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"I thought to myself, if evil can be organized so efficiently [by the Nazis] why cannot good? Is there any reason for efficiency to be monopolized by the forces for evil in the world? Why have good people in history never seemed to have had as much power as bad people? I decided I would try tofind out why and devote my life to doing something about it."
Robert S. Hartman

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Rem B. Edwards

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Defining "Formal Axiology"

Formal axiology is a branch of axiology in general. Axiology in general or "as such" is value theory in all its ramifications, ranging from meta-theory to ethics, aesthetics, logic, and any other dimension of human interest that involves questions of good and evil, right and wrong, correctness or incorrectness, beauty and ugliness, truth and falsity, and every other conceivable value issue, dimension, or interest.

Formal axiology, to which this *Journal of Formal Axiology: Theory and Practice* is devoted, was created by Robert S. Hartman (1910-1973) who spent his final years before his premature death teaching in the Philosophy Departments of The University of Tennessee, Knoxville, TN and The National University of Mexico, Mexico City, MX.

Formal axiology focuses initially upon the most formal features of human values, then upon applications of these formalities to the concrete details of what we value (values) and how we value (valuations). Robert S. Hartman searched for and began to find the most logically abstract (he would say "synthetic") features of all human values and valuations. His most important contributions were (1) the formal definition of "good" or "value," which he regarded as the "axiom" of formal axiology — Good is concept (or standard) fulfilment, (2) the three basic kinds of value, intrinsic, extrinsic, and systemic, (3) the hierarchy of value, where the three basic kinds of value are themselves ranked with respect to their relative worth, (4) an association of the three basic kinds of value with set theory and transfinite mathematics, (which has proved both enlightening and highly controversial), (5) preliminary work on a formal calculus of value, further advanced by Frank. G. Forrest and challenged by Mark A. Moore, who provides a finitistic alternative, (6) the creation of the "Hartman Value Profile," based upon all of the above, which is a powerful personality profile which assumes that our values are the keys to our personalities, (7) the prediction that formal axiology would eventually embrace, apply to, and bring rational order to all the humanities and social sciences, and (8) the expectation that formal axiology would be or become a "science," a formal not an empirical

science, but further advanced more recently as an empirical science by Leon Pomeroy.

Instead of explaining each of the above in more detail, let me just say that this journal will be devoted to such topics as these. Also, let me invite you and interested others to read and write for this journal on such topics. The articles in the current issue make a good start, beginning with Steve Byrum's lead article titled "A Bushel and A Peck: Robert S. Hartman's Axiology and Transfinite Mathematics," and ending with the Discussion Topic, "Applying Axiological Calculuses to "Killing to Save Lives," as treated by Frank G. Forrest, Mark A. Moore, and Ted Richards.

Robert S. Hartman made a great beginning, but he left us with many unsolved problems and puzzles and with a vast amount of work still to be done. Members of the Robert S. Hartman Institute, organized in 1976, have attempted to carry on and further develop Hartman's insights into the formal features of human values and to apply them to many value domains such as business consulting, psychology, spirituality, etc. Much of this work has resulted in a number of books in the Hartman Institute Axiology Studies sub-series of the Value Inquiry Book Series, published by Editions Rodopi, Amsterdam - New York, and in other books and publications listed on the "Books and Publications" page of Hartman Institute website, http://www.hartmaninstitute.org. Many additional fruitful discussions will also be found on the "Research Topics" page of that website. You are invited to take a look.

The Officers, Board Members, and other friends and members of the Robert S. Hartman Institute believe that we are now sufficiently strong, mature, and promising to begin to publish this *Journal of Formal Axiology: Theory and Practice* in order to facilitate ongoing discussions, critiques, advancements, and applications of issues relating to Hartmanian Formal Axiology. Some if not all future issues will be devoted to special topics, and we Editors welcome your help and suggestions in identifying special themes of general interest. The next issue will address the question, "Is Formal Axiology a Science?" Hartman himself, and others like Leon Pomeroy, have had a great deal to say about this already, but much remains to be said and clarified. You are invited to contribute to this discussion. Other non-theme topics of interest will also be covered in the next issue if space allows.

If you wish to write for this Journal, it is absolutely essential that your work conform to the formatting and content requirements given on the JOURNAL OF FORMAL AXIOLOGY page of the Robert S. Hartman Institute website, http:// www.hartmaninstitute.org. Please try to meet these requirements at the very beginning of your writing process, not at the end of it, and definitely do so before you submit even a preliminary draft to the Editors. This will make the writing and editing processes much easier for all of us and forestall many easily avoidable difficulties. *Articles that fail to meet these requirements will not be read or considered by the Editors*.

A BUSHEL AND A PECK: ROBERT S. HARTMAN'S AXIOLOGY AND TRANSFINITE MATHEMATICS

C. Stephen Byrum

C. STEPHEN "STEVE" BYRUM came to Hartman's work in the late 1960s, studied with Hartman during his last years at the University of Tennessee, Knoxville, and has devoted large dimensions of his professional life to advancing Hartman's ideas and teachings. Both his Master's Thesis and Doctoral Dissertation explored implications of Hartman's work, and two of his nearly 40 books have advanced this work.

Byrum taught on the college and university level for 25 years, also serving as a Dean of Humanities. He worked as a personal and family counselor for 22 of those years in private practice in Chattanooga. Since 1978, he has advanced the use of the Hartman Value Profile and Hartman's concepts of leadership in business and industrial settings. Since 1996, he has exclusively worked at President and CEO of The Byrum Consulting Group, LLC. He hopes that he is helping pioneer interpretations of the Hartman Value Profile in work settings.

Byrum is married, the father of two adult children, and has two grandchildren. He is presently at work on a book that will bring together the numerous articles he has written on Hartman's work, along with the variety of interpretations he has created on the Profile. He has great gratitude for the opportunity he has had to study with Robert Hartman, Rem B. Edwards, and John Davis, and the colleagues and friendships he has gained through the Hartman Institute.

Abstract

In this article, I avow in no uncertain terms my commitment to the work of Robert S. Hartman. I reveal my conviction that the way in which he talks about human existence — even existence in general — in terms of value and valuation is the most important way of talking about reality that I have ever encountered. Bold words, to be sure, but perfectly reflective of my conviction. I have given a great deal of my adult life to advancing Hartman's work.

I am highly influenced by the idea of "talking about." I believe that Hartman was searching for means to be intelligently communicative. His "theologic" is not theology; he was not trying to prove God as much as searching for intelligible communication.

Several issues are then raised, from this context, about the math of Hartman's *The Structure of Value*, and particularly his emphasis on transfinite math. I ask whether this math is a literal mechanism of calculable measure, or a metaphor, a way of talking about. In addition, I further question Hartman's time-honored "hierarchy" of value that moves from the systemic, to the extrinsic, to the crowning intrinsic. I see greater importance to the systemic than is usually

seen. I challenge the entire ideal of "hierarchy" — especially a linear hierarchy — instead of a mutually inclusive holography of the three dimensions of value.

The article's goal is to be neither discursive nor definitive. Instead, I simply open a conversation and make it possible to admire, affirm, and embrace Hartman's work without having to be obsessive about the math.

I hope the article humanizes Hartman a bit and shows that he was a critical thinker of the highest order struggling for expression and articulation, as opposed to a numbers wizard whose major work depends on comprehending and affirming transfinite math.

Introduction

I wish everyone could know my granddaughter, May. She is clearly a genius, and certainly the most beautiful and intelligent granddaughter that has ever lived. Just ask her grandmother. Recently, she turned two years of age. There were lots and lots of balloons at her birthday party. The day after the party, our son demonstrated for her the "magic" of popping balloons. She loved it, was full of glee and laughter with every explosion, and was soon popping the balloons herself. Recounting her day, she told my wife and me: "I love popping balloons." I asked her why, although I try to subscribe to the idea of standing in the midst of whatever and not asking why. Her immediate response: "The balloons have noise in them and I want to let it out." If Einstein is right about genius being the ability see connections, then what can I say? For our discussion here, my granddaughter not withstanding, seeing connections may be one of the most fundamental forms of the evolution of mind that we can encounter. The process of seeing connections almost automatically occurs, obviously well before articulation and explanation — or the scrutiny of questions — ever even come to mind. How blatantly stupid it would have been for me to explain that there was really no "noise" in the balloon to be released, or to create a discussion on the physics of noise. In fact, I like her way better. She made a connection for me that I had never considered before, so I will never look at the exploding of balloons the same way again.

My wife and I will say to our granddaughter: "Do you know how much Gigi and Cap [her names for us] love you?" Her attention is captured because she evidently likes the reinforcement of knowing how much she is loved, or — perhaps even more — the way that our answer takes the form of a little song that she like to hear. We sing: "I love you a bushel and a peck, a bushel and a peck, and a hug around the neck." We end with a big hug which she relishes for a moment and then smiles and laughs and fights to get loose.

Let's analyze this scene for a moment. I can define my terms very precisely. A bushel is very precisely "a unit of dry measure in the United States equal to 2,150.42 cubic inches." A peck is exactly one-fourth of this amount or 537.605 cubic inches of dry measure. Were we to live in Great Britain, we would

probably be singing about an "imperial bushel" which is, by the standards of measure used there, 2,219.36 cubic inches of dry measure. My parents, coming from farming backgrounds, used the language of bushel and peck often and accurately, although I am confident that they had no idea of the formal, mathematical definition. I personally think of bushel in terms of a size of basket that I can fairly closely identify, and a peck as a smaller basket of about one-fourth the size of the larger basket. All of this would be far too time-consuming for my busy granddaughter to contemplate and unnecessary — for the time being — for her to have explained. She identifies "bushel and a peck" with a "whole lot" of love. We have used a very specific agricultural calculus that clearly is an expression of both the reality and power of metaphor.

Is our metaphor better in some way because of its association with mathematics? Many voices in our measurement-biased culture would probably think so, but I'm not sure. I am not convinced it is. It is simply a metaphor that is possible because of the evolution of mathematical discussions that were prominent at the time that the old sing-song about how much a person is loved came into being, and in our genius as human beings we see connections. Mathematics, in and of itself, is not being demeaned in any way, but the metaphorical may be a primary mechanism of communication — communication being the most important outcome — and mathematics only of almost accidental, secondary importance. Throughout this discussion, metaphor is seen as being a higher order human activity than mathematics, and — therefore — to use mathematics metaphorically is seen as both a legitimate and credible process and a way of raising mathematics exponentially to a higher level of usefulness.

In a similar sense, when Alice shows up in Wonderland — and there are plenty of political undertones that make the story intriguing and the term *Wonder*land ironic — she encounters a character called the Red Queen. The Red Queen explains to Alice: "Here, in Wonderland, you have to run as fast as you possibly can just to keep up." Then, the character further explains: "And, if you want to succeed and get ahead, you have to run twice as fast as you possibly can." There is no *logic* to this final statement at all. It is impossible to run twice as fast as you possibly can. However, when I use this illustration when discussing dealing with the rapid pace of change in classes for leaders in modern business, they make a ready — and sometimes visceral — identification. They see the *sense* of the math precisely, although the math actually makes no sense. What the Red Queen is telling Alice is exactly what they are experiencing in terms of expectations every day of their lives. Clearly, with this illustration, we are back to metaphor — and to a mathematically related metaphor. The metaphor is not concerned with logic; metaphor and logic are — to use Stephen J. Gould's terminology — "non-overlapping magisteria" [a nice word for *stuff*], although Robert Hartman and any poet worth his/her salt — a whole new metaphor — could as easily see metaphor and logic as infinitely overlapping.

