreme Commander of the allied forces and as Commander of the Land Forces; Alanbrooke thought that Eisenhower was just playing golf, and that no one was running the land war.][124]

(7) Mueller objects that to argue as I do "from the analogy of ethical science with physico-mathematical science *presupposes* the attainability of crystal-clear knowledge in both, without having shown the attainability of such knowledge in Ethics."[125]

Mueller mentions "an ethician" [Aristotle] who said that "It is the mark of an educated man to look for precision in each class of things only to the degree which the nature of the subject permits." That same ethician said that "Nothing could be more dangerous than to mingle geometry and physics and to apply purely geometrical methods and reasoning to the study of physical reality." In other words, nothing is more dangerous than to apply mathematics to physics. Now, if we accept the judgment of this "ethician" we have to make up our minds as to his other statements; for he has been extremely mistaken in his judgements.

[My position is that] the transition of the concept of value from an

analytic to a synthetic concept—in the sense of Newton, Kant, and Cassirer—would bring about the applicability of value science and hence the construction of a value reality; and this has been realized in the [HVP] test.

Mueller charges that "The question of why there is fairly common consent about actions (*e.g.*, murder) is not raised by Hartman. Any answer would be irrelevant to the theory because mere majority opinion is on the level of common sense and therefore non-scientific."[126]

In reply, we must free ethical thinking from common sense. Everything that formal axiology constructs must be in agreement with reality. Thus, the [HVP] test has 90 percent plus correlation with reality. A murderer, in formal axiology, may be *axiologically good* when he murders well, but he is morally bad.[127] Morally, a murderer is a bad person because his self-definition is a transpositional concept: "I am not I," that is to say, "I want to destroy myself," which, since intrinsic value is not in space and time, means "I want to destroy everybody." His self concept is self destructive as well as other destructive, autodestructive as well as heterodestructive. It is a sincept.

A transposition comes about by the lack of a concept's combining its elements. The transpositional intension is no true intension; it is a collection of predicates without a uniting tie. It signifies or indicates lack of meaning.[128] The murderer's self concept can be non-sensical, contradictory, or false—and can be so in all three value dimensions—systemic, extrinsic, and intrinsic.[129] Thus, formal axiology gives a total structural pattern for murderers, or for person who are not themselves. For details on the lack of self of a murderer, see Robert M. Linder, *Rebel Without a Cause*.[130]

A doctrine of a non-self person would be a doctrine of evil in man, including murderers; and it would be a *construction* of such persons. Whether people will accept this or not has nothing to do with the corresponding science, just as it made no difference for the scientific truth whether people did or did not accept the Copernican thesis that the earth is not in the center of the universe, or Galileo's *"Eppur si muove,"* or Einstein's thesis of the bending of light in the proximity of mass.

(8) [Mueller sketches] the theory of the three value dimensions and shows how they are applied in the first part of the [HVP] test—intrinsic values to persons, extrinsic value to things, and systemic value to systems, while in the second part [of the test] these dimensions are applied to the person himself—intrinsic value to his own self or "I," extrinsic to his work, and systemic to his work.[131]

He now asks two questions: "Where does Hartman get the principles

behind the divisions listed above?" and "In his application of them, is consistency and pattern observable?"[132] To the first question he responds that it does not follow from the system that persons are intrinsic values, and thus more valuable than things—or that things, extrinsic values, are more valuable than systems, even though these statements may be true. He states that to move from the ability of man to have thoughts about the total number of things, cardinality $\aleph_0$, to his ability to reflect on these thoughts, and to reflect on these reflections, *etc.*, cardinality $\aleph_1$, to the statement that these thoughts are actually infinite—therefore, man is infinite—is shifting "from the *possibility* of an infinite number of thoughts to their *actuality* as infinite, and from infinity of one aspect to the simple statement that man is infinite." Using such logic, he says, "we could prove *anything*—lines, mudpies, whatever—to be infinite, and hence equal to man, which would ruin the hierarchy of values."[133]

Mueller here refers to only one of my four axiological proofs of the infinite value of man.[134] These four axiological proofs are based on four different definitions of man. The one here in question is: "Man is a rational being," where "rational being" is defined as "being able to think thoughts." Thus, *we do not have one aspect of man but his essential aspect in accordance with this definition.* The question whether man actually thinks an infinity of thoughts will be discussed in my objection to Mr. Edwards [to come later]. [What I say in *The Structure of Value* is that] "While the *process* of abstraction is potentially infinite, the *totality* of common properties abstractable is actually infinite."[135]

I do not make the simple statement that man is infinite; rather, I deduce that man is infinite from the fact that the definition of "man" contains and unifies an infinity of predicates. If a line, or mudpies, or anything whatever would have an $\aleph_1$ infinity of different predicates, then, like any intrinsic value, they would be equal in value to man. This is indeed possible for certain lines used in drawings; then they are a matter of aesthetics.[136] But this is not the case for example for a geometrical line, which is systemic, and where the cardinality $\aleph_1$ is not in the intension, but the extension. Where there are no different properties, but only one repeated, we have an extensional, not an intensional continuum.

(9) Mueller now turns to [another] question, saying that strictly as a device, the theory is truly beautiful; but it is unrelated and unrelatable to anything other than itself when it comes to value judgments. It cannot get off the ground, or perhaps it can not come down to earth.

To answer [this] question, he turns to the value calculus and the [HVP] test, saying that "All of his examples presumably could be used in the

test—many of them actually are so used."[137] In this section Mueller takes apart my examples for the value formulae. In particular, [he contends] that in the sequence of the hierarchy of these formulae, "'Killing in war'—even as a concept—is better, or less-to-be-disvalued than taking a metaphor literally," but that is what Hartman does.[138] This indeed sounds paradoxical.

The main argument of Mueller's critique is directed against what he calls the inapplicability of the theory, and in particular the [HVP] test. [At this point, I must give] some information on the test. First of all, in writing on the test, one ought, of course, to use the test and not something else. Yet, Mueller compares two value examples, neither of which is found in the test, such as "Killing in war" and "Metaphor taken literally," and applies this argument to the test.

The examples used in the test for the formulae I_S and I_E respectively, are "A crackpot" and "Slavery." As is explained in the *Manual*[139] to the test, one cannot compare hodge-podge value samples from different realms, even though they have the same formula. Rather, values for the formulae must be seen under special keys—Subjects, Knowledge, Truth, Language, Process, *etc.* The items of a scale must be mutually compatible and have to be selected accordingly. Therefore, it does not seem to me fair to speak about the test by using items not contained in the test. I am frankly curious to know why Mueller did this and what his reason is for doing it.

Secondly, even though the illustrations of the formulae have to be used within their respective keys, the formulae themselves do hold, though often in a way we cannot at present quite understand, as I say in *The Structure of Value*.[140] For what is easily understood in a system, for example, that 2 x 2 = 4,32 is not necessarily understandable in the *application of* the system, for example, that two plums added to two horse shoes is four. "Arithmetically, what is true is the addition of two *numbers*, and it is of no importance what these numbers are *interpreted* to be." Similarly what is axiologically true is that, for example $(E^E)_E$ IS OF EQUAL VALUE as I_E, no matter what these extrinsic and intrinsic values may be *interpreted* to be. Yet, there is probably, as I continue,[141] a deep reason in this calculus, showing its extreme sensitivity of valuation, which is beyond our present capacity to value.

Thus, with Jesus, the *thought* of a deed already was the deed—and a life without spirit was no *life*. I refer in this connection,[142] to various passages in the Gospel, also, in particular, to I Corinthian 11:27 where taking the communion meal in a spirit of eating is equated with killing Jesus. All this is based on the fact that the *reality* to which a *philosophy*

refers is very different from the reality to which a formal system refers, as discussed in the section of *The Structure of Value* on "Philosophical Reality and Scientific Reality."[143] Since our value sensitivity at present is crude, referring to a reality corresponding to a philosophy, we of course cannot fully understand the subtlety of a reality that arises from the application of a system.

Thus, there seems to be a double incorrectness in Mueller's argument: (1) he discusses a test by examples which are not in the test, and (2) he neglects to consider the new sensitivity which arises when people become attuned to a system. Thus, valuations which today are against common value sense may tomorrow be according to it (as, for example, happened in the realm of fact with the Copernican system).

Thus, Mueller's objection against the applicability of the theory is, I believe, on theoretical grounds untenable. Moreover, there is plenty of evidence now of the effectiveness of the [HVP] test. It has been used in some 150,000 cases in several countries, (United States, Mexico, Switzerland, Sweden, Japan, Israel), all with the same striking adherence to the person's actual value make-up. Obviously, Mueller did not take the test himself, perhaps because he did not have the material that goes with it, especially the instruction for scoring, and, of course, the *Manual of Interpretation*. Otherwise, he would have given himself an account of how well the test fits the value pattern of the person.[144]

The [HVP] test has not only been validated empirically in both clinical and nonclinical (industrial, educational, government, *etc.*) practice, but also in a profound study of factor analysis, a dissertation by Billie Cannon Elliott, *Factor and Cluster Analysis of the Hartman Inventory: A Study of Item Homogeneity and Factorial Invariance for Normative and Ipsative Scales*, at The University of Tennessee.[145] Factorial analysis is the ultimate test of a test. The axiological test passed this test with flying colors.

The [HVP] test is objective in that it is based on an objective theory and measures the deviation of an individual's value pattern from the axiological pattern, whereas a psychological test is not based on an objective theory but on empirical standardizations by the empirical norms of a group.

"In summary," Mueller says,

> I have tried to show that the test is inapplicable in real life for the purpose Hartman proposes. When applied, it gives the relation between what Hartman thinks is the order in general and what a living person thinks is the order for him. As such the test is either subjectively

inapplicable or merely subjectively applicable.[146]

"This judgment," he adds, "applies to the use of the test as an objective normative instrument; its use as psychological testing device, to show division from the norm is another question."[147]

I do not understand this difference; and the validations of the [HVP] test have shown the close, actually the incredible, relationship between the axiological order deduced from the definition of value as a set of predicates, and the actual order in the thinking of living persons.

The norm on which the test is based is the axiological order, namely, of the formulae Mueller mentions.[148] Eighteen interpretations of these formulae have been mutually attuned in one and the same key in order to organize the test. When the test is given to a person, then the deviation from the norm can be measured in terms of the value calculus, just as in a geographical test, when a person puts Rio de Janeiro north of New York, the deviation can be measured in terms of longitude and latitude, or as in a mathematical test, when a person says 2 and 2 is 5, the deviation from the norm can be measured.

Thus, what does it mean that a test is objectively inapplicable? A test is always taken by people; and the only thing that can be measured is the deviation from the norm, if there is a norm. The distinct difference between the axiological test and a psychological test is that the norm is objective (not "what Hartman thinks is the order in general," but what he deduces on the basis of an axiom); whereas in a psychological test it is subjective, based on majority expression. Moreover, as I said, the test has been tested widely, both practically and theoretically. It simply works.

Mueller says that "A new system could develop a test which is not limited to 18 examples. Hartman's test is so limited because it deals with types of valuations and types of values."[149]

The [HVP] test is limited to 18 items because it takes in only binary value combinations (compositions). If it included tertiary value compositions, it would have 108 items; and if quaternary, it would have 588 items; but this was found to be unnecessary. It has nothing to do with the difference between method and system; rather, as we have seen, the system has a potentially infinite number of value formulae.

Mueller concludes that, "Hartman's system is neat, clean and mathematically and logically unassailable, as long as it remains in its tower. But the consequences of its descent into the real world are disastrous."[150] He says that my contribution could be "a *method* rather than a *system*."[151]

But I say *explicitly* that I regard my system as a method.[152] A science

is the combination of the intension and extension of a fundamental synthetic concept, an axiom, which constitutes a method, and necessarily leads to action; while a philosophy is the combined intension and extension of a fundamental analytic concept, a category or principle, which lacks method and remains speculation.

From the above, it seems that Mueller's judgment that formal axiology is unsuccessful in practice is neither substantiated by facts nor by his argument.

8. Reply to Gordon Welty, 1970

Source of critique: Gordon Welty, "Transfinite Cardinality and Hartman's Axiology," The Journal of Value Inquiry, *4:4 (Winter 1970), pp. 293-301.*

Gordon Welty, then at Princeton University, protested (1) that for Hartman intrinsic and extrinsic values differ only in degree, (2) that establishing cardinalities for the three kinds of values is highly problematic in practice, which makes Hartman's theory irrelevant to the real world, (3) that a special theoretical stance is required to differentiate unique objects, to locate objects in the three value dimensions, and to select predicate sets, (4) that applying the value dimensions is purely subjective, (5) that Hartman's axiology cannot be established by empirical scientific inquiry, and (6) that Hartman can apply his axiology only by ad hoc *theorizing.*

Hartman's response to Welty, below, comes entirely from the uncompleted manuscript on "Formal Axiology and Its Critics."

We now turn to Gordon Welty. Professor Welty devotes his attention to a few specific points in my discussion.

(1) The first of these is the cogency of my ordering of the dimensions of value. He says that [I regard] the differences between intrinsic and extrinsic value as "differences in kind rather than degree,...and the intrinsically valued objects are more valuable."[153]

This seems to me a contradiction; for, as I say, things which belong to different classes can not be compared, and thus one cannot be called more valuable than the other. The three dimensions of value are all three *dimensions of value*, and as such they are of the same kind but of different degrees. I say in *The Structure of Value* that "The relationship between systemic, extrinsic, and intrinsic value corresponds to a process of

continuous enrichment with definite leaps from one value dimension to the next."[154]

The relativity of fact and value stretches throughout the whole value realm such that any given set of properties is a fact; any subset of a given set of properties is a value of the given set; the given set is the norm of its subsets; the totality of subsets of a given set of properties is the total value of the given set; the total value is the value type succeeding the given set; and any value type is value to its preceding and fact to its succeeding type. In other words, the value dimensions belong to a value continuum; and in this respect the value dimensions are different in degree. On the other hand, for the valuing person the leap certainly means a difference in the kind of the valuation.

So it is both true and not true that the difference between the value dimensions are in kind rather than degree.

(2) Welty's next objection is [posed in] the questions: How do I determine cardinalities of properties of actual things? In other words, how do I determine the application of the theory in specific cases?[155] This objection I have dealt with in the case of Mueller. However, Welty adds a few interesting wrinkles to the argument. He does not speak of particular objects but of objects in general. The question, he says, is "the number of predicates relevant to *a set of material objects*. These predicates will permit the establishment of classes of objects. The predicates are thus a precondition to valuation."[156]

This is quite correct; but now Welty's argument gets confused. He begins with scientific objects, such as inert or noble gases, where the validity of a predication is assessed by a prediction; and he shows that "predication is controlled (in the methodological sense) by theory, and *vice versa*."[157] (It seems to me that inert and noble gases are evaluated rather than valued.)

The confusion lies in Welty's transition from a scientific object, that is an object of scientific discourse, to "every material object." *An object of scientific discourse is by definition a systemic object.* Scientific discourse has neither abstract, nor singular, but synthetic concepts. Not predication in general, but *only predication in scientific discourse or of scientific objects*, is controlled (in the methodological sense) by theory. "Prediction," I say in *The Structure of Value*, "is nothing but the statement that the object conforms to the frame of reference."[158] Science in general is a method and has nothing to do with any specific content. If there is a formal frame of reference applicable to a set of objects, then there is a science, no matter whether the subject matter of the science is spatio-temporal—and hence empirical, observable, and predictable—or not.

Thus, mathematics, music, and axiology are sciences; and they *do* include experimentation, observation, and prediction even though they are not empirical. In music, one can "predict" which note Wilhelm Backhaus is going to play next when he is playing a certain concerto; and in mathematics one can "predict" what will be the result of a certain operation. The same occurs in axiology. Given a certain situation, and applying the axiological frame of reference, one can "predict" the axiological result. Prediction thus is simply extrapolation of systemic deductions. Thus, the inert gases, electrons, and anything that is subject to a formal frame of reference is a systemic thing. [Welty asks:] "What does this suggest for Hartman's distinction between *abstract* and *singular concepts*?"[159] Nothing, because abstract and singular concepts do not refer to systemic things.

So let us turn then to the distinctions between abstract and singular concepts. An abstract concept is one which is abstracted from a given sense reality. It thus refers to a space/time object; and this has not, like the systemic concept which is construct by a formal theory, a definite and finite, but an indefinite and denumerably infinite, number of properties in common with other such things. The class, the extension in question, is [that of] things in space and time which are sensorially and conceptually grasped. These are not, as Welty seems to think, objects of scientific discourse, for the extensions of scientific discourse are not things in experiential time and space, but constructions in their own constructed time and space, as is shown in *The Structure of Value.*[160]

(3) We now turn to the singular concept. Says Welty: "Every material object is unique. Hence no object can be differentiated on this basis in the absence of a theoretical stance. '*That* object is Blah' is a singular concept, whatever *Blah* is and whatever the object is."[161]

Welty overlooks the difference I make between singularity and uniqueness. A singular concept refers extensionally to a singular thing but intensionally to uniqueness; that is to say, uniqueness is the intension of singularity, and singularity is the extension of uniqueness. A thing is unique only if it has a non-denumerable number of properties. If it does not then it is singular, but not unique. Thus if an object has only the property "Blah," it is singular but not unique.[162] The singular fact has the full concreteness of all its properties. Thus, an object that is Blah is not seen in the concreteness of all its properties, but only in the Blah aspect of these properties. [As I indicate,] "The singular fact has the properties of fact in general, namely being, plus the properties of a particular class, plus an infinity of properties which the individual has uniquely."[163]

"That object is Blah" may mean that Blah is the proper name of that object; and in this case, if Blah is unique rather than merely singular, it must have a non-denumerable number of predicates. A thing may be singular (have one property not in common with anything else), but does not then have uniqueness; when it is singular, it need not have uniqueness.

It is also false, as Welty contends, that the object will always fulfill its concept, because there are gradations in intrinsic valuation, as is made clear in "The Logic of Value."[164] An object which always fulfills a concept is a systemic object, not an intrinsic object, as is made clear in *The Structure of Value*,[165] and as follows necessarily from the definiteness and finiteness of the systemic intension. Hence, no "stance" is required for deciding the location of a thing in the value dimensions. [We only need] to know what kind of a concept determines the thing.

It is also *false* that there is no basis for selecting predicates. The set of predicates for any object whatsoever will not be of the same cardinality. If we do give them the same cardinality, then we give them the same value dimension. Thus, if we form a continuum with a man and with an ice cream sundae, we value both intrinsically; but we do not have to do so. We can value a man extrinsically, for example, as a good man in my office, and an ice cream sundae systemically, when we are the manager of an ice cream factory. In other words, we can value anything in all three value dimensions; and this is a matter of personal choice, if we value. If, however, we *speak* about valuation, if we are axiologists rather than valuers, then the distinction between dimensions of value is derived from the axiological superstructure. Hence, in saying that "Rather than the distinction between dimensions of value being derived from the axiological superstructure, we find that the constituency of the predicate set is a matter of personal choice,"[166] *Welty confuses again the levels of theory and practice.*

I discuss this matter fully in the "Introduction" to *The Structure of Value* and in the section on "The Axiological Fallacies."[167] The fallacy he commits is the Fallacy of Method, the confusion between the frame of reference and the subject matter of a science, the confusion of the form and the content of a science. As I say, "This confusion, which arises from the overwhelming emphasis on the subject matter rather than the form of science...is the main obstacle to the creation of a science of ethics."[168] Welty's sentence makes about as much sense as to say "Rather than the distinction between dimensions of physics, space and time being derivative from the physical superstructure, we find that the velocity of a car is a matter of personal choice."

(4) Welty then quotes my citation from Ortega y Gasset according to which one and the same reality may split up into many diverse realities; and all the realities are equivalent, each being authentic for its corresponding point of view. He says that I do not realize that "the equivalence of viewpoints is incompatible with the existence of theory."[169] However, he omits the following sentence of Ortega's: "All we can do is to classify the points of view;" and this is exactly what formal axiology does. The points of view are precisely the value dimensions, which are part of the system of formal axiology. Hence, "The axiological variations of the situation are expressible in a symbolism which faithfully represents the 'measure' given by Ortega y Gassett. The value symbolism is isomorphous with the value reality."[170] Again, Welty commits the Fallacy of Method.

Each person selects the value dimension within which he wants to value a certain situation, just as a person selects the velocity of his car; but the formula for velocity is in the science of mechanics. Hence, Welty's reference to the science of mechanics, where only one point of view dictates the relevant dimensions, is not relevant to axiology. It refers only to the science but not to its objects, not to the application of it. The value dimensions are parts of the science and are *a priori* determined by the axiom of the science of value; but the applications, of course, are not.

Hence it is *false* of Welty to reject my "claim to have 'structured' ethics by introducing the concepts of the dimensions of value" for the reason that the application of this science is a matter of subjective caprice.[171] It is not merely caprice, as Ortega says; there is a very good axiological reason for any kind of valuation. Also, in the situation that Ortega describes of the great man dying, his wife, the doctor, the painter, the witnessing reporter, have different emotional distances from the event. However, *this distance, in practice*, is as different from the distance determined in *The Structure of Value*, the science, as is the actual distance I drive in my car from the notion of distance in the formulae of mechanics. Thus, it is false of Welty to say that the distinction between intrinsic and extrinsic value purportedly derived from the superstructure is in fact arbitrary.[172] This conclusion derives from Welty's commission of the Fallacy of Method.

By systemic class we must understand two kinds of classes, the synthetic and the schematic.[173] The former is the class of constructs such as numbers and electrons, the latter the class of schemata such as *Equidae*, *Canidae*, and *Syringae*. Both kinds of classes, when fulfilled, give rise to systemic value; whereas the concepts "horse," "dog," and "lilac" are empirical concepts and give rise to extrinsic value. Kant called the two kinds of schemata the constructive or synthetic, and the abstractive or

analytic, technical and architectonic respectively.[174] The difference can be seen, for example, by substituting *syringe vulgaris* for "lilac" in the famous lines about going down to Kew. In the same way, I am my brother's keeper, but not my male sibling's. The extrinsic and the corresponding systemic terms are not synonymous for their intensional structures are not similar.

Welty finds it unsatisfactory that the basis for ethical distinction lies within the language level of ethics.[175] I find this very satisfactory because the language levels of ethics express the value logic inherent in the identification of name with norm; and this probably guarantees the final triumph of ethics when these laws of value logic have been made clear to people so that they see that their present value judgments are logical confusions. Otherwise, there would be no hope for humanity. Axiology makes clear that valuation is innate in the human frame.

In sum, as is said over and over again in *The Structure of Value*, the value system itself is objective and *a priori*; its application is subjective. A baby may be regarded as less valuable than Reimanian manifolds; that is a matter of individual value patterns. But the value formulae can never be different from what they are. "I to the I" means the intrinsic valuation of an intrinsic value; "I to the S" means the systemic valuation of an intrinsic value. As Mueller rightly says, the first is my baby seen as my baby, the second as a tax reduction.[176]

If we want to speak of "stances," then formal axiology is the result of a theoretical stance which forces us into the valuations in the tables of *The Structure of Value* which *normal people* follow. The curve of the actual valuations of people is always a bell curve where those who value very exactly and those who value very badly form the extremes, while the vast majority values precisely as the value theory says. Hence, empirical verification shows that the Tables are not "What Hartman thinks is the order in general"[177] but that this is indeed the order by which people value.

(5) On the other hand, I do not have much hope to convince my critics by mere facts. After all, Galileo's colleagues, after looking through the telescope at the moons of Jupiter, signed a document saying they had seen nothing. The difference is only that *they did not* pride themselves in being empiricists. After all, if the analogy between the creation of natural and value science is valid or correct, as I hold it is, there must be an analogy with Galileo's colleagues looking through the telescope at the moons of Jupiter and signing a document that they had seen nothing.

Welty gives what he calls "a schematized criterion of relevance for predicates."[178] The formula he gives is an example of what I call a

schematization of analytic concepts[179] and what Garcia Bacca calls a stenographic as against a scientific formalization. It is simply the statement, in forms of letters, of undefined concepts.[180] [We must] take seriously the distinction between analytic and synthetic, material and functional concepts in the sense of Kant and Cassirer,[181] and the difference between [empirical] concepts abstracted from sense reality, or analytic concepts, and concepts constructed through penetration to the essence of a phenomenon and through axiomatic identification. David Garcia Bacca identifies this essence with a logical [construct].[182] Unless this is understood, one cannot understand either the method of science or the method I use in axiology. Empirical procedure is false in natural science and fundamentally false in value science where there is nothing empirical to observe.

In conclusion,[183] [Welty's] whole section on empirical scientific inquiry, [according to which] we first ascertain if a difference between two sets of observations is real or chance, *etc.*,[184] is irrelevant to value science. It is true that in order to *apply* value science, I must both have in my mind a set of predicates of certain objects, and must observe whether these objects have these predicates. But this is not so much observation as measurement; and the value predicate can never be observed—only the unit in a thing which corresponds to the unit that determines the value predicate.

Even less can the science of values itself be produced by induction from observations, except by empirical investigations on the occurrence of the value word "good" and other [such words]. This is actually how I came to the value axiom.[185] But to observe how often and under what circumstances a word is used is very different from observing material objects. The verification of the theory, on the other hand, deals with co-variation techniques according to the formula mentioned [in discussing] the [HVP] test. The whole procedure outlined by Welty for co-variation techniques vs. randomization techniques[186] has an application for the validation of the [HVP] test; but it comes, in practice, to very different results from those that he believes to be true.

Again, at the end of his section [on empirical scientific inquiry], Welty commits the Fallacy of Method by mixing up the objective standards of the theory of formal axiology[187] and errors in judgment. He says "If the ethical theorist admits that there is at least one object which has not been judged, he admits the possibility of an error of judgment."[188]

As I said before, I not only admit the possibility, but the necessity, of error of judgment, since the application of a theory is subjective; whereas the theory itself is objective. By a method I mean the existence of a formal frame of reference which can be applied to reality. The latter, the

application, is subjective; and in this respect the method is always subjective. But the other part of it, namely the formal frame of reference, is objective.

(6) In the third part [on *ad hoc* theorizing in ethics], Welty draws the consequence from the fallacy he commits. He says my attempt "stumbles on the leg of a theoretical stance from which one can select relevant sets of predicates," and that therefore I am "reduced in application to *ad hoc* arguments that suggest *e.g.*, that 'a baby' is sequenced higher than 'a mathematical genius.'"[189]

My sequencing [of items] in the [HVP] test has nothing to do with Value and the like but comes directly from the sequence of numbers of sets of predicates, that is, precisely, values.

Actually, the application of axiological theory, like [that of] any theory, is an art, as Kant makes very clear, and as is clear to anyone who has ever taught a technical science. Moreover, there is a "technical stance" for the selection of relevant sets of predicates. This is given in *The Structure of Value*,[190] where the process of abstraction is shown from its intensional rather than its extensional side.

I do not regard it as a theoretical stance to show that certain selections of predicate sets have to be done personally and socially; nor do I identify myself with Ortega's [view] that they are done on caprice only. They are done because of the value pattern of the persons in question—their minds and feelings. The procedure I outline would go far to explain the puzzle of abstraction. In the words of Cassirer: "There is nothing to assure us that the common properties, which we select from any arbitrary collection of objects, include the truly typical features, which characterize and determine the total structures of the members of the collection."[191]

The problem of selecting relevant properties is much more complex and much deeper than Welty assumes. It does have a profound empirical aspect, but it is not the one of Welty's little formula. It goes back to the very beginnings of the mind, as Susanne Langer has shown in her *Mind: An Essay on Human Feeling*,[192] and as has been shown by psychoanalysts. The question is: at what stage of development does an infant begin to associate qualities such as solidity with objects that he sees? Experiments with infants reveal that this occurs much earlier than expected, namely, around the fourth month. The difference is [between] infants less than 16 weeks, and infants older than 16 weeks. The object concept is *discovered* after the 16th week of life, that is, after about four months [of age]. The first structure of properties recognized by a baby is the upper part of the mother's face. The mother becomes the first extension to this

set of properties. Children who are deprived of maternal recognition in the first year of life are impaired in later life both in their power of abstract thinking and generalization, and their capacity for valuation. In recent psychoanalytical literature, the baby's breakthrough to "playful openness, to diverse possibilities," begins in the fourth month of life and is regarded as the basis of consciousness and Self.[193]

The value capacity thus is founded in the very roots of the experience of the self. Hence, it is almost frivolous to discuss the subject in the way Welty does. It may well be held that this question of selection of relevant predicates of a concept is an important subject of practical axiology, but it is so only because the system of formal axiology is based on the axiom that value is a subset of properties. Empirical formulae such as Welty's never define what value is. Thus, his formula even uses the word "value" in a double sense, a logical and an axiological one, without ever defining the meaning of axiological value, or saying why utility is a value. All this is what I call value alchemy because it approaches the problem of value as the alchemists approached the problem of nature.[194]

It is no exaggeration to say that a philosopher who does not know the methodological difference between alchemy and chemistry[195] and the difference between using formulae on the basis of analytic, as against on the basis of synthetic concepts,[196] is unable to see the difference between a science of value and a philosophy of value. He will necessarily criticize the science through the framework of philosophy, exactly as alchemist used to criticize a chemical procedure or a procedure of science, as Fludd did Kepler. Indeed, such critiques can actually be constructed by analogy with an alchemist criticizing a chemist.[197]

The relation between the axiological theory and finding a procedure for selection of relevant predicates is the same as the relation between, say, the theory of relativity and finding whether light really bends around a mass. It is a practical supplementation of the theory. The axiological theory only says that valuation is a function of the knowledge subjects. If one wants to expand the axiological theory and find a way of knowing objects by their predicates, then this is a laudable enterprise; and it would make more certain and secure the practice of valuation. Unfortunately, Welty's prescriptions are too superficial and cursory; also, they only apply to fragmentary scientific subjects. For example, the universe of intrinsic value is precisely nonstochastic, as Viktor Frankl has shown.[198]

I do not see how what Welty says about empirical scientific inquiry applies to the axiological problem of an objective standard. The objective standard in axiology is derived synthetically *a priori* by the process of

axiomatic identification described in *The Structure of Value*[199] and by no means by the technique he describes. There can be no empirical scientific inquires into values. So the error of a judgment is meant by Welty in the production of the theory, not in its application.

Welty compares Rescher's and my arguments, writing that: "On the one hand, Hartman proceeds *ad hoc* when confronted by practical cases, on the other hand Rescher proceeds *ad hoc* in his attempts to rectify the superstructure of Utilitarianism."[200]

There is a world of difference between these two kinds of *ad hoc*s. Welty says in his conclusion:

> There appear to be two polar demands placed on an ethical theory. One is the requirement of validity or objectivity of judgements. The other is the requirement of the autonomy or accountability of the ethical agent. These demands have been unreconciled since the time of Kant, if not earlier.[201]

But this is definitely not true, because Kant made very clear that his theory of rationality or freedom accounts for the autonomy of the agent. In formal axiology the same is the case through obligatory material norms.[202]

(7) Welty says that "Hartman tries to guarantee truth by basing his theory on intensional predicates of the object. But that posture makes the theory irrelevant to the real world."[203]

But again this is mistaken, as the [HVP] test proves. Rescher tried to guarantee autonomy by appeal to the methodological principle of Sir David Ross: "What we think" about moral questions is the "standard of reference" for a moral theory.[204] Such a theory, says Welty, has no validity: "The way to resolve this problem is not to indulge in *ad hoc* theorizing." How he can call mine *ad hoc* theorizing is a riddle to me because he only speaks of the application of my theory. The theory itself is based on a definite axiom, like any scientific theory. [Welty concludes:]

> What is needed is a theoretical stance. To this end it is perhaps necessary to relax the requirement of truth and objectivity to that of *reasonableness of method*, as Thomas D. Perry has cogently argued.[205] This would be similar to the realization that one can't resolve truth and determinism in a hopelessly stochastic world.[206]

As I said before, the world of ethics is the very opposite of a stochastic world; "stochastic," "conjectural," "random," "statistical"—this is where

the error is. To know ethics scientifically two things are [essential]: a) a correct view of science as a synthetic *a priori* structure, and b) the view of the ethical world as rational and non-stochastic; only the extrinsic is stochastic.[207] The view of Welty leads to, or comes from, the stupid view of a monad who writes about value theory without any idea of what value is, as if I would write about [the inserted words are unreadable].

In intrinsic valuation we go precisely beyond the conjectural random features of the universe. Each intrinsic value is a world in itself and so is the autonomous world of every individual.[208] It is absolutely hopeless to find an ethics in the extrinsic dimension, that is, in the hopelessly stochastic universe. First of all, this is not the dimension of ethics, namely, the autonomous human will. Secondly, the universe is not at all hopelessly stochastic, but the mathematical laws of physics rule it. It is a rational structure, even though with stochastic pockets. The premiss of axiological science is precisely the same as that of natural science, namely, the rational order of the universe. Thirdly, the universe is stochastic insofar as we do not order it by reason. Science imposes its pattern, as Heisenberg has said, like a kaleidoscope, on the disorder of the universe; and so does life on the disorder of everyday events, as says Erwin Schrödinger.

What Welty says is true of analytic abstractions from the world, which indeed have a minimum of order;[209] but it is not true of the construction of worlds. It is true of *analytic abstractions from the world* but not of the *synthetic construction of worlds*, *e.g.*, the value world. This construction only knows variables, [like x and y for individuals, ϕ and Ψ for intensions or predicates, and Φ for class concepts.][210] To give these variables values is a matter of application. Hence, the definition of "formal axiology" as "that science the logical values of which are axiological values."[211] General value is that variable the logical values of which are axiological values.

All together, these critiques [by Mueller and Welty] confirm the motto of the "Introduction" of *The Structure of Value*:

> Some students begin by forming an opinion (like 'bunk')...and it is not until afterwards that they begin to read the texts. They run a great risk of not understanding them at all or of understanding them wrongly. What happens is that a kind of tacit contest goes on between the text and the preconceived opinions of the reader; the mind refuses to grasp what is contrary to its idea, and the issue of the contests commonly is, not that the mind surrenders to the evidence of the text, but that the text yields, bends, and accommodates itself to the preconceived opinion. —

Fustel de Coulanges[212]

The unfortunate author then has the task of bending back the distorted picture of his text in the mind of the critic, or at least of the readers of the critic.

The fundamental preconceived opinion is that of [my] critics, [who] have not succeeded in separating the *a priori* and the empirical aspects of ethics. Unless this is done there is no hope for an ethics, for an understanding of ethics, such as that of formal axiology; and what Kant says is true: "That which mingles these pure principles with the empirical does not deserve the name of philosophy,...much less does it deserve the name of moral philosophy..."[213] It does not deserve the name of philosophy because what distinguishes philosophy from common rational knowledge is that it treats in a separate science what the latter only comprehends confusedly; much less does it deserve that of moral philosophy.

Thus, a critic, rather than giving detailed criticisms of single features of a work, ought first to state his frame of reference and then discuss the features in question as consequences of that frame of reference. Actually, in order to attack or criticize the work, he should show why his frame of reference is more adequate to the subject matter than that of the author criticized. In this respect it would, of course, be a fatal objection to say that the system does not work, as both Mueller and Welty do; but, as we have seen, it does work.

In reading the text, they only see what fits or does not fit their preconceptions. They do not enter into the spirit of the book, and they overlook things that are important to the argument to such an extent that they seem to be sloppy in their reading. Yet, it must be emphasized that these critics are in a minority and that the majority of the readers are both understanding and creative, as the list of works that make use of formal axiology shows.

Another procedure concerning the relevance of properties is given in the section of *The Structure of Value* concerning the weighing of properties, "The Logical Pattern of Value Terms,"[214] where the logical order of an intension is shown in terms of combinatorial analysis; and an exact procedure is given for the weighing of properties, leading to the law that each property of a thing is worth as much as each other property, no matter on what level of abstraction or differentiation, but *depending on the degree of maximum specification*. All these terms are discussed in detail. The higher the differentiation of a thing, the less each property is worth for the thing; but the more properties a thing itself has, that is, the more

differentiated a thing is, the more the thing itself is worth for something that has it.[215] These are *a priori* determinations of intensional structure, rather than the empirical one in Welty's formulae.

A theory of relevance of properties in the sense of formal axiology must itself be a formal *a priori* theory based on an axiom and not a matter of empirical determination; that is to say, the *pattern* of relevance must be given in terms of a structure of *variables*, the values of which are of course a matter of subjection application of the theory; but *ad hoc* formulae without a theory do not solve the problem.[216] At the beginning, formal axiology structures and classifies forms of norm, or formal norms, variables of norms. As a science it is a method, not merely a theory; formal axiology is not words but a method—it is action. "Into the fire with words..."

Bertrand Russell wrote:

> Both [Alfred North] Whitehead and I were disappointed that *Principia Mathematica* was only viewed from a philosophical standpoint. People were interested in what was said about the contradictions and in the question whether ordinary mathematics had been validly deduced from purely logical premisses, but they were not interested in the mathematical techniques developed in the course of the work. I used to know of only 6 people who had read the later parts of the book; three of these were Poles, subsequently (I believe) liquidated by Hitler. The other three were Texans, subsequently successfully assimilated.[217]

Russell [criticized] Gilbert Ryle for "dismissing important scientific knowledge in favor of verbal trivialities;"[218] [and he expressed] the aporetic of philosophy: "Science is what you know, philosophy is what you don't know." He thought that nine tenths of what is regarded as philosophy is humbug; the only part that is at all definite is logic; and since it is logic, it is not philosophy.[219]

9. Reply to Pete Gunter, 1973

Source of critique: P. Y. A. Gunter, "Hartman: Three Criticisms," The Journal of Value Inquiry, *7:2, (Summer 1973), pp. 136-140.*

This critical essay and the next one by George K. Plochman were presented on 4 May 1972 to The Society for Philosophy of Creativity, *meeting in St. Louis in conjunction with the Western Division of the American Philosophical Association. Both Gunter and Plochman were*

responding primarily to Hartman's article, "The Value Structure of Creativity," in The Journal of Value Inquiry, *6:4 (Spring 1972), pp. 243-279.*

Hartman's tape-recorded responses to these two papers, transcripts of which will follow, were also given at that meeting.

In his article, Professor Gunter, from North Texas State University, objected (1) that Hartman assumes the absolute validity of set theory, (2) that he assumes that qualities form discrete units that can be counted, and (3) that Hartman cannot reconcile his dynamic view of man and God with applying non-denumerable infinity, which implies timelessness, to them.

[Professor Gunter's criticism] was very, very subtle and I think a little too subtle, because, it is like this: if a man says "I am going north" then you will say, "You can't say that because when you go to the north pole you will go south." That's also very subtle, isn't it? In other words there are certain simple things which, when you go to their final consequence, become extremely complex.

(1) Now, set theory. Set theory has, as the critic of the critic said, its inconsistencies; but I can afford not to be concerned about them; I can say: "Sufficient unto the day is the rigor thereof." In other words, today set theory indeed has these problems which are not solved, even in exact set theory; and the problem is, they are not solved because they seem to be unsolvable.

We cannot deny the use of mathematics in any field because at the basis of it is an abyss. We have to use mathematics. We know the abyss is there below it; but neither the physicist nor the girl in the shop cares about that. So, the "Cantorian paradise," as David Hilbert called it—we may perhaps be expelled from it; but for all the calculations of the everyday world, for all the calculations of physical science, for all the calculations of science including value science, I think this is, at their lower levels, irrelevant. And since axiology *is* on such a low level, I don't have to bother *yet*. But it may be that there will come the day when the correspondence between number and value will be so subtle that then the paradoxes will appear; they will appear as paradoxes in value theory; and that I think will be extremely interesting. (2) [Gunter's] second question was about the relationships between quantity and quality. That, of course, is a tremendously interesting and profound question. Can set theory be applied to a collection of properties? Now Mr. Gunter said that a set is "any collection of objects

whatsoever,"[220] and in saying "object" he already uses extension instead of intension. He is doing this because he says objects are discrete; they can be counted.

Now, objects are not as discreet as one would wish them to be. Not only are the objects of the *perceptual* world rather vague, but the objects of science are so vague that we don't even know whether they exist. Yet we calculate with them very happily—for example, electrons. Nobody knows whether they are even objects; nobody knows where they are. As a matter of fact we know we can't say where they are. Werner Heisenberg's uncertainty relationship [says that] we never know where an electron is because when you look you push it away; so when it's there, you are not there; and when you are there, it is not there. So we can never say where it is. It is a very vague object. One can make a very good point for the *un*discreteness of objects even in the empirical world.

However, I do not base the theory of value on properties. I just don't base it on properties, because of this question. I base the theory on predicates, on the intensional predicates, the predicates in an intention. And this set of predicates is the measure of the value of the thing. In other words, if I want to measure a chair I don't speak of the properties of the chair; I speak of the predicates of the concept "chair;" and these predicates are very discrete. We look them up in the dictionary.

Then I apply these predicates, and this construction I call "properties." So the properties are constructed; they are not empirically perceived in axiology. However, by applying the transfinite cardinalities I then come to predicates which by necessity are completely undiscrete, like the points in a line. They are conceptually discrete but not perceptually. There are also predicates which are completely vague; they belong to intrinsic value; and they are metaphors. So metaphor is defined precisely as a non-denumerably transfinite concept, and it is vague in this sense. However, you can mathematically deal with that vagueness in non-denumerable sets.

(3) With that I come to [Gunter's] third [objection], namely, simultaneity and succession, another extremely interesting problem; how can something that is given be dynamic? That is about the right correlation, is it?

Now, if you have a non-denumerably transfinite set which is given, then by topological transformation, it becomes the most dynamic thing in the world. In a new article called "The Axiometric Structure of Intrinsic Value"[221] I apply topological transformation to these given sets, and then they become extremely dynamic. A topological transformation is the following thing—it's a lovely thing. It is the invariant of any given form, no matter how it will look, as long as its points remain in the same order.

For example, if you have a doughnut, which topologically is called a torus, then you can perform any kind of squeezing, and punching, and pulling, *etc.*, of that torus; and the result may be, for example, a teacup. Now the teacup looks very different from a torus; yet, it has exactly the same sequence of points; and where the hole in the doughnut was, there is the handle of the teacup. So this is a topological transformation, an invariance of neighborhoods of points even though the form looks entirely different. (When you apply that to intensions, to metaphors, you get a theory of metaphors which is a transformation and a great dynamic of these forms.)

But I can give you another example of something given which is an intrinsic value and is extremely dynamic: a good work of art. There it is, that Rembrandt *Nightwatch*. Now, for the people who have a feeling for it, that's a whole world, a dynamic world; and there are many books on the dynamics of lines, aesthetics, and so on. So an aesthetic dynamic is of something given simultaneously, and yet there is this tremendous dynamic in it.

10. Reply to George Kimball Plochmann, 1973

Source of critique: George Kimball Plochmann, "Robert S. Hartman on the Structure of Creativity: A Critique," The Journal of Value Inquiry, *7:2 (Summer 1973), pp. 129-135.*

George Kimball Plochmann, then at Southern Illinois University, edited Hartman's The Structure of Value *for publication by Southern Illinois University Press. His reservations about Hartman's position centered around what he saw as (1) the unyielding structure of formal axiology, and (2) its low likelihood of being true. The response below was tape-recorded as Hartman gave it at the meeting of* The Society for Philosophy of Creativity *in St. Louis in 1972.*

Now I go to Professor Plochmann. The most important thing is that he told me he only wished that my paper did not possess such a "shimmering schematic perfection."[222] Well, I like that; to say of a theory that it has a shimmering schematic perfection, I think I take that as a compliment!

(1) Professor Plochmann says of my theory that "Its structure is unyielding;"[223] but, seriously, the structure is not at all inflexible. As a matter of fact, it is so tremendously flexible that if you put the three value

dimensions together and you let one value value another—in other words you take a systemic value and you let it be valued systemically, or extrinsically, or intrinsically, and you do the same with the extrinsic value, you let it be valued extrinsically, systemically, or intrinsically, the same with the intrinsic value, you let it be valued systemically, extrinsically, or intrinsically, then when you have only five combinations of value, you get 28,000 different value combinations.

Some mathematicians at M.I.T. have put all this in a computer and have come up with a book entitled: *Axiological Tables,* and there are the first 28,000 value formulae. Now, all of these formulae, mind you, are variables; and each of them has an infinity of applications. It is almost impossible, even with these few, the first 28,000 formulae, to find enough actual examples to fill up the book. You have to go to *Hamlet*, to *La Traviata*, and so on, to find enough examples for these formulae; and this is only the value formulae of six different combinations, six different values. So it is really extremely flexible.

(2) Finally, Professor Plochmann says, a true value philosophy, a true system, must at least have "a likelihood of being true."[224] So let me finish with this report, and you think out what it may mean, because I don't know it myself yet. In my book, *The Structure of Value,* there are tables of hierarchies of value according to the first two value combinations. These make 18 values in a hierarchy, ranging from the highest value form, I^I, to the lowest, I_I—the destruction by an intrinsic value of an intrinsic value; that is 18 value forms.[225]

I had a seminar with the psychoanalysts in Mexico of Erich Fromm's school. Fromm has a school down there, and I had the value seminar for them. When we came to these pages they said to me, "But this is a test." I said "How do you mean that?"[2] And they said, "You scramble up these 18 value forms and their examples, give it to a person, and have the person put his own order of these 18; and then you measure the distance between his order and the order in the book; and you have a test of the value capacity of the person."

We did it, and it worked immediately—to such a point, mind you, that this test is now used in about 7 countries. It is, for example, used in the social security system of Mexico; it is used here in St. Louis[226] at the Deaconess and Lutheran Hospitals because it is more prognostic and more diagnostic than, for example, the Minnesota Test (a famous psychological test) when you make the correlations between any crowd. If we in this room would take the [HVP] test, then every one of us, because we are pretty normal, would have a correlation with the table in the book of more

than 95 percent. In other words, we actually do value the way it says in these tables.

Now that, to my view, is a tremendous likelihood of being true; and I think that is a validation of the theory. But I am not sure, and I don't know yet. Well, it measures something; but if a person puts these 18 items according to his own value pattern, if he is normal, then he will be 95 percent doing the very same thing that the calculus says he should do. The differences in the valuation of the items, for example, "my kingdom for a horse"[227] is precisely what brings out the individual value pattern of a person when taking the [HVP] test; it speaks for, not against, the test.

There are many more problems than solutions. Don't think that I am not very aware of that, but actually I love this [critical dialogue]; and the more problems I have, the better I like the theory.

11. Reply to Rem B. Edwards, 1973

Source of critique: Rem B. Edwards, "The Value of Man in the Hartman Value System," The Journal of Value Inquiry, *7:2 (Summer 1973), pp. 141-147.*

In this article, Edwards, a colleague of Hartman's at The University of Tennessee, appraised the central arguments of Hartman's "Four Axiological Proofs of the Infinite Value of Man," Kant-Studien, *55:4 (1964), pp. 428-438. Hartman wrote before we became as sensitive as we are today to the sexism inherent in certain ways of speaking; but in writing of "man" he meant no sexism; and he clearly expected that the word would be interpreted generically.*

Edwards objected to Hartman's claims that an entity's degree of value depends on the number of properies it possesses, and that we human beings as rational beings are infinitely valuable because we can think a non-denumerable infinity of thoughts (thereby having a non-denumerable infinity of properties).

The objections are (1) that no one can do it; our powers of thinking are limited, as are our capacities for thinking about our thinking; that (2) Hartman confuses potential with actual infinity, and the ideal essence of man with concrete individuals—a difficulty that is perpetuated in the following response, and (3) that thinking a non-denumerable infinity of thoughts is not a real potentality (much less an actuality) for any human being, though presumably God can do it. Edwards also maintained (4) that since different individuals can think different numbers of thoughts,

Hartman's argument shows that we are of unequal value, and that we are of less value than computers, which we cannot rival in sheer number of thoughts. (If some people can think an infinite number of thoughts and some can not, that also proves inequality.)

From the the theory of types, which says that properties cannot be members of whole sets of things to which they are predicated, Hartman argued that the Self that thinks an infinity of thoughts cannot be a member of the set of which it thinks but must belong to a higher order of infinity, and that the Self that thinks of the whole of spacetime cannot be spatiotemporal.

Edwards responded (5) that this leads to the absurdity that the Self that thinks the thought of the whole of reality or the whole of existence must be unreal, must not exist! Edwards also indicated (6) that the argument from the theory of types leads to an infinite regress of selves, and (7) that if we can think only a finite number of thoughts, the self which thinks them needs to belong only to a different finite set (perhaps one temporally ordered), not an infinite set, to avoid the sort of self-reference prohibited by the theory of types.

In the following letter to Edwards dated 25 January 1972, Hartman replied to the typewritten manuscript of this article, prior to its actual publication.[228]

I am writing an article for the *Journal of Value Inquiry*, "Axiometry in Theory and Practice," where I show how my system is being applied. The most striking and widespread as well as effective application is the axiological [HVP] test. Its effectiveness seems to prove the system. For example, the actual practice of people taking the test, that is, the average of their sequences, corresponds between 90 and 99 percent to the theory, that is, to the sequence in the tables on pp. 272-273 of *The Structure of Value*. The correlation between theory and practice, in other words, is over 90 percent.

Thus, maybe, one should not be overwhelmed in one's desire to apply the system by the "philosophical difficulties" which, I think, are not as serious as Edwards believes. Let me try to show this in the following commentary on his paper.

(1) The first objection I have to his difficulties is that I believe he misunderstands the relation between essence and existence, or the relation between the scientific account and the observation of phenomena. It is not

for nothing that formal axiology is called a science. We have to apply the structure of science to it.

Thus, the very objection he raises against my proofs of the infinite value of man, namely that no individual man actually can think that infinitely, was made against Galileo when it was held that his ideal picture of entities did not correspond to the entities themselves. Thus, there is no actual empirical line which has the properties of a geometrical line, *e.g.*, that of having no dimension [thickness]. Yet, the purely mathematical properties of a line are those which rule the concrete samples of lines. I refer in this connection, to W. H. Werkmeister, *A Philosophy of Science*.[229] In other words, it is the primary properties which give us the laws of the secondary properties of empirical objects. The latter can never in purity exemplify the former.

This was discussed by Galileo in his *Dialogues Concerning the Two Chief World Systems*,[230] where Simplicio admits—just as Edwards does—that the mathematical subtleties of the new science might be in themselves cogent and logically correct, but maintains that they are applicable to nothing in the actual world. It may be perfectly true in theory, he says, that a sphere touches a plane in only one point; but in the case of physically real planes and spheres it is manifestly not so. To this challenge Galileo replies that the discrepancy between theory and the empirical world is the fault of neither geometry nor physics but is due entirely to the inability of the investigator to calculate correctly; for the investigator, Galileo contends, begins by defining a generalized "ideal case" of the particular process of nature under observation; then he introduces such qualifying propositions as to make the universal notion applicable to the unique situation; and only to the extent to which he succeeds in doing this will there be harmony between his theory and the real world. It remains true, therefore, that in theory sphere and plane touch each other in only one point; but in the empirical world we must allow for a certain "roughness" of surface and must take into consideration the "pressure" of a physical sphere upon a physically real plane.

Formal axiology is a science; and it therefore deals, like any science, with the ideal case, the schema or thought construction, to speak with Kant. The infinity of properties is the primary property of man which rules the secondary properties of actual "empirical" men. Of course, if no man, as Edwards says, ever felt or was capable of feeling this infinity, the definition would be purely theoretical. But his view of man is too limited. It is quite true that *most* people do not feel, nor can think, the infinity which their nature presupposes; but there are some who do. Read Henri Bergson's *Two Sources of Morality and Religion*,[231] where he speaks of the mystic, or

The Structure of Value,[232] for cases of such infinite, "oceanic" feelings. Even though perhaps Edwards or I have never felt this way, we cannot therefore deny, as William James rightly said, that they exist. Edwards himself has discussed this matter in Ch. 5 of his book on Religion.[233] The mystics are the prototypes of man, and the axiological definition refers to these prototypes (as a line traced by an almost invisible material would be the prototype of a line). Other men just approach the definition more or less, as the sphere more or less approaches the one point on touching the plane.

(2) Thus, it is false that there are no men who correspond to the axiological definition. But it is also false that the axiological definition of Man would be invalidated if there were no such samples of Man. The proofs arise from the axiological definition of Man and the premises of the axiological system. Werkmeister makes it clear that even if there should be no confirmation by observation, deductions within a system would still be as forceful and cogent as ever, even though they would possess only "theoretical" value. Archimedes' principle of the spiral, for example, has lost nothing of its significance for mathematical theory just because physical objects do not move in accordance with it; nor is the validity of the Pythagorean theorem impaired because we cannot construct a mathematically perfect triangle. The whole of Newton's theory of the universe is based on the fiction that the gravity of a body is condensed at a point in its center. In mathematics, Newton says, we are to investigate the quantities of forces with their proportions consequent upon *any* condition supposed; in other words, we are to consider the "ideal case," and we are to treat it as if it were a case of pure mathematics.[234] In the same way, Heinrich Hertz explicitly states that the deductions of the first part of his *The Principles of Mechanics*[235] "remain entirely foreign to experience" and that "they are based upon the laws of an inner intuition and upon the forms of logic."[236] Thus, *if* we define man as he is defined in the various proofs and *if* we apply to these definitions the axiological system, then it follows deductively and necessarily that man is the infinite being in question. If then in observation we should not find such a man it would be just too bad for observation (and man), for observation would then be faulty (and so would be man), in terms of the system. But, thank God, we do find such men, namely in the various writings of mysticism.

On the other hand, a system is a universal tool; and one does not *have* to define man that way I do. One may define man as the Russians do, as "a product of society." In this case, man is an extrinsic value rather than an intrinsic value, or perhaps even a systemic value. But then there is still the

theoretical possibility of an intrinsic being, and this would then have to be defined differently from man. Maybe the Russians would call Lenin an intrinsically valuable being, a superman, whereas the masses are only extrinsically or even systemically valuable. Thus, a system can be applied any way, and this variability of the system is due, of course, to the fact that it consists of variables.

So far, all the objections against my system have been against supposedly wrong results in application. In so far as these arguments were against the test, they were simply wrong (*e.g.*, Mueller). In so far as they are against the definition of man, I can only say I don't agree. As is said in *The Structure of Value*, application of a system is a subjective matter. When I see a man or a woman, then he or she *is* infinite for me. I see man as does Kierkegaard, or Berdyaev, or Jesus.

(3) I feel Edwards is doing himself a great injustice in saying that he is able to think only five or six types or orders of his own thinking. Thinking is much more than *conscious* thinking, it is one's totality; it is dreaming, imagining, memory, anticipation, *etc.*, *etc.* (see Husserl). And if we would take LSD we would be astonished at the infinities that are within ourselves. It is thus simply not true that "no individual human person *can do* what Professor Hartman suggests that we all can do in constructing a thought world."[237]

(4) It is also false, for reasons in the methodology of science, that there is an "absolutely devastating equivocation between the notion of the concrete individual human person and the ideal essence of the abstraction 'man'."[238] Edwards underestimates both actual men, past men, and especially future man. All these are meant by the definition of man, not just the few men of his acquaintance. Thus, man as he will be in a hundred thousand years, for example in Franz Werfel's *Star of the Unborn*,[239] a book which I very much recommend, will have the imagination, vocabulary, intellectual energy, and endless time to devote to the enterprise of being human, that the definition implies—not to speak of man on other and older stars [planets] than Earth. In a word, we must see man in all his essential nature and not in the merely terrestrial or pedestrian way of January 1972.

I do not at all understand, therefore, what Edwards means by saying that "the application of the Hartman system to actual existing men shows that they are of finite value."[240] This kind of man is the one *he* has in mind, but to which my definition of man does not apply, but the Russian or a similar one does.

(5) Neither can I see how it follows from the application of my system that men are of unequal value.[241] Their limitations by language, *etc.*, are

mere accidents, and have as little to do with the definition, as has an unequally designed circle on a blackboard with the definition of "circle." Computers by no means can outdo man, and it would take all the computers in the world for a thousand years to even approach one human brain. After all, computers are made by human brains. There is a quite a lot of literature on this.

Of course, Edwards can, in his own application of formal axiology, call the being I call "man," "God;" but he is then left with the different infinities within infinity examined in my article on Creativity[242]—with Gods and meta-Gods, *etc.* Edwards actually comes to the same notion of God I have come to myself, namely that there are infinite orders of infinity. Where does the logic of the proof using the infinity of orders take us if we follow it out all the way? [It leads] to the understanding of existence as a fixation, and of True Reality as far beyond existence. In this sense it is non-existence. God then is the limit of infinities, in the technical sense of "limit" (just as a point, for Whitehead, is the limit of concentric circles). And man, self-reflective as he is, is made in God's image, *i.e.*, tending to a similar limit within himself. ("Similar," of course, not in the mathematical sense, since man's limit is an infinity infinitely less infinite than God's.[243]

Edwards' objection against the logical proof, then, does not hold water either. For the definition is not "false from the outset" because it applies to no actual individual man, for the reasons mentioned above that science deals with ideal cases and not with concrete ones. But also for that other reason, that actually some men can do what Edwards says they cannot do. We therefore do not have here a false premise on my part but rather a too limited notion of man on his part.