Mathematical metaphors are about as common as any poetic metaphors. We learned at our mothers' knees with their old Bible story books that Saul had killed his thousands and David had killed his ten thousands. When we got old enough to know about the time-frames indicated in the story and the kinds of weaponry available, David would have had to have been Rambo — a modern, mythic figure — killing dozens of people per minute over an entire day. Then, when we got old enough to learn about the size of armies in that ancient world, we knew in terms of factual information that the likelihood of there even being an army with ten thousand soldiers was not very great. It was still a good story, and we captured the grandeur that David must have had for his followers. When we even later learned the complex concept of "myth," we were not offended. Of course, you had to have intentional hyperbole and exaggeration even to come close to capturing the impact that a person's life could make. Myth was not a lie, it was a meta-truth.

We learned that a day with the Lord was as a thousand years, and a thousand years was as a day. Admittedly, that one was puzzling, and — even as young people — a real stretch of an explanation for the delay in the messianic return of Jesus. But, thankfully, we were more concerned with the girls on the pew in front of us, the meal we were going to have if the long-winded preacher would ever stop, and the ball game that would fill our afternoon. Across that entire afternoon, no one would come close to mentioning the use of mathematical metaphors, but we did have some sense that this God that the preacher was talking about was capable of an entirely different experience of time than we commonly had. I knew nothing of *chronos* and *kairos* — two variant understandings of time used by the ancient Greeks — but it was not long until the warping of time explored in the science fiction books of the 1950s really captured my attention. Those writers must have come away from their mother's knees with their imaginations prompted more than mine. They also gave me my first experiences — totally not understood but totally mesmerizing — of Einstein, quantum physics, and transfinite math. The old preachers were never close and became less appealing. They had no heart, in their abject literalism, for metaphor or new math.

In all of these examples noted above — all of them — you find human beings manifesting *ways of talking about* realities relevant to their lives. In general, for better or for worse in regard to the elusive reality of factual integrity, to *talk about* is to move toward articulation and to move then toward what is understood or experienced as meaning. Ways of *talking about* evolve — and mature, you hope — over time, sometimes being more intriguing and appealing than at others, sometimes exhausting themselves in *status quo* applications and yearning for new expression, and sometimes being so to-the-point and satisfying that they become timeless. I doubt that the cultural "meme" of "I love you a bushel and a peck" will ever get lost in the stretch of time as it moves forward,

although the mathematical ground for the metaphor has probably already been lost.

Therefore, and I learned this from Robert S. Hartman, the ability to *talk about* has higher priority than what culture accepts at some particular point in time as *factually literal.* The only credible *fact* is that what is recognized as *factual* is always a matter of cultural recognition and never a matter of that which is absolute. Hartman's *axiology* was a way of *talking about* human beings from the point of view that humans are primarily driven by their values. He could not *prove* this idea, but it became the most convincing way of *talking about* human beings I had ever heard. In his *theologic*, he stepped radically beyond the proofs of theology and the autocratic power of dogma and doctrine, and he showed how *talking about* God meaningfully was much more important than proving anything. If mathematics could be *used* — instrumentally — to help *talk about* anything, just as metaphor can be of instrumental use, credibility and legitimacy of conversation and communication is manifested with integrity.

1. Approaching Robert Hartman

I learned about Hartman, accidentally, from the worst college teacher I ever had. A lazy sociology instructor would have us circle our chairs three times a week and talk about anything we wanted to express. He assured us that it would be "sociology." It was normally a "BS session" led by a couple of teacher kiss-ups who liked the sound of their own voices. The teacher would then give horrendous tests based on our knowledge of reading the boring text for the class. In assigning our term paper and presentation topic at mid-term, on which fifty percent of our final grade would be based, we wanted us to find some "-ism" or "-ology" that he had never heard of. I headed for the library, found a dictionary, made it almost through the "A" section, and hit upon "axiology." This led me to information about Robert Hartman.

My fascination was immediate. I learned that Hartman wanted to *talk about* human beings from the point of view of how humans are motivated and driven by their value systems. This was perfect *talking about* for me. It was more satisfying than the extrapolations of scientific psychology that I was learning in school, and abundantly better than the old church language learned from my parents and in the church only two blocks down the street from the college where I was studying. I knew absolutely nothing about Hartman and especially nothing about transfinite math. That development in his *talking about* was not in the initial papers that I read. His ideas of the value of human beings, just as with Rem B. Edwards, was what attracted me first and foremost and, in fact, what has been the key to Hartman's attraction for me ever since. In my almost forty years of using the Hartman material in colleges, in my counseling practices, and in all of my client work in business and industry, not one single conversation about transfinite math has ever come up. It has not needed to. It is a highly specialized

way of *talking about* that has its own level of intrigue, and it certainly had cultural currency in the late 1950s and early 1960s. Yet, as a way of *talking about*, it may not be essential to the overall Hartman project.

Thus, the Hartman Institute finds itself caught up in an ongoing discussion of the efficacy and efficiency of the transfinite math model, and — for some — it is doubtless insulting to even suggest the word *model.* There are some of our members — and I deeply appreciate the power of their minds to fathom the math — for whom the math is critical to understanding Hartman and giving credibility to his Profile. There are others of us who are convinced that the math is more culturally dictated by the mathematical discussions current at mid-century, metaphorical in nature, and not directly related to the mathematical calculations that drive the Profile. Fortunately, our discussions about math or metaphor do not tend to be overly acrimonious. In fact, these discussions are always highly intriguing. We know, as an Institute, how to be contentious at times, but we find great commonality in advancing the work that Hartman has shown us and — even more importantly — the person who Hartman was.

When I showed up in Hartman's classes and finally came to *The Structure of Value*, the presence of transfinite math was abundant. My overwhelmingly immediate response, my "gut instinct," was that this certainly was interesting and certainly was contemporary, but that the structure of transfinite math was metaphorical. Coming from a background in the study of poetry and literature, plus a seminary degree in biblical studies, the presence of metaphor that I was totally familiar with filled the room. Of course, this particular choice of metaphor could fulfill a sufficient need for those enamored with math and science in the external world, a world not always accepting of anything coming from philosophy. That was fine with me, and I would learn the meaning of the system. I had also studied Hebrew for three years, so I was very good at creating alephs in spite of the hellish annoyance of adding subscripts and superscripts on old typewriters. I got through the logic requirements of the prelims, but still never — ever — felt the need to justify or advance Hartman's teachings in regard to or in reverence for transfinite math.

Hartman makes reference to Martin Heidegger only twice in *The Structure of Value* and seldom in his periodical publications. His first mention, early in the book, was to see Heidegger, along with John Dewey and Ludwig Wittgenstein, as understanding thinking as a form of doing (Hartman, 1967, 13). When we are thinking as human beings we are ultimately doing something and — it seems to make sense to say — something that we believe is useful to the organization of life that ultimately results in making life better in some important manner. Even if we are doing things that are only entertaining and nonsensical, the usefulness of such activities — or the use of words for similar purposes (jokes, limericks, nonsense sounds that entertain children) — is a kind of purposeful activity. In his compelling book, *The God Delusion,* Richard Dawkins says that we live in a kind of "Middle Earth" (Dawkins, 2006) sandwiched

between that which is infinitesimally large and that which is infinitesimally small, between that which is infinitesimally fast and that which is infinitesimally slow. Our brains evolve, as humans, in a way that allows us to have the chance to function safely and productively in our "Middle Earth," although at one and the same time we are fairly oblivious to the other worlds that are out there and the world models created by other entities (bats, dogs, etc.) that allow them a chance for survival, productivity, and even — dare I use the words — happiness and meaning. So, language — and words and numbers are both forms of language — are forms of thinking/doing that are useful. There is nothing magical or necessarily true in words, only the possibility of useful functioning defined in terms of our own particular species uniqueness. Any "truths" that we construct are, as Nietzsche said, "useful fictions," which would only qualify logically as absolutely true if we had every relevant piece of information relating to them. Of course, we never have this, or — even if we did — we would have no way to know it. When the last piece of the puzzle that defines reality finally arrives, it is not likely that inscribed on that last piece will be the words, "This is the last piece of the puzzle, you have completed your solving process."

The second mention of Heidegger is even more important. Hartman explains that Heidegger — and Plato — are ontologists (Hartman, 44).

> If they wanted to say anything [i.e., do something with words that was useful], they had to leave analytic language [which is an accurate reading of Heidegger as, for him, it is impossible to extrapolate about Being by inferences drawn from beings] and, refusing to use synthetic language, they had to have recourse [or they *only* had recourse] to the language of singular concepts, myths, and metaphors. Rather than becoming scientists, they thus became poets. But they could not remain philosophers — in the sense defined — and say anything significant about Being (Hartman, 44).

This is a profoundly powerful statement in spite of a potential argument that might rise about Hartman's use of the word *significant.* What qualifies or defines whether one expression — philosophical, scientific, or poetic — is any more *significant* than the other? Clearly, Hartman's tripartite hierarchical modeling is showing itself here once again. The philosopher seems to be the agent of the synthetic systemic, the abstract, at this point, the scientist the agent of the analytic extrinsic, and the poet the agent of the intrinsic. The mathematician could be seen as the near peer of the philosopher in this modeling, with numbers being substituted for words in a numerical as opposed to a grammatical language. On the other hand, if the tripartite hierarchical modeling is allowed to be less strict and the "dimensions" (Hartman's word) of valuing allowed to run together more holistically, even the numbers of the synthetic mathematics can be seen as their own kind of metaphors.

Hartman clearly defines the word *metaphor* with the greatest precision: "a set of predicates used as a variable" (Hartman, 113). He famously used the expression of "a peach of a peach" to make this point. The second word *peach* defines a particular object, the fruit. This is the predicate. The first word *peach* is the metaphor, the variable, and its meanings have, to use the transfinite math language because it is useful, a non-denumerable infinity of meanings. A "concept" (Hartman, 250) is then, simply, a set of predicates. On the predicate end of the spectrum, there are limitations — the constituent ingredients of the peach that makes it a peach as opposed to something else. On the variable end of the spectrum, there are no limitations; the meaning contained the first word *peach* are potentially infinite.

Now, apply something of this "logic" to transfinite mathematics in general. Numbers are ultimately predicates. Formulate these numbers — or *use* these numbers — in a particular manner and they can be a help in counting how many trees are in your backyard or how long it will take to walk the three mile exercise loop you use in your neighborhood. In other words, *what* the numbers are used to explain and *how* that explanation goes forward is the variable. The range of applications is essentially infinite.

It then seems that one of the most fundamental manifestations of human existence is projection: I dream about what retirement will be like some day, I wonder what my grandchildren will become, I envision — and here thinking as doing occurs — my body thirty pounds lighter. Idealism and pessimism are both standard-operating-procedure forms of projection. One fact of my existence that I have experienced consciously now for a very long time is that a basic form of my thinking/doing continuum is projection. Even if I am doing nothing more normative than planning the day in my first moments of contemplative consciousness when I awake in the morning — I probably am even doing this kind of planning in my sleep as I problem-solve dream (for want of a better word) — projecting is as native a phenomenon to me as breathing.

So, would it not be totally natural to expect such projection to influence an understanding of value and valuation that progressively moves — in one example we are familiar with — from systemic to extrinsic to intrinsic, or an understanding of mathematics that moves from finitude to infinity to denumerable infinity to non-denumerable infinity? Furthermore, would it not be equally likely that someone would see the parallels between valuing and mathematics and make a connection-of-explanation; that is, create a "*way* of talking about" that extends conversation and connection in a manner that seems plausibly meaningful — meaningful, not because of the uncovering of some absolute truth, but meaningful as intriguing, interesting, and engaging because no one had exactly thought about these exact connections before?