(6) As to Edwards' objection against my use of the theory of types,[244] there is no reason why one should not "get mileage" from metaphysical applications of a logical theory. Metaphysical reasoning is logical. Willard Quine and others outdo me by far in using even existential quantifiers metaphysically.

Just as the orders of infinity lead to the transcendence of God, they lead to the incomprehensibility of the Self. Edwards is quite right; the self or the thinker can never have any knowledge or thoughts about the totality of himself ([which does not mean] not "about himself at all"). There is an infinite regress within the self, as Kant already stated; and Nicolai Hartmann has shown in his *Ethics*[245] that precisely because we never can know ourselves fully, we need another who can do so—so we can know ourselves fully only by loving an other who loves us. This is Nicolai Hartmann's

phenomenological foundation for the necessity of loving another person.

Thus, wherever one turns in the application of Formal Axiology, one finds himself in company, good or bad, as the case may be. The main function of a system is probably to stimulate thought. Anyway, as I did stimulate Edwards', so he did mine.

12. Reply to William Eckhardt and Robert S. Brumbaugh, 1973

Sources of Critique: William Eckhardt, "The Place of Values in Human Relations," The Journal of Human Relations, *21:2 (Second Quarter 1973), pp. 216-219, and Robert S. Brumbaugh, "Formal Value Theory: Transfinite Ordinal Numbers and Relatively Trivial Practical Choices,"* The Journal of Human Relations, *21:2 (Second Quarter 1973), pp. 211-215.*

The second 1973 issue of The Journal of Human Relations *actually appeared after Robert S. Hartman's death and contained short articles by William Eckhardt and Robert S. Brumbaugh responding to his project of developing a science of values. It also contained Hartman's rejoinder, republished below. Hartman responded to both critics in one short article originally titled "Reply to Eckhardt and Brumbaugh,"* The Journal of Human Relations, *21:2 (Second Quarter 1973), pp. 220-225. Immediately following Hartman's article, the Editor commented: "Robert S. Hartman died in 1973, a great loss to those inspired by his value research. This issue of the* Journal of Human Relations *is dedicated to his memory and to his continuing inspiration."*[246]

William Eckhardt, then a research psychologist at the Canadian Peace Institute in Oakville, Ontario, emphasized (1) the importance to the survival of humanity of developing a science of value and suggested (2) that Hartman's correspondence theory of value (the correspondence of entities with concepts) is the correspondence theory of truth (the correspondence of concepts with entities) "turned on its head."[247] *Eckhardt also (3) equated value with love, and suggested (4) that a science of values would require criteria for judging the authenticity of values and value concepts.*[248] *He also (5) noted the convergence of his own empirical approach to value theory and Hartman's formal or mathematical approach.*[249]

Robert S. Brumbaugh, then a Professor of Philosophy at Yale University, commented (1) that applications of Hartman's value transpositions are very limited and cannot be extended to cover trivial value choices like what to have for lunch or whether to buy a Swiss Army knife.[250] *Brumbaugh also suggested (2) that if formal axiologists recognize a quantifiable relation of*

"greater than," they might fear the sort of counterintuitive results derived from the utilitarian hedonistic calculus. No finite number of pleasures (like those of the cannibals eating Joe) should ever be allowed to total up to the value of a unique individual person, but this often happens when a purely finitistic calculus of value is employed.[251] *His most constructive suggestion was (3) that the mathematics of transfinite ordinals needs to be added to Hartman's calculus of transfinite cardinal numbers. This would permit making distinctions within each of the three levels of intrinsic, extrinsic, and systemic values, while preserving their ultimate incommensurability.*[252] *The inability to calculate distinctions within transfinite orders when only transfinite cardinal numbers are used makes a purely cardinal calculus, like that proposed by Hartman and developed in depth by Frank G. Forrest, a very "blunt tool," as Forrest himself admits.*[253] *In Part Two of this book, Mark A Moore will present an alternative finitistic quantum logic calculus which allows innumerable value distinctions to be made and calculated that cannot be determined using only a transfinite cardinal calculus. Finally, Brumbaugh noted (4) the need for knowing how to value axiology itself.*[254]

I agree with almost everything Eckhardt says about the place of value in human relations, especially the necessity of a science of values for our time, and the convergence of empirical and mathematical types of value theory. I emphasize the latter, for creating a science of value presupposes a formal frame of reference. Exactly as there is mathematics in natural science, there must be a frame of reference in value science; and it must be different from that of natural science. It must be mathematics applied not to things, a qualitative rather than a quantitative, and an intensional rather than extensional, use of mathematics. Its basis is the definition of a *value as a set of properties [or predicates],* which leads to the application of set theory to values. Once one has this framework, which I call formal axiology, one can apply it to empirical value phenomena and explain them in terms of the axiological system and its elements, the intrinsic, extrinsic, and systemic value dimensions.

In speaking of love, then, we speak of intrinsic value applied to human beings; and we find that this produces the axiological science of ethics.[255] But intrinsic value can also be applied to things, and we then get the science of aesthetics; or it may be applied to concepts and we have metaphysics, or to words and we have poetry. In sum, in a formal value frame of

reference, empirical-existential words such as "love" become *variables* which apply to many more value phenomena than did the [original] words. The latter were abstracted from sense reality and therefore are ambiguous and limited in their meaning. Thus, "love" is a very ambiguous and a very limited word. We would probably not call "love" the dedication of a sculptor to the marble block from which he elicits a form, yet it is the same value phenomenon applied to a thing rather than a person; and we speak of a love of truth which is a systemic use of the word "love" and would belong to the science of metaphysics. The formal approach thus is more generalized and infinitely applicable and gives a new insight which the everyday words of common language cannot give, simply because common language does not have the insights that are needed for a science of value. If it did, we would not need but already have such a science.

What then is the authenticity of a value? A value U is more authentic than a value V if it is a higher value than V. Since in formal axiology value is defined as any set of properties, and set theory is applied to these sets, systemic, extrinsic, and intrinsic values are mathematically defined: intrinsic value is a higher (greater) value than extrinsic value, and extrinsic value a higher (greater) value than systemic value. Hence, intrinsic value is a more authentic value than extrinsic value, and extrinsic value a more authentic value than systemic value. A value composition is more authentic than a value transposition.

I would not, however, use the word "authentic" of value, for values are constructions of the human mind; and we can as little speak of the authenticity of a value as, say, the authenticity of the number 3. "Authenticity," in formal axiology, is applicable only to humans and signifies that a human being fulfills his own definition of himself, which is "I am I," and thus actually *is* who he is. This is the definition of an authentic, genuine, real human being who is true to himself. I therefore would reserve the word "authenticity" for ethics.

In general, the norm for each value is the concept by which the valued thing is known. This *may* be called a turned-around correspondence theory: in the degree that the thing corresponds to its concept it is more or less good. But there is a difference between a thing's corresponding to a *concept* and a situation corresponding to a *proposition. "What is truth-value to a proposition is good-value to a concept."*[256]

Eckhardt finds the definition of goodness of formal axiology somewhat limited because its utility depends on the amount of agreement we can get on conceived definitions. This is one of the most important theorems of formal axiology. Valuation in common is possible only where there exist

common concepts. When an American and a Russian value democracy, then both rightly say that the other's is a very bad democracy; they have opposite definitions of "democracy." In general, the more abstract a concept the more difficult, indeed impossible, is the common valuation of it; and the more concrete a concept the more it may be subject to common valuation. The reason is that in learning to speak we learn to combine certain sensorial things we observe with certain concepts our mothers tell us. This is beautifully illustrated in William Gibson's *The Miracle Worker*;[257] the world of fact as well as the world of value revealed itself to her [Helen Keller].

We all agree on chairs and tables, but in cases where there is conceptual disagreement concerning the definitions themselves, no common valuation is possible. This is a most important theorem of value theory and fact of value actuality, and no wishful thinking can erase it.

Whereas in Eckhardt's paper we get aspects of the relation between value reality and value theory, in Brumbaugh's paper we find a contribution to formal value theory itself. I agree with the importance of using transfinite ordinal numbers and have used them in exactly the way Brumbaugh proposes,[258] but without elaborating this use the way Brumbaugh does, and which I fully accept. However, we must be aware of the difference between "better than" and "greater than." When we apply mathematical models to properties of things rather than to things themselves, we must be aware of the *qualitative nature* of our procedure. We are then forced into the relative values of concrete and abstract things, of genus and species, of sliced avocados and sliced fruit, etc. And this subject has to be treated fully;[259] and it is here precisely that it is useful to introduce the ordinal transfinite numbers.

Insofar, then, I agree with Brumbaugh. But he has misunderstood, or at least not correctly presented, formal value theory in two respects. One is by only mentioning negative exponentation, or disvaluation by transposition, without giving the corresponding operation of positive exponentation, or valuation by composition. Obviously, in the latter case we do not have orders of value infinitely different but misplaced in relation to one another, but we have these value orders placed correctly in their relations to one another and comparable in spite of being of different orders. My value calculus deals with both with compositions and transpositions, and one is as important as the other.

The second misunderstanding seems to be a too simple view of value. In value theory, as far as I am concerned, there are no "trifles." An everyday thing like a salad at noon, a knife of the Swiss Army type, a cold corked

retsina wine, *etc.*, can be subject to systemic, extrinsic, or intrinsic valuation, depending on how one looks at them, as Brumbaugh shows in an example of moral issues at stake in choosing a lettuce salad (when there is a union lettuce-workers boycott). A thing, such as the ones mentioned, is usually an extrinsic value, and an extrinsic value is anything but a trifle. The *thing* in question may be a trifle, but its *value* is not. For a thing with n properties has, in the value calculus 2^n values. Thus, we do not have an extrinsic value [like] "great ethical tension;" but we do have an almost infinite variety of complexity in extrinsic valuation. To take only two examples, French tasters of Burgundy wine have a check list of 158 properties, which gives a glass of Burgundy 2^{158} or 3.6×10^{46} possible values.[260] An expert in Volkswagens who knows the Volkswagen inside and out with all its 20,000 parts, each having a minimum of 5 properties, would be able, theoretically, to give a particular Volkswagen $2^{1,000,000}$ values. Thus, the valuation of trifles is extremely complex, indeed astronomical.

Even a thing with only 10 properties has 2^{10} or 1024 possible values. Thus, in a job evaluation which has ten properties, there are 1024 ways in which a worker can fulfill it. These 1024 ways can be exactly structured. There is one way of *good* performance; there are 385 ways of *fair* performance, 252 ways of *average* performance, and 385 ways of *bad* performance. It is not sufficient, then, to say that a worker is doing a fair job; it must also be determined which of the fair sets of properties his performance fulfills—9, 8, 7, or 6—and which set within these sets. There are 120 different possibilities of fulfilling 7 out of ten job requirements. Which of the 120 is he fulfilling?[261]

From the point of view of a formal value theory, value becomes infinitely complex. This is the reason that value theory has to introduce transfinite numbers of properties. Brumbaugh has shown this clearly in his essay "Changes of Value Order and Choices in Time"[262] where he makes another important contribution to value theory based on the relation "greater than" of the three dimensions. We must be able, he says to keep comparability of different value orders without reducibility between orders; and the transfinite symbolism makes this possible.

To speak of trifles then is to look at value from a sensorial and limited every-day perspective, from the point of view of a secondary value property but not a primary value property which alone is the concern of the *science* of value.

Finally, to mention one of the problems Brumbaugh sees in value theory, I need to know how to value axiology itself. This, of course, presupposes an axiological meta-theory, that is, a formal theory applicable to various

value theories. This matter has been discussed in *The Structure of Value*, in the section "The Value of a Value Theory."[263]

Both in the cases of Eckhardt and of Brumbaugh, the ways in which we differ are pointed out only for the sake of precision; whereas the ways in which we agree are fundamental. As Eckhardt rightly says, a science of value beside the science of facts is the need of our age.

13. Conclusion: Theory and Practice

[Kant discussed and repudiated the platitude that "This may be true in theory, but it does not apply in practice." The proper remedies for this, he contended, are: better judgment in linking theory with practice, and better theory that successfully harmonizes theory and practice.][264] The critics I have discussed, and they are the main ones, all come down to this platitude discussed by Kant. It thus seems to be a common objection against formalistic or scientific ethics that it cannot work, no matter how beautiful it be in theory. It seems to me that my system is the first that actually does work, and the working of which can be statistically verified.

Any reader can verify it by giving the [HVP] test to some 20 people, averaging the results, and using the formula for the correlation of sequences. He will find, depending on the class of the people tested, a correlation between 85 and 98 percent with the theory. The test appeared in my book *The Structure of Value* without my knowing that it was a test. A seminar of psychoanalysts drew my attention to the fact that the tables on pp. 272-273 would constitute a test. Thus, we have here a purely philosophical product which can be compared perhaps in its kind to such purely philosophical products as Pascal's and Leibniz' calculating machines, or if we take axiometry as a whole, to Descartes' analytic geometry, or to Leibniz's differential and integral calculus. At least, I see no other comparison in the history of philosophy.

This means indeed that philosophy has been left behind, that there has arrived an axiometric method; but it does not mean for me personally that I should "throw away the ladder," even though it is quite true that in the light of value science, value philosophy appears antiquated and indeed senseless. Thus, I might say with Wittgenstein that "My propositions are elucidatory in this way: he who understands me finally recognizes them as senseless, when he has climbed out through them, on them, over them. He must so to speak throw away the ladder, after he has climbed up on it."[265]

Value philosophy is still extremely important to lead up to the lacunae that are found in axiometry. Thus, in the discussion of intrinsic value, the

fundamental insights of aesthetics are the most important values for the axiometric determination of intrinsic value. While we have a science with respect to extrinsic value and also can understand its symbolism, we do not yet have a science with respect to intrinsic value; we only have the symbolism without clearly understanding it. This is my next task, and for this I still need philosophy as the ladder. But even as it now stands, axiometry is a new instrument of thought, and one which I believe the world desperately needs. We don't need more methods of technology, but we desperately need a new way of thinking.

As Max Lerner said in an article on 24 January 1972, in his column "Opinion," "The encounter movement needs an overview which will give them a core and an intellectual habitation and name. Encounter deals with techniques and isn't enough." "Human potentials" mostly expresses a hope. "Esalen" has become a fighting word. "Growth centers" smacks of real estate and public relations. The woods of New York, Los Angeles, and San Francisco are full of newly imported gurus, but the thriving guru business doesn't amount to "a Philosophy." The work of Abraham Maslow [is suggested] as a basis for the new movement of intrinsic valuation, and Maslow made constant use of formal axiology. I am a founding sponsor with him and others, of the Association of Humanistic Psychology and had many meetings with him on the subject, [especially] during his year in Cuernavaca when we were together almost daily.

The revolution of our time must be an inner revolution, a reformation, something which has become clear even to the rock and roll generation and to serious so called "rock pop" composers such as Tim Rice, composer of *Jesus Christ Superstar*. Said Tim Rice in an interview by the magazine *Seventeen*, Jesus'

> whole attitude toward revolution is very relevant. Although he was a revolutionary in the mind, he could see that acts of violence and physical overthrow were quite unimportant in the long run. He would not be in favor of putting a bomb under a building or blowing up a bridge. What had to be accomplished—which probably depressed him very much—was a complete overhaul of everybody's thinking. He could see that most people who called themselves revolutionaries just couldn't understand this.

It is indeed the intellectual creations that change the world. The whole nuclear age came about because a library clerk in a basement put down some formulae in an esoteric physical journal. Axiometry is a new

intellectual instrument; yet, people who think deeply about the reformation of our time but know nothing of axiology come as close to it in their formulations as is possible in words.[266]

ENDNOTES

1. [This paragraph comes from Robert S. Hartman's letter to Raymond Pruitt, 17 July 1971.]

2. John W. Davis, ed., *Value and Valuation: Essays in Honor of Robert S. Hartman*, (Knoxville: University of Tennessee Press, 1972).

3. [Hartman's note here reads: "Note, send this also to the Jesuits in Brazil as autobiography."]

4. Robert S. Hartman, *The Structure of Value: Foundations of Scientific Axiology*, (Carbondale, Ill.: Southern Illinois University Press, 1967), p. 15.

5. *Ibid.*, p. 63.

6. [In 1967, Charles Hartshorne sent John W. Davis a brochure about the graduate program at The University of Texas. Hand-written by Hartshorne at the bottom of the page were these words: "I've been reading R.S.H. Fantastically ingenious and challenging."]

7. Henry Nelson Wieman, "Foreword: The Axiology of Robert S. Hartman," in Davis, pp. ix-xiv.

8. N .B. Motroshilova, in *Problema Jennostib Filosofii* (*The Problems of Value in Philosophy*), (Moscow: Academy of Sciences in the USSR, 1966).

9. Hartman, *The Structure of Value*, pp. 293-302.

10. Brand Blanshard, *Reason and Goodness*, (London: George Allen & Unwin, Ltd., 1961), p. 420.

11. Bertrand Russell, *The Scientific Outlook*, (London: G. Allen & Unwin, 1949), pp. 82, 84.

12. Albert Einstein, "On the Generalized Theory of Gravitation," *Scientific American*, 182:4 (April 1950), p. 15. Compare *The Structure of Value*, pp. 12-13.

13. Compare *The Structure of Value*, pp. 19-20.

14. *Ibid.*, p. 224.

15. Charles Hartshorne, *Anselm's Discovery*, (LaSalle, Ill.: Open Court Publishing Company, 1965), p. 262.

16. [Nicolas Goodman, an expert mathematician and logician, and Charles Hartshorne's son-in-law, was then teaching at Stanford University.]

17. *[Utopia*, published in 1516, was not written by Francis Bacon but by Thomas More, who coined the word. However, Bacon did begin writing an unfinished work on the ideal society titled *Nova Atlantis*, 1627.]

18. [The word in the manuscript here is "secual"; but I am interpreting this as typographical error. Hartman did claim that sexual intercourse is out of ordinary spacetime and belongs within intrinsic spacetime.]

19. Robert S. Hartman, "The Good as a Non-natural Quality and the Good as a Transcendental," *Review of Metaphysics*, 16:1 (September 1962), pp. 149-155.

20. Hartshorne, *Anselm's Discovery*, pp. 258-260, [in response to J. N. Findlay.]

21. I wrote on this in Robert S. Hartman, "Four Axiological Proofs of the Infinite Value of Man," *Kant-Studien*, 55:4 (1964), pp. 428-438.

22. Hartman, *The Structure of Value*, pp. 200 ff.

23. Hartman, "Four Axiological Proofs of the Infinite Value of Man."

24. Hartman, *The Structure of Value*, p. 118.

25. *Ibid.*, p. 308.

26. *Ibid.*, p. 307. [The original version of *The Structure of Value* published in 1967 was a hardback edition; the paperback edition was published in 1969. It included some additions to "Acknowledgments" and a few internal changes.]

27. [Four folders on this uncompleted manuscript are now in the Hartman archives at the Special Collections Library, The University of Tennessee, Knoxville. They contain only research materials to which Hartman planned to refer, and several short manuscripts written for other purposes that he hoped to integrate into this project. However, it appears that no actual writing for the Intrinsic Value project was ever done.]

28. See my article, Robert S. Hartman, "The Logic of Value" in *The Review of Metaphysics*, 14:3 (March 1961), pp. 390-432. On the distinction between the two kinds of time, I refer my readers to an article by Micheline Sauvage, "Notes on the Superposition of Temporal Modes in Works of Art," in Susanne K. Langer, ed., *Reflections on Art*, (Baltimore: Johns Hopkins University Press, 1958), pp. 161-173. [Sauvage distinguished between time inside and time outside a work of art.] What she says of the aesthetic is also true of the ethical experience. I also refer you to Nicolas Berdyaev, *Slavery and Freedom*, (London: The Centenary Press, 1943), especially p. 23, where he explains the difference between the axiological category of personality, as against the extrinsic category of the individual. In the whole first section, entitled "Personality," almost every sentence is important for this subject. I also refer my readers to Martin Buber, *I and Thou*, (New York: Scribners, 1958).

29. Quoted on p. 193 of *The Structure of Value*.

30. Robert S. Hartman, "Belief and Value," *Fourteenth International Congress of Philosophy*, Vienna, (1968).

31. Hartman, *The Structure of Value*, p. 255.

32. [For an attempt to untangle intrinsic values and intrinsic valuations see: *Forms of Value and Valuation: Theory and Application*, Rem B. Edwards and John W. Davis, eds., (Lanham, Md.: University Press of America, 1991), pp. 44-53, 84-87.

33. Robert S. Hartman, "The Axiometric Structure of Intrinsic Value," *The Journal of Value Inquiry*, 8:2 (Summer 1974), pp. 81-101.

34. As discussed in *The Structure of Value*, p. 255.

35. *Ibid.* See also "The Nature of Valuation" as well as the Nationwide Lectures. ["The Nature of Valuation" was published in Edwards and Davis, *Forms of Value and Valuation: Theory and Application*, pp. 9-35; see especially pp. 25-26 and 30-31. By "the Nationwide Lectures," Hartman presumably meant his autobiography, developed and taught in a management training seminar for Nationwide Insurance: Robert S. Hartman, *Freedom to Live: The Robert Hartman Story*, (Amsterdam - Atlanta: Editions Rodopi, 1994).]

36. J. B. Priestley, *Man and Time*, (Garden City, NY: Doubleday, 1964).

37. Sir Arthur Eddington, *The Nature of the Physical World*, (Ann Arbor, Mi.: The University of Michigan Press, 1958).

38. See my discussion of Jesus in Nationwide, "The Nature of Valuation," the discussion of Berdyaev, *etc.* Also see Ortega y Gasset, *Man and People,* (New York: Norton, 1957).

39. G. E. Moore, *Principia Ethica*, (Cambridge: The University Press, 1959), pp. 97ff.

40. See Hartman, "The Logic of Value," pp. 417ff.

41. See Hartman, "Four Axiological Proofs for the Infinite Value of Man."

42. Robert E. Carter, "Review of Robert S. Hartman, *The Structure of Value*," in *Dialogue*, 8:4 (1970), p. 728.

43. Cf. in this connection "The Logic of Value." See also "Formal Axiology and the Measurement of Value," *The Journal of Value Inquiry*, 1:1 (Spring 1967) as well as the outline of the theory in the "Introduction" of *The Structure of Value.*

44. J. O. Urmson, *The Emotive Theory of Ethics*, (London: Hutchinson University Library, 1968).

45. This is discussed in *The Structure of Value* under the notion "It is good that" as well as in my book *El Conocimiento del Bien*, (Mexico City and Buenos Aires: Fondo de Cultura Económica, 1965).

46. Hartman, *The Structure of Value*, p. 120.

47. Hartman, *El Conocimiento del Bien.*

48. Carter, p. 729.

49. The relationship of liking a painting and its goodness is discussed with reference to an experiment by Charles Morris in *The Language of Value*, ed. Ray Lepley, (New York: Columbia University Press, 1957), pp. 371-374 and in *El Conocimiento del Bien*, pp. 296-307.

50. G. R. Grice, "Review of Robert S. Hartman, *The Structure of Value: Foundations of Scientific Axiology*," in *The British Journal for the Philosophy of Science*, 19 (1969), p. 180.

51. Hartman, *The Structure of Value*, p. 51.

52. *Ibid.*, p. 103.

53. Grice, p. 180.

54. Hartman, *The Structure of Value*, p. 54.

55. *Ibid.*, p. 54.

56. *Ibid.*, p. 19.

57. *Ibid.*, p. 112.

58. *Ibid.*, p. 81.

59. *Ibid.*

60. Grice, p. 180.

61. Hartman, *The Structure of Value*, pp. 126-131.

62. *Ibid.*, p. 335.

63. [It is likely that Robert Hartman translated this from his own copy of the German edition of Nicolai Hartmann, *Ethics*, Vol. II. Nothing in the English translation, (New York: Humana Press, 1967), corresponds exactly to this, but see pages 66-68 and 71-72.]

64. Hartman, *The Structure of Value*, pp. 52-53.

65. *Ibid.*, p. 122.

66. *Ibid.*, p. 20.

67. Conrad H. Waddington, *Science and Ethics*, (London: G. Allen & Unwin, 1942), p. 7.

68. Bertrand Russell, *My Philosophical Development*, (New York: Simon and Schuster, 1959), pp. 79-80.

69. [See endnote # 6.]

70. Wieman in Davis, p. xiv.

71. Nicholas Rescher, *Introduction to Value Theory*, (Englewood Cliffs, NJ: Prentice-Hall, 1969), p. 59.

72. Hartman, *The Structure of Value*, pp. 16-19.

73. Robert S. Hartman, "Formal Axiology and the Measurement of Value," *The Journal of Value Inquiry*, 1:1 (Spring 1967), pp. 38-46.

74. Rescher, p. 59.

75. Hartman, *The Structure of Value*, p. 107.

76. *Ibid.*, p. 95.

77. *Ibid.*, p. 51.

78. *Ibid.*, pp. 51-52.

79. *Ibid.*, p. 19.

80. Rescher, p. 59, n. 18.

81. Hartman, *The Structure of Value,* pp. 252, 355, n. 9.

82. Rescher, p. 59.

83. Hartman, *The Structure of Value*, p. 335.

84. Rescher, p. 59.

85. Hartman, *The Structure of Value*, pp. 268-280.

86. *Ibid.*, p. 163.

87. *Ibid.*, p. 269.

88. *Ibid.*, p. 268.

89. Rescher, p. 59.

90. *Ibid.*

91. Hartman, *The Structure of Value*, pp. 199-208.

92. *Ibid.*, p. 205.

93. Rescher, p. 59.

94. Hartman, *The Structure of Value*, pp. 194-199.

95. *Ibid.*, p. 197.

96. Robert W. Mueller, "The Axiology of Robert S. Hartman: A Critical Study," *The Journal of Value Inquiry*, 3:1 (Spring 1969), p. 19.

97. *Ibid.*, pp. 21-22.

98. *Ibid.*, pp. 22, 25-26.

99. *Ibid.*, p. 22.

100. Hartman, *The Structure of Value*, pp. 126-131.

101. As discussed in *ibid.*, p. 306.

102. *Ibid.*, p. 115.

103. *Ibid.*, p. 305.

104. *Ibid.*, p. 308.

105. *Ibid.*, p. 293.

106. *Ibid.*, p. 292.

107. Mueller, p. 22.

108. Hartman, *The Structure of Value*, pp. 180, 306.

109. Mueller, p. 22.

110. Hartman, *The Structure of Value*, p. 110.

111. *Ibid.*, pp. 106-107.

112. See Endnote 27.

113. Mueller, p. 22.

114. [Hartman doubtless intended to develop this point further. His note here reads: "Note; give the exposition of 'man' in the properties of general nationwide; here comes the fotographed (*sic*) list." Unfortunately, the list did not come; and the editor can make no sense of the note! Nothing in Hartman's *Freedom to Live: The Robert Hartman Story* seems to count as an exposition of the concept of "man."]

115. This paragraph is taken from Robert S. Hartman, "The Value Structure of Personality," an unpublished manuscript, p. 23.

116. *Ibid.*, p. 23.

117. *Ibid.*

118. *Ibid.*

119. Hartman, *The Structure of Value*, pp. 165, 246-248.

120. *Ibid.*, pp. 162-165.

121. Mueller, p. 23.

122. Hartman, *The Structure of Value*, pp. 110-111.

123. See *ibid.*, p. 111 for details. See also Robert S. Hartman, "Group Membership and Class Membership," *Philosophy and Phenomenological Research*, 23 (March 1953), pp. 353-369. Compare Alfred North Whitehead and Bertrand Russell, *Principia Mathematica*, Vol. I, (Cambridge: Cambridge University Press, 1925), pp. 43 to 45.

124. See: Arthur Bryant, *Triumph in the West, 1943-1946, Based on the Diaries and Autobiographical Notes of Field Marshal The Viscount Alanbrooke*, (London: Collins, St. James's Place, 1959), pp. 337-341.

125. Mueller, p. 23.

126. *Ibid.*

127. Hartman, *The Structure of Value*, p. 125

128. *Ibid.*, p. 269.

129. *Ibid.*, pp. 268 to 271.

130. Robert M. Linder, *Rebel Without a Cause: The Hypnoanalysis of a Criminal Psychopath*, (New York: Grune & Stratton, 1944).

131. Mueller inverts these two parts.

132. Mueller, p. 25.

133. *Ibid.*, n. 13.

134. Hartman, "Four Axiological Proofs of the Infinite Value of Man," pp. 428-438; and *The Structure of Value*, pp. 116-119.

135. Hartman, *The Structure of Value*, p. 118.

136. See for example Robert S. Hartman, "Cassirer's Philosophy of Symbolic Forms," in Paul B. Schilpp, ed., *The Philosophy of Ernst Cassirer*, (Evanston: Northwestern University Press, 1949), pp. 187-228.

137. Mueller, p. 26.

138. *Ibid.*, p. 27.

139. Robert S. Hartman, *The Hartman Value Profile (HVP) Manual of Interpretation*, (Muskegon, Mi.: Research Concepts, 1973).

140. See: Hartman, *The Structure of Value*, p. 278.

141. *Ibid.*, p. 279.

142. *Ibid.*, n. 42, p. 359.

143. *Ibid.*, pp. 64-69.

144. [At this point, Hartman offers to have Mueller's HVP test analyzed for him].

145. Billie Cannon Elliott, *Factor and Cluster Analysis of the Hartman Inventory: A Study of Item Homogeneity and Factorial Invariance for Normative and Ipsative Scales*, (Knoxville: The University of Tennessee, June 1969), 304 pp.

146. Mueller, pp. 28-29.

147. *Ibid.*, n. 17, p. 29.

148. *Ibid.*, n. 13, p. 25.

149. *Ibid.*, p. 28.

150. *Ibid.*, pp. 27-28.

151. *Ibid.*, p. 28.

152. Hartman, *The Structure of Value*, pp. 21 and 77.

153. Gordon Welty, "Transfinite Cardinality and Hartman's Axiology," *The Journal of Value Inquiry*, 4:4 (Winter 1970), p. 294.

154. Hartman, *The Structure of Value*, p. 223.

155. Welty, p. 294.

156. *Ibid.*, p. 294. [The italics are Hartman's.]

157. Welty, p. 294.

158. Hartman, *The Structure of Value*, p. 127.

159. Welty, p. 294.

160. See the sections in Hartman, *The Structure of Value*, on "Philosophical 'System' and Scientific System." pp. 27-30, and "Philosophical Reality and Scientific Realty," pp. 64-69.

161. Welty, pp. 294-295.

162. Hartman, *The Structure of Value,* p. 96.

163. Hartman, *The Structure of Value*, p. 96. For more details see: "Singular and Particular," *Critica*, 2:4 (January 1968), pp. 15-51; see also: "The Logic of Value," pp. 398-432.

164. Hartman, "The Logic of Value."

165. Hartman, *The Structure of Value*, pp. 252 ff.

166. Welty, p. 295.

167. Hartman, *The Structure of Value*, pp. 122-131.

168. *Ibid.*, p. 128.

169. *Ibid.*, p. 295-296.

170. Hartman, *The Structure of Value,* p. 260.

171. Welty, p. 296.

172. *Ibid.*, p. 293.

173. Hartman, *The Structure of Value*, pp. 198, 199.

174. Kant, *First Critique*, p. B 861.

175. Welty, p. 296.

176. Mueller, p. 24.

177. *Ibid.*, p. 28.

178. Welty, p. 296.

179. Hartman, *The Structure of Value*, pp. 197-199.

180. See: Hartman, *El Conocimiento del Bien*.

181. Ernst Cassirer, *Substance and Function and Einstein's Theory of Relativity*, (New York: Dover Publications, 1953), Chs. I and II.

182. David Garcia Bacca, *Introduction A La Logica Moderna*, (Barcelona: Editorial Labor, 1936), pp. 36ff.

183. [Hartman's note to himself here reads: "Start with Kant on this very subject--phony formulae." But the note is undeveloped.]

184. Welty, pp. 296-298.

185. [Hartman describes his own empirical quest for the meaning of "good" in his autobiography, *Freedom to Live: The Robert Hartman Story*, pp. 50-52.]

186. Welty, p. 297.

187. See Robert S. Hartman, "Formal Axiology and the Measurement of Value," *The Journal of Value Inquiry*, 1:1 (Spring 1967), p. 39.

188. Welty, p. 298.

189. *Ibid.*, p. 299.

190. Hartman, *The Structure of Value*, pp. 350-351.

191. Cassirer, pp. 6-7.

192. Susanne K. Langer, *Mind: An Essay on Human Feeling*, (Baltimore: Johns Hopkins University Press, 1967).

193. René A. Spitz, *The First Year of Life: A Psychoanalytic Study of Normal and Deviant Development of Object Relations*, (New York: International Universities Press, 1965); H. Plessner "On Human Expression," *Review of Existential Psychology and Psychiatry*, 4:1 (1964), pp. 37-46; Henry Elkin, "The Emergence of Human Being in Infancy," *Review of Existential Psychology and Psychiatry*, 1:1 (1961); T. G. R. Bower, "The Object in the World of the Infant," *Scientific American*, 225:4 (October 1971), pp. 30-38. Here also belongs the whole work, and reports on it, of Piaget—and the whole field of child psychology.

194. Hartman, *The Structure of Value*, pp. 15, 47, 124, 132 126, 228, 319.

195. *Ibid.*, p. 320.

196. *Ibid.*, p. 34.

197. See Wolfgang Pauli, "The Influence of Archetypal Ideas on the Scientific Theories of Kepler," in Carl G. Jung and Wolfgang Pauli, *The Interpretation of Nature and the Psyche*, (New York: Pantheon Books, 1955), pp. 147-212, especially pp. 198-200; see also Max Caspar, *Johannes Kepler, 1571-1630*, (Austin, Tex.: Humanities Research Center, 1971), pp. 301-303.

198. Viktor E. Frankl, *The Will to Meaning: Foundations and Applications of Logotherapy*, (New York: World Publishing Co., 1969).

199. Hartman, *The Structure of Value*, pp. 73ff, 102, 301, 303ff.

200. Welty, p. 300.

201. *Ibid.*, pp. 300-301.

202. Hartman, *The Structure of Value*, p. 293.

203. Welty, p. 301.

204. W. D. Ross, *The Right and the Good*, (Oxford: The Clarendon Press, 1930), p. 40.

205. Thomas D. Perry, "Moral Autonomy and Reasonableness," *Journal of Philosophy*, 65 (27 June 1968), pp. 383-401.

206. Mueller, p. 301.

207. See Erwin Schrödinger, *What is Life? and Other Essays*, (Garden City, NY: Doubleday, 1956).

208. [Here Hartman wrote:] "See Robert S. Hartman, 'The Universe of Intrinsic Value,' forthcoming." [This may be a reference to the book on intrinsic value that he did not live to write; (see Endnote 27); or it may be a reference to Hartman's posthumously published essay: "The Axiometric Structure of Intrinsic Value," *The Journal of Value Inquiry*, 8:2 (Summer 1974), pp. 81-101.]

209. Hartman, *The Structure of Value*, pp. 27 ff, 64ff.

210. [Hartman's handwritten additions here are partly unreadable. My reconstruction follows the notations used in *The Structure of Value*, p. 155.]

211. *Ibid.*, pp. 19, 99.

212. *Ibid.*, p. 3.

213. Immanuel Kant, *Fundamental Principles of the Metaphysic of Morals*, (New York: The Liberal Arts Press, 1949), p. 6.

214. Hartman, *The Structure of Value*, p. 205.

215. For details see *ibid.*, pp. 205, 175, 178 and Hartman, "Group Membership and Class Membership."

216. See: Hartman, "Singular and Particular," for my discuss of the relevance of properties.

217. Russell, *My Philosophical Development*, p. 86.

218. *Ibid.*, p. 253.

219. *Ibid.*, p. 176.

220. P. Y. A. Gunter, "Hartman: Three Criticisms," *The Journal of Value Inquiry*, 7:2 (Summer 1973), p. 138.

221. Robert S. Hartman, "The Axiometric Structure of Intrinsic Value," pp. 81-101.

222. George Kimball Plochman, "Robert S. Hartman on the Structure of Creativity: A Critique," *The Journal of Value Inquiry*, 7:2 (Summer 1973), p. 135.

223. *Ibid.*, p. 134.

224. *Ibid.*, p. 133.

225. Hartman, *The Structure of Value*, pp. 272-273.

226. [The Meeting of The Society for The Philosophy of Creativity in 1972 at which this response was presented was held in St. Louis.]

227. Plochman, pp. 132-133.

228. [Hartman began his letter to Edwards with these paragraphs:]

Thank you so much for your letter of January 17, and your article "The Value of Man in the Hartman Value System." I had already gotten some ideas of it

from Pruitt's thesis and I sent you my article: Robert S. Hartman, "The Value Structure of Creativity," *The Journal of Value Inquiry*, 6:4 (Winter 1972), where you find the difference between the infinity of man and of God. I am looking forward very much to your essay "Worldliness" [Note: This essay was never published].

Right now I am writing a book on intrinsic value and Valuing, called *The Universe of Intrinsic Value*. I start out with the aesthetic experience, discussing in particular the difference between time and space within an intrinsic experience and the time and space of everyday experience. The motto of the book could be the motto from Husserl on p. 195 of *The Structure of Value*: "Fact is one of the possibilities of varying the given in imagination." In the hierarchy of realities, fact or extrinsic value is not very high. Once one takes this seriously everything else follows. In particular, one gets rid of the existence-fixation of which most philosophers, not to mention the public, suffer. Existence is just one and not a very high value dimension. The consequence of all this you find in the Creativity-article. (It will be presented on May 4 at St. Louis).

229. W. H. Werkmeister, *A Philosophy of Science*, (Lincoln, Neb.: University of Nebraska Press, 1949), pp. 22-23.

230. Galileo Galilei, *Dialogue Concerning the Two Chief World Systems*, (Berkeley: University of California Press, 1967).

231. Henri Bergson, *The Two Sources of Morality and Religion*, (Garden City, NY: Doubleday & Co., 1954), Ch. 3.

232. Hartman, *The Structure of Value*, p. 224.

233. Rem B. Edwards, *Reason and Religion: An Introduction to the Philosophy of Religion*, (New York: Harcourt Brace Jovanovich, 1972), Ch. 12. Republished in 1979 by The University Press of America, Lanham, Md.

234. Werkmeister, p. 25.

235. Heinrich R. Hertz, *The Principles of Mechanics*, (New York: Dover Publications, 1956).

236. Quoted in Werkmeister, p. 26.

237. Rem B. Edwards, "The Value of Man in the Hartman Value System," *The Journal of Value Inquiry*, 7:2 (Summer 1973), p. 143.

238. *Ibid.*

239. Franz Werfel, *Star of the Unborn*, (New York: The Viking Press, 1946).

240. Edwards, "The Value of Man in the Hartman Value System," p. 144.

241. *Ibid.*

242. Hartman, "The Value Structure of Creativity."

243. *Ibid.*

244. Edwards, "The Value of Man in the Hartman Value System," p. 147.

245. Nicolai Hartmann, *Ethics*, Vol. 2, Ch. 23.

246. Editor, *The Journal of Human Relations,* 21:2 (Second Quarter 1973), p. 225.

247. William Eckhardt, "The Place of Values in Human Relations," *The Journal of Human Relations,* 21:2 (Second Quarter 1973), p. 217.

248. *Ibid.*, p. 216.

249. *Ibid.*, pp. 218-219.

250. Robert S. Brumbaugh, "Formal Value Theory: Transfinite Ordinal Numbers and Relatively Trivial Choices," *The Journal of Human Relations*, 21:2 (Second Quarter 1973), p. 211.

251. *Ibid.*, p. 212.

252. *Ibid.*, p. 213-214.

253. Frank G. Forrest, *Valuemetrics®: The Science of Personal and Professional Ethics*, (Amsterdam - Atlanta: Editions Rodopi, 1994), p. 170.

254. Brumbaugh, p. 214.

255. Hartman, *The Structure of Value*, pp. 308-311.

256. *Ibid.*, p. 164.

257. William Gibson, *The Miracle Worker*, (New York: Knopf, 1957).

258. Hartman, *The Structure of Value*, p. 204.

259. As in the section, "The Logical Pattern of the Value Terms," in *The Structure of Value*, pp. 199-208.

260. *Ibid.*, pp. 113, 336, 350.

261. *Ibid.*, p. 216.

262. Robert Brumbaugh, "Changes of Value Order and Choices in Time," in Davis, pp. 46-61.

263. Hartman, *The Structure of Value*, Ch. 7, pp. 293-302.

264. [At this point, Hartman gives the following undeveloped instruction: "Now follows Kant on the platitude or commonplace." My thanks to my colleague, Richard Aquilla, for helping me to find the proper reference in *Kant's Political Writings*, ed. Hans Reiss, (Cambridge: The University Press, 1970), pp. 61-63.]

265. Ludwig Wittgenstein, *Tractatus Logico Philosophicus*, (London: Routledge & Kegan Paul, 1960), p. 151.

266. [Hartman's final instruction for completing this manuscript was: "Now comes the letter to Goodwin on Marcuse and that's all." Unfortunately, the editor was never able to find this letter.]

PART TWO

CONTEMPORARY CRITICS

Five

TEN UNANSWERED QUESTIONS

Rem B. Edwards

Robert S. Hartman died in Mexico in 1973 at the height of his philosophical and axiological prowess, having laid the foundations for a formal science of axiology, but not having developed its superstructure. His concluding paragraph in The Structure of Value *was prophetic:*

> *The application of axiology to actual situations through the applied axiological sciences is a task for new generations of pure and applied axiologists, pure and applied social and moral scientists, and finally, the mechanics and craftsmen of social and moral situations. As the achievements of the natural scientists analyzing natural situations in terms of mathematics, have led to the building of factories turning out new and undreamed of things, so the achievements of the moral scientists of the future, analyzing moral situations in terms of formal axiology, will lead to the building of a new society with new people, living on higher levels of awareness and possessing undreamed of insights into the subtleties and depths of moral reality.*[1]

Since 1973, Hartman's projects have been carried forward on many fronts, especially by the members of the Robert S. Hartman Institute for Formal and Applied Axiology, *who meet annually to discuss difficulties and share advances and results. Much work, centered on the Hartman Value Profile [HVP], has been done on the psychology of values; and much has been done with the philosophy of values. The present work focuses primarily on the philosophy of values—as it reaches towards a science of values.*

At the annual meeting of the R. S. Hartman Institute *in October 1991, Rem B. Edwards presented the following paper titled "Ten Unanswered Questions." It posed questions arising out of the attempts of both Robert S. Hartman and Frank G. Forrest to develop an applied calculus of moral value; and it was intended primarily as a stimulus to and future research agenda for members of the* Hartman Institute. *In Chapter Six of this book, Frank G. Forrest, who accepted the challenge, will present answers to these ten questions.*

To summarize, the ten questions are: 1. Can the ethical duty to enrich ourselves and the selves of others be expressed formally? 2. Does axiological ethics give us the duty to reproduce maximally, since the birth of every child infinitely enriches the world; if so, is contraception morally equivalent to murder; and does axiology forbid mass murder, since killing a million people is no worse than killing only one? 3. Can axiological ethics distinguish between duty and supererogation—going beyond the call of duty? 4. Can axiological ethics make a place for euthanasia, either active or passive, or both? 5. Would axiological ethics generate concrete moral rules? 6. If so, would the rules be simple and unqualified; or might they be complex and incorporate qualifications and exceptions? 7. Would formal axiology help us to distinguish between adequate and inadequate moral rules? 8. Could it make a place for human rights and adjudicate conflicting rights? 9. Could it make a place for moral sanctions, for Mill's legal, popular, and inner supports for moral conduct? 10. Finally, what is the proper place of "marginal human beings" (fetuses, the profoundly retarded, the irreversibly comatose) and animals, according to formal axiology?

I have many unanswered questions about what axiology has to say about moral action and obligation. I do not know how to answer these questions, and I challenge you to think about them and share your insights with me. I offer these questions to the members of the Robert S. Hartman Institute as a research agenda for the future. I am convinced that the following ten questions must be answered if formal axiology is to develop a plausible theory of moral action and obligation.

1. Measuring Personal Enrichment

Can the ethical requirement that we enrich our selves and the selves of others by such things as love, creativity, enjoyment, moral activity, and so on, be expressed mathematically or formally in the transfinite logic of set theory? More particularly, if an individual self in its totality has the formal value of $\aleph_1$, how are *finite enrichments* of self to be represented and calculated mathematically? Surely not every enrichment of self moves its value to$\aleph_2$ I have always doubted that $\aleph_1$ is an appropriate number for beings like ourselves with finite lives; all personal enrichments of individual lives seem to me to be finite enrichments of finite beings—but that is

another story.[2]

2. The Duty to Reproduce, Contraception, and Mass Murder

If intrinsically valuable individual persons are infinitely valuable, and we have a moral obligation to maximize the good, does the Hartman system place upon us *an obligation to reproduce*, to have as many children as is humanly possible, since with each new child we can infinitely enrich the universe? Do we have moral obligations to purely potential (unconceived or unborn) persons, to conceive and to have them, since thereby we could infinitely enrich the world; or do we have moral obligations only to actual persons? Is contraception morally equivalent to murder on Hartmanean grounds? I do not know the answers!

The foregoing problem itself may be very "unscientific," however. Formally, persons have the characteristic number $\aleph_1$. Formally and scientifically, the addition of $\aleph_1$ to $\aleph_1$ always yields only $\aleph_1$, nothing more; so it would seem that we do *not* enrich the universe at all by having children.

The really troublesome thing about this logic, however, is that the subtraction of $\aleph_1$ from $\aleph_1$ always leaves $\aleph_1$, so it would appear that there is nothing wrong with mass murder (like the bombing of the Federal Building in Oklahoma City on April 19, 1995) as long as at least one person remains in existence. Is this what axiology implies? I hope not! In a reference that I could not find in my haste,[3] I believe that Hartman himself noted that his transfinite logic implies that killing one person is *just as bad as* killing many—let us say a million. The dark side of this logic is that it implies that killing a million people is *no worse than* killing one person. This strikes me as being exceedingly counter-intuitive, to say the least, and utterly horrible and repulsive, to say the most! Am I right about this?

3. Duty and Supererogation

Could Hartmanean ethics make a place for the distinction between moral *obligations and supererogations*, between duty and "going beyond the call of duty?" Can it distinguish between beneficial acts that are morally *required*, and beneficial acts that should be *encouraged* even though they are not morally required? If not, does it require us to be saints and heros at all times? Just how many personal sacrifices does it require of us in helping others not only to survive but also to flourish as developing persons? I do not know the answers!

In *The View From Nowhere*, Thomas Nagel says that "supererogatory virtue is adherence to the claims of impersonal morality prior to their modification to accommodate the normal limitations of human nature."[4] Would the morality generated by formal axiology be an impersonal maximizing ideal which requires extreme personal sacrifice at all times for the sake of greater goodness? Or would it *require* of us only minimal decency while *encouraging* but not requiring supreme moral excellence of us mere mortals who are inescapably frail, ignorant, and all too often poorly motivated to do the right thing? If so, what *formulas* would express the distinction between the required and the recommended?

4. Euthanasia

Would a Hartmanean ethics be able to make a place for *euthanasia*, either passive (withdrawing or withholding means of life support) or active (directly exterminating) where terminally ill persons suffer unbearable and unrelievable pains, or where terminally ill persons are irreversibly comatose? What *formulas* would tell us either that we should live to the bitter end no matter how horrible life might be, or else that we may end it all when the burdens become too great to bear? I do not know the answer axiologically, but philosophically I know what it should be! And I am prepared to abandon axiology if it gives the wrong answer!

5. Generating Moral Rules

Would the Hartman ethic generate a set of *concrete moral rules* to give practical moral guidance to ordinary persons? If so, what would be the point of their general adoption? I have in mind such "common sense" maxims as:

A. Keep your promises,
B. Tell the truth,
C. Do not kill persons,
D. Do not steal,
E. Do not commit adultery,
and so on.

I know how to think about moral rules *philosophically* (as in Utilitarianism or Deontology); but how does one think about the origin and justification of moral rules *formally*, *axiologically*—and in that sense

scientifically? Can axiology say anything more than that moral rules are themselves systemic values, but that they can be valuated systemically, extrinsically, and intrinsically? What is their significance for extrinsic and intrinsic values? Could the answer be as simple as that moral rules, as systemic values, should always be represented by "n" in axiological formulas, and their positive significance for extrinsic and intrinsic values is simply E^n or I^n? I have no clear view of the answers.

6. Complex Moral Rules with Qualifications and Exceptions

Would the action-guiding moral rules generated by a scientific axiology be *simple* (and simple minded), as above? Or would they be *complex* with built in exceptions and qualifications, as in the examples below? And if complex, how would they and the qualifications or exceptions they include be expressed formally? How might the following complex rules be expressed axiologically?

A. Keep your promises, except when you have promised to do wrong, or unless breaking a promise is necessary to save a human life, or unless...
B. Tell the truth, except when a "little white lie" like "I'm feeling fine," or "You're looking good," or "I'm glad to see you," will do no harm, or except when necessary to save a human life, (What do you say to the S.S. officer who asks if you are hiding any Jews in your attic?), or except when you are teaching your children about Santa Claus, or unless...
C. Do not kill persons, except where absolutely necessary in self defense, in defense of loved ones, in a "just war," or unless capital crimes have been committed, or unless active euthanasia is appropriate, or unless...

As for C., could the destruction of an infinite value for *any* reason ever be justified within a Hartmanean framework? How could this be expressed formally, mathematically? I do not know the answer!

7. Assessing the Adequacy of Moral Rules

How could the formal logic of set theory assist us in *telling the difference between morally adequate rules, and morally inadequate ones*, or whether simple or complex rules are best justified? Would there be something distinctive about the set of moral rules that a Hartmanean framework would

generate? Would Hartmanean rules look very different from the common sense moral rules identified above? If so, how so? Again, I do not know the answers!

8. Human Rights, Conflicting Rights

Could formal axiology generate a plausible account of *human rights and show us how to resolve conflicting rights*? If so, how so? What concept of "rights" would be operative? I have in mind such things as the rights to life, to liberty, to security, to the pursuit of happiness, or, within the medical context, rights to some degree of basic medical care, to confidentiality, to be told the truth about one's condition, to informed voluntary consent, and to refusal of treatment. Could formal axiology tell us, for example, how to resolve the conflict between a woman's right to have an abortion and a pro-lifer's right to freedom of speech on the premises of an abortion clinic—or between a Republican's inalienable right to property and a poor person's right to basic but costly medical care? Could formal axiology tell us if and when rights are forfeited by extreme anti-intrinsic behavior—for example, the right to liberty for grand larceny, or the right to life for murder? Could formal axiology tell us whether rights could be voluntarily waived and if so which ones and under what circumstances, for example, the right to life in the euthanasia situations just mentioned?

Again, I know how to think *philosophically* about rights, but how does one think about them *formally, axiologically, scientifically*? Frank Forrest has convinced me that *without formulas, there is no formal axiology.* Without formulas, we may be thinking philosophically about values; but we are not thinking scientifically or axiologically. What formulas would express human rights, and what formulas would permit us to resolve problems about conflicts of rights? I do not know.

9. Moral Sanctions

Would formal axiology generate a theory of *moral sanctions* to support obedience to moral rules and respect for moral rights? I have in mind Mill's legal sanction—the police power of the state, his popular sanction—the power of adverse public opinion, and his inner moral sanction of conscience—unpleasant feelings of guilt at the very thought of wrongdoing. Again, what *formulas* would tell us if and when one or more than one of these sanctions is appropriate in particular circumstances.

10. Marginal Human Beings and Animals

What is *the moral status of "marginal human beings"*—the profoundly retarded and deranged, the irreversibly comatose, the pre-conscious developing fetus, within formal axiology? None of Hartman's "Proofs of the Infinite Value of Man" apply to them. Do they, or do they not, have intrinsic worth? What moral standing do they have, if any? What moral duties do we have to them, if any? And what about *the moral status of animals*? Animal righters would certainly challenge us to think very hard about these questions, but it is very unclear to me how they should be answered within the framework of axiology. I am puzzled about why "A baby" appears in the Hartman Value Profile, [HVP], Part I as the example of intrinsic value in light of the fact that intrinsic value is fulfillment of self-concepts—and newborn babies with no language at all have few if any concepts at all—especially of self. I have suggested in my essay on "Universals, Individuals and Intrinsic Good" in *Forms of Value and Valuation* that what we need is a broader notion, according to which intrinsically valuable entities are those conscious individuals who have a capacity for intrinsic valuation—which would make a place for the intrinsic worth of animals and babies, but not for pre-conscious fetuses or the irreversibly comatose.[5] Though infants and most animals cannot measure things by linguistically expressed concepts, they can identify themselves with things valued through sensory images employed as concepts and through an immense variety and complexity of feelings; they have a capacity for intrinsic valuation minus linguistic concepts.

As a Philosopher, I find the foregoing questions to be very troubling indeed. I sincerely hope that some of the papers presented in the future at this meeting will address some of these issues. In concluding, let me say again that *I do not know how to answer the questions that I have raised, and I challenge you to think about them and share your insights with me. I offer these questions to you as a research agenda for the future. I am convinced that these ten questions must be answered if formal axiology is to develop a plausible theory of moral action and obligation.*

ENDNOTES

1. Robert S. Hartman, *The Structure of Value: Foundations of Scientific Axiology*, (Carbondale, Ill.: Southern Illinois University Press, 1967), p. 311.

2. This story is told in Rem B. Edwards, "The Value of Man in the Hartman Value System," *The Journal of Value Inquiry*, 7:2 (Summer 1973), pp. 141-147.

3. In Robert S. Hartman, "Four Axiological Proofs of the Infinite Value of Man," *Kant-Studien*, 55:4 (1954), he says something close to this, that "The value of human society thus can never surpass that of one individual person. Conversely, each individual human being has axiologically the value of all human society..." pp. 437-438.

4. Thomas Nagel, *The View From Nowhere* (New York: Oxford University Press, 1986), p. 204.

5. Rem B. Edwards, "Universals, Individuals, and Intrinsic Good," in *Forms of Value and Valuation: Theory and Applications*, Rem B. Edwards and John W. Davis, eds., (Lanham, Md.: University Press of America, 1991), pp. 84-87.

Six

A REPLY TO "TEN UNANSWERED QUESTIONS"

Frank G. Forrest

Traditional ethical theory focused on ultimate value dichotomies like good and bad, right and wrong, virtue and vice. Robert Hartman's primary contribution to axiology centered on the first of these, on developing formalistic patterns for identifying good and bad, as well as intermediate values between the extremes like fair, average, and poor. He promised that a teleological value calculus would emerge which, when skillfully applied, would help us to understand and distinguish between ethical right and wrong, virtue and vice. This calculus was to be based upon set theory and transfinite mathematics; but Hartman's development of the application of this formal framework to practical problems in ethics was very rudimentary.[1]

One axiologist in particular, Dr. Frank G. Forrest, has spent a number of years developing an applicable Hartmanean moral calculus based on set theory and cardinal arithmetic. The mature results of his years of effort were published in 1994 in Frank G. Forrest, Valuemetrics*: The Science of Personal and Professional Ethics.*[2] *Earlier versions of Forrest's book had been available for several years to members of the* R. S. Hartman Institute.

A version of Forrest's response to Rem B. Edwards' "Ten Unanswered Questions" was originally presented to the 1992 meeting of the R. S. Hartman Institute. *In the significantly revised version that follows, Forrest maintains that formal axiology: (1) employs cardinal number arithmetic, in which mere additions do not express value enrichment, but value exponents do, (2) does not give us an obligation to reproduce or any other duties, but allows us to assess the outcome of various courses of action like overpopulating the earth, (3) does not distinguish between duty and going beyond the call of duty, but can be used to assess the results of various alternatives like minimal decency and extreme moral sacrifice, (4) can analyze and assess the outcome of situations involving euthanasia or mercy killing, (5) does not generate concrete rules, but may analyze them and guide their application by the value creation principle: "Always do the most good," (6) can be used to analyze and compare ethical rules with or without*

the inclusion of various qualifications and exceptions, (7) can help distinguish between the adequacy or inadequacy of the moral rules it analyzes, (8) can account for human rights, (9) and can determine which moral sanctions are appropriate for various infractions. Also, (10) the moral status of marginal human beings and animals depends upon factual and philosophical considerations about their properties and capacities.