Remember that Einstein saw "genius" as the ability to see connections, although seeing connections does not necessarily mean that real connections actually exist. And, since my thinking has been so deeply influenced by the

cultural memes about what thinking is, I usually end up with a linear, one step following the next, view of reality, so it should come as no surprise that I move from one step, one level, one dimension to another and, in doing so, construct almost any and every reality in a hierarchical manner. Even the political fact that real and subtle aristocracies (or social class realities) have been actually more powerful in one way or another than democracies helps underscore the subtle structuring of life in terms of hierarchies. Darwin's evolutionary survival of the fittest may continue this impact. *Not* to think and live hierarchically is a major achievement in almost any approach to thinking and living. There seems always to be some kind — or multiple kinds — of "pecking orders" at the most fundamental levels of human existence. How could our thinking, and the new structures of understanding that we construct, keep from being hierarchical? That life is a *gestalt*, a whole incapable of being bridled, a continuum — just like Hartman always emphasized — seems, if the absolute power of the word *gestalt's* meaning is fully embraced, at least ironic. Ironically, the whole idea of *gestalt* is the polar opposite of and actually runs counter to the entire concept of hierarchy. Yet, we seem to have as human beings this almost native tendency — probably as deeply embedded as the will to survive itself — to lay hierarchical templates over almost everything we do and almost every mental construct that we create.

So, it is actually as easy to consider transfinite math as a metaphor — a concept filled by a set of predicates with unlimited variables of application, one of which is a way of explaining a matched-set hierarchy of value and valuing. Hartman runs the word *metaphor* in and out of his writings so often, and crowns *metaphor* with such a high standing, for the possibility of transfinite math as a metaphor not to be a plausible conclusion would seem strange. And, if this were to be the case, mathematics is not demeaned in any way. My only problem — as will be seen — is that the novelty-become-power of transfinite math may make the hierarchical nature of Hartman's "dimensions" of value stricter and more arbitrary than they need to be or that he would ever have wanted them to be. We meet him through *The Structure of Value* at what could have been the mid-career of his life. That his life was cut short disallowed a later reflection that I believe would have put the *role* of transfinite math into a more proportionate perspective that would have evolved as the fascination of new forms of math mediated and mitigated itself toward century's end. I, of course, have no way to be sure of the point being made here, and thus my clear and conscious use of the word *believe.*

In retrospect, I am not sure if I was drawn to the transfinite math model because it was so necessary or accurate. It may have been more because it was contemporary and novel. In addition, maybe the kind of "Aha" recognition that Aristotle explained as being at the root of people's engagement with theater was being replicated in Hartman's paralleling of the hierarchy of value and the math. I understood what he was saying, the experience of enlightenment was very gratifying, but neither understanding nor gratification proves the indispensability

of the math. The math may be part of a cultural and historical "snapshot" that gained prominence in the 1950s more than it is an absolute that Hartman would have been drawn to had he written in 2000. Maybe what he was doing was simply as "a *way* of talking about" current to that period, as my initial teaching references were punctuated with analogies to JFK, MLK, the counter culture, and Vietnam. By the time I stopped teaching college students in 1996, I had to change my references. My students by that time had not even been born when these events and people became so important and defining to my own life.

I would even confess that the transfinite math did allow students to be mesmerized by the strange markings I would put on the board when I incorporated Hartman into my early lectures, and this allowed me as a young instructor to establish the primacy of my intellect over theirs. I did this in much the same way that I introduced them to Hebrew and Greek concepts by writing the actual words in the original script. Thankfully, I got over the need for this intellectual "production value" pretty quickly.

In further retrospect, the math that has been important in my Hartmanian work across four decades has never been the transfinite math. It has been the finite math that underscores the calculations that drive Hartman's Profile and — even more — the finite math that has substantiated the success achieved by using the Profile in client outcome studies. Beyond question, on a day-to-day basis, it is this latter mathematics that rules my life and work.

I feel very strongly that Norm Hirst is correct when he says (Hirst, 2007) that Hartman did use transfinite numbers. To me, *use* is the word of choice here. But, to me, Hirst is very precise when he says that these transfinite numbers were "synthetic entities used to provide order" (Hirst). The primary use of the numbers, their "affect on value arithmetic," is to give an understanding of order. I love his statement, "Mathematics communicates by thought recipes" (Hirst). At the very minimum, there is the implication in transfinite math that the predicates of value and valuation are not the same predicates as the constituent elements of physics. Hirst is also right when he demonstrates that mathematics has undergone radical evolutions since Hartman's time, and that there are countless new algebras, new logics, and presently thirty-three — by his count — non-standard logics. I am personally not even sure what constitutes a non-standard logic, but clearly there are new formalistic ways of "talking about" that Hartman never knew. What he would have moved on to, or even whether he would have abandoned the mathematical modeling altogether, is a big, open question.

Rem B. Edwards has been constant in his articulation of the problems with the emphasis in Hartman scholarship on the transfinite math, and I agree deeply with his assessments. Edwards is most succinct when he says that the "applications [of Hartman's work] are only as valid as the philosophy underlying the applications, and that Hartman's own applications of his formal axiology to human beings were grounded solely and entirely in his philosophy" (Edwards, 2007a). Edwards advances, with approval, statements by Carlos Perelman and

Norm Hirst that state, respectively: "We must not forget that we are using mathematics only as a tool, that is, as a means for an end, and not as an end by itself. We are not doing mathematics, we are doing formal axiology, and our purpose is to build a sound structure for axiology, hopefully using established mathematical knowledge as guidance. But if the tool is not useful for the job, we must change the tool." And, "Now, I see our job as overcoming the nonsense we have inherited and getting on with new formalisms" (Edwards, 2007a).

I'm simply not sure if we need to go looking for a new math or whether any new math would create greater credibility for Hartman's work. Maybe a new math would simply be a new metaphor, but we would likely soon come to the point of the old argument about whether that new mathematical modeling is more metaphorical than not. Why not, following Edwards's suggestion about transfinite math, "lop off" the concern with math altogether. Unlike the language of transfinite mathematics, the language of systemic, extrinsic, and intrinsic values makes plenty of sense to people, and for most it is a revolutionary new way of thinking about how they order their lives. You certainly can have one (the values) without the other (the transfinite).

I wonder, at times, if *finite* and *infinite* are not artificial constructs only useful for organizing reality, or seeming to do so. I wonder if *infinite* and *reality* are not two of the most frequently used metaphors ever created, overused like *excellence* and *quality* in modern business and industry. If reality is infinite, isn't infinite enough? Aren't denumerable infinity and non-denumerable infinity just the same reality talked about in different ways? At the end of the day, reality is a continuum no matter how it is subdivided in grammatical or numerical language.

When we "stretch" mathematics to projected edges, we can't even really say "edges," or new "horizons" — all that these words mean is that we are moving very far away from our initial constructions of 1 + 1 = 2. My granddaughter, at two, counts to fifteen clearly and accurately — there are fifteen steps leading to our upstairs and we always count them together as we go up and down — but then she goes in her counting to "26-30" which appears to be totally meaningful and accurate to her, so much so that I hesitate to tell her she is wrong; in fact, I'm wondering if she is right and I am wrong — "26-30" seems pretty appealing to me at times. She knows that 1 + 1 = 2 because of two trees that we count in the middle of the backyard. She has no concept, yet, of "oneness," "plusness," or "twoness." When she finally gets to that point, she will simply have learned to abstract from reality in a new way of "talking about." Life is a continuum to her, and numbering a rather arbitrary sorting out that she will doubtless learn in more compounding ways that will doubtless be seen as a maturing and progressing of her intelligence. Whether the world will become "richer" — to use Hartman's idea — as she learns more about math is really open to question. In fact, she could experience an arbitrariness of education that allows for the "rote" in mathematics that obliterates the "rich" that doubtless is there.

The whole issue of synthetic and analytic finally run together for me. I have yet to see a synthetic that did not rise out of an analytic. The whole issue of *apriori* and *aposteriori* run together as well. I have yet to see an *apriori* that did not rise in reference to very distinct *aposteriori*. Finitude and infinity, synthetic and analytic, *apriori* and *aposteriori* are all a continuum, and Hartman is very, very clear that once we are at the point of a continuum of experience, we are right in the middle of the arena of metaphor. Right in the middle of an entire discussion punctuated by the signage of transfinite math, Hartman says: "The metaphorical language therefore is a non-denumerable infinity, a continuum" (Hartman, 113). Isn't this very sentence, in some way, exactly grammatically equivalent to saying, "the language of non-denumerable infinity is metaphorical"? So, Heidegger is a poet, and a million miles separate the holistic idea of *gestalt* which Hartman comes to again and again from transfinite math. Maybe there is simply not a mathematics of *gestalt.* Why would we even think there would need to be? Maybe an un-defined *gestalt* is simply too threatening. Why even get distracted looking for a new math, when it seems much simpler to just say that the transfinite model was metaphorical to begin with, has a certain value in terms of "talking about," and let it all go at that?

2. Reassessing Our Approach to the "Hierarchy of Value"

As I have readily admitted, I have been influenced as much as anyone by the linear thinking and projection memes of my culture. To think of levels, stages, steps in a process, pecking orders, and progressive dimensions is almost a category-of-the-mind type of reality. Because of these influences, the movements from Systemic to Extrinsic to Intrinsic have always made sense and occurred almost without question. In almost every early and mid-career writing about Hartman, this hierarchy has been in evidence. It has only been in the last few years that I have begun to question these movements, or at least to not see them as being so absolutistic.

First, I have begun to challenge my own thinking because of the Heraclitus-like argument that were horses to conceive of a god, it would probably look like a horse. In a similar manner, if I am a human being and greatly caught up in intrinsic value concerns and the desire for intrinsically valuable events in my life, it only begins to make sense that I would rank the Intrinsic above the other dimensions of value. If ethics is a core concern at the heart of my own personal philosophy, to give favor to the Intrinsic could be totally anticipated. In like manner, in an almost Anselm-like argument, since the Extrinsic seems to have the additional attribute of concreteness, it seems to have more substance and weight than the seemingly more abstract Systemic domain. There may be added weight because of the way in which, over the years, the Intrinsic/I scores on the Hartman Value Profile have always been my strongest scores. Maybe the reason I have had such little trouble giving precedence to the Intrinsic over the other

dimensions of value is because I tend to look more readily through an Intrinsic lens.

Second, I have begun to challenge my own thinking because of an increased reflection on how life is more of a continuum or *gestalt*, and that dividing this whole into constituent parts too easily can be arbitrary and misleading. Quantum theory would also insist on almost holographic interdependencies and interrelationships, as opposed to more absolute divisions, parts, and components. Therefore, the emphasis on stacked hierarchies has become troublesome, with the emphasis on *stacked* being the key. The older I get, the less *stacked* in some orderly manner life seems. More and more, I want to see the three dimensions running in and out of each other or existing in an integrative circle as opposed to stacked levels. A long time ago — and this was hard for me but at least a first cue — I decided that David and Vera Mefford's work on the thirteen stage types of the Profile that ideally showed a maturity from Stage 1 to Stage 13 worked better as a circle in which the thirteen types had total parity with each other. Working with clients groups, it became clear that the very best groups were diverse groups in which types "around the circle" were represented rather than everyone being all in one typology or everyone yearning to all be Type 13s. In some respects, what I am saying now about the three dimensions of the hierarchy being more of a circular parity with each other is not all that different than where I have taken my own interpretations of the Stage/Type analysis. Hartman scholarship has said that an "ideal" score on the Profile would be I, E, and S all being equal — Stage/Type 13. The concept of an "ideal" score should wait for another discussion since "ideal" is a systemic abstraction, and what we are really trying to understand is uniqueness. It may seem that for a long time we were espousing some primacy to the concept of hierarchy but giving the highest priority to a hierarchy in which all of the elements were in total parity with each other.