In the discussion to follow, I will assume these premises and understandings:

(1) Intrinsic value exists only when persons are involved. Singular concepts are those words and only those words that apply to persons, including their proper names.

(2) As persons, all normal people have the same degree of intrinsic goodness. What is different about people that permits us to classify some as good, some as bad, and some better than others, is their behavior, their mental and physical strength and dexterity, and how they fulfill their roles.

(3) The independent mathematical system we use to account for value phenomena is cardinal number arithmetic. One may find this system in any set theory text book. Cardinal number arithmetic is simple but strange. In this discipline we find mathematical relationships that contradict and are inconsistent with finite number arithmetic. This situation exists because cardinal numbers include the numbers for infinity. Thus, our calculations disclose situations: (a) where a part is equal to the whole, (b) where a quantity may have more than one value, for example X may = a or b, (c) where an arithmetical operation produces no change and (d) where arithmetical operations under certain conditions cannot be performed.

(4) Cardinal number arithmetic models and accounts for value phenomena imperfectly. Therefore, in order to eliminate some loose ends and gaps, we must resort to several *ad hoc* operations in the application of this arithmetic as a frame of reference for the science of value.

(5) Ordinary sound logic and formal axiology go hand-in-hand.

1. Measuring Personal Enrichment

Enrichment of our selves and others can be expressed mathematically. Unique individual selves have the characteristic cardinal number $\aleph_1$, known hereafter as the concept value index. Finite conceptual properties like knowledge have the value index n. If we assume that advancing a person's

knowledge is a finite enrichment of the self, this situation can be expressed mathematically using exponents, as follows:

R (Resultant) = $\aleph_1{}^{n} = \aleph_1$.

However, in accord with (3) (c) above, repeated finite or even infinite enrichments of one's self *do not* move the value of the resultant beyond $\aleph_1$. Adding $\aleph_1$ to itself any number of times still is $\aleph_1$. In order to create a value of $\aleph_2$, a person must intensely identify-with or fully give him or her self to something or someone. Thus, if a person passionately loves knowledge and intensely identifies himself or herself with it, we get:
$R = n^{\aleph_1} = \aleph_2$.

This shows that mere additions to knowledge do not really enrich a person's life, but the passionate love of knowledge does. So does loving another person, which can be expressed by substituting $\aleph_1$ for n in the preceding formula.

The basic rules of inference for exponents in cardinal number arithmetic may be found in my book: *Valuemetrics™: The Science of Personal and Professional Ethics*.[3] Understanding the various illustrations that follow requires awareness of one of these rules. When we combine concepts and their attendant value indexes (n, k, or $\aleph_1$), the arithmetical operation that models these combinations is exponentiation. If the concepts are compatible and enhance fulfillment of one or both, the combination is a composition and the sign of the exponent is plus (+). If they are incompatible and obstruct fulfillment, the combination is a transposition and the sign of the exponent is minus (-).

2. The Duty to Reproduce, Contraception, and Mass Murder

Hartman's formal system *does not* place upon us an obligation to reproduce. Neither does it place any other obligation upon us. There are no moral commandments in formal axiology as such. On the other hand, this system is a means of analyzing the legitimacy of obligations and moral commandments. According to this system, having as many children as humanly possible *would not* infinitely enrich the world or the universe. This course of action, as the facts reveal, tends to degrade the planet and quality of life on it. Hartman's system indicates that we should limit the number of our children in accordance with the bounds of the earth's resources, space, and need for protection of the ecosystem. The fact that parts of the earth at present are sparsely populated does not negate this precaution.

On the basis of ordinary logic, we have obligations to actual persons, but not to unconceived persons. An unconceived person is a concept without a referent. Our responsibility to unborn persons, however, is a matter for which axiological analysis is appropriate.

The value calculus that I have developed departs from Robert S. Hartman in at least one respect. Hartman represented extrinsic values—things, processes, and actions in public spacetime—by the value index "$\aleph_0$" because he regarded them as having a denumerably infinite complexity; yet, he admitted that our practical treatment of them is always finite. Therefore, in lieu of $\aleph_0$, I assign the value index "k" to things of extrinsic value. The number "k" represents finite but indefinitely large sets. With this in mind, we now can show by the following calculation that contraception *is not* morally equivalent to murder on Hartmanean grounds. When we arrange concepts according to valuemetrics syntax, contraception is:

$$R_x: \quad \underset{\text{sperm}}{k} \quad \underset{\text{prevented-from-uniting-with-egg.}}{k} \quad \text{(Transposition.)}$$

Therefore: $R_1 = k^{-k} = 1/k$

Murder is a person killing a person with malice aforethought. The value index of this concept combination is $1/\aleph_2$. $1/k$ and $1/\aleph_2$ are not equivalent. Therefore, contraception and murder are not equivalent. Contraception, on the other hand, is a transposition (1/k), and in and of itself is wrong. However, there are various circumstances that will justify it, such as counteracting over-population, wholesome enjoyment of sex without incurring unwanted pregnancy, and so on. Consider the following:

R_3: R_1 (contraception) to counteract overpopulation

We know that $R_1 = 1/k$. However, in order to find the value index of R_3, we first must determine the value index of overpopulation (R_2). If we apply this illustration to one of the many locations in Africa today, the concept combination of R_2, according to valuemetrics syntax, is:

$$R = \quad \underset{\text{ecosystem unable to support}}{k} \quad \underset{\text{people-mass.}}{\aleph_1} \quad \text{(Transposition.)}$$

Therefore: $R_2 = \aleph^{-k} = 1/\aleph_1$

Accordingly: R_3: R_1 (1/k) counteracts R_2 ($1/\aleph_1$). (Transposition.)

Therefore: $R_3 = (1/\aleph_1)^{-1/k} = \aleph_1^{1/k} = \aleph_1$

In this equation $\aleph_1$ is greater than either of the input value indexes ($1/\aleph_1$ and $1/k$). Consequently, this is an instance of value creation. We interpret this as follows. When we use a transposition, such as contraception ($1/k$), as in this example, and the outcome is either the creation of value or holding value neutral, then the transposition is justified.

The justification of contraception to provide enjoyment of sex and at the same time insure that an unwanted pregnancy does not occur involves the following operations.

$$\overset{-n}{R_1}: \text{ unwanted pregnancy (Transposition)} \quad \overset{k}{}$$

$$R_1 = k^{-n} = 1/k$$

$$\overset{k}{R_2}: \text{ sex that unquestionably-will-not-result in } \overset{1/k}{R_1} \quad \text{(Transposition)}$$

$$R_2 = (1/k)^{-k} = k^k = k$$

$$\overset{1/k}{R_3}: \text{ contraception insures } \overset{k}{R_2} \quad \text{(Composition)}$$

$$R_3 = k^{1/k} = n \text{ or } k$$

In this instance, cardinal arithmetic is somewhat ambiguous. However, R_3 is not a transposition. Hence, in the final outcome, value has not been depreciated. Under these conditions, it is reasonable to assume that contraception is a justified transposition.

Let us return to Edwards' question about mass murder. The model for killing a person is $R = \aleph_1^k = 1/\aleph_1$, not $R = \aleph_1 - \aleph_1 = \aleph_1$. Therefore, his conclusion "—so it would appear that there is nothing wrong with murder as long as one person remains in existence"—*is not* a proper axiological deduction. Neither is it logical.

Any rational person would agree that killing a million people is horrible and repulsive. However, if everybody felt that killing one persons is just as horrible and repulsive, the problems of murder and war probably would go away. And that would not be too bad.

3. Duty and Supererogation

The first paragraph of the third question in "Ten Unanswered Questions" contains four questions. The answers to these are: no, no, no, and none.

A Hartmanean ethics (1) does not distinguish between moral *obligations and supererogations*, or (2) between *required and encouraged* beneficial acts. (3) It places no requirement on anyone to be a saint or hero or (4) to make inordinate sacrifices for others. No distinction between minimal decency and supreme moral excellence is made. The formulae in Hartman's axiology do not express the distinction between the required and the recommended degree of morality. These are things that people ultimate must decide upon for themselves in determining what kind of persons they want to be. These things pertain to psychology and personality. They are outside the scope of formal axiology. What formal axiology does is this. It provides the insight to make the distinction between right and wrong, which, as C. I. Lewis says, "extends to every topic of reflection and to all that human self-determination or attitude may affect."[4]

Obviously this ideal is personal if a person adopts it and identifies with it as a guide for his or her behavior. This model points us in the direction of attaining the greatest goodness, but doing this does not require extreme personal sacrifice. In most instances, attaining the greatest goodness, creating value, produces personal satisfaction, not sacrifice.

4. Euthanasia

Ethical problems involving euthanasia can be analyzed by Hartman's formal axiology. We use the basic formula of Hartmanean algebra for this purpose.

In my *Valuemetrics*™*: The Science of Personal and Professional Ethics* I discuss passive and active euthanasia in some depth and show both the formulas and the factual considerations that are relevant for justifying both kinds of "mercy killing." I refer readers to that discussion for details.[5]

Edwards claims to know philosophically but not axiologically whether euthanasia is justified, but this invokes the following counter question? What is the basis for a comparison of the rightness of the philosophical answer to the morality of euthanasia with the axiological answer?

5. Generating Moral Rules

The Hartman ethic *would not* generate a set of concrete moral rules. Instead it provides a mathematical logic applicable to many kinds of situations for obtaining moral guidance. Common sense maxims and commandments do not exist in this system. However, a moral principle that

has universal application, the value creation principle, is a logical appendage to the system.

Obtaining the clear view that is lacking, as indicated in the last line of this question, requires understanding that formal axiology *does not* originate moral rules. Instead it is a system of logic for determining the degree of goodness of a rule. The rule itself and the system for analyzing it both are things of systemic value. The referents of the concepts that make up a rule, however, may be things of intrinsic, extrinsic, or systemic value. The value creation principle is a precise statement of the maxim "Always do good." However, formal axiology does not generate this principle. The value creation principle is only a guide in the application of formal axiology.

The tools of analysis provided by formal axiology permit us to determine whether more good results from following simple moral rules than from not following them. For example, let us compare:

$k \quad n$ keeping promises (C) vs. $-k \quad n$ breaking promises (T)

$R = k^n = k$ $\qquad$ $R = k^{-n} = 1/k$

Here, keeping promises produces more value than breaking promises, for k is greater than 1/k. Here and in what follows, (C) means that the concept combination is a composition, and (T) means that the combination is a transposition.

$k \quad n$ telling the truth (C) vs. $k \quad -n \quad n$ asserting that a falsehood is true (T & C)

$R = k^n = k$ $\qquad$ $R = (n^{-n})^k = (1/n)^k = 1/k$

$k \quad \aleph_1$ protecting persons (C) vs. $-k \quad \aleph_1$ killing persons[6] (T)

$R = \aleph_1{}^k = \aleph_1$ $\qquad$ $R = \aleph_1{}^{-k} = 1/\aleph_1$

$k \quad k$ protecting property (C) vs. $k \quad k \quad n \quad n$ taking property without the right[7] (C & T)

$R = k^k = k$ $\qquad$ $R = (k^k)^{-(n^n)} = 1/k$

Our calculations show that given each of the above choices, following the rules results in greater value than breaking them; and to that extent, the rules are justified. Yet, the situations to which we must apply moral rules are often so complex that qualifications of and exceptions to these simple rules must be considered, as I will show in discussing the next two questions.

6. Complex Moral Rules with Qualifications and Exceptions

Scientific axiology, as indicated previously, *does not* generate a simple or complex set of rules of ethics, but it can be used to analyze moral rules. However, we have a set of arithmetic rules, to wit; (1) rules for general finite and transfinite number exponentiation,[8] (2) rules for determining which concept is the base and which is the exponent in a basic equation,[9] (3) rules for transposing transpositions, that is, for redressing wrongs, injustice, badness,[10] (4) rules for general finite and transfinite roots,[11] and (5) rules for the justification of transpositions that transpose transpositions, that is, that bring good out of evil or prevent even greater evil.[12]

These rules are operational rules for applying Hartman's system for determining right and wrong, and for identifying possible exceptions and qualifications. This system reveals under what circumstances, if any, the destruction of infinite value is warranted. The basis for this possibility rests on the fact that a hierarchy exists within infinity. The mathematical expressions that show this possibility are given in the literature on this subject, including my book.

If we understand that destruction of infinite value means "the killing of a person" or a "person dying," we can express this mathematically as $1/\aleph_1$. This act is justified if (1) it contributes to the fulfillment of a situation expressed by $\aleph_2$ or (2) if it inhibits fulfillment of a situation expressed by $1/\aleph_2$. Sydney Carton's sacrifice of his life to save the Darney family, narrated in Charles Dickens' novel *A Tale of Two Cities*, is an example of the first. Destruction of the Iraqi army (killing Iraqi soldiers) to prevent them from continuing to murder the people in Kuwait is an example of the second.

Example (1):

R_x: Sidney dies to save Lucie's love and happiness with Charles, where

$\aleph_1$ $\aleph_1$

R_1: Lucie's love with Charles (C)

$R_1 = \aleph_1^{\aleph_1} = \aleph_2$,

$\aleph_1 \quad -k$

R_2: Sidney dies (T)

$R_2 = \aleph_1^{-k} = 1/\aleph_1$, and where

R_3: R_2 $(1/\aleph_1)$ to save R_1 $(\aleph_2)$ (C)

$R_3 = \aleph_2^{1/\aleph_1} \leq \aleph_2$ but $> 1/n$[13]

The words "to save" indicate that the relationship between R_1 and R_2 is compositional. If Sydney's purpose was no more than to save Lucie's and Charles' lives, then his sacrifice, while heroic, would not be justified. However, Sydney had a higher motive which, as the arithmetic reveals, justifies his action. The resolution of the equation for R_3 comes under the Rules for General Finite and Transfinite Roots. These rules provide guidance for determining where wrongs and badness are justified.

Example (2)

R_x: killing Iraqi soldiers to prevent them-from-murdering-Kuwaiti-people, where

$-k \qquad \aleph_1$

R_1: killing Iraqi-soldiers (T)

$R_1 = \aleph_1^{-k} = 1/\aleph_1$, and where

$1/\aleph_1 \qquad\qquad 1/\aleph_2$

R_2: R_1 to prevent Iraqi-soldiers from murdering Kuwaiti people (T)

$R_2 = (1/\aleph_2)^{-1/\aleph_1} = \aleph_2^{1/\aleph_1} \leq$ but $> 1/n$

The words "to prevent" indicate that the relationship between Iraqi soldiers murdering Kuwaiti people $(1/\aleph_2)$ and R_1 is transpositional. This is an example of the Rules for the Justification of Transpositions that Transpose Transpositions. These rules provide guidance for determining the justification of wrongs and badness that redress wrongs and badness. The use of penalties for infractions of the rules in sports and in the criminal justice system also are real world examples of the application of these rules.

7. Assessing the Adequacy of Moral Rules

Although the Hartmanean system does not generate a set of moral rules, as I have repeatedly stated, it nevertheless can be used to determine whether a given moral rule, simple or complex, is adequate or inadequate. Consider some of the examples of complex rules given by Edwards in his sixth question:

Example (1)

Keep promises, except when you have promised to do wrong or evil

The concept combination "keep promises" in and of itself without qualification is compositional and therefore ethically correct. However, in this case the promise is transpositional, a promise to do wrong. Keeping a promise of this nature materializes the wrong. Breaking it eliminates the wrong. The valuemetrics analysis of this situation is:

R_x: violate a promise to commit murder, where

R_1: promise^{n} to commit murder$^{1/\aleph_2}$ (C)

$R_1 = (1/\aleph_2)^n = 1/\aleph_2$, and where

R_2: violate^{-k} $R_1^{1/\aleph_2}$ (T)

$R_2 = (1/\aleph_2)^{-k} = \aleph_2{}^k = \aleph_2$

Under the Rules for Transposing Transpositions, the concept combination "violate a promise to commit murder" creates value. Therefore, disvaluing a promise is ethically correct if the promise incorporates anything transpositional, a wrong or badness. However, if the promise incorporates something compositional, then to disvalue it (violate it) would depreciate value. This would be unethical.

Example (2)

Keep a promise, except when breaking it is necessary to save human life.

In this example, we assume that the promise is to do something good and beneficial. Breaking the promise would depreciate value and hence would constitute a Transposition. The purpose of the following analysis, therefore, is to answer the following question: If implementing this Transposition does in fact save human life, would it be justified?

R_x: break a promise in order to save human life, where

$$\overset{-k}{R_1}\text{: break a promise } \overset{n}{(T)}$$

$R_1 = n^{-k} = 1/k$, and where

$$R_2\text{: } \overset{1/k}{R_1} \text{ to save human life } \overset{\aleph_1}{(C)}$$

$R_2 = \aleph_1^{1/k} = \aleph_1$

This situation is value neutral; it neither creates nor destroys value. Nevertheless, because it maintains value we may conclude that breaking a promise to save human life is justified. Keeping a promise while knowing that doing so would result in human death would certainly destroy value.

Example (3)

Tell the truth, except when lying is necessary to save a human life.

This is another example of justifying a transposition. Lying, which is asserting that a falsehood is true, is a transposition having a value index of 1/k. If telling a lie would in fact result in saving an innocent person's life, is it justified? The concept combination for this situation is:

$$R_x\text{: } \overset{1/k}{\text{lying}} \text{ to save a human-life } \overset{\aleph_1}{(C)}$$

$R = \aleph_1^{1/k} = \aleph_1$

This situation is also value neutral; therefore, lying to save an innocent person's life is justified.

Example (4)

Do not kill, except when necessary for self-defense.

If we assume that the prohibition against killing applies to killing a person, and that self-defence applies to defending myself (or oneself) against being murdered, then the concept combination in this case is:

R_x: killing a person to prevent that person from murdering me, where

$$\overset{-k}{R_1} \text{ killing a person } \overset{\aleph_1}{(T)}$$

$R_1 = \aleph_1^{-k} = 1/\aleph_1$, and where

$R_2 = R_1^{1/\aleph_1}$ to prevent murder $^{\aleph_2}$ (T)

$R_2 = (1/\aleph_2)^{1/\aleph_1} = \aleph_2^{1/\aleph_1} \leq \aleph_2$ but $> 1/n$

This is another example of the justification of a wrong to avert a greater wrong. Whereas killing a person to prevent that person from murdering is justified, if obstructing the murder can be accomplished compositionally, this would be a better solution, as the next example shows.

Example (5)

R_x: curb a person to prevent that person from murdering me, where

R_1: curb a person ^{k} $^{\aleph_1}$

$R_1 = \aleph_1^{k} = \aleph_1$, and where

R_2: R_1 ($\aleph_1$) to prevent murder (T)

$R_2 = (\aleph_2)^{-\aleph_1} = \aleph_2$

The assumption that "$\aleph_2$" in this example is better than "$\leq \aleph_2$ but $> 1/n$" in the preceding example is based on the lack of ambiguity in $R = \aleph_2$ as compared to $R \leq \aleph_2$ but $> 1/n$.

Example (6)

Do not kill, except in the defense of loved-ones.

If the stipulation concerning the purpose of the defense is also to prevent murder, then killing a person is justified. However, if the purpose of the defense is for some other reason, say defense against slander, and if we define slander as defamation of reputation (1/k), then killing is unjustified, as the following analysis reveals.

R: killing-a-person $^{1/\aleph_1}$ to defend against slander $^{1/k}$ (T)

$R = (1/k)^{-1/\aleph_1} = k^{1/\aleph_1} = d$

This means that R is indeterminate, that it cannot be solved mathematically. Hence, we have no grounds in the axiological context to justify killing a person under these circumstances.

As the immediately preceding examples illustrate, formal axiology can analyze moral rules that incorporate exceptions and can determine which exceptions are justified and which are not.

8. Human Rights, Conflicting Rights

Can formal axiology generate a theory of human rights? In the literature on this subject, human rights are defined as justified claims for things that meet the basic needs of people in sustaining and improving their lives. When we research the subject further, we find that rights apply to a broad range of human needs and wants, and they may be classified variously as natural rights, God-given rights, civil rights, and so on. We discover that rights are a function of values; hence, a theory of rights is an extension or component of applied value theory. This suggests that human rights theory is inherent in formal axiology, as opposed to being generated by it.

The names of all things conceived as rights are concepts. They are subject to the same procedures of axiological analysis as other concepts. Consequently, questions of hierarchy and conflicts among rights can be resolved by the same formulas as other axiological problems. The following examples illustrate how the formulas of axiology apply to rights. The word "right" belongs to the type of concept that has the value index n.

$\overset{n}{R_x}$: right to life (human life) $\overset{\aleph_1}{(C)}$

$R = \aleph_1^{n} = \aleph_1$

$\overset{n}{R_x}$: right to freedom $\overset{n}{}$

$R = n^{n} = n$

$\overset{k}{R_x}$: respecting the right-to-life $\overset{\aleph_1}{}$

$R = \aleph_1^{k} = \aleph_1$

$\overset{-k}{R_x}$: Denying the right-to-life $\overset{\aleph_1}{}$

$R = \aleph_1^{-k} = 1/\aleph_1$

A conflict of rights such as the right to life versus the right to property can be resolved by the axiological framework. The value index for human life is $\aleph_1$, and the value index for property is k. $\aleph_1$ is greater than k; therefore, human life is a greater good than property. Thus, the right to human life has precedence over the right to protect property. This applies to the real world in the following example.

If A denies B's right to property by stealing it, is B justified in denying A's right to life by killing him? The solution to this problem, incidentally, uses the same axiological method for determining just punishment under the retributive theory of criminal justice.

$1/\aleph_1$ $1/k$

R_x: killing the offender (A) absolves the crime of theft (denying B's right to property) (T)

$$R = (1/k)^{-1/\aleph_1} = k^{\aleph_1} = d$$

Under the rules for Finite and Transfinite Number Roots, d means indeterminate. Therefore, we have failed to justify killing A.

The preceding examples show how axiological principles and procedures for the solution of other value problems also apply to the solution of problems about rights.

9. Moral Sanctions

A theory of sanctions to support obedience to moral and legal rules and respect for moral and legal rights is also inherent in formal axiology, as opposed to being generated by it. The methodology for analyzing sanctions is the same as that for analyzing rights and other values, for both rights and sanctions are expressions of value. To illustrate, consider the following concept combinations.

Example (1)

$1/k$ $1/k$

R_x: threat-of-imprisonment (denying freedom) to discourage lawlessness (T)

$$R = (1/k)^{-1/k} = k^{1/k} = n \text{ or } k$$

Thus, under these conditions, threat of imprisonment is justified.

Example (2)

R_x: social disapproval to discourage stinginess

Whether or not social disapproval for stinginess is justified depends on the nature and degree of the stinginess. If stinginess is interpreted as very close guarding of possessions, then, as this analysis indicates, social disapproval is not justified because value is depreciated.

$$\overset{1/k}{R_x}: \text{social-disapproval to discourage very-close-guarding-of-possessions } \overset{k}{(T)}$$

$$R = k^{-1/k} = 1/k^{1/k} = 1/n \text{ or } 1/k$$

However, if stinginess is a marked lack of generosity equivalent to avaricious miserliness, then the stinginess is transpositional. This changes the situation, as follows.

Example (3)

$$\overset{1/k}{R_x}: \text{social disapproval to discourage lack-of-generosity } \overset{1/k}{(T)}$$

$$R = k^{-1/k} = k^{1/k} = n \text{ or } k$$

Here value is gained, not lost; and this type of social disapproval is justified. This example demonstrates why sound ethical analysis requires clarity of concepts and knowledge of relevant facts.

Example (4)

$$\overset{\aleph_1}{R_x}: \text{pangs-of-conscience causing repudiation of dishonesty } \overset{1/k}{(T)}$$

$$R = (1/k)^{-\aleph_1} = k^{\aleph_1} = \aleph_2$$

Conscience causing repudiation of dishonesty is a case of value creation, and thus it is justified.

One rule of syntax in formal axiology concerns the use of the concept "person," or "any of its derivatives," or a person's "proper name." The rule allows use of such a concept only when the meaning of a situation cannot be given without it. This keeps the number of alephs in concept combinations to a minimum. The concept combination in Example (4) does not contain the concept "person" or a person's name, yet the value index

$\aleph_1$ is assigned to the concept "conscience." This is done because conscience is a major element in the complex humanness and self-identity of people.

10. Marginal Human Beings and Animals

See attached Forms of Life: Moral Status Chart for my classification of marginal cases and non-human animals. I also am puzzled as to why a baby is number one on the HVP.

There are certain animals whose intelligence seems to approach the human capacity to think and combine thoughts. I refer to certain apes, porpoises, and whales. They are a more complex form of life than, for example, insects and plants, but I do not think that we have sufficient evidence to assign to them any value index other than k. If this evidence is ever produced, then we would assign to them the value index $\aleph_1$.

Since I assign the value index k to extrinsic things, processes, and activities and do not follow Robert S. Hartman in assigning them the value index $\aleph_0$, the question arises why I do not assign $\aleph_0$ to non-human animals as having a kind of value that is intermediate between persons and things. I suggest that we assign k even to the higher forms of animal life in order to maintain a distinction between them and people under all conditions. If we assign $\aleph_0$ to these animals, this distinction disappears under certain circumstances. For instance, the care and protection that a mother whale provides for her offspring would then be expresses as $R = \aleph_0^{\aleph_0} = \aleph_1$. In this situation, interaction between animals has the same value index as a person, with no person being involved. This discloses one of the drawbacks of cardinal number arithmetic. Perhaps Mark A. Moore's quantum wave model equation developed in the article to follow will permit us to assign different values to non-human forms of life without encountering this problem.

FORMS OF LIFE

Moral Standing Chart

I Irreversible coma
II Pre-conscious-brain functioning fetus
III Conscious-brain functioning fetus
IV Retarded persons
V Baby
VI Animals, plants, and so on.

Class	Functions Naturally	Primitive Will	Form of Life	Vidx	Moral Standing	Entitled to Human Rights
I	no	no	artificial	$1/A_1$	none	no
II	yes	no	vegetative	k	< person	no
III	yes	yes	human	A_1	person	yes
IV	yes	yes	human	$1/A_1$	person	yes
V	yes	yes	human	A_1	person	yes
VI	yes	yes	non-human	k	< person	no (we eat them)

ENDNOTES

1. Robert S. Hartman, *The Structure of Value: Foundations of Scientific Axiology*, (Carbondale, Ill.: Southern Illinois University Press, 1967), pp. 243-248, 265-293.

2. Frank G. Forrest, *Valuemetrics*®*: The Science of Personal and Professional Ethics*, (Amsterdam - Atlanta: Editions Rodopi, 1994).

3. *Ibid.*, pp. 45, 50, 79.

4. C. I. Lewis, *The Ground and Nature of the Right*, (New York: Columbia University Press, 1955), pp. 3-4.

5. Forrest, pp. 157-164.

6. See *ibid.*, p. 65.

7. *Ibid.*, p. 64.

8. *Ibid.*

9. *Ibid.*, p. 51.

10. *Ibid.*, pp. 87-96.

11. *Ibid.*, p. 91.

12. *Ibid.*, pp. 97-100.

13. *Ibid.*, p. 94.

Seven

A QUANTUM WAVE MODEL OF VALUE THEORY

Mark A. Moore

Mark A. Moore, a former student of Hartman's, is President of the Robert S. Hartman Institute for Formal and Applied Axiology. *Identifying possible weaknesses in a moral calculus based on transfinite mathematics, in this essay he develops a different finitistic calculus based on the mathematics and the metaphysics of quantum wave mechanics. Moore develops this new finitistic quantum wave model value calculus in Sections 1-3 below; then he applies it in section 4. The first three sections were presented at the 1993 meeting of the* Robert S. Hartman Institute, *and section four was presented at the 1994 meeting. Moore finds many areas of substantial agreement between his quantum wave model calculus and the transfinite calculus of Hartman/Forrest; but there are significant differences also. Moore identifies at least eight serious critical flaws in the transfinite value calculus.*

(1) The axiom that defines the system and the threefold hierarchy of value can differentiate eighteen binary value combinations. All eighteen are used in the Hartman Value Profile. However, the transfinite calculus can differentiate only eight distinct values. To illustrate, (using A for ℵ, as Moore does here), I^I *(or* A_1^{A1}*), and* E^I *(or* k^{A1}*), and* S^I *(or* n^{A1}*), all yield the same resultant value of* A_2*.*[1] *This means that it is just as valuable to love a button or an idea as it is to love a person, and this is highly counterintuitive.*

(2) The value distinctions between good, fair, average, poor, and bad or no good get lost when the transfinite calculus is used. All extrinsic objects and processes have the value k, no matter whether they are good, fair, average, poor, or no good. Transfinite algebra does not do justice to gradations of value within the three intrinsic, extrinsic, and systemic value dimensions. However, this does not happen in the quantum wave model approach.