Finally, I have begun to challenge my own thinking because of recent validation research and outcomes analysis with client groups that has shown that strong scores in the Systemic domain on the Hartman Value Profile may be a more important discriminator of strong performance, and especially leadership performance, than strong scores in either the Extrinsic or Intrinsic domains. In fact, these latest validation studies tend to indicate that a strong score in the Systemic domain will predictably indicate that strength in the Extrinsic and Intrinsic will be even stronger than the actual scores would tend to indicate. The role of the Systemic, as there is movement up the leadership chain both with individuals and groups, seems to grow in importance, and I have more requests for information on how to improve the Systemic scores than any other Profile-related topic except how to improve the self-esteem indicators.

Rem B. Edwards has been exceedingly kind to me in his comments about my latest book about Hartman, *From the Neck Up: The Recovery and Sustaining of the Human Element in Modern Organizations,* my first writing on Hartman

that clients have really seemed to understand and be appreciative of the clarity that they seem to find. That he would have read the book as closely as he did, even to the point of finding a typo in a footnote that I should easily have caught, is an honor to me, given the respect I have for him. He has clearly noticed the growing ambivalence I have about the hierarchy issue, which goes away more easily and carries less clout if transfinite mathematics is indeed metaphorical. He also notices clearly that I still am a champion of the Intrinsic along the way. I cannot help myself.

Edwards writes: "I was puzzled by your seeming repudiation of the hierarchy of value in a couple of places" (Edwards, 2007b). He is referring to two passages in my *From the Neck Up* book: "First (and there is no sense of hierarchical importance being created here, the is *systemic* value and valuation" (Byrum, 2006, 39); and, "Next, and again there is no stacked hierarchy of value being created here, there is *extrinsic* value. . . " (Byrum, 2006, 40). What I *am* doing here is following the traditional model of Hartman scholarship of explaining the movement from Systemic to Extrinsic to Intrinsic. In this sense, I am continuing to embrace the traditional understanding of a hierarchy of value. In this sense, I am *not* and have no desire to repudiate or to create anything that is incompatible with plenty of statements in this book and elsewhere where the tripartite, progressive model is being used.

What I *am* doing, without question, is trying to lay the groundwork for lessening and mediating the strictest interpretation of this tripartite, progressive hierarchy, or, more precisely, the groundwork for discussing and considering this lessening of hierarchical strictness as a fruitful possibility for furthering Hartmanian interpretation. Thus, the emphasis on the word *stacked* is, again, my major thrust. It will not be possible for me to move later to look at the three dimensions as more mutually inclusive of each other in a holistic, *gestalt* manner unless I first take the edge off of some of the strict arbitrariness of the hierarchical model.

3. Conclusion

In conclusion, let me reemphasize that if transfinite math — or perhaps any math yet to be conceived — is a metaphor that is useful for helping to reinforce the relationship between and the movements of Systemic, Extrinsic, and Intrinsic, we should simply appreciate that usefulness and move on with our discussions. In my *The Value Structure of Theology* (Byrum, 1990) I explain in detail why Hartman had become enamored of St. Anselm's ontological proof for the existence of God. It was not, in any way, that Anselm had proven the existence of God in any demonstrable way. He had simply arrived at a highly unique and intellectually intriguing "way of talking about" the existence of God.

This "way of talking about" has, in fact, had a good deal of power. Even Bertrand Russell reported (Dawkins, 81) his fascination: "I remember the precise

moment, on day in 1894, as I was walking about Trinity Lane, which I saw a flash (or thought I saw) that the ontological argument is valid. I had gone out to buy a tin of tobacco; on my way back, I suddenly threw it up in the air, and exclaimed as I caught it — 'Great Scott, the ontological argument is sound.'"

What I really like about Systemic, Extrinsic, and Intrinsic — the core values of Hartman's philosophy — to begin with was that it really fit with my experience of existence and raised that experience to new levels of understanding and meaning. It gave — and continues to give — a highly satisfying way to "talk about" existence. People, from my students to my clients in business and industry across forty years, have found similar meanings. When people start using these terms in normal day-to-day conversation and decision-making, their efficacy is proven better than by any formulas. Transfinite math — regardless of its present efficacy or whether it was ever efficacious — was a nice intriguing reinforcer and mechanism of explanation that had/has? value in a way not unlike the value of the God-argument contributed by St. Anselm. That it may have its own logical challenges or even failures does not mean that Hartman's core philosophy follows suit with similar weakness. To challenge the math has little or nothing to do with being able to challenge the underlying philosophy, much less to enliven any challenges relating to the Profile.

I cannot be absolutely certain that the transfinite math was ever really more than a mechanism of reinforcement and explanation to Hartman or whether it would have continued to hold leading paradigm status if he had lived longer. Clearly, it garnered a huge degree of intrigue for Hartman, but he was about as curious and eclectic a thinker as anyone could be. In *The Structure of Value*, he gave the math a lot of attention to be sure, but I still resist ever feeling that it was the core of his philosophy. He was fully capable of giving a lot of attention to a lot of things, and the more intellectually intriguing and challenging, the better. We have to remind ourselves that *The Structure of Value* is only a part of the larger volume of his work. That it became, at the time of its publication, his major, published piece, may end up being a mere coincidence of life, death, and the peculiarities of the world of publishing. I have not been able to call the book Hartman's *Magnum opus,* although it is a "snapshot" of where he was in his thinking at the time he wrote the book.

Finally, I do not want to be seen as demeaning or being adversely critical of those who remain infatuated by the math. In fact, I admire their intellectual acumen. Maybe, what it takes to stir their intellectual pots in a gratifying way is exactly something like the math and logic. My pot may be too simplistic.

I am unrelentingly dedicated to advancing Hartman's philosophy of the value of human life and what would constitute valuable experiences for human beings. This is also, for me, the highest calling of this Institute that bears Hartman's name. I have never found a better "way of talking about" existence in terms of value and valuation than his axiology. The axiology has become a powerful catalyst to change for both individuals and groups, and I believe that it

will only continue to be so. Yet, the math has never been of any inherent and absolute necessity. My own "Occam's Razor" ultimately finds it dispensable.

Dawkins quotes J. B. S. Haldane's idea that "My own suspicion is that the universe is not only queerer than we suppose, but queerer than we *can* suppose" (Dawkins, 364). And, since, at the end of our *supposing*, we will only — at best — have produced a *supposition,* why should we fight over our convenient fictions? So, as human beings, we are continually trying to give order because we are convinced that order is better than chaos. Maybe it is our own intellectual egos, but we convince ourselves that our structures of order are real, even while — pushing our own logic — we realize that any of our structures of order are penultimate mental constructions that are inherently artificial. All of our mental structures are metaphors. Even our hallowed Systemic, Extrinsic, and Intrinsic are mental structures intended to provide for an orderly and informative discussion that leads to orderly and informative decisions and actions. Axioms may, by definition, embrace an entire phenomenal field, but how would we ever know that we have achieved "entire." Nonetheless, no intelligent person would encourage discarding axioms, since they do have a certain usefulness in the time-being of their accuracy. Ultimately, even our axioms are metaphors, but that's alright if they are useful, if they provide a "talking about" that seems to advance the great conversation that life is.

Dawkins is at his best when he explains: "What we see of the real world is not the unvarnished real world, but a model of the real world, regulated and adjusted by sense data — a model that is constructed so that it is useful for dealing with the real world" (Dawkins, 371). He even uses Shakespeare: "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy" (Dawkins, 364).

Well, . . .I must stop. You see, my granddaughter is coming over to play. And, after all, I do love her a bushel and a peck. My love for her is of the non-denumerable infinity variety. We may let the noise out of a few balloons, and maybe she will teach me about "26-30" — both experiences guaranteed to be intrinsically valuable.

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SPORTS AXIOLOGY

David Mefford, Vera Mefford, Jeremy Boone, Mike Hartman, Leonard Wheeler, and Gregory Woods

DAVID MEFFORD, Ph.D., is a native of Morristown, Tennessee with 40 years experience in the science of value, "formal axiology," created by Professor Robert S. Hartman. David was Hartman's student and assistant and his first representative in Europe, conducting seminars in the HVP with numerous organizations such as Siemens and VW.

While completing his Ph.D. degree at the University of Tennessee, David evaluated and counseled psychiatric patients with the Hartman Value Profile under the supervision of Dr. John Wolaver, M.D., for a three year period. David's dissertation, *Phenomenology of Man as a Valuing Subject*, achieved a comprehensive typology of personalities, based on value judgment patterns. His axiological personality model of 26 cognitive types and 40 emotional patterns is currently used by professional psychologists, sociologists, consultants, and business leaders for individual and group assessments and counseling.

David recently co-created the Personal Talent Skills Inventory (PTSI), a parallel form of the Hartman Value Profile (HVP) with Target Training International (TTI) that is currently being used for selection and coaching in 50 countries.

David is co-founder and Board member of the Hartman Institute and Chairman of The Value Source Group, an axiological technology provider.

VERA MEFFORD has been President of AXCES Corp (formerly Value Measurement Technologies) since 1982, where she developed and marketed axiological products and services for human resources, advertising, and corporate development. Her clients have included Chase Manhattan, Oak Ridge National Lab, ALCOA Aluminum, State Farm, Cellular One, and Target Training International (TTI). She has served as a business consultant and executive coach for 30 years, with a focus on organizational development, team-building, and helping executives and consultants achieve a balanced quality-of-life. Since 2001, Vera's full-time focus has been on training business consultants in advanced axiology, conducting teleconferences for coaching networks, and executive coaching. She has also been developing new values-based assessments, including the R.I.S.E. Profile for internal company management gap analysis and the COMPASS — a custom profile which measures an organization's interface with its client base.

In 2007, Vera became President of the Value Source Group, co-founded with Gregory Woods and Dr. David Mefford. Her time is dedicated to developing industry-specific axiological assessments, including applications to Sports, Fitness, Business, Finance, Sales, Leadership, Hospitality, Customer Service, etc. Vera also trains and provides support services for The Value Source Group's Master Distributors.

JEREMY BOONE, CSCS, NMT, USAW, is the owner of Athlete By Design, LLC, an international sports performance consulting firm. He has worked with athletes from the NFL, MLB, NBA, MLS, and many others worldwide, including serving as the off-season speed and conditioning coach for the NFL Carolina Panthers for the past five years. In addition, he is an internationally recognized presenter and has authored multiple training resources for both coaches and athletes. His current research efforts are focused on sports axiology and a lower body screen for deceleration and asymmetries in field and court sports. Most recently, he has created innertactics.com, a sports axiology firm working world-wide with individual athletes and teams who struggle with mental aspects of identifying and developing athletic talent. Jeremy is a master distributor for The Value Source Group in Charlotte, NC, and he can be contacted at his web address: support@athletebydesign.com.

MIKE HARTMAN, NASM and Lifestyle Fitness Coaching Certified, formed Better Life Training after a 16-year professional hockey career playing with the Buffalo Sabres, Winnipeg Jets, Tampa Bay Lightning, and the Stanley Cup Champion, New York Rangers.

Mike is a certified NASM Trainer and Sports Conditioning Specialist and has been training athletes in all sports for more than 17 years. Mike started off-season training schools focusing on speed, agility, quickness, and balance, primarily for hockey players. Over the years he has expanded to include other sports. Mike brings to his clients the expertise and discipline learned through his years as a professional athlete and has trained thousands of athletes. He also worked with the 2002 U.S. Women's Olympic Hockey Team.