(3) Moore is skeptical about Hartman's rank ordering of some binary value combinations, and he offers a partly new hierarchy of binary values. For example, he reverses Hartman's ranking of S^I *over* I^E*, suggesting that as he puts it, "the sacred nature of formal systems" ranks lower than "the*

positive uses of persons." Moore regards his new rank ordering as intuitively more compelling.

(4) Some of Hartman's critics like Pete Gunter[2] and Robert S. Brumbaugh,[3] questioned Hartman's limitation of basic values to three, intrinsic (persons), extrinsic (things), and systemic (ideas) and suggested that there might be intermediate or additional types of basic value. The need for an additional basic type of value is especially acute when it comes to non-human animals. Where neither Hartman nor Forrest can find any degree of intrinsic worth in non-human animals, and consistently classify them in the extrinsic value dimension along with rocks and doorknobs, Moore shows how to expand the initial threefold hierarchy of values into fourfold, fivefold, or however many it takes to make all the distinctions between kinds of basic values that need to be made. All animals are not equal in degree of psychic complexity, feeling, desires, volitions, cognitions, and capacity for valuation.

(5) Where Hartman was unable to explain how to compare the value of a thing's having three properties of its five propertied concept with the value of a thing's having three properties of a three propertied concept, Moore has discovered how to do it and shows us in the coming pages.

(6) Moore indicates that in fighting evil with evil (transposing transpositions), Forrest is forced to treat equals as if they were unequal, for example, ruining crops = killing insects. By contrast, the quantum wave model can show that these alleged equals are not really equal at all.

(7) Moore can get a different numerical value for all eighteen binary combinations; but the transfinite calculus gets only eight, as previously indicated. This means that the quantum wave calculus can distinguish eighteen, not just eight, distinct relations of "better than" and "worse than." It can also expand indefinitely on that. Important value distinctions or discriminations can now be made that the transfinite calculus cannot make, as Moore illustrates with many examples. Moore claims that "transfinite algebra does not provide enough resolution to deal adequately with the value landscape."

(8) In the preceding reply to Edwards, Forrest clearly shows that murder is wrong, but he does not reply adequately to the charge that the transfinite calculus implies that multiple murders are no worse than a single murder, since $A_1 - A_1 - A_1 - A_1 - A_1 - A_1 - A_1 = A_1$. Moore emphasizes that the quantum wave approach does not yield this highly counterintuitive result.

Although this new finitistic model is in many ways superior to the transfinite model, in at least one important respect the transfinite calculus is superior. It preserves the incommensurability of the value of each person

with the values of things and concepts. In the finitistic approach, enough money, or enough barrels of oil, eventually equal or surpass the value of a human life; but no finite extrinsic or systemic values ever equal or surpass the intrinsic worth of a single human life, according to the transfinite calculus. A richer calculus is now required that somehow combines the transfinite with the quantum wave calculus, preserving the advantages of each while avoiding the liabilities of both. Mark Moore is now working on this!

To his devoted followers, Robert Hartman's work represents a significant advance in the philosophical understanding of value. Hartman was not content to stop at philosophical understanding alone. His dream was to create a logic of value—a formal logic which not only formally differentiates types of values but also allows for calculations that combine the types of values so that the relative value of each combination can be compared. For Hartman, this enterprise represents three distinct parts, and the working out of each part exemplifies the process of creating a science.

First, there are the foundations of value. In this stage Hartman provided us with what he calls the "analysis" of value. Hartman wanted to accomplish the reduction of the understanding of value to its most simple and generic meaning. Relying heavily upon G. E. Moore, Hartman concluded that the essence of all value is the concept of "Good."

The second stage is the formal definition of the analytic simple concept "Good." This stage is called the "Axiom of Value." Hartman claimed that all true sciences have such axioms at their core. What makes this stage unique is the identification of a simple analytic concept, a concept whose meaning cannot be further analyzed, with a formal or mathematical process. In this way, the analytic concept can now be treated by the laws of mathematics. This formal treatment leads to the creation of theorems and hypotheses that can be formally derived and empirically tested.

The third stage was described by Hartman as the "Calculus of Value." Here, the formal apparatus generated by the Axiom of Value is developed. This stage contains the ranking of value types and their respective combinations.

Each of the three stages of Hartman's work find their own unique development and critique. Surely, stage one, the analysis of value, is a purely philosophical undertaking. As such, it should be critiqued as any philosophical work. This means that it can be historically placed along side

other significant attempts to understand the nature of value. It can also be critiqued for its philosophical and argumentative soundness.

The second stage, the Axiom of Value, must be treated like any other so-called axiomatic work; namely, it must be judged for its logical consistency and usefulness in generating interesting and provocative theorems which are not only consistent with what we analytically believe to be true about value but also further our understanding and instruct us about subtleties of value that have been obscure.

Finally, the third stage of value, the Calculus, must be judged on the merits of delivery. The Calculus must provide us with a mechanism of value calculation. Here the calculations must be judged on their ability to distinguish logically what has been formally distinguished in the Axiom, and for their ability to make precise and reveal differentiations of specific values and value situations.

Importantly, a criticism of one stage is not an indictment of the entire program. Elsewhere, I endeavored to demonstrate that the third stage of Hartman's program, the Calculus of Value, is defective.[4] This, however, in no way represents a rejection of stages one or two. In fact, my objections to Hartman's calculus really depend upon the acceptance of stages one and two. In my earlier critique, I pointed out that two portions of Hartman's Calculus fail the simple test of consistency.

First, the Axiom of value allows for the differentiation of eighteen binary value combinations. The calculus, however, only distinguishes eight different "numerical scores." This means, that ten of the formally distinct value combinations are really numerically indistinct. This implies that the Calculus does not do justice to the Axiom, and for me this implies that the Calculus is defective. Many axiologists are sympathetic with the argument from utility—that the Calculus is useful and therefore should not be tossed overboard. We owe Frank Forrest a great debt for the work he has done to codify value calculations. However, the simple fact remains that the Calculus does not do justice to either the Analytic or the Axiomatic stages of Hartman's work, and this must be rectified.

Second, the Axiom requires that we employ a multi-valued logic in the Calculus. Valuations, according to the Axiom, are gradations of value. Values are sets which are fulfilled in a range of ways going from no-good, to poor, to average, to fair, to good. However, Hartman never delivered a calculus that actually does this with logical consistency. When he calculated the relative value of how an extrinsic value may be evaluated either systemically, extrinsically, or intrinsically he only employed the value mode of systemic value. There is no calculus based on the partial

fulfillment of extrinsic value. From the view of the Calculus, the extrinsic evaluation of any extrinsic value is the same, but we know from the Axiom and other parts of the Calculus that this is not logically consistent.

I am critical of Hartman's Calculus of Value, and I believe that proper respect for science in general, and Hartman's lifelong work in particular, requires that all defective aspects be openly challenged and if possible replaced. This is science and not religion. Dogma within a science is a value transposition, and ultimately no good comes of it.

Having said this, there is still a point to be made about being only negative. It is easier to criticize than to fix. I am sensitive to this; indeed, science does not stride forward merely by finding error, but in the discovery of new frameworks. This paper attempts to provide a constructive alternative to Hartman's Calculus of Value. As such, it must be evaluated by two important criteria: First, is this alternative genuinely consistent with Hartman's Axiom of Value. Second, is the calculus presented here logically consistent, interesting, and fruitful in its development and applications. I invite your healthy suspicions.

1. A Review of Certain Aspects of Quantum Logic

Quantum mechanics is one of the great achievements of human intellect. Viewed simply, it is a part of physics. More specifically, it is the physics of the atom. Quantum mechanics may also be seen as a mathematical and logical system. This aspect was developed especially by John Von Neumann. To consider quantum theory only in its applications for physics and mathematics (as extraordinary as they are) would be an injustice, however, for it represents a new way of thinking about nature, about logic, and about process.

Simply put, quantum mechanics challenges our notions of what it means to be located in space, what it means to be a member of a class or an element in a set, and what is means to endure through time. In this paper, I will focus on these larger, more philosophical aspects of quantum theory, and more formal aspects are only slightly discussed.

A. Wave vs. Particle

To grasp the importance of quantum theory, several critical aspects must be understood. These aspects center on the basic dualism of quantum theory, the duality of wave and particle in the interpretation of nature.

At the end of the nineteenth century, physicists were content to think of

nature as composed of two parts: matter and fields. Drop an apple from a tree. The apple is matter; and it falls due to its attraction to a larger piece of matter, Earth. Connecting the apple in the tree and Earth is a field, the gravitational field. The complexity of the atomic world was yet to be discovered, and many physical fields and forces were still unknown. Physicists were content to treat matter and fields as separate entities. This began to change, first with the work of Clerk Maxwell, and later with Albert Einstein's demonstration that classical matter and fields are convertible to each other, and with Max Planck's proof that the interconnectedness of field and matter is a fundamental principle of the world of the atom, not merely a theorem of classical physics.

Planck's initial work centered on the question of why hot things change color. That black body matter glows when heated was already known. Steelmakers had known for generations that iron turns cherry red at about 1300 degrees, and this was a good way of knowing the temperature of a furnace. But why does this change occur? Planck discovered that atoms glow or give off color due to their vibrations. If one adds heat, vibrations increase in frequency, and this accounts for the change in color. There is, then, a direct correlation between the frequency of the atom's vibration, the amount of energy applied to the atom, and the color or frequency of the light emitted by the atom. All of this seems reasonable, but Planck also discovered that changes of the frequency of light emitted by the atom do not proceed in a linear fashion with increased energy input. Rather, there is a step function. Changes in output (light) occur only after sufficient additional energy has been absorbed. This step function, these packets of released energy, Planck called "quanta;" and the constant he discovered is called "Planck's Constant."

The plot thickened when physicists turned to the nature of light. Work done by Christian Huygens and Sir Isaac Newton established that light is a wave (and thus a field). However, Arthur Compton demonstrated that light behaves like a particle. So, which is it? Is light a wave or a particle? While this controversy was boiling, Louis De Broglie submitted a doctoral thesis proposing that all particles of matter are associated with particular waves. Just as light waves have the properties of particles, particles have the properties of waves. Waves and matter are somehow interconnected. This duality was formally presented by Werner Heisenberg in 1925. Therefore, quantum theory is about the interchangeability of particles and waves; and it has two versions—a wave version developed first by Erwin Schrödinger, and a particle version developed by Werner Heisenberg.

It may sound as if the problem was then solved: quantum theory supplies

the formal framework for the transition of wave into particle and vice-versa. But it is not so simple. In fact, the duality of the two states (wave and particle), and the contradictory ways in which each state behaves, are not reconciled. The problem is not solved, only presented in a more precise way. The problem is that matter can be validly seen as a wave or as a particle; but particles are very different from waves. It would be fine if we could show that matter is at one point behaving like a particle, and at different time it has changed its behavior and begins behaving like a wave; but this is not what happens. Matter behaves equally like a particle and a wave at the same time, and this challenges our common sense view of reality.

1. As a particle, matter is simply located at a specific point in space. As a wave, matter is located generally along the entire volume of space the wave occupies.

2. As a particle, matter interacts with other particles in a Newtonian fashion (rather like billiard balls colliding). As a wave, matter interacts by phase coherence.

3. As a particle, matter and energy are conserved. When two particles of matter collide the energy released is equal to the energy lost in the two respective particles. When waves interact, the energy of the combined wave is equal to the square of the wave energies. An energy increase and deficit is created.

4. As a particle, matter changes direction and loses energy after collision. As a wave, matter returns to its original amplitude and energy after interference.

These are serious conflicts. They have not been reconciled by quantum theory today. To make matters worse, we are not free to accept one model or the other. We cannot be particle or wave theorists and let that be the end of it. The history of quantum theory is filled with attempts to explain away the conflict. In the Copenhagen Thesis, the "reality" of matter outside some experiment is not a meaningful question. This implies that measurement somehow interacts with matter, altering its natural condition. Measurement, then, is seen as a type of interference. However, in 1964 John Bell showed that this and similar ways around the problem fail. Bell demonstrated, in what is now called Bell's Theorem, that without faster-than-light connections (which would violate Einstein's most basic principle of general relativity) a theory of matter based on a particle model cannot explain the facts as we know them. It is not a matter of choosing equally satisfying theoretical models. Neither side, by itself, can explain all the facts. We seem to be left with what Von Neumann calls a "miracle."

Understanding this constitutes one of the great achievements of human intellectual history.

B. The Wave Nature of the Electron

We have a rather good understanding of how particles behave, as explained by the mechanics of Newton. While there is subtlety in Newton's mechanics, there are no big surprises. What is surprising is how matter behaves in its wave form at the quantum level. In our everyday world of classical scale, the world we inhabit, we are familiar with the actions of matter on matter. There is great similarity between this world and the small atomic world when we think of matter as particle. However, as a wave, matter behaves very differently. Since we are less familiar with wave mechanics in general, and quantum waves in particular, I will comment on the nature of waves, and on probabilities and possibilities. Later I will show how important these topics are to our understanding of intensions or meanings of concepts. First we must turn our attention to the wave nature of matter.

The wave nature of the electron is best demonstrated by examining what happens when an electron is fired through a single hole, and then through multiple holes. Today we are all familiar with the firing of electrons onto a phosphor screen (a television). If the beam of electrons is focused through a single hole, then we expect to see a single bright spot on the screen. If the intensity of the beam is increased, the spot brightens. So far, so good. If the diameter of the hole is decreased then the diameter of the spot likewise decreases. This is as expected. However, at a certain point, a strange thing begins to happen. Instead of getting smaller, the spot on the screen begins to expand. Not only does it expand, but it does so in circles of bright and dark areas which resemble a bull's eye target used by an archer.

This pattern, called the Airy Pattern, was discovered by George Airy in 1835 by looking at the effects of passing any type of wave through a hole or iris. Airy's pattern applies equally to waves of water, light, or sound. Airy noticed that the angular diameter of the bull's eye is:

70*(wave length/the diameter of the iris).

It has been suggested that the reason a beam of electrons forms the Airy Pattern is not because electrons are waves, but because a stream of electrons, trying to get through the hole, simply form a wave from their

collective flow. This, however, is not the case. If flow of electrons is slowed down by firing one each minute, the Airy Pattern will still be found. The wave nature is a part of the electron's intrinsic nature, and that's all there is to it.

The same pattern appears when photons of light are passed through small holes. In the famous two-slit experiment, photons of light behave exactly like waves as they pass through both slits. With both slits open, the same wavy pattern arises. Even more interesting, with both slits open and twice the light reaching the screen, the brightest areas are not twice as bright, but four times as bright as with a single slit open. In other words, when waves cohere, the effect is double the expected; and when waves interfere, the effect is complete wave cancellation, or darkness. This curious phenomenon can be explained, but to comprehend it we must explore the nature of wave coherence and interference.

C. Wave Mechanics

To understand how waves behave, we need to know how they are measured. This is done in three ways. First, wave amplitude, the height of the wave, is determined. Second, frequency of period, the time it takes the wave to complete a cycle going from the top of the wave to the bottom and back to the top, is calculated. Third, the energy is gauged. The energy is also equal to the amplitude squared for any portion of the wave. In quantum theory, waves actually do not have energy but probability, which is equal to amplitude squared. The higher the amplitude, the greater the probability of a given state's occurring. For quantum theory, wave amplitude is a distribution of the probabilities of the possible states of a system.

To understand what happens when two waves meet, we need only compare the phases of the respective waves. If waves are perfectly in phase, then the peaks and troughs are in complete synchronization. This is called *coherence*. Any deviation from perfect coherence is called *interference*. Interference can be partial or total, where the peaks line up with troughs, and vice-versa. In this case we have complete wave destruction.

When waves meet, their amplitudes add. If they are in phase, then the resulting wave is the addition of both amplitudes. If they are completely out of phase, then one amplitude is subtracted from the other. All degrees in between are the result of the degree of phase. This process, called "superposition," works on a linear scale until very large amplitudes are

combined, where distortion or non-linearity can set in. It is thought, however, that for quantum waves, non-linearity never sets in. After meeting, two waves may again separate. What is remarkable is that after separation, the two waves resume the original amplitude they possessed prior to meeting. It is as though nothing happened.

As mentioned earlier, a wave's energy (or probability) is its amplitude squared. This means that a sea wave with an amplitude of four feet has four times the (destructive) energy as a wave with an amplitude of two feet. Imagine the destructive power of a two hundred-foot wave! (One occurred in Valdez, Alaska in 1964). For quantum waves, probability is the square of the amplitude. If we imagine one quantum wave with an amplitude of 2 and another with an amplitude of 4, the wave with amplitude of 4 is not twice as likely to occur, but four times more likely to occur.

In the early 1800's, the French mathematician Joseph Fourier discovered that any wave can be uniquely expressed as a combination of sine waves. Fourier's analysis applies to musical instruments, for example. When two different instruments play the same note, their waves are different. These differences give a unique sound to each instrument. This explains why electronic instruments such as the Moog synthesizer can duplicate the sounds of many different instruments by duplicating the unique Fourier signatures for each instrument. Fourier's discovery is even more general than he envisioned. Not only can sound waves be analyzed as a composite of sine waves, but this magical analysis can be performed by using wave groups other than sine waves. There is no natural way to take a wave apart. For every type of wave, there is a way to analyze it.

D. Types of Waves

In general, there are three types of waves: impulse waves, sine waves, and spherical waves. Impulse waves are sharp spikes. They are infinitely narrow and one-dimensional. One impulse wave differs from another only in its location. Sine waves have a characteristic shape; and two dimensions are required to describe them properly. Finally, spherical waves consist of the vibrations of hollow spheres and exist in three dimensions.

The analysis of a wave by wave type is a complex mathematical process that is best solved by today's high speed computers. The result of wave analysis in music is the compact disk or synthesizer. (Compact disks and synthesizers use impulse waves to create the various sine waves for each instrument and note. This can also be done by analogue.) However, the number of iterations necessary for the analysis of a given wave will depend

upon the "familiarity" of the wave with the wave form used for the analysis. This "kinship" relation of wave to analysis is very valuable. This is similar to a prism through which light is passed. The complexity of the spectrum as it leaves the prism is a measure of the similarity of the prism to the light wave. If there is no change in the wave, then the prism and the wave are in complete one to one mapping. Max similarity is called "kin prism" and max dissimilarity is called "conjugate prism." The measure of dissimilarity is the bandwidth of the spectrum. The larger the bandwidth, the greater the conjugate wave, the greater the dissimilarity.

2. The Relation of Quantum Theory to Value Theory

What, it may be asked, does all of this have to do with value theory? Value theory is about what people desire; quantum theory concerns the atomic world. The answer is that quantum theory involves a multi-valued logic that describes the probabilistic behavior of particles of matter and the combinatorial aspects of waves of matter. Waves of matter must be thought of as the total possibilities of action, and quantum theory provides the logic for how these total possibilities combine. It may be objected that the quantum world is small, and its effects are not noticed in the world we know. This is only partially true. First, the proxy waves of photons of light from distant stars can be several meters wide, and thus they are not only creatures of the atomic world. Second, as Roger Penrose points out, quantum effects may be sufficiently robust to be experienced by the human brain.[5] To be serious about this comparison, we must do more than speculate. A direct comparison between value theory and quantum theory is necessary. In the following discussion, I propose to make just this comparison.

A. Wave Families: Types of Concepts

For Robert S. Hartman, there are three types of concepts: Formal, Analytic, and Singular. Each type represents a value: Systemic, Extrinsic, and Intrinsic. Each type is differentiated by the way in which the intensions and extensions are related. For formal concepts, intensions and extensions vary directly, and each is a formal construct. In analytic concepts, intensions and extensions vary inversely. The predicates of analytic intensions consist of other predicates, and the extensions of analytic concepts are properties of things. In singular concepts, the intension and the extension are unified into a one-to-one mapping, a topology. This three-

fold distinction is very similar to the different wave families: impulse, sine, and spherical. Impulse waves are like formal concepts in that they are one-dimensional; only their position differentiates one from another. Sine waves are like analytic intensions in that they are two-dimensional, (and time is a third dimension). Finally, spherical waves are like singular intensions; they are by nature continuous in a fashion that is suggestive of intrinsic value.

B. Particles and Waves: Intensions and Extensions

For Hartman, the foundation of all value lies in the understanding of the nature of concepts. Concepts are composed of two aspects, intensions or meanings and extensions or properties to which meanings refer. Meanings consist of predicates, and things consist of properties. Concepts involve both.

This distinction resembles the difference between the wave and particle nature of quanta. A wave is similar to an intension. A quantum wave is the possibility that a certain physical state will occur. Possibility squared is probability. For Hartman's theory, the intension represents the full range of possibility of the extension. The extension is some sub-set of properties named by a subset of predicates in the intension. The total value of these extensional sub-sets of properties that define extension is equal to nothing less than the total meaning of the concept. In both quantum theory and value theory, the intensional wave represents possibility and the extension represents probability. In fact, total meaning (possibility) is equal to the square of the probability. Probability is determined by the amplitude of the wave for any specification of properties. Total meaning for the intension is the square of the number of properties.

C. Wave Interference and Value

Intensional analysis is wave analysis. Since the intension is the measure of value, we ought to be able to apply the logic of wave interference to intensions. In fact, we can. First, the way values combine or blend is similar to how waves combine. Wave combinations are measured by amplitude and phase. If waves are out of phase, then the combination is destructive; if they are in phase, then the combination is constructive. Degrees of phase control the resulting combinatorial possibilities.

Extensional analysis, on the other hand, is like particle analysis. Properties behave in a Newtonian fashion. Their combinations are probabilistic.

This is very much like value composition and transposition. The difference is that for Hartman, values are either completely in phase or completely out of phase. Although he speaks of partial concept fulfillment in extrinsic value, the combinations of value types are not partial; they are either completely in phase or out of phase. The "quanta" of value are unfortunately either "on or off," "plus or minus." Like waves, intensions have been combined and uncombined without destruction. This is not true for extensions. Once the two automobiles collide, the scars remain. Humpty Dumpty cannot be put together again.

D. Heisenberg's Uncertainty Principle and Analytic Concepts

A cornerstone of Quantum theory is the Uncertainty Principle. Simply stated, knowledge about a quantum event is possible but limited. As we increase knowledge in one area, we lose knowledge in others. The total we can know at a given time is limited and relational. Thus, knowing more about one area will limit what we can know about another.

But of what are we uncertain? In *The Emperor's New Mind*, Roger Penrose points out that when we are considering merely the possibility of quantum activity, we are never uncertain. Uncertainty creeps in only when we try to determine probability. Remember, probability is the amplitude of the wave squared; it is possibility squared. (We can measure the amplitude at any point along the curve, not only at the maximum.) In the value sense, this is the level of total meaning or value. The Uncertainty Principle is then a Principle of Total Value.

This is very much like the relation of intension to extension of analytic concepts. The greater the knowledge of the extension, the less the knowledge of the intension. (This may not be true of singular concepts, but we cannot speak strictly of "knowledge" when we encounter "singularities.") If a concept has three (expositional) properties, then we know that there is one way to have none of these properties (and be no-good), three ways to have one property (and be poor), three ways to have two properties (and be fair), and one way to have all three properties (and be good). Nothing is uncertain. However, since intensions and extensions vary inversely, the more we know with increased levels of specification, the less is known about higher levels of abstraction; thus, probability decreases. We cannot increase the level of specification and at the same time increase probability.

E. Conclusions

Many aspects of quantum theory are similar to value theory. Upon reflection, however, this should not surprise us. Meaning, for Hartman, is a wave. Hartman does not develop this area of value theory, but it is subject to wave analysis. Like quantum theory, value theory requires that meanings be either in phase or out of phase; either there is composition or transposition. This alone should prompt us to look to wave mechanics to understand values better. In the final section of this paper, I will actually use principles of wave mechanics to calculate values.

3. Quantum Wave Model for Value Combinations

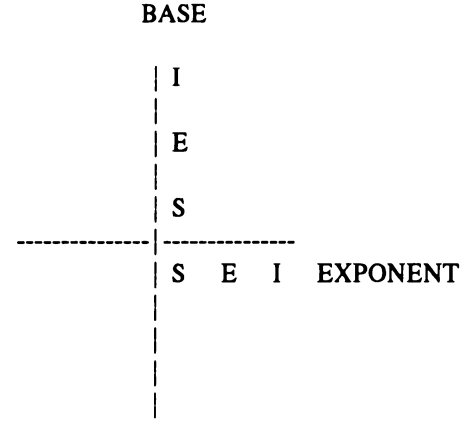
Quantum mechanics is a theory about the dual nature of matter. Matter is a simply located particle with a certain probability, and it is also a possibility or meaning wave. According to Von Neumann, this dual nature requires consciousness. From my perspective, it is the essence of value. The quantum proxy wave, the possibility of action, is the intension of a concept against which the extension, the particle nature of matter, is measured. These are value measurements, and they can be compared by a method of computing quantum wave vectors.

A vector is a way of calculating amplitudes of the wave. The longer the vector, the greater the value. But quantum vectors are not ordinary. Waves can be in phase or out of phase. The dark areas in wave interference charts are areas out of phase; the most intense areas are areas in phase. We can apply these principles directly to value and valuation.

Following Roger Penrose, the formula we shall use is similar to the calculation of a quantum vector. In general, a vector is an outcome of two input variables; it summarizes the result. Typically, this is done by allowing the two inputs to be sides of a right triangle, and the vector is the hypotenuse. The Pythagorean Theorem is the standard method. However, since quantum vectors are waves that can either be in phase or out of phase, the formula is a little more complex. The actual formula is:

$$a^2 + b^2 = c^2 + 2*(a*b*\text{cosine theta})$$

where theta is the angle of the vector. The cosine is derived by dividing the adjacent line segment by the hypotenuse, which in this case is the valuation of a value.



This additional correction term accounts for the interference lines of bright to dark in the wave combinations of quantum mechanics. If theta = 0 degrees, then the cosine = 1; the two waves are totally in phase; and the waves combine geometrically. If theta = 90 degrees, then the cosine = 0; and the waves combine arithmetically. If theta = 180 degrees, then the cosine = -1, and the waves cancel each other. All cosines in between give varying degrees of wave amplification and destruction.

A. Binary and Tertiary Value Combinations

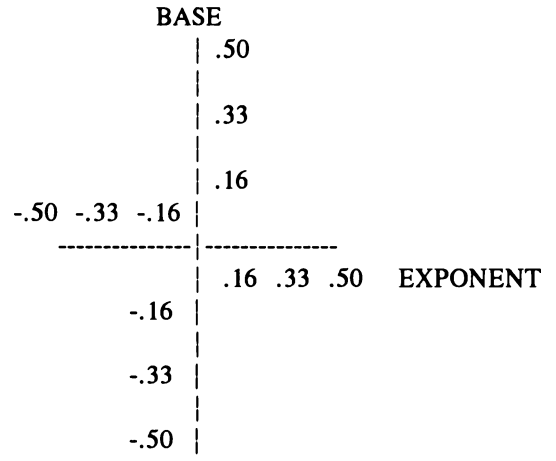
For us, the vector will summarize the axiological process of binary and tertiary compositions and transpositions of value. In the act of valuation, a base value is valuated. A vector can be calculated to summarize the overall resulting value. In tertiary combinations, the vector of the binary valuation is itself valuated; and a three-dimensional vector is created. There is, however, one important difference with quantum theory. In quantum mechanics, wave interference is a cancellation; but in formal axiology it is a transposition. Therefore, the dark areas in quantum mechanics are areas of transposition in axiology. Transpositional vectors measure the intensity of the darkness, just as compositions measure the intensity of the brightness.

The next step is to assign an amplitude number for each of the types of values. There are three kinds of value, and each needs a number. For Hartman, these numbers are finite, infinite, and non-denumerably infinite. In my view, this is where Hartman gets into trouble. I choose to employ a very simple convention. Let the lowest value be represented by a single

unit of value, the next value by two units, and the highest value by three units. Thus,

systemic value = 1 unit;
extrinsic value = 2 units; and
intrinsic value = 3 units.

There are, then, 6 total value units since the sum of the above units is six. Systemic value is 1/6 (.167); extrinsic value is 2/6 (.333); and intrinsic value is 3/6 (.50). These numbers add to 1.0. Each represent base values and the exponents of the process of valuation.