Mike's goal is to provide training programs designed to meet the needs of individual clients of all ages for sports and fitness.

Mike is currently one of the first "Master Distributors" for the Value Source Group, and his intention is to make this his full time career.

LEONARD WHEELER was drafted into the NFL from Troy State University in 1992 by the Cincinnati Bengals, where he played for 5 years. He played for the Minnesota Vikings and left pro-football after playing for the Carolina Panthers in 2001. Leonard serves as a Board Director for the Youth Commission International that reaches out to 132 cities in 32 states to better educate our youth. He currently serves as the President of the National Football Players Association (NFLPA), Charlotte Retired Players Chapter, and was recently selected as the only retired player to the Financial Committee for the NFLPA that regulates over 500 financial advisors for active NFL players. Leonard is also the President of TNBA (The National Business Association), helping professional athletes network with business professionals in their city, www.TNBA.net.

Leonard's company, Wheeler Enterprises, helps individuals and companies identify and maximize strengths, create leadership qualities, and develop

more of their potentials. Leonard is a Personal and Corporate Strategic Coach and Speaker, as well as a Master Distributor for the Value Source Group. His clients include several fortune 500 companies, and he has numerous personal coaching clients around the country.

GREGORY WOODS has over 15 years of senior level experience in business analysis, technology planning, solution architecting, business strategy, implementation, and execution. Greg was the founder and CEO of Breakwater Consulting Group Inc., which has provided technology-based solutions for Fortune 2000 companies in the Michigan area since 1991.

Over the course of fifteen years, Greg developed teams that deployed award-winning network and database design solutions recognized nationally and globally in 1998, 1999, and 2000 with numerous awards from Microsoft. Greg was nominated for the Microsoft Partner Advisory Council, which is a global council that advises Microsoft on product enhancements, marketing, placement, and pricing of their products.

Before establishing Breakwater, Greg's valuable experience came from working as a Consultant for Herman Miller in all areas of their business, from packaging and distribution systems to international deployments of systems. Greg also worked for Steelcase, consulting in lead generation tools and e-commerce systems to connect dealers and customers for a better overall experience.

Greg is currently the Chief Executive Officer of the Value Source Group, an axiological technology provider in Charlotte, North Carolina.

Abstract

This article is the story of the foundation of a Sports Axiology that applies axiology to team and individual sports. The authors provide quotes from our professional sports partners relating their experiences; we define "Sports Axiology," and we provide examples of the axiological tools we are currently using with amateur and professional sports athletes. Our tools include an introductory "Coaching Simulation" that each reader may score for him or herself, the Pro-Sports Profile™ parallel form of the Hartman Value Profile (HVP), part one; the Pro-Sports Scorecard; a sample of the first of thirteen basic "Player Styles," and the outline of the formally structured "Playbook for Life" coaching system.

We have profiled young soccer athletes starting at age 12, up to seasoned professionals currently playing on Pro-Football and Pro-Hockey teams — all with solid success.

Three professional athlete-coach-trainers and three professional axiologists have contributed to this article to enable readers to understand different perspectives on this application of axiology to the world of sports.

We begin this article with two quotes from our professional sports associates about their experience with axiology.

I really didn't know that much about Formal Axiology until I met Dr. David and Vera Mefford. Last April I decided to get some coaching from a popular coaching company in the Charlotte, NC area because I felt that I needed some time to find out the best way to develop my skills in the real world.

My background in the sports industry is more than sixteen years as a professional and a total of 28 years, including my amateur status. I played professional hockey in the NHL, minors, team USA, and in Europe. Also, I coached the best fourteen year olds in the USA through a National USA Hockey program, www.usahockey.com.

Personally I had a bit of an identity crisis when I stopped playing and needed to find out how to adapt to the real world of life, so I was given the Hartman Value Profile (HVP), and that's when I realized that this is for real. My wife and I could not believe the accuracy of the profile and felt I needed to get more details, so I contacted Dr. David Mefford and he generously filled me on how the profiles work.

After we spent about an hour with each other, my mind was racing! My instincts were such that I wanted to get this profile in the hands of every former professional hockey player so that they can adapt to the real world and better their lives when they retire from the game. At that time I asked Dr. Dave if this could be done for sports and fitness. He answered without hesitation "Yes," and now we have a profile for athletes engaged in team sports already developed.

To make a long story short, I took the Pro-Sports Profile™, and I was again blown away by my results. In fact, I was so excited about the final outcome that I asked if I could use this in my business to help out the hundreds of people that I coach online and in person at our fitness facility. I'm the type of person who has to believe in something 100% before I get involved with anything, so the next step was to get the Sports-Profile in the hands of several former and current professional players in hockey and other sports. The final results were unbelievable! I only heard one of many athletes tell me that this is not completely an accurate profile of him. (He told me that he is a great leader, and his score was in the growth area in the section about Interpersonal Harmony).

My next step was to ask more questions about the deeper meaning of his "Interpersonal Harmony" score. I found out that in some cases it can reflect an individual who will not put up with others' mistakes! This answered all of his questions because he is the first one to get down on his teammates when things are not going that well for him or the team. After I explained this to the future hall-of-famer and former 3-time Olympic athlete, he was a believer! A few days went by and I had four messages from him in one day. He said he needed to take the "Life-Values Profile™" because he is going through a divorce, and he wanted to look at measurement of his values so he can work on his personal life.

The point is that a lot of world-class athletes are fixed in their own way on things, and for me to be batting a 1000 with all of these athletes says it all. In fact, one of the largest athletic companies in the country for recruiting is owned by several former professional athletes, and they all took the profile and want to start profiling players as soon as possible.
Mike Hartman, Better Life Training, Charlotte, North Carolina

As a former NFL Player, not only have I come to value Axiology, but I have come to understand its effectiveness. For the past 3 ½ years in studying Applied Axiology, the quantitative analysis process has become a partner and confidant in my pursuit to help people in both sports and business. In playing in the NFL there is always a thinking process that is governed by our emotions to make the right decision at the right time. I wish I would have had access to the axiological conceptual tools when I played. These athletes today can have a true advantage before, during, and after the game of sports if they apply and implement the understanding of Axiology in their personal lives.

I have found that the key is to try and catch the athletes before they retire, so that we can build on their beliefs for success that already exist within them. The longer the athletes are out of the game, the more difficult it is to create a new belief system for success in life.

Working with corporate executives over the years has been very interesting in that no one wants to believe that they have low self esteem. I only recently learned that "self-esteem" is a summary of all three axiological dimensions and not just the intrinsic. Over ***90%*** *of the successful executives that I have profiled had negative bias scores in their Intuitive Sense of Self (formerly self-esteem). Now, I would tell them their "self esteem" is centered in the extrinsic or systemic dimensions. They are concerned with driving the results for success, which means that the self takes a back seat. I have been surprised with the number of people that truly hate their job but stay with it because of the fear of not knowing what they do best. The HVP profile has offered and will continue to show them, along with the proper coaching, what areas to tap into, so that they can maximize their strengths and minimize their potential blind spots.*

I want to personally "thank" Dr. Robert Hartman for his vision in reaching the world for true clarity in three important and dynamic value dimensions, and Vera and Dr. Dave Mefford for their diligence in continuing to carry the torch. In the Axiology process, not only do you start to understand the self, but you start to see how you best fit within a team concept that wins. As the President of the NFLPA Charlotte Chapter and being over so many retired NFL players, the study of Axiology has given me the insight to help my guys' transition their thinking from the playing field into another success in real life.

In partnering with Greg Woods over the years, he has become a teammate that we can count on for better understanding the process of Axiology. My business, Wheeler Enterprises, Inc., has landed some awesome partnerships

with large companies because of their belief in the axiological valuing process. Axiology will continue to be a part my circle of influence and I will continue to fight for people to see and understand its true intrinsic, extrinsic, and systemic value in the industry of Sports and Business.
Leonard Wheeler, Wheeler Enterprises, Inc., Charlotte, North Carolina

The emergence of Sports Axiology is causing a lot of excitement, and we want to share with our readers what this excitement is all about. Sports Axiology is axiology applied to sports and sports game play, including both team sports such as football, hockey and soccer, and individual sports such as golf and tennis. Axiology is the name for the systematic study of value or value theory (value equated with worth or meaning). Formal axiology is the scientific discipline of value (worth) based on a logical frame of reference. The name, "formal axiology," was coined by Edmund Husserl in 1902 in a footnote to his reference to origins in *The Formal and Transcendental Logic* (Husserl, 1974, paragraph 50, 142). The scientific foundations for a *formal* axiology were developed by Robert S. Hartman in his book, *The Structure of Value: Foundations for a Scientific Axiology* (Hartman, 1967).

The first question that comes to mind is, "What is the difference between sports psychology and sports axiology?" Sports psychology has been very valuable to sports, focusing on things like how best to control and handle anger and frustration. However, psychology in general is based on *inductive* logic and rests on *empirical* foundations. It is an instance of reasoning from a part to the whole, from particulars to generals, or from the individual to the universal. The general validity of a "law" is inferred from its *observed* validity by showing that if a law holds true in certain cases, it must also hold in the next and succeeding cases. Axiology, on the other hand, has the distinctive difference of being based on *deductive* reasoning, a method by which concrete applications or consequences are deduced from axioms, definitions, and postulates. Hartman's "Axiom of Value" provided us with a formal mathematical norm which can be applied to any field of study to structure that field, and then it weighs or measures individuals or teams against that scientific norm. Dr. Leon Pomeroy in his book, *The New Science of Axiological Psychology* (Pomeroy, 2005), has shown that formal axiology is also empirically valid. Dr. Pomeroy spent over 20 years collecting statistical data for his book cross-nationally, from numerous and diverse eastern and western countries and cultures, and proving that cultures all over the world make value judgments the same way. Sports axiology is a discipline that can enhance and improve the effectiveness of sports psychology. Sports axiology provides a formal, logic-based approach that sports psychology can readily embrace. We see the marriage of sports psychology and sports axiology as the very best approach to coaching and improving the skills and talents of sports teams and individual players.

Sports axiology is currently emerging out of the larger effort to further develop the science of formal axiology. As the potential of the science of formal axiology is further explored, new applications are being created, such as this application to team and individual sports. One of the "laws" of formal axiology is, "x" has more value if it acquires *more good-making properties*. This may not be true of intrinsic value if any and all additions are captured in the intrinsic focus, but it is clearly true in the extrinsic or systemic dimensions. If you add a room onto your house with an additional 500 square feet, your house gains in value. It is still the same house intrinsically (your home), but there is clearly a systemic and an extrinsic value gain. If a player acquires more properties in terms of improved skills and abilities, he or she has more value — not as a person, but as a player or athlete.

Sports Axiology, like any new field of study, has to show itself positively (defining what it is). When we focus on what it is, we find several areas of concentration. Sports Axiology has the following three major focus areas:

1. The first is to identify emotional or mental barriers or blocks that may be preventing access to the athlete's full potential.
2. The second is to develop more of a team's or an athlete's innate potential and make it actual.
3. The third is to identify and develop the "health" of a team.

Sports axiology uses special tools for insight into athletes' barriers to success, and also identifies the areas in which athletes have the most potential for development. The two tools already developed and currently being used for *coaching* aids are the "Pro-Sports Profile™" and the "Pro-Sports Value Scan™." (Some users are branding this as the *"Pro-Sports Mind Scan*".) The Pro-Sports Profile™ is a parallel form of the Hartman Value Profile (HVP), a two-part, eighteen item forced ranking assessment that reflects the structure of a person's evaluative judgment.

As Robert S. Hartman defined it, "evaluative judgment" or "value judgment" is a combination of human cognitive and emotional capacities. We do not simply "think" about an object in our value judgment of it; we also have a certain feeling about it. Value determinations are about the cognitive nature of the object, together with a "liking or disliking" of the object. The Pro-Sports Profile™ differs from the HVP in that the items are specific to team sports and to team game play. This is necessary to capture the components of valuation, both the cognitive and the emotional, relative to specific aspects of sports games. The Pro-Sports Value Scan™ uses the same assessment but with a much briefer overview report, using graphs to focus on specific skill sets. Another important axiological tool is the "Sports Coaching Simulation," consisting of nine statements with three alternatives each — to introduce coaches and trainers to the Sports Axiology system. When Jeremy Boone was delivering keynote speeches to large gatherings of coaches this January, he passed out the following coaching

simulation to give them a taste of the power of axiology. It took the coaches around 5 minutes to rank their preferences, and they were given immediate feedback about their general coaching style.

"Throughout the history of sport, athletes and coaches alike have attempted to crack the code of the role that the mind plays in performance" (Jeremy Boone). Jeremy continues: While physical competency contributes to athletic success, it is now commonly agreed that the mental aspect is what separates the good from the great. So much so, that even high school and middle school teams now employ the services of sport psychologists to try and gain a performance edge for their teams. Until recently, psychologists and coaches have had to take a subjective approach to the mind-games of athletes, specifically using self-report assessments, including personality tests and attitudinal indicators. While these assessments help to reveal various motivators and behavior styles of athletes, an objective way to measure an individual's decision making pattern on the field or court is missing. Do we truly understand what makes these great athletic minds work? Why are some athletes able to make lightning fast decisions and even at times seemingly predict the future, and others cannot? Or how about the age old question of the cause of a performance slump?

These questions and many others like them are slowly starting to get answers. However, these answers are primarily solutions to the problems and at times do not reveal the true causes. The good news is that there is now a relevant sports psychometric profile based on the field of formal axiology that can help to answer these questions clearly.

Just what is the mind-set of a champion?

While much attention has been given to the personality, behavior, habits, and attitudes of high level athletes, it is the ability to make quick and clear decisions, combined with the ability to cope with and/or resolve any situation, that best define the mental abilities of the most successful athletes.

The Pro-Sports Profile™ is a task based assessment that forces athletes to use their values to make decisions, just as they do on a field or court. Based on the results of the task, forty specific attributes can be measured, built around the three core dimensions of value found in Dr. Robert S. Hartman's work on formal axiology. These results are completely unique to each individual athlete, as there are 4.5 quadrillion possible ranking combinations.

1. Developing Young Athletes - Not Miniature Adults

It is well-known that over four billion dollars are spent on specialized training for young athletes. As the popularity of this market continues to grow, so do potential problems around the expectations of performance. Due to the high demands of winning at even the early ages of eight to ten, these young athletes are often treated as miniature adults.

The result is that sports psychology services are now becoming woven into the fabric of the "Long Term Developmental Model" for young athletes, but in more of a "solution to a problem" approach. The inabilities to cope with pressure, deal with fear, and handle anger are just a few of the main issues that are becoming more common.

Thus far, little research has been available in the area of psychology and young athletes. In addition, the studies that have had a major impact have involved fairly low numbers of participants in each study.

"Inner Tactics," a sports axiology firm made up of various authors of this article, created an initial focus group of over two hundred young athletes between the ages of fourteen and eighteen who participated in taking the Pro-Sports Profile™. The scores are put into a five point rubric ranging from growth area, fair, good, very good, to excellent. A brief summary of the results are found below:

Game Intelligence- good to very good
Competitive Fire- very good
Game Role Awareness- very good
Concentration- fair
Mental Toughness- fair
Stress Resistance- fair

Based on the above findings, it seems that young athletes struggle with being aware of themselves and their environment during a performance, they have difficulty being mentally tough during times of high stress and/or potential failure, and they struggle with the ability to cope under pressure.

This preliminary data served to be extremely insightful and has been used to develop age and gender specific coaching resources. These suggested coaching models will soon be available from the Inner Tactics group.

2. Team Chemistry — Bond or Bust

The third focus area of the Pro-Sports Profile™ is the ability to identify and develop the health of a team. There is an old acronym of the word "team" that says, "Together-Everyone-Achieves-More," and of course, there is no "I" in the word "team." This could not be truer except when the team does not act as a cohesive unit, and all members do not believe in and work toward the same team goals.

The biggest benefit of using the Pro-Sports Profile™ in a team setting is that now coaches can identify six primary areas of a team's health. In the "World View," these include a team's game plan, team performance, and team identity. In the team's self view these include team planning, authority, and vision, how the team acts as a cohesive unit, and team personnel.

Recently, a nationally ranked college team took the Pro-Sports Profile™ two days before their second round of post-season play. Their opponent was a

bottom seed, while this particular team was a top five seed. A general summary of their results are below.

Mental Toughness- fair
Concentration- fair
Stress Resistance- fair
Interpersonal Rapport- fair
Interpersonal Conflict- good to very good

The team as a whole was considerably more focused on the future, i.e. on looking toward the following week's game, rather than focusing on the present. They also struggled with the ability to cope beyond what only they felt they could control. In addition, the pressure to win and uphold the legacy of this school's past winning accomplishments was quite high. In the end, the team lost on their own field to a lower seeded team.

Combining the services of a qualified axiological coach along with the results of the Pro-Sports Profile™ would provide a head sports coach tremendous insight into a team's mind-set. Specific strategies can be implemented to help ensure that team peak performance occurs when needed and to identify any potential roadblocks to a less than optimal performance.

3. The Coach-Athlete Relationship

Various studies in other journals have addressed the question, "Do coaches truly know the mental capabilities of their players?" However, these studies have all been inconclusive, as the authors could not determine if it is the coaches who do not truly know their athletes, or if it is the athletes who do not know themselves.

A new study is presently taking place that is trying to answer this question, using the Pro-Sports Profile™. Approximately sixty young athletes were given the profile, along with a complimentary questionnaire for their coaches, asking them to guess how they think that their athletes scored. The results will begin to give us insight as to what specific qualities coaches can identify, and what specific qualities young athletes do not know about themselves. Again, these data will help further to take the guesswork out of creating clear coaching models for athletes of all levels.

4. The Need for Interest-Specific Axiological Assessments in Sports

We have been working on the physical side of the athlete for years. Just training hard is not enough. New training programs are continually needed, but still lacking in some key aspects. It is highly unlikely that a new type of physical training technique will come out that will give one team a truly competitive advantage over another. The training process has become a *commodity* for the most part**.** We have perhaps developed the physical aspect of the athlete as far as we can naturally. Proof of this is evidenced by the on-going temptation to use

performance enhancing drugs. As my friend Leonard Wheeler, who played in NFL says, "When you enter play at this level everyone is just as fast and hits just as hard." Where is the untapped resource in sports today? It is found in an athlete and team's mental and emotional states.

Scientifically structured, organized, purposeful and dimensionally balanced judgment is truly an area that has not been tapped or made a commodity in our world today.

Jeremy Boon of Athlete by Design has been on the forefront of capturing the power and impact of mental training in his coaching practice for years. Jeremy and I met two years ago where I covered the standard HVP with him. He developed his skills in using the profile but found it had limitations in pro sports. He found that it was difficult for a coach to interpret and take time to understand the details. There also seemed to be a lack of face validity and the ability to pinpoint mental and emotional attributes or evaluative judgment styles on the field. In other words, coaches were not looking for knowledge of "life" values in general, as much as they sought to understand more specifically how a player uses his or her judgment during the game and how he or she feels about teammates and other participants.

This need led me to Dr. David and Vera Mefford. Leveraging their experience and the work that the Meffords had done in the past with the University of Tennessee athletic department, it was agreed that a parallel form of the HVP was the best way to access the player's judgment and decision-making on the field. This resulted in the development of the Pro-Sports, Pro-Tennis, and Pro-Golf profiles. It also expanded our input and data collection in the sports arena with Mike Hartman (former NHL player) and Leonard Wheeler (former NFL player) whose input has been highly valuable and greatly appreciated.

Formal Axiology is an essential tool that enables us to measure the clarity and quality of player judgment. It can help us objectively look at our options and make truly integrated decisions, giving equal weight to the pros and cons of all three primary axiological dimensions, both externally and internally, thereby ensuring that our decisions are well balanced.

The other essential aspect of leading and making good judgments is "Know thyself" as inscribed on the Oracle of Delphi. This includes who you are and what you stand for, as well as where your talents are, and where you may need to improve. The abilities to be honest with yourself and authentic in the world are essential. This is why we have created targeted assessments for special interests like Sports, Ethics, Life, Financial, Business and Christian profiles.

It is one thing to see how you make value judgments in general, how you see yourself, systems, and the world, yet quite another to discover how your judgment is driven as an athlete, a financial planner, or a Christian. We wear many hats these days and to be able to focus and hone in on different parts of who we are and how we think is a most powerful and effective tool. When you are trying to improve a company's bottom line, knowing how the CFO thinks

about his place in this world may not be the best tool. It makes more sense to determine how clear his/her evaluative judgment is with respect to the company's immediate financial issues at hand.

In today's fast-paced world, with information easily accessible and the need for uniqueness to set organizations apart from their competition, managing change is essential. The differentiation will not be so much in the product(s), service(s) or manufacturing/training process as it is in the *quality* of decisions. This marriage of a higher, synergetic valuing process with the team of individuals will become the *soul* of all organizations. Whether in sports, business or religion, interest-specific assessment axiology is the next level needed to catapult organizations to higher levels of success.

5. History

The Hartman Value Profile (HVP) was used by the senior author, David Mefford, and the late professor John W. Davis with the University of Tennessee's football team under coach Johnny Majors in the late 70s. Professor Davis also did some work with the Dallas Cowboys on axiological recruiting models at the same time. After that experience, Dr. Davis wrote an article for volume XVII of the *Journal of the Philosophy of Sport*, titled "Measuring Athletic Goodness: Formal Axiology Applied to Football" (Davis, 1990). In his article, Dr. Davis explores the nature of a "good" team and of a "good" player. "Good," as defined according to formal axiology's "axiom of value," means "x has value to the degree it fulfills its concept." A "good" player or a "good" team must fulfill the ideal specifications of the concept "good player" or "good team."

The effort worked so well that we formed a company in 1981 called "Computer Sports Research, Inc." together with Andrew Cafferky, a stock broker-investor associate. In this company we used our axiological formulae to pre-determine the outcome of football games against the Las Vegas line. We purchased the Baker-Peters mansion in West Knoxville, opened fifteen 800 phone lines and sold our advice to those who bet on the games. We (the Meffords) were prohibited by law from placing bets ourselves or for others, and our phones were monitored by the FBI. Our first week in business handicapping games, we had an 87.5% accuracy for the combination of college teams and the NFL, which was one of the best records in the nation. We continued for another year, but we were forced to withdraw due to the Pro-Football strike in 1982. One of our associates and co-developers of the proprietary formulae, Dr. Mark A. Moore, continued this business for several years from his office in Maryland.