Using these units as input, we get the following unique ranking for the eighteen binary value combinations:

BINARY VALUE COMBINATIONS

HARTMAN RANK	BASE	VAL#1	VECTOR	VALUATION # 1	BASE VALUE
1	I	I	0.9239	The Sacred Nature of	Persons
2	E	I	0.7965	The Sacred Nature of	Animate and Inanimate Things
4	I	E	0.7353	The Positive Uses of	Persons
3	S	I	0.6542	The Sacred Nature of	Formal Systems
6	E	E	0.6097	The Positive Uses of	Animate and Inanimate Things
5	I	S	0.5695	The Rational Views of	Persons
7	S	E	0.4790	The Positive Uses of	Formal Systems
8	E	S	0.4249	Rational Views of	Animate and Inanimate Things
9	S	S	0.2957	Rational Views of	Formal Systems
10	S	-S	-0.2957	Irrational Views of	Formal Systems
11	E	-S	-0.4249	Irrational Views of	Animate and Inanimate Things
12	S	-E	-0.4790	Negative Uses of	Formal Systems
14	I	-S	-0.5695	Irrational Views of	Persons
13	E	-E	-0.6097	Negative Uses of	Animate and Inanimate Things
16	S	-I	-0.6542	The Total Destruction of	Formal Systems
15	I	-E	-0.7353	The Negative Uses of	Persons
17	E	-I	-0.7965	The Total Destruction of	Animate and Inanimate Things
18	I	-I	-0.9239	The Total Destruction of	Persons

Vector length is an indication of value. Positive vectors are compositions and negative vectors are transpositions. There is a symmetry between positive and negative vector lengths. The worst transposition is equal and opposite to the best composition. These eighteen types represent the basic model for binary valuation. I indicate the base values as I, E, and S respectively. As examples of the three base value types, I choose the following: Intrinsic Value = Persons; Extrinsic Value = Animals and Inanimate Things; and Systemic Value = Formal Systems. The valuations (Val. # 1) of these base values are indicated by either a positive or negative I, E, or S. As examples of the positive valuation of the base values, I choose the following: Intrinsic Valuation = Sacred Nature; Extrinsic Valuation = Uses of; and Systemic Valuation = Rational Views. As examples of the disvaluation of the base values, I choose: Intrinsic Disvaluation = Total Destruction; Extrinsic Disvaluation = Negative Uses; and Systemic Disvaluation = Irrational Views. The Hartman ranking is also included. Notice that the Hartman ranking differs from mine in several places. For example, Hartman ranks "The Sacred Nature of Formal Systems" higher than "The Positive Uses of Persons." I reverse this order. Within transpositions, my method ranks "The Negative Uses of Persons" as worse than "The Total Destruction of Formal Systems." Hartman reverses this order. It is interesting to ponder these differences.

In Hartman's system, there are only three types of base values and three types of valuations of these values. This leaves some value theorists uncomfortable about having to group animate and inanimate objects together into one category. The quantum model, on the contrary, offers the capacity to expand the base values at will. The following two tables represent two expansions of base values. The first table separates the animate from the inanimate and thereby creates four base values: Persons (I1), Animate Things (I2), Inanimate Things (E), and Formal Systems (S). As before, the four base values are given unit values and then normalized. These values are:

S = 1 Unit or .10;
E = 2 Units or .20;
I2 = 3 Units or .30; and
I1 = 4 Units or .40.

Here we have 10 total value units. The vector ranks are:

BINARY VALUE COMBINATIONS
(With Animate and Inanimate Things Distinguished)

Hartman Rank	Base	Val#1	Vector	Valuation # 1	Base
1	I1	I	0.8500	The Sacred Nature of	Persons
2	I2	I	0.7728	The Sacred Nature of	Animate Things
2	E	I	0.6896	The Sacred Nature of	Inanimate Things
4	I1	E	0.6609	The Positive Use of	Persons
3	S	I	0.5984	The Sacred Nature of	Formal Systems
6	I2	E	0.5877	The Positive Use of	Animate Things
6	E	E	0.5116	The Positive Use of	Inanimate Things
5	I1	S	0.4828	Rational Views of	Persons
7	S	E	0.4266	The Positive Use of	Formal Systems
8	I2	S	0.4010	Rational Views of	Animate Things
8	E	S	0.3250	Rational Views of	Inanimate Things
9	S	S	0.2504	Rational Views of	Formal Systems
10	S	-S	-0.2504	Irrational Views of	Formal Systems
11	E	-S	-0.3250	Irrational Views of	Inanimate Things
11	I2	-S	-0.4010	Irrational Views of	Animate Things
12	S	-E	-0.4266	The Negative Uses of	Formal Systems
12	I1	-S	-0.4828	Irrational Views of	Persons
13	E	-E	-0.5116	The Negative Use of	Inanimate Things
13	I2	-E	-0.5877	The Negative Use of	Animate Things
16	S	-I	-0.5984	The Total Destructions of	Formal Systems
15	I1	-E	-0.6609	The Negative Use of	Persons
17	E	-I	-0.6896	The Total Destruction of	Inanimate Things
17	I2	-I	-0.7728	The Total Destructions of	Animate Things
18	I1	-I	-0.8500	The Total Destruction of	Persons

To take this analysis further, we may wish to distinguish between Plants and Animals within the category of "Animate Things" (I1). We represent this as Animals (I2), Plants (E1), and Inanimate Things (E2). Above we included animate things as (I2) intrinsic value. We shall continue this practice here. None of this would change the ordinal arrangement of the value combinations measured by the vector; only what we call an item would change. By our process, these five categories are given a value unit and then normalized.

S = 1 Unit or .066;
E2 = 2 Units or .133;
E1 = 3 Units or .200;
I2 = 4 Units or .266; and
I1 = 5 Units or .333.

Now there are 15 total value units which yield new rankings. These rankings are found in the immediately following table on page 191.

Next, we can generate the tertiary relations, as illustrated in the tables on pages 194-197. This is based on using the binary vectors as a base; then each of these vectors is valued by the three compositions and the three transpositions. These vectors are three-dimensional and create a unique ranking for all 108 tertiary combinations. Notice that I have consistently used the same descriptions to exemplify each of the 108 types. Notice also that the vectors come in pairs of equal length. For example, in the first two rows, "I I I" equals vector length of 1.2423 as does "I -I -I." This means that the intrinsic disvaluation of an intrinsic disvaluation is as valuable as the intrinsic valuation of an intrinsic valuation. This implies, for example, that the intrinsic commitment to the elimination of killing persons is as valuable as the intrinsic commitment to great love of persons. However, these two vectors are not identical; while they are the same length, they do not occupy the same space. In fact, they point in very different directions. I have indicated this difference by the category called "QUAD" for quadrant. On the chart on page 193, these vectors are clearly distinguishable. The disvaluation of transpositions is a positive value. These are found in Quadrant # IV. Valuations of compositions, which are also positive, are found in Quadrant # I. Disvaluations of compositions are found in Quadrant # II, and valuations of transpositions are found in Quadrant # III. Even if we were to include more complex axiological constructions, they would all be distinct vector lengths in distinct (many-dimensional) sectors. In this representation, I do not include separations of Extrinsic Value into categories of Inanimate, Plants or Animals. However, this could be done.

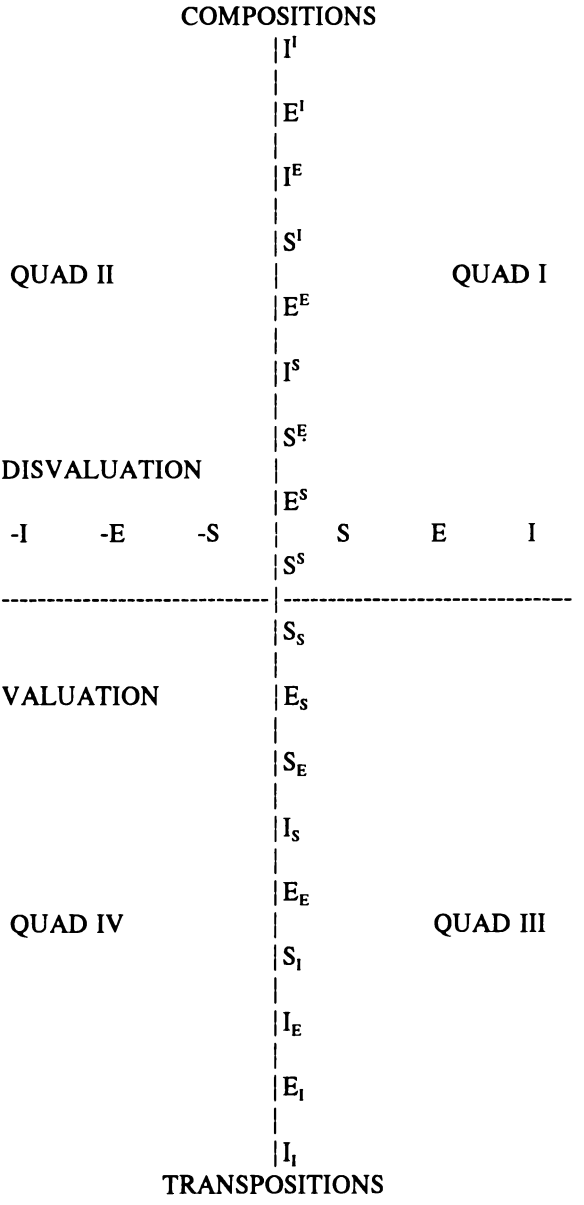
BINARY VALUE COMBINATIONS
(With Animals, Plants, and Inanimate Things Distinguished)

HARTMAN RANK	BASE	VAL#1	VECTOR	VALUATION # 1	BASE
1	I1	I	0.7965	The Sacred Nature of	Persons
2	I2	I	0.7405	The Sacred Nature of	Animals
2	E1	I	0.6896	The Sacred Nature of	Plants
2	E2	I	0.6266	The Sacred Nature of	Inanimate Things
4	I1	E	0.6097	The Positive Use of	Persons
3	S	I	0.5596	The Sacred Nature of	Formal Systems
6	I2	E	0.5580	The Positive Uses of	Animals
6	E1	E	0.5116	The Positive Uses of	Plants
6	E2	E	0.4534	The Positive Uses of	Inanimate Things
5	I1	S	0.4249	Rational Views of	Persons
7	S	E	0.3892	The Positive Uses of	Formal Systems
8	I2	S	0.3699	Rational Views of	Animals
8	E1	S	0.3250	Rational Views of	Plants
8	E2	S	0.2735	Rational Views of	Inanimate Things
9	S	S	0.2172	Rational Views of	Formal Systems
10	S	-S	-0.2172	Irrational Views of	Formal Systems
11	E2	-S	-0.2735	Irrational Views of	Inanimate Things
11	E1	-S	-0.3250	Irrational Views of	Plants
11	I2	-S	-0.3699	Irrational Views of	Animals
12	S	-E	-0.3892	The Negative Uses of	Formal Systems
14	I1	-S	-0.4249	Irrational Views of	Persons

HARTMAN

RANK	BASE	VAL#1	VECTOR	VALUATION # 1	BASE
13	E2	-E	-0.4534	The Negative Uses of	Inanimate Things
13	E1	-E	-0.5116	The Negative Uses of	Plants
13	I2	-E	-0.5580	The Negative Uses of	Animals
16	S	-I	-0.5596	The Total Destruction of	Formal Systems
15	I1	-E	-0.6097	The Negative Uses of	Persons
17	E2	-I	-0.6266	The Total Destruction of	Inanimate Things
17	E1	-I	-0.6896	The Total Destruction of	Plants
17	I2	-I	-0.7403	The Total Destruction of	Animals
18	I1	-I	-0.7965	The Total Destruction of	Persons

TERTIARY VECTORS



The tertiary rankings are as follows:

TERTIARY VALUE COMBINATIONS

BASE	VAL #1	VAL #2	VECTOR	QUAD	VALUATION # 2	VALUATION # 1	BASE
I	I	I	1.2423	I	Total Commitment to	The Sacred Nature of	Persons
I	-I	-I	1.2423	IV	Total Destruction of	The Evil Nature of	Persons
E	I	I	1.1436	I	Total Commitment to	The Sacred Nature of	Animate and Inanimate Things
E	-I	-I	1.1436	IV	Total Destruction of	The Evil Nature of	Animate and Inanimate Things
I	E	I	1.0973	I	Total Commitment to	The Positive Uses of	Persons
I	-E	-I	1.0973	IV	Total Destruction of	The Abusive Uses of	Persons
I	I	E	1.0806	I	Maximize Positive Effects of	The Sacred Nature of	Persons
I	-I	-E	1.0806	IV	Minimize Negative Effects of	The Evil Nature of	Persons
S	I	I	1.0369	I	Total Commitment to	The Sacred Nature of	Formal Systems
S	-I	-I	1.0369	IV	Total Destruction of	The Evil Nature of	Formal Systems
E	E	I	1.0042	I	Total Commitment to	The Positive Uses of	Animate and Inanimate Things
E	-E	-I	1.0042	IV	Total Destruction of	The Abusive Uses of	Animate and Inanimate Things
I	S	I	0.9747	I	Total Commitment to	Rational Views of	Persons
I	-S	-I	0.9747	IV	Total Destruction of	Irrational Views of	Persons
E	I	E	0.9719	I	Maximize Positive Effects of	The Sacred Nature of	Animate and Inanimate Things
E	-I	-E	0.9719	IV	Maximize Negative Effects of	The Evil Nature of	Animate and Inanimate Things
I	I	S	0.9642	I	Formal Acceptance of	The Sacred Nature of	Persons
I	-I	-S	0.9642	IV	Formal Rejection of	The Evil Nature of	Persons
I	E	E	0.9210	I	Maximize Positive Effects of	The Positive Uses of	Persons
I	-E	-E	0.9210	IV	Minimize Negative Effects of	The Abusive Uses of	Persons
S	E	I	0.9085	I	Total Commitment to	The Positive Uses of	Formal Systems
S	-E	-I	0.9085	IV	Total Destruction of	The Abusive Uses of	Formal Systems
E	S	I	0.8685	I	Total Commitment to	Rational Views of	Animate and Inanimate Things
E	-S	-I	0.8685	IV	Total Destruction of	Irrational Views of	Animate and Inanimate Things
S	I	E	0.8552	I	Maximize Positive Effects of	The Sacred Nature of	Formal Systems

BASE	VAL #1	VAL #2	VECTOR	QUAD	VALUATION # 2	VALUATION # 1	BASE
S	-I	-E	0.8552	IV	Minimize Negative Effects of	The Evil Nature of	Formal Systems
E	I	S	0.8427	I	Formal Acceptance of	The Sacred Nature of	Animate and Inanimate Things
E	-I	-S	0.8427	IV	Formal Rejection of	The Evil Nature of	Animate and Inanimate Things
E	E	E	0.8199	I	Maximize Positive Effects of	The Positive Uses of	Animate and Inanimate Things
E	-E	-E	0.8199	IV	Minimize Negative Effects of	The Abusive Uses of	Animate and Inanimate Things
I	S	E	0.7885	I	Maximize Positive Effects of	Rational Views of	Persons
I	-S	-E	0.7885	IV	Minimize Negative Effects of	Irrational Views of	Persons
I	E	S	0.7850	I	Formal Acceptance of	The Positive Uses of	Persons
I	-E	-S	0.7850	IV	Formal Rejection of	The Abusive Uses of	Persons
S	S	I	0.7694	I	Total Commitment to	Rational Views of	Formal Systems
S	-S	-I	0.7694	IV	Total Destruction of	Irrational Views of	Formal Systems
S	E	E	0.7195	I	Maximize Positive Effects of	The Positive Uses of	Formal Systems
S	-E	-E	0.7195	IV	Maximize Negative Effects of	The Abusive Uses of	Formal Systems
S	I	S	0.7094	I	Formal Acceptance of	The Sacred Nature of	Formal Systems
S	-I	-S	0.7094	IV	Formal Rejection of	The Evil Nature of	Formal Systems
E	S	E	0.6793	I	Maximize Positive Effects of	Rational Views of	Animate and Inanimate Things
E	-S	-E	0.6793	IV	Minimize Negative Effects of	Irrational Views of	Animate and Inanimate Things
E	E	S	0.6685	I	Formal Acceptance of	The Positive Uses of	Animate and Inanimate Things
E	-E	-S	0.6685	IV	Formal Rejection of	The Abusive Uses of	Animate and Inanimate Things
I	S	S	0.6318	I	Formal Acceptance of	Rational Views of	Persons
I	-S	-S	0.6318	IV	Formal Rejection of	Irrational Views of	Persons
S	S	E	0.5845	I	Maximize Positive Effects of	Rational Views of	Formal Systems
S	-S	-E	0.5845	IV	Minimize Negative Effects of	Irrational Views of	Formal Systems
S	E	S	0.5510	I	Formal Acceptance of	The Positive Uses of	Formal Systems
S	-E	-S	0.5510	IV	Formal Rejection of	The Abusive Uses of	Formal Systems
E	S	S	0.5040	I	Formal Acceptance of	Rational Views of	Animate and Inanimate Things
E	-S	-S	0.5040	IV	Formal Rejection of	Irrational Views of	Animate and Inanimate Things
S	S	S	0.3976	I	Formal Acceptance of	Rational Views of	Formal Systems

BASE	VAL #1	VAL #2	VECTOR	QUAD	VALUATION # 2	VALUATION # 1	BASE
S	-S	-S	0.3976	IV	Formal Rejection of	Irrational Views of	Formal Systems
S	-S	S	-0.3976	III	Formal Acceptance of	Irrational Views of	Formal Systems
S	S	-S	-0.3976	II	Formal Rejection of	Rational Views of	Formal Systems
E	S	S	-0.5040	III	Formal Acceptance of	Irrational Views of	Animate and Inanimate Things
E	S	-S	-0.5040	II	Formal Rejection of	Rational Views of	Animate and Inanimate Things
S	-E	S	-0.5510	III	Formal Acceptance of	The Abusive Uses of	Formal Systems
S	E	-S	-0.5510	III	Formal Rejection of	The Positive Uses of	Formal Systems
S	-S	E	-0.5845	III	Maximize Negative Effects of	Irrational Views of	Formal Systems
S	S	-E	-0.5845	II	Minimize Positive Effects of	Rational Views of	Formal Systems
I	-S	S	-0.6318	III	Formal Acceptance of	Irrational Views of	Persons
I	S	-S	-0.6318	II	Formal Rejection of	Rational Views of	Persons
E	-E	S	-0.6685	III	Formal Acceptance of	The Abusive Uses of	Animate and Inanimate Things
E	E	-S	-0.6685	II	Formal Rejection of	The Positive Uses of	Animate and Inanimate Things
E	-S	E	-0.6793	III	Maximize Negative Effects of	Irrational Views of	Animate and Inanimate Things
E	S	-E	-0.6793	II	Minimize Positive Effects of	Rational Views of	Animate and Inanimate Things
S	-I	S	-0.7094	III	Formal Acceptance of	The Evil Nature of	Formal Systems
S	I	-S	-0.7094	II	Formal Rejection of	The Sacred Nature of	Formal Systems
S	-E	E	-0.7195	III	Maximize Negative Effects of	The Abusive Uses of	Formal Systems
S	E	-E	-0.7195	II	Minimize Positive Effects of	The Positive Uses of	Formal Systems
S	S	-I	-0.7694	II	Total Destruction of	Rational Views of	Formal Systems
S	-S	I	-0.7694	III	Total Commitment to	Irrational Views of	Formal Systems
I	-E	S	-0.7850	III	Formal Acceptance of	The Abusive Uses of	Persons
I	E	-S	-0.7850	II	Formal Rejection of	The Positive Uses of	Persons
I	-S	E	-0.7885	III	Maximize Negative Effects of	Irrational Views of	Persons
I	S	-E	-0.7885	II	Minimize Positive Effects of	Rational Views of	Persons
E	-E	E	-0.8199	III	Maximize Negative Effects of	The Abusive Uses of	Animate and Inanimate Things
E	E	-E	-0.8199	II	Minimize Positive Effects of	The Positive Uses of	Animate and Inanimate Things
E	-I	S	-0.8427	III	Formal Acceptance of	The Evil Nature of	Animate and Inanimate Things

BASE	VAL #1	VAL #2	VECTOR	QUAD	VALUATION # 2	VALUATION # 1	BASE
E	I	-S	-0.8427	II	Formal Rejection of	The Sacred Nature of	Animate and Inanimate Things
S	-I	E	-0.8552	III	Maximize Negative Effects of	The Evil Nature of	Formal Systems
S	I	-E	-0.8552	II	Minimize Positive Effects of	The Sacred Nature of	Formal Systems
E	-S	I	-0.8685	III	Total Commitment to	Irrational Views of	Animate and Inanimate Things
E	S	-I	-0.8685	II	Total Destruction of	Rational Views of	Animate and Inanimate Things
S	-E	I	-0.9085	III	Total Commitment to	The Abusive Uses of	Formal Systems
S	E	-I	-0.9085	II	Total Destruction of	The Positive Uses of	Formal Systems
I	-E	E	-0.9210	III	Maximize Negative Effects of	The Abusive Uses of	Persons
I	E	-E	-0.9210	II	Minimize Positive Effects of	The Positive Uses of	Persons
I	-I	S	-0.9642	III	Formal Acceptance of	The Evil Nature of	Persons
I	I	-S	-0.9642	II	Formal Rejection of	The Sacred Nature of	Persons
E	-I	E	-0.9719	III	Maximize Negative Effects of	The Evil Nature of	Animate and Inanimate Things
E	I	-E	-0.9719	II	Minimize Positive Effects of	The Sacred Nature of	Animate and Inanimate Things
I	-S	I	-0.9747	III	Total Commitment to	Irrational Views of	Persons
I	S	-I	-0.9747	II	Total Destruction of	Rational Views of	Persons
E	-E	I	-1.0042	III	Total Commitment to	The Abusive Uses of	Animate and Inanimate Things
E	E	-I	-1.0042	II	Total Destruction of	The Positive Uses of	Animate and Inanimate Things
S	-I	I	-1.0369	III	Total Commitment to	The Evil Nature of	Formal Systems
S	I	-I	-1.0369	II	Total Destruction of	The Sacred Nature of	Formal Systems
I	-I	E	-1.0806	III	Maximize Negative Effects of	The Evil Nature of	Persons
I	I	-E	-1.0806	II	Minimize Positive Effects of	The Sacred Nature of	Persons
I	-E	I	-1.0973	III	Total Commitment to	The Abusive Uses of	Persons
I	E	-I	-1.0973	II	Total Destruction of	The Positive Uses of	Persons
E	-I	I	-1.1436	III	Total Commitment to	The Evil Nature of	Animate and Inanimate Things
E	I	-I	-1.1436	II	Total Destruction of	The Sacred Nature of	Animate and Inanimate Things
I	-I	I	-1.2423	III	Total Commitment to	The Evil Nature of	Persons
I	I	-I	-1.2423	II	Total Destruction of	The Sacred Nature of	Persons

B. Extrinsic Value and Partial Fulfillment of Intensions

One of the most important aspects of Hartman's work pertains to partial fulfillment of analytic concepts by extrinsic values. Extrinsic values fulfill analytic intensions by degrees. Most of our value decisions are based on comparisons or preference. Formally this represents the partial or complete fulfillment of an analytic intension. Hartman's approach is based on examining numbers of properties. The more properties represented by competing extensions (of the same intension), the better the value.

It has been objected that merely counting properties is not sufficient. Some properties appear to be more important than others; their presence or absence is more serious. Even if we treat all properties as equal in importance, the problem of how to determine the relative value of two extensions of two different intensions would still remain. Hartman tells us that if an extension (a thing) has all five properties of a five predicate intension, then it is better than an extension having only four properties of the same intension. But how are we to compare the value of an extension having three properties of a five-propertied intension with an extension having three properties of a three-propertied intension?

Before giving a solution to this problem, let us review some features of Hartman's program. Specifically, just how do properties add value, and how are we able to make value classifications of "good" and "bad" from the arrangement of properties? The answer lies in Hartman's treatment of Pascal's Triangle.

C. Pascal's Triangle

```
          1
        1   1
      1   2   1
    1   3   3   1
  1   4   6   4   1
1   5  10  10  5   1
```

Pascal developed this remarkable triangle to demonstrate number generation and computing odds. In reality it is a binomial distribution. It also serves as an exposition of combinatorial sets. It is the combinatorial aspect that interests us. Hartman points out two important elements of the triangle. First, the triangle accounts for the number of predicates contained in an intension. This is done by counting the rows of the triangle. Each row

represents a count of predicates.

Counting Predicates	Number of predicates on each row
1	0
1 1	1
1 2 1	2
1 3 3 1	3
1 4 6 4 1	4
1 5 10 10 5 1	5

Each column represents two things: First, it represents the number of combinations distinguishable for any given number of predicates. For example, row three "1 2 1" (which is an intension with two predicates) has three value combinations: 1 is no-good, 2 are average, and 1 is good. In other words, the number of predicates in the intension directly determines the number of value combinations we can differentiate. Normally, we use five combinations: no-good, poor, average, fair, and good. In theory we could use many more, and the triangle gives a way of differentiating these combinations. Obviously, the more value categories we have at our disposal, the more precise the value differentiation; and this is determined by the number of predicates in the intension.

Second, each row also determines the number of sub-sets within each value category. For example, the row "1 2 1" tells us that the category "no-good" has one subset, "average" has two subsets, and "good" has one subset. If we count the subsets in each row of the triangle we learn the following:

Counting Subsets	Number of subsets per row
1	1
1 1	2
1 2 1	4
1 3 3 1	8
1 4 6 4 1	16
1 5 10 10 5 1	32

Each row multiplies by a factor of 2 the number of sub-sets in the previous

row. This means:

1) The addition of one predicate in an intension doubles the amount of available information.

2) The addition of one predicate in an intension adds one new value category.

3) Each row carries all the information contained in every row above.

These three aspects of Hartman's value triangle are important in dealing with problems of partial concept fulfillment, which can be solved by the method of vectors. Following Hartman, let us think of a no-good extension as the fulfillment of definitional properties only and a complete lack of expositional properties. Now we can characterize value fulfillment as a scale going from the limits of systemic value (definitional properties only) to complete fulfillment of all expositional properties. This scale is sensitive to the number of predicates in the intension. The greater the number of predicates, the greater the amplitude of the intension:

Amplitude of Intension Wave:
Max Fulfillment of Properties = 1 to 5: Normalized

Max Number of Predicates = 0 Normalized = .1670
Max Number of Predicates = 1 Normalized = .2336
Max Number of Predicates = 2 Normalized = .3002
Max Number of Predicates = 3 Normalized = .3668
Max Number of Predicates = 4 Normalized = .4334
Max Number of Predicates = 5 Normalized = .5000

Since an analytic intension can be partially or wholly fulfilled, we can also determine the amplitude of a partially fulfilled intension. Recall that each row of the triangle determines how many value categories are allowed, that is, how many ways there are to fulfill the intension. The greater the number of ways of fulfilling an intension, the greater the amplitude of the wave. Again, by referring to Pascal's Triangle, we can measure both the number of ways an intension can be fulfilled and the amplitude of the wave which fulfills the intension.

Ways of Fulfilling the Intension
for Each Row

1	1
1 1	2
1 2 1	3
1 3 3 1	4
1 4 6 4 1	5
1 5 10 10 5 1	6

These ways of fulfillment can likewise be normalized:

Amplitude of Intension Fulfillment:
Fulfillment of Predicates = 1 TO 5 Normalized

Max Number of Predicates = 0 Normalized = .1670
Max Number of Predicates = 1 Normalized = .2336
Max Number of Predicates = 2 Normalized = .3002
Max Number of Predicates = 3 Normalized = .3668
Max Number of Predicates = 4 Normalized = .4334
Max Number of Predicates = 5 Normalized = .5000

By summing the relation between the degree of fulfillment and the number of properties contained in the intension, we can determine the exact amplitude for each predicate and its degree of fulfillment, as follows:

Normalized Value Scale for Degrees of Extrinsic
Value Fulfillment per Number of Predicates in Intension

NUMBER OF PROPERTIES		DEGREE OF FULFILLMENT	AMPLITUDE
5	0.5000	0.5000	0.9239
5	0.5000	0.4334	0.8495
4	0.4334	0.4334	0.8008
5	0.5000	0.3668	0.7756
4	0.4334	0.3668	0.7265
5	0.5000	0.3002	0.7033
3	0.3668	0.3668	0.6778
4	0.4334	0.3002	0.6528
5	0.5000	0.2336	0.6352

3	0.3668	0.3002	0.6034
4	0.4334	0.2336	0.5818
5	0.5000	0.1670	0.5751
2	0.3002	0.3002	0.5547
3	0.3668	0.2336	0.5302
4	0.4334	0.1670	0.5175
2	0.3002	0.2336	0.4804
3	0.3668	0.1670	0.4617
1	0.2336	0.2336	0.4316
2	0.3002	0.1670	0.4084
1	0.2336	0.1670	0.3575
0	0.1670	0.1670	0.3086

If we follow Hartman and represent these possibilities as sections of Pascal's Triangle, then there exits a clear order of relative value. The following representation of Pascal's Triangle assigns an ordinal rank to each position on the Triangle. "1" is that position which has the highest amplitude, and "21" has the lowest.