Professor John W. Davis was a genuine pioneer in the development of formal axiology and was the first president of the Robert S. Hartman Institute, formed in 1976. Dr. Davis was passionate about sports, especially football. He was head of the University of Tennessee's Philosophy Department, and he was the prime mover in establishing a "Research Professorship" or "Chair of

Excellence" appointment in 1967 for Robert S. Hartman, the first such position in the Humanities at the University of Tennessee. In 1974, one year after Hartman's death, Professor Davis enlisted David and Vera Mefford to meet him in Cuernavaca, Mexico at Hartman's villa to organize, package, and ship all of Hartman's works to Knoxville, Tennessee for the Hartman archives in the Special Collection Library at the University of Tennessee. In the late 70s, Professor John Davis became the doctor-father for David Mefford along with Dr. Rem B. Edwards and Dr. Roy Cebik. David's dissertation was well-received, and crossed departmental lines, with Dr. Howard Pollio of the Psychology Department also on his committee. It expressed for the first time the thirteen logical developmental stages of axiology (quantity emphasis), as well as the 27 valence patterns (quality emphasis) associated with them.

6. Recent Developments

Recently, while engaged in "Advanced Axiology" coaching work for consultants of Target Training International (TTI), one consultant asked if we had something useful for the University of Maryland football team. We told them that we could use any of the assessments marketed by TTI, the DISC, the PIAV, and/or the PTSI, a parallel form of the Hartman Value Profile. However, we did not believe any of these mainly business-related assessments would work sufficiently for the needs of team and individual sports. After hearing the expressed needs and desires of the football coach, we decided that a new sports-specific assessment would have to be created.

Together with Dr. Rem Edwards, David and Vera Mefford had recently created a parallel form for Christians, the Christian Value Profile. That experience clearly demonstrated how much better and accurately an interest-specific assessment works, and we believed we could do the same for sports.

Then, Gregory Woods, now CEO of the "Value Source Group," (the marketing group for the new interest-specific assessments) based in Charlotte, NC, introduced us to Jeremy Boone, owner of "Athlete by Design™" and an international sports performance consultant for professional teams and players, to Leonard Wheeler, President of the "NFL Players Association," and to Mike Hartman, a former pro-hockey player and fitness coach. We consulted with them and gathered a long list of needs for sports teams and individual athletes. A short time later, the Pro-Sports Profile™ became a reality. We appreciate and thank Jeremy Boone, who worked with us diligently on refining and adjusting the assessment and its report to the point where they are easy to understand and work very well. We thank Mike Hartman for his persistence and confidence in the Sports Profile and for going straight to the top pro and Olympic hockey players to gain the feedback we needed, and for his professional help with the golf profile. We also extend our appreciation to Leonard Wheeler for inviting us to his "NFL Players Association Club," where we learned a great deal about the

difficult transitions that professional athletes go through upon retirement from sports. At this time (March, 2008) we have gathered demographic data and statistics on a few hundred cases and will continue to gather data. The assessment may be refined if subsequent data shows the need for doing so.

Another reason for constructing a sports-specific parallel form is the obvious weakness in the Hartman Value Profile concerning face validity. Face validity is about the apparent linkage between the assessment itself and the results produced. Many professionals over the years, such as Dr. Clay Lafferty, President/Owner of "Human Synergistics," told us that the HVP has zero face validity. Our work with Dr. Lafferty produced numerous subject-specific "Values Usage Exercises" (VUE) assessments. Many axiological practitioners take the face validity issue of the HVP as strength. However, these objections are serious, and we want to avoid this potential barrier by presenting an assessment that looks and feels like it will work for the specific-interest group — *on its face*. To demonstrate this face validity, we present the randomized list below, as opposed to the Hartman Value Profile (HVP). It is readily apparent that sports players understand the items of the Pro-Sports Profile™ as being more relevant to them in their sports context.

7. Pro-Sports Profile™ and the HVP Standard Randomized Lists

	Pro-Sports Profile™ Part I:	**HVP Part I:**
E^E	A well-executed play	A good meal
S^S	Respect for decisions of officials	A technical improvement
S_S	Violating team rules	Nonsense
E_S	A penalty/foul	A fine
E_E	An ugly play	A rubbish heap
I^S	A coaching genius	A devoted scientist
E_I	The agony of defeat	Blow up an airliner in flight
S_I	League suspension	Burn a heretic at the stake
S_E	A bad call	A short-circuit
I^E	A highly competitive player	"With this ring, I thee wed"
I^I	The heart of a champion	A baby
I_I	Viciously hurting a teammate	Torture a person in a concentration camp
E^I	Team spirit	Love of nature
I_S	Cheating for personal gain	A madman
E^S	Recognition for athletic achievement	An assembly line
I_E	A severe injury	Slavery
S^I	Love for the game	A mathematical genius
S^E	A successful game plan	A uniform

The Pro-Sports Profile™ is designed for team sports. We have constructed another specific list for the individual sport of golf as well as one for tennis. Time will tell if these interest-specific profiles work as we envision. The team-specific assessment above is working very well, and we should be able to validate it as soon as we have a sufficiently large data bank. Currently, we are using these assessments strictly for *coaching*, but this may be expanded to *selection* and *recruiting* as the validation data proves itself.

The assessment result reports must also be expressed in the common language of sports. The language used in presenting the report from the assessment has to speak to what players understand. This is demonstrated by the language used in the reports.

8. The Pro-Sports Axiological System

We introduce the system with a short nine item self-scoring teaser, the "Coaching Simulation." One of Jeremy Boone's colleagues who also presented with him took the Sports Coaching Simulation and scored a 9-0-0 (I-E-S). In other words, his communication style is intrinsic dominant and filled with stories and passion. He chooses to see player improvement on the field over relying on player assessment scores. It was no surprise that Jeremy's presentation was extremely well attended and received very high feedback marks. Another high level coach scored a 0-4-5 (I-E-S). This coach focused solely on whether or not the players did what they were asked to do. He values players to the degree that they fulfill their duties and responsibilities and values a winning record. This individual sees his players as performers rather than individuals, whereas the first coach sees his players as people first and performers second.

We invite all readers to complete the "coaching simulation" and score it according to the scoring instructions that immediately follow the exercise.

Coaching Simulation

Instructions:

Individual task: Read over the 9 statements below about sports coaching. Each sentence may be completed by any of the 3 choices provided. All alternatives are positive and reflect different ways you can emphasize aspects of coaching. Rank the alternatives for each sentence according to your agreement. Assign a number 1 to your first choice — the alternative you agree with the *most*. Mark your second choice with a 2. Your number 3 choice indicates the alternative you agree with the *least*. Each sentence completion alternative must be assigned a 1, 2, or 3. There is no time limit for this exercise, but you should be able to complete it in about 5 minutes.

Team Task: Same as above, but give each team 15 minutes, or about two minutes per question. People differ in what they value on every subject. That is

what makes each one of us unique. There is a wide variety of completion alternatives for the 9 coaching statements. A discussion about each of the coaching statements will increase your coaching team's knowledge of the value coaching can have. Take 5 minutes to discuss each statement, and try to reach a consensus that represents the collective judgment of your staff. Consensus is reached when every team member can say, "Well, it may not be exactly the way I see it, but the discussion has left me with enough confidence that I can support the choices made." After your team has ranked the responses, wait for further instructions from your coach or trainer. If you are the facilitator, then you decide what direction to take.

1. Coaching should be:					
systematic		practical		inspirational	
2. Coaching systems emphasize:					
game plans		tactics		developing potential	
3. Coaching procedures:					
influence game outcomes		integrate isolated tasks		assign responsibility	
4. Coaching results are assured by:					
authoritative controls		talented resources		cooperation of players	
5. Coaching provides:					
discipline and order		corrective methods		integration of talent	
6. Coaching should be oriented to:					
a comprehensive system		successful action		individual player's success	
7. Coaching demands:					
planning and tenacity		effective communication		sensitivity to players	
8. Coaching is most effective when:					
a periodized plan is followed		results are shown		motivating peak performance	
9. Good coaching increases:					
the winning record		game efficiency		player morale	
A Sum (Systemic):		B Sum (Extrinsic):		C Sum (Intrinsic):	

Scoring Instructions: Under each statement, circle those completions you ranked as #1. Then, total up only your #1 choices for all As, Bs, and Cs and write the sum in the spaces provided at the bottom. The highest score you can logically have is a 9, and the lowest a 0. Scores of 0-2 indicate low emphasis; 3-6 indicate moderate emphasis, and 7-9 indicate high emphasis on that dimension.

A Sum: _____ **B Sum:_____** **C Sum:_____**

(Systemic: bottom line) (Extrinsic: practical) (Intrinsic: holistic)

*Axiology***,** the science of value, presents a 3-dimensional approach to coaching. There is no "ideal" score for each of these statements. A *balance* or *symmetry* among the 3 dimensions is what really counts. The statements cannot be specifically scored as "right" because situations change; it is your total approach that matters and the best approach is one that reflects symmetry. You or your team do very well as long as you includ 3 systemic, 3 extrinsic and 3 intrinsic choices in any order, because this reflects a balanced approach to coaching. All 3 dimensions are critical: players, play action and processes, as well as plans and rules; inter-dimensional balance and integration are the keys; and coaches or coaching teams who are balanced will generally outperform those who are out of balance.

*Balanced (3-3-3)***:** A coach or coaching team that scores 3-3-3 tends to be objective, covers all the bases, and tries to keep all dimensions in perspective. This helps place equal emphasis on each of the coaching dimensions.

Systemic: This dimension focuses on the *organizing* aspects of the sport or game such as rules, game plans, and the necessary structural components that must be included. Clearly defined concept linkages in the game plan, rules and established authority, controls and objective game standards are key systemic values providing the foundation for this dimension. This focus reflects a well-ordered structural orientation toward coaching as the guiding logic. Emotional stability, cognitive certainty and regular discipline in practice are the foundation for shaping the best game plan. Orderly practice, clarity of purpose, and distinct guidelines for game success are essential components of coaching, emphasized in the systemic dimension. Coaches with a high emphasis here focus on author-itative controls, and proper and strategic planning, which will influence game results, and lead to an ever-growing winning record.

Extrinsic: This dimension focuses on the practical aspects of practice and training and the comparative value of each player's performance in his or her position — as well as on a design to *evolve* toward greater success for each player and for the team as a whole. This perspective includes relating and comparing all details of the function of each play, performance of the entire team

and individual players, and all inputs that contribute to the active evolution of the team's potential. A value emphasis in this dimension indicates a practical orientation toward coaching, designed to provide the best chance of successful implementation of the game plan in actual games. Talented resources, good tactics, corrective procedures and methods, effective communication, integrating isolated tasks and game efficiency all contribute to achieving the coach's desired results, and the team's goals for success.

Intrinsic: This dimension involves all aspects of coaching players and their cohesion into a vibrant whole as a well-oiled "machine." The coaches and staff who design the game plan as well as the players who actually implement it out are all included in the intrinsic value dimension. The singular effort and contribution of each player combines with all other players to best implement the plan to influence game results, according to the desired level of performance. This focus reflects interpersonal sensitivity and concern for all people and players involved, raising team spirit and player morale. A shared vision and focus on how the overall game plan promotes success which breeds more success provides the foundation for cooperation and integration of all players into a well-oiled, functional team. Coaches with a high emphasis here tend to be inspirational, which motivates each player's cooperation and the effort necessary to attain peak performance. They know how to grow potential, assign responsibility, and integrate individual talents into a cohesive whole.

Next, we invite them to try out the Pro-Sports Profile™ and they receive a 40 item scorecard summary of the assessment results as follows.

Sports Talent - Capabilities	**Growth Area**	**Fair**	**Good**	**Very Good**	**Excellent**
1. Game Intelligence			**6.5**		
2. Sense of Game Reality					8.8
3. Emotional Game Control			5.6		
4. Ability to Discern Good from Bad				7.6	
5. Overall Attitude toward Sports					10.0
6. Understanding Other Players – holistic view				**7.2**	
7. Rapport with Other Players				∅	
8. Interpersonal Harmony				62% -	
9. Interpersonal Conflict				67% +	
10. Understanding Team Plays			**6.0**		
11. Team Orientation			75% -		
12. Attitude toward Team Success			∅		

13. Attitude toward Team Failure			100% -		
14. Understanding Discipline, Rules, Plans			**6.2**		
15. Attitude toward Authority			67% +		
16. Attitude toward Benefits of Compliance			∅		
17. Attitude toward Rule-breaking			100% +		
18. Understanding Self Worth			**6.6**		
19. Sense of Self Reality				7.0	
20. Emotional Self Control			5.5		
21. Ability to Discern Personal Good from Bad				7.6	
22. Overall Self Attitude					8.6
23. Intuitive Awareness of Self Worth				**8.4**	
24. Desire for Self Development				63% +	
25. Insight into Personal Potential				75% -	
26.Insight into Personal Problems				100% +	
27. Game Role Awareness			**5.6**		
28. Game Role Satisfaction			55% -		
29. Attitude toward Peak Performance			58% +		
30. Attitude toward Poor Performance			70% -		
31. Sports Self Identity			**5.8**		
32. Mental Toughness (Discipline, Energy and Drive)			85% -		
33. Attitude toward Personal Growth			77% -		
34. Attitude toward Personal Regression			100% -		
35. Decision-making Ability			**6.6**		
36. Intuition				7.0	
37. Concentration				7.6	
38. Stress-Tension Indicator					9.2
39. Ability to Handle Stress				8.4	
40. Assessment Reliability			.79 -.76		

Understanding the Scorecard: The Scorecard shows results from three perspectives:

1. external, the surrounding world, items 1 – 17,
2. internal, world of self-appreciation, items 18-34, and
3. combined scores, items 35 – 40.

• This can be characterized as "two worlds in three dimensions." The external world has three dimensions, and the internal self world has three dimensions. This results in a total of six core dimensions. These are connected on the scorecard by lines forming a triangle or straight line.

• Each dimension has two important pieces of information associated with it: clarity and attitude. The numerical (clarity) score shows how well a respondent understands the content of that value dimension.

• The attitude, valence, or bias quality score (+, -, 0) tells you how positively (actively engaged) or negatively (passively engaged or distant) the player relates to the content of that particular value dimension. The "∅" or "neutral" valence indicates that both the sufficiency and the deficiency of the content in that dimension are equally emphasized.

The Scorecard is followed by an expansion of the scorecard items with detailed definitions. The following is a report example of the *external extrinsic* with reduced definitions:

9. Team Performance and Effort

Understanding Team Plays: How clearly do you understand and value the cause and effect action aspects of the game?

This dimension reveals your mental grasp of tangible, observable game realities: actions, causal relations between efforts and results, sudden breaks or screw-ups, routines and how they all fit together in space and time in a given game. This score also measures your capacity to understand game plays and tasks and how they relate, and to actually perform the directed play routines as a team player with good sportsmanship. **High** scores reflect you know what to do and when to do it. **Low** scores indicate a lack of team spirit, taking players and actions for granted, impatience or confusion regarding game realities; and potentially, resistance to getting fully involved in game play.

Growth Area]	[fair	[good	[very good	[excellent	
**********	**********	**(6.0)**	**********	**********	
2	4	5.5	7.0	8.5	10

NOTE: The "quality" scores (attitudes) below are relative to the level of the "quantity" score (clarity) above. If the clarity number above is in the **excellent** range, ignore positive or negative extremes. The attitude scores are less significant at the highest clarity levels.

Team Orientation: What is your level of understanding and involvement with teammates and your sport?

This external attitude summary is an emotional measure of the closeness or distance you feel toward sports and game play. This is about your degree of familiarity and involvement with the team, game flow, game procedures and players in their functional roles. A strongly **positive** score indicates dependence and reliance on established practical game norms, as well as feeling

comfortable with, and totally immersing yourself in the game. A **neutral** score indicates objectivity toward established practical norms of the game or sport, like fair play. A strongly **negative** score indicates a degree of discomfort or disdain for established game and team norms, or taking them for granted.

⇐ Passively engaged Actively engaged ⇒
********** (75% -) **********
100% - 80% - 65% - 50% neutral 65% + 80% + 100% +

Attitude toward Team Success: How well do you thrive in a team setting?
This score reflects your attitude towards the benefits of team conformity and success. It shows how you relate to the good, constructive aspects of game and team norms. A **positive** attitude shows sensitivity to and reliance on practical efficiency, and reflects a player who demonstrates team spirit, who values fair play and good sportsmanship, and who tends to be competitive, highly valuing recognition for athletic achievement. A **neutral** or balanced attitude shows objectivity and fair judgment toward established game standards and norms. A **negative** attitude shows the good aspects are taken for granted and you may lack team spirit and good sportsmanship, and you likely do not care enough about game-readiness or following the game plan.

⇐ Passively engaged Actively engaged ⇒
********** (75% -) **********
100% - 80% - 65% - 50% neutral 65% + 80% + 100% +

Attitude toward Team Failure: What is your response when the game does not go as planned?
This score reflects your attitude towards the drawbacks in game play. It shows how you relate to the negative as well as destructive aspects of practical game/sports functions and norms. A **positive** attitude shows you are judging "bad" aspects of game play as even worse (being highly focused on mistake avoidance) including things like penalties, fouls, ugly plays, slugging incidents, game losses etc. A **neutral** or balanced attitude shows objectivity with regard to inefficient or non-productive aspects of the game. A strongly **negative** attitude shows you judge bad aspects as *less bad than they really are*, which could mean you are currently not actively involved in game play, and therefore feel you did not contribute to team failure.

⇐ Passively engaged Actively engaged ⇒
********** (75% -) **********
100% - 80% - 65% - 50% neutral 65% + 80% + 100% +

Another example of interest-specific information is determining and reporting "player-styles."

10. Player Styles

Each player has an axiological or value-judgment style, a conditioned orientation toward playing the game, identified by the emphasis pattern between the three primary axiological dimensions. This emphasis pattern is the habitual way the athlete makes decisions about the game and his or her mode of play during the flow of a game. The player-style is an emphasis pattern composed of the following three axiological dimensions.

Robert S. Hartman said the essence of intrinsic value is "identification." If I *completely identify* with any idea, thing or person, I am intrinsically valuing that object. In sports, the player's identification with the game is an intrinsic value. How a player actually performs in game play is extrinsic value. Knowing the game, the rules, and knowing the purpose of all plays and moves is systemic value.

The value categories (axiological Pro-Sports dimensions) are:

I (intrinsic) represents the "*holistic*" dimension of a person's mental/ emotional makeup and judgment in the game continuum and the player's *identification* with the game resulting in an integrated, cohesive unity. This dimension includes appreciation for and sensitivity to other players, feeling-into the totality of the game, and with recognition of teammate roles and game relationships. Two all-embracing, *holistic* concepts for *intrinsic strength* are: *holistic feeling-awareness for teammates/opponents presence on the field, court, or ice; and the passion to go "all-out" for peak performance.*

E (extrinsic) stands for the "*external*" dimension within a person's evaluative judgment, including the tangible (observable) movement and flow of the game, practical aspects of handling the ball, position movement patterns, comparative differences between offense and defense, and processes executed to score or to prevent scoring, as well as the tangible aspects of team cohesion and practice activities (a player's doing his or her best). Two *comparative* concepts for *extrinsic strength* are: *controlled energy in movement, actions, responses and comparative poise; and competitive fire.*

S (systemic) represents the "*knowledge***"** dimension within a person's evaluative judgment: discerning the order, structure, and organizational aspects of the game, like learning, thinking, planning, knowledge, and strategic innovative ideas. Two *rational* concepts for systemic strength are: *game experience memory, and knowing the purpose and variation possibilities of all moves*.

To calculate the "player-styles" we next look at the Scorecard and notice how far apart the clarity number scores are in relation to each other. If the clarity numbers are within a range of 0 - .599, they are considered equal. If the clarity numbers are 0.6 or greater apart [> 0.599], they are considered unequal. A simple logical deduction reveals one formula for all clarity numbers being equal; six formulae for two dimensions being equal with one unequal; and six formulae for all dimensional numbers being unequal — for 13 basic player styles (see below).

We provide *two* common names for each axiological "player style" to better capture the essence of the style while providing more insight into the distinct character of the player.

Player-style code	**Player-style name**
1. I = E = S	versatile - mature
2. (I = E) > S	team player - facilitator
3. (I = S) > E	mentor - director
4. I > (E = S)	supportive - affiliative
5. (E = S) > I	efficient - resourceful
6. E > (I = S)	practical - prudent
7. S > (E = I)	purposeful - systematic
8. I > E > S	energetic - team player
9. I > S > E	passionate - influential
10. E > I > S	team leader - advisor
11. E > S > I	expedient - operator
12. S > I > E	organizer - play designer
13. S > E > I	analytic - planner

Athletes will want to review and study the description of their own unique "player style" as a foundation for further growth and development of their sports talents and potential. The player-style pattern identifies natural sports talents, aptitudes, and personal preferences in relation to the game and game flow. Most athletes have a strong focus on one or two perspectives and a weaker focus on one or two of the others.

Example: Player-style One:

Versatile - Mature (Integrated)
(I = E = S)

Description: This Player-style pattern is considered ideal because it represents the most adaptive and versatile game-style that you, as an athlete, can have. This player-style indicates you maintain an equal emphasis in your game view concerning: the relative importance of other team players presence on the field, court or ice, the relative meaning of what's going on in terms of moves and movement, plays, game-role tasks, the ball or puck and equipment, and the relative meaning of knowledge, purpose, authority, and team-organization.

You tend to judge game situations in a balanced, objective way in terms of all three basic perspectives: team and opponent players, play situations, and well-practiced play designs. You are a player who has developed talents in all three perspectives with balanced and equal proportion. When you take action and move, you can embrace going in and out of any one of the three perspectives with ease. The "versatile" player-style indicates that you are not stuck in any one perspective, but you are talented and competent in all the basic areas of sports performance and achievement. You can relate to and deal with other players very well, and you generally maintain healthy and fulfilling relationships with your

teammates. You also have good practical execution skills, and you relate well to tangible plays, moves, and game phases. You also understand how to deal effectively with the play-book, knowledge of purpose, and systems of organization. The "versatile" Player-style indicates that the world of sports is wide open for you, and it suggests that you are able to take advantage of any and all opportunities.

Strongest links to game reality (your sports talents): You tend to be very versatile and mature, and you adapt well to different types of teammates and opponents and changing game situations. It is easy for you to see what you need to emphasize or focus on for better success, depending on the nature of the game or sport you are currently playing. If an interpersonal focus is called for, you will turn on your people skills and relate to teammates as an empathetic, sensitive, good listener, who really cares about them. If a performance or task focus is needed, you will become an action-oriented player who focuses on the play at hand to get it done successfully. If you determine that the situation calls for an organizational or coaching focus, you will turn your attention to learning and gaining more knowledge about the game situation, so you can best apply your planning, systems, and organizational skills for better play selection. This player-style suggests that your greatest talents are adaptability, flexibility, objectivity, and versatility.

Weakest links to game reality (growth areas and opportunities): You could get easily bored or disinterested with limited or routine game assignments and responsibilities, whether in practice, at home, or on the field, gym floor, or ice. You need to feel that your creativity and your talents are challenged on a regular basis, or your performance and your motivation could suffer.

Best suited for: You are well-suited for virtually any team position, because