Value Priority	Number of expositional properties:
21	0
20 18	1
19 16 13	2
17 14 10 7	3
15 11 8 5 3	4
12 9 6 4 2 1	5

This table shows that a good three-propertied thing (ordinal rank = 7) is better than an average four-propertied thing (ordinal rank = 8); a fair three-propertied thing (ordinal rank = 10) is better than a poor four-propertied thing (ordinal rank = 11); and a fair four-propertied thing (ordinal rank = 5) is better than a good three-propertied thing (ordinal rank = 7).

This is an interesting pattern. If we connect the next best elements on a diagonal in the triangle, and count the subsets in each diagonal row, then we replicate the Fibonacci Ratio, or the Golden Section. This pattern is as follows:

D. Ordinal Ranking of Values

Ordinal	Subsets
21	= 1
20	= 1
19,18	= 2
17,16	= 3
15,14,13	= 5
12,11,10	= 8
9, 8, 7	= 13*
6, 5	= 21*
4, 3	= 34*
2	= 55*
1	= 89*

(Note: * means that all the elements in the diagonal row are not shown.)

The Fibonacci pattern has shown itself to be one of the important ratios of how nature builds or develops itself through time. Growing organisms frequently display this pattern, and the Greeks were very keen on its embodiment of aesthetic proportion. It would indeed be significant if the Fibonacci Ratio is also a pattern of how meaning or relative value builds itself by the addition of predicates. It would define a pattern for how meaning adds to meaning. The vector analysis is similar to the Fibonacci pattern of how a certain number series adds.

E. Comparing Ordinal Ranking of Values

The above analysis is far too incomplete. From Hartman, we understand that the essence of valuation is property counting. By examining sets of predicates and their corresponding properties, we can determine overall value. This is deceptively simple, and with the aid of the algebra developed in this paper this can be seen. The particular properties a thing has are critical for determining its value. Each property has a different value per the level of differentiation. Various values per property and predicate permit the calculation of the relative value of individual elements within each subset.

Let us assume that a concept has five predicates: A, B, C, D, and E. If

a thing has all five properties, this is better than having only four. However, it is not always so simple. In reality, these five properties represent subsets of property combinations. According to combinatorial algebra, five propertied things can be arranged in the following order:

1 subset = null {0} (no expositional properties)
5 subsets = singles: {A}, {B}, {C}, {D}, {E}
10 subsets = couples: {AB}, {AC}, {AD}, {AE}, {BC}, {BD}, {BE}, {CD}, {CE}, {DE}
10 subsets = triples: {ABC}, {ABD}, {ABE}, {ACD}, {ACE}, {ADE}, {BCD}, {BCE}, {BDE}, {CDE}
5 subsets = quads: {ABCD}, {ABCE}, {ABDE}, {ACDE}, {BCDE}
1 subset = pent: {ABCDE}

Each of these subsets has its own unique amplitude. The amplitude, as you may remember, is determined by adding the squares of the amplitudes of each element contained in the subset. This can be done as follows:

1) Determine the normalized amplitude of each predicate. From the table above, we know that:

PROPERTY	AMPLITUDE
NULL	.1670
A	.2336
B	.3002
C	.3668
D	.4334
E	.5000

2) Add the squares of each subset combination:

The following table is a complete listing of all subsets by their unique amplitudes:

AMPLITUDES OF ALL COMBINATIONS OF SUBSETS FOR ONE TO FIVE PROPERTIED INTENSIONS

0

-{AB} = .0390 {A} = .0540

-{AB} = .0501 {A} = .0545 {AB} = .1446
{B} = .0901

-{ABC} = .061 {A} = .0545 {AB} = .1446 {ABC} = .2791
{B} = .0901 {AC} = .1890
{C} = .1345 {BC} = .2246

-{ABCD} = .0723 {A} = .0545 {AB} = .1446 {ABC} = .2791 {ABCD} = .699
{B} = .0901 {AC} = .1890 {ABD} = .3324
{C} = .1345 {AD} = .2424 {ACD} = .3768
{D} = .1878 {BC} = .2246 {BCD} = .4124
{BD} = .2779
{CD} = .3223

-{ABCDE} = .0835 {A} = .0545 {AB} = .1446 {ABC} = .2491 {ABCD} = .6992 {ABCDE} = .9492
{B} = .0901 {AC} = .1890 {ABD} = .3324 {ABCE} = .7614
{C} = .1345 {AD} = .2424 {ACD} = .3768 {ABDE} = .5824
{D} = .1878 {BC} = .2246 {BCD} = .4124 {ACDE} = .6268
{E} = .2500 {BD} = .2779 {ABE} = .3946 {BCDE} = .6624
{CD} = .3223 {ACE} = .4390
{AE} = .3045 {ADE} = .4923
{BE} = .3401 {BCE} = .4746
{CE} = .3845 {BDE} = .5279
{DE} = .4378 {CDE} = .5723

This chart is very revealing. In general, the category "fair four-propertied" (ordinal rank = 5) is better than "poor-average five-propertied" (ordinal rank = 6), but it is not true that every sub-set is better. For example, the set {DE} of a five-propertied poor-average is, in fact, better than the set {BCD} of four-propertied fair:

$$\{DE\} = .4378$$
$$\{BCD\} = .4124$$

Close inspection of the chart demonstrates that this is not an unusual occurrence. However, the average values for these sets of subsets agree with our original ordering of the sets.

Average value for "five-propertied poor-average" = .2867
Average value for "four-properties fair" = .3501

F. Average Value for all Sets of Subsets

		0			
		.0390	.0545		
	.0501	.0723	.1446		
.0612	.0930	.1860	.2791		
.0723	.1167	.2334	.3501	.6992	
.0835	.1433	.2867	.4271	.6664	.9492

This table points out the great variety of valuations and provides a very nice confirmation of the important principle that blanket value judgements cannot be made without knowing the details. A very nice value principle may be important in general, but its importance may vary in different situations. This is consistent with the principles of quantum mechanics. When I speak of value priority in general, I only speak statistically, not absolutely. Individual variations cause very significant changes in actual value. Our general picture covers a host of variations.

4. Applications

The measurement of relative value must find its way to the real world. This is an awesome undertaking. What seems clear on a theoretical level quickly runs aground on the uneven details of the world. This is true for two fundamental reasons: First, the real world contains perturbations which

defy measure. Newton's mechanics is a wonderful theoretical framework, and it has many exact applications; but if you want to predict exactly where a bullet fired from a rifle will land, then you are dealing with a level of detail over which measurement has scant control. It is not that we do not know that air currents, temperature, and moisture variations have an effect on the bullet's flight; the problem is that we cannot measure these effects with sufficient precision for accurate prediction. Second, when dealing with something as complex as values with a theoretical framework as new and untested as formal axiology, we are ill equipped to know which elements are relevant, and to what extent. So, applications are a quagmire. We must tread lightly, but let us try.

In his excellent book, *Valuemetrics®: The Science of Personal and Professional Ethics*, Frank Forrest makes a most important step in applying formal axiology to real world situations. In what follows, I rely extensively on this ground breaking work in which Forrest utilizes Robert Hartman's transfinite algebra. For Hartman, value relations are either compositions or transpositions. Compositions are value combinations which are good, and transpositions are bad combinations. In applying Hartman's algebra, Forrest created a decision procedure which arrives at conclusions that demonstrate whether a certain situation is a composition or a transposition of value. Forrest's decision procedure requires a technical analysis of each situation. Although some may take exception, Forrest bravely takes on difficult issues such as abortion.[6] That there may be objections should surprise no one. After all, this is a controversial issue. My purpose is to inquire if Forrest's conclusions agree with the quantum wave model.

There are three questions for comparison. First, do both methods agree on what constitutes compositions and transpositions? Second, do both methods agree on the value relations of "better than" and "worse than"? Finally, do both methods agree that transpositions are sometimes justifiable; and if so, under what conditions?

A. Compositions and Transpositions

Forrest utilizes a slightly different indicator for the cardinality of concepts than Robert Hartman. Hartman claimed that there are three type of concepts, formal, analytic, and singular, corresponding to three types of value. These concepts correspond to systemic, extrinsic and intrinsic value, respectively. The cardinality of each concept is as follows:

Formal = Finite,
Analytic = Infinite, and
Singular = Nondenumerably Infinite.

Each type of concept or value can also be *valued* (composition) or *disvalued* (transposition); and their blending yields eighteen possible combinations. Forrest modifies Hartman's scheme in the following way:

Formal = Finite and definite or "n",
Analytic = Finite and elastic or "k", and
Singular = Nondenumerably Infinite or "A" [ℵ].

Forrest correctly characterizes the eighteen combinations of composition and transposition as eight distinct cardinalities. These cardinalities are as follows:

$A_1^{A_1}, k^{A_1}, n^{A_1} = A_2$

$A_1^{k}, A_1^{n} = A_1$

$k^{k}, n^{k}, k^{n} = k$

$n^{n} = n$

$n^{-n} = 1/n$

$k^{-k}, n^{-k}, k^{-n} = 1/k$

$A_1^{-k}, A_1^{-n} = 1/A_1$

$A_1^{-A_1}, k^{-A_1}, n^{-A_1} = 1/A_2$

Forrest's rank order for the eighteen combinations of compositions and transpositions yields only eight distinct and different cardinalities. The quantum wave method, on the contrary, yields eighteen distinct rankings, as follows:

HARTMAN

RANK	BASE	VAL#1	VECTOR
1	I	I	0.9239
2	E	I	0.7965
4	I	E	0.7353
3	S	I	0.6542
6	E	E	0.6097
5	I	S	0.5695
7	S	E	0.4790
8	E	S	0.4249
9	S	S	0.2957
10	S	-S	-0.2957
11	E	-S	-0.4249
12	S	-E	-0.4790
14	I	-S	-0.5695
13	E	-E	-0.6097
16	S	-I	-0.6542
15	I	-E	-0.7353
17	E	-I	-0.7965
18	I	-I	-0.9239

Except for this difference, all combinations that Forrest recognizes as compositions and as transpositions agree with the quantum wave method.

B. Better Than and Worse Than

In formal axiology, compositions are better than transpositions; but axiology must provide a method for deciding on the relative goodness or badness of particular value relations. Forrest's analysis distinguishes eight cardinalities based on the eighteen binary value combinations. Four of these cardinalities are compositions, and four are transpositions. Ranking the eight cardinalities from best to worst yields the following scale:

1) $A_1^{A_1}, k^{A_1}, n^{A_1} = A_2$

2) $A_1^{k}, A_1^{n} = A_1$

3) $k^{k}, n^{k}, k^{n} = k$

4) $n^{n} = n$

5) $n^{-n} = 1/n$

6) $k^{-k}, n^{-k}, k^{-n} = 1/k$

7) $A_1^{-k}, A_1^{-n} = 1/A_1$

8) $A_1^{-A_1}, k^{-A_1}, n^{-A_1} = 1/A_2$

In this scale,

A_2 is better than A_1;
A_1 is better than k;
k is better than n;
n is better than 1/n;
1/n is better than 1/k;
1/k is better than $1/A_1$; and
$1/A_1$ is better than $1/A_2$.

The quantum wave method offers at least eighteen, not just eight, different relations of better than and worse than. The vector length is the measure of value. The larger the vector, the better the value. The quantum wave method is not limited to eighteen binary value combinations. As earlier demonstrated, it can include distinct values and levels of value other than the primary intrinsic, extrinsic, and systemic values.

C. Using Transpositions to Maintain or Create Value

Ethics is sticky stuff. We are familiar with the dilemma of fifteen persons trying to occupy a ten-person life boat, or telling a lie to protect or save life. There are a variety of responses to these situations. Some hold the view that it is justifiable to commit a wrong act if the act results in a greater good. Others say that bad is never justifiable, no matter how good the intended outcome. Forrest clearly takes the view that doing wrong, committing transpositions of value, is justifiable in certain cases. Transpositions can create or maintain compositions of value, and these are justifiable. Forrest offers an interesting analysis of these cases. According to my understanding, Forrest employs the following principle:

> A transposition is justifiable if and only if 1) the two situations are causally related by necessary and sufficient conditions; and 2) the

> cardinality of the transposition is equal to or less than the cardinality of a consequent transposition (except cardinalities which are A_1).

This principle first tells us that a transposition is justifiable if it is the only way to maintain or bring about a composition. Second, it tells us that the cardinality of the transposition must not be larger than the composition. That is, it may be acceptable to do wrong to achieve a higher good, but it is not acceptable to do a greater wrong to achieve a lesser good. Forrest offers the following example.[7]

"an illegal rule that protects people's welfare"

Forest contends that the use of the transposition, "illegal rule," is justifiable to protect the higher good of "people's welfare." He demonstrates this in the following way:

1) "illegal rule" has cardinality of 1/n; while
2) "people's welfare" has cardinality of A_1.

Therefore, the illegal rule is bad, but not as bad as the good in people's welfare; it is, therefore, justifiable.

What would the quantum wave model say about this example? To arrive at the answer we only need to sum the respective vectors. If the resultant sum is positive, then it is justifiable, if negative then it is not justifiable.

1) "illegal rule" has vector = -0.2957; while
2) "people's welfare" has vector = 0.7965.

Adding 1) and 2) yields a positive number; and if 1) is the only viable way to protect 2), then it is justifiable.

In another example, Forrest considers whether it is justifiable to kill insects to protect crops.[8] Forrest analyses this situation in the following way:

1) "killing insects" has cardinality = 1/k; while
2) "ruining crops" has cardinality = 1/k.

Here the two cardinalities are equal; and, on Forrest's analysis, 1) is justifiable.

On the quantum wave model we find that the relevant vectors of both 1) and 2) are -0.6097; both are equally bad. However, as noted above in the section dealing with partial fulfillment of intensions, the relevant details and properties involved are critically important to measure the vector. If we go no further than the analysis provided by Forrest, then we can only say that the two vectors are equal. Additional information may very well demonstrate that one vector is longer than another, and thus the issue is resolved. For example, if we add to the above description the fact that protecting crops is important to prevent malnutrition in people, then the

property loss for persons would certainly be much greater than the loss of some insects. But as long as the two vectors are exactly equal, I see no justification for concluding that the consequent justifies the antecedent.

This is a critical difference between the two models. For Forrest, using a transposition to create or protect value of equal cardinality is justifiable, but for the quantum wave model it is not. If the two vectors are truly equal, then there is no justification to choose one over the other. The two situations are value-neutral. Moreover, in Forrest's algebra, only eight distinct cardinalities cover a multitude of value situations. This algebra does not provide enough resolution to deal adequately with the value landscape. In the quantum wave model, not only are there eighteen distinct value types (as opposed to eight); but, as was demonstrated above, inside each of the eighteen value types, there is infinite room for constructing vectors of varying length to account for diverse configurations of both the number and the relative importance of properties.

Forrest also considers cases where using a transposition to prohibit other transpositions is not justified. We shall review two cases:

The first example is: "lying to conceal illegal evidence."[9] Here
1) "lying" is cardinality = 1/k; while
2) "illegal evidence" is cardinality = 1/n
Since 1/k is smaller than 1/n, then lying in this case is not justified.

The quantum wave model gives a similar result:
1) "lying" has vector of -0.6097; while
2) "illegal evidence" has vector of -.02957.

Another example is: "harming a person in performing a medical experiment;"[10]
1) "harming a person" has cardinality = $1/A_{l;}$ while
2) "medical experiment" has cardinality = k.

According to the quantum wave model:
1) "harming a person" has vector = -0.7353; while
2) "medical experiment" has vector = 0.6097.
These results agree with Forrest's conclusions.

In another case, Forrest considers "lying to prevent harm to an innocent person."[11] He finds this transposition justifiable because
1) "lying" has cardinality = 1/k; while
2) "harm innocent person" has cardinality = $1/A_{l}$.

According to the quantum wave model:
1) "lying" has vector = -0.6097; while
2) "harm innocent person" has vector = -0.7353.
This confirms Forrest's results.

Forrest also considers capital punishment. He argues that capital punishment for murder is justifiable.[12] He presents this case as follows:
1) "execution" has cardinality = $1/A_1$; while
2) "murder" has cardinality = $1/A_2$

The quantum wave model indicates that
1) "execution" has vector = -0.7353; while
2) "murder" has vector = -0.9239.

Again, Forrest's results are confirmed. However, in this case, there are alternative ways to describe the situation. Execution of a murderer is an act of killing. It is not clear that execution is merely the extrinsic disvaluation of a person. Perhaps it is an intrinsic disvaluation of a person; and, if it is, execution has the same cardinality as murder. Perhaps Jesus would agree. If the two vectors are the same, the quantum wave model does not support capital punishment unless additional details are relevant.

First, for the quantum wave model, the subset of properties of a murderer are likely different from and less valuable than those of an innocent victim. Both are persons; and for Hartmanean algebra, both have the same cardinality. However, the quantum wave vectors for both persons are likely unequal. We might argue that a murderer's set of properties is not as rich as the innocent victim's set of properties; therefore, the murderer's vector is less than the innocent victim's. On this basis, killing a murderer as the only way to prevent the killing of an innocent victim would be justifiable.

Second, on the quantum wave model, killing one person is not as bad as killing two or three persons. Wave vectors add; additional acts of evil increase overall evil. It is important to note this because it is not true for Hartmanean algebra. So, on the quantum wave model, execution is justified to prevent murder or additional murders only if this is the only alternative. It would be justified to kill Hitler; but this does not mean that execution is the best course of action. If incarceration could achieve the same result, then execution would not be justified. The quantum wave model analyses this alternative in the following way:
1) "incarceration" has vector = -0.7353;
2) "execution of murderer" has max vector = -0.9293; while
3) "murder one innocent person" has min vector = -0.9239; and
4) "murder two innocent persons" has min vector = -1.8586, etc. (Quantum waves add.)

Therefore, killing to prevent murder is justifiable if and only if 1) incarceration or interdiction is not possible, and 2) the vector of the murderer is less than the vector of the victim. Would it be justifiable to kill a murderer to protect another murderer?

I conclude with two general points. First, the quantum wave model confirms and agrees with Forrest's construction of Hartmanean Algebra in almost all cases. Second, the quantum wave model does not confirm Forrest's algebra in two areas. First, the quantum wave model offers a more detailed analysis of value relations. This allows for greater comparative analysis both of diversity of value types and particular differences within each value type. Second, the quantum wave model does not recognize that a transposition is justifiable merely because its vector equals the composition's vector.

5. Conclusion

In this essay, I try to lay the groundwork for the future development of Scientific Axiology. Building on what is good about Hartman's work and overcoming the shortcomings is not an easy task. Specifically, I have tried to relate the two-fold nature of the concept with the two-fold nature of the electron. Like an electron, a concept has a particle (extensional) and a wave (intensional) component. Thus, the intension or meaning of a concept can be analyzed *via* the wave amplitudes and vectors of quantum algebra. I have tried to show that quantum logic is plausible for value logic.

I do not intend to say that I have proven some dynamic new connection between quantum theory and axiology, but I wish to explore this area. The problems in Hartman's axiology are formidable. However, if Formal Axiology is to become the science we wish it to be, these problems must be solved. I can only hope that my work will be viewed as an attempt to further our understanding, and I trust that it will receive critical attention. Only through scrutiny and criticism can we move forward.

Finally, every principle and formula utilized in this paper can be expressed as a function in Fuzzy Logic. I direct attention to an important new book by Bart Kosko: *Neural Networks and Fuzzy Systems*.[13] Fuzzy Logic is actual value logic, especially for the gradations of value found in the extrinsic value domain. I stress the importance of Fuzzy Logic for Hartman's value theory, and I invite investigation of this most important new field.

ENDNOTES

1. See: Frank G. Forrest, *Valuemetrics©: The Science of Personal and Professional Ethics*, (Atlanta - Amsterdam: Editions Rodopi, 1994), p. 79.

2. P. Y. A. Gunter, "Hartman: Three Criticisms," *The Journal of Value Inquiry*, 7:2 (Summer 1973), p. 137.

3. Robert S. Brumbaugh, "Changes of Value Order and Choices in Time," in *Value and Valuation: Axiological Studies in Honor of Robert S. Hartman*, ed. John W. Davis, (Knoxville, Tenn.: The University of Tennessee Press, 1972), p. 51.

4. Mark A. Moore, "Hartman's Value Theory: Formal Models," in Rem B. Edwards and John W. Davis, eds., *Forms of Value and Valuation: Theory and Applications*, (Lanham, Md.: University Press of America, 1991), pp. 171-192.

5. Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics*, (New York: Penguin Books, 1989), Ch. 10.

6. Forrest, *Valuemetrics©: The Science of Personal and Professional Ethics*, pp. 145-152.

7. *Ibid.*, p. 92.

8. *Ibid.*, p. 93.

9. *Ibid.*, p. 94.

10. *Ibid.*, p. 95.

11. *Ibid.*, p. 98.

12. *Ibid.*, p. 99.

13. Bart Kosko, *Neural Networks and Fuzzy Systems: A Dynamical Approach to Machine Intelligence*, (Englewood Cliffs: Prentice Hall, 1992).

ABOUT THE CONTRIBUTORS

REM B. EDWARDS received his A.B. degree from Emory University in 1956 where he was elected to Phi Beta Kappa. During graduate school he was a Danforth Graduate Fellow. He received a B.D. from Yale University in 1959 and a Ph.D. from Emory in 1962. He taught for four years at Jacksonville, University in Florida and since 1966 has been on the Philosophy faculty at The University of Tennessee. He was a U. T. Chancellor's Research Scholar in 1985 and is a Lindsay Young Professor of Humanities, beginning in 1987. He has been a Visiting Professor at Berry College, Rome, Ga. and at Eastern Illinois University, Charleston, Ill. He specializes in Ethical Theory and Medical Ethics, with special interests in Ethics in Mental Health Care, Ethics and Animals, and Formal Axiology. He has published seven other books, including *Reason and Religion*, (New York: Harcourt, 1972 and Lanham, Md.: University Press of America, 1979), *Pleasures and Pains: A Theory of Qualitative Hedonism*, (Ithaca: Cornell University Press, 1979), *Psychiatry and Ethics*, (Buffalo: Prometheus Books, 1982), (with Glenn Graber) *BioEthics*, (San Diego: Harcourt, 1988), (with John W. Davis) *Forms of Value and Valuation: Theory and Applications* (Lanham, Md.: University Press of America, 1991). He has published over fifty articles and reviews, including "Pain Management and the Values of Health Care Providers," in *Advances in Pain Research and Therapy*, Vol. 11 and "Abortion Rights, Why Conservatives are Wrong," in *National Forum*, Fall 1989. He is an Associate Editor for the Value Inquiry Book Series, responsible for the Hartman Institute Axiological Studies sub-series.

Edwards has been the President of the Tennessee Philosophical Association (1973-4), the Society for Philosophy of Religion (1981-2), and the Southern Society for Philosophy and Psychology (1984-85). He is a Charter Member of the R. S. Hartman Institute, has served on its Board of Directors since 1987, and since 1989 has been its Secretary-Treasurer.

FRANK G. FORREST received his B.S. degree from the United States Military Academy, West Point, N.Y. in 1939. He was commissioned as a Second Lieutenant, US Army, in June, 1939 and retired as a Colonel with an aeronautical rating of Senior Army Aviator in March 1964. He served in World War II in Alaska and the Aleutian Islands. In the Korean War, as a Lieutenant Colonel, he served as an infantry battalion commander. After the Korean War, he served as a staff officer in major Army headquarters and as the commander of a training regiment. He was a

qualified Army Airplane and helicopter pilot and flew aerial missions during the Korean War.

Upon retirement from the military, Forrest joined Embry-Riddle Aeronautical Institute in April 1964 and retired as Vice President in 1977. In this position he planned and coordinated moving the school from Miami to Daytona Beach, Florida in 1965. Over a thirteen year period, he coordinated the planning and construction of the Embry-Riddle campus and played a major role in the development and transition of the school from an Institute to a University.

Forrest received his M.A. degree from Stetson University in Deland, Fl. in 1969 and his Ph.D. from International University, San Diego, Cal. in 1976. His dissertation was titled *Human Values Accounting as an Organizational Development Tool.* He is the author of *Valuemetrics: The Science of Personal and Professional Ethics*, (Amsterdam - Atlanta: Editions Rodopi, 1994). He is a very active member of the R. S. Hartman Institute and has served the Institute as a member of the Board of Directors.

ROBERT S. HARTMAN was Research Professor of Philosophy at The University of Tennessee and at the National University of Mexico when he died on September 20, 1973. He was buried near his home in Cuernavaca, Mexico. He was born in Berlin on January 27, 1910. He attended the German College of Political Science, the University of Paris, the London School of Economics, and Berlin University, where he received he LL.B. in 1932. For a brief period, he taught at Berlin University and served as an assistant district court judge.

Hartman's rejection of Fascism, which he expressed in speeches and articles, brought him into conflict with the Nazi party and forced him to leave Germany, using a fake passport, in 1932. He legally changed his name (Robert Schirokauer) to the name on his passport, Robert S. (for Schirokauer) Hartman. In 1938, using a Swedish alien's passport, he and his wife, the former Rita Emanuel, and son, Jan, left Europe for Mexico, where they lived until their immigration in 1941 to the United States, where they later became citizens.

Hartman's first teaching position in the United States was at Lake Forest Academy in Illinois. While there, he enrolled at Northwestern University where he received his Ph.D. in 1946. He taught at the College of Wooster in Ohio from 1945-48, and at the Ohio State University from 1948-56. He was a visiting professor at Massachusetts Institute of Technology, 1955-56, and at Yale, 1966. He was Smith Mundt State Department Research Fellow and Exchange Professor at the National

University of Mexico, 1956-57. He held more than fifty lectureships in the United States, Canada, Latin America, and Europe. He was a research professor of philosophy at the National University of Mexico from 1957 until his death in 1973, and at The University of Tennessee from 1968—1973.

Hartman's formal axiology, as the ordering logic for the value sciences, was developed in many published articles and received its most complete expression in his major work, *The Structure of Value: Foundations of Scientific Axiology*, (Carbondale, Ill.: Southern Illinois University Press, 1967). In the field of psychology he applied his axiology in The Hartman Value Profile, a value test widely used in Mexico and by psychiatrists, psychologists, and business consultants in the United States.

MARK A. MOORE received his Ph.D in Philosophy at the University of Tennessee, Knoxville, in 1973. During his studies, he worked with Robert S. Hartman and wrote his doctoral dissertation on the scientific aspects of Hartman's theory of Formal Axiology. He continued his research while performing his duties as a tenured professor of philosophy at Salisbury State University in Maryland.

Moore left Salisbury State University in 1979 to start a consulting and research firm dedicated to the application of formal systems to decision making. Working with Harry Suber, Ph.D. in Mathematics, Moore constructed formal decision models which identify and abstract formal value structures within information streams. These structures are used to optimize decision making and utilize sophisticated computer technology of multidimensional geometry.

Moore has applied this technology in several important areas. First, it was used to determine "content relevance" in computer data base search and retrieval; and Moore founded Codeworks Corporation to take advantage of this. Second, he also applied this technology to the financial markets. Here, formal value structures are used to evaluate trades for their potential profit or loss. To take advantage of this technology, Moore founded and is a partner in TrendLogic Associates, Inc. Currently he is a principal of a business consulting firm—Jack Wilder and Associates—which specializes in using the Hartman Value Profile in the business context. He and his wife Inge now live in Savannah, Ga. where they own and operate the Foley House Inn.

Moore is President of the Board of Directors of the R. S. Hartman Institute.

INDEX

VIBS

1. Noel Balzer, **The Human Being as a Logical Thinker**.

2. Archie J. Bahm, **Axiology: The Science of Values.**

3. H. P. P. (Hennie) Lötter, **Justice for an Unjust Society.**

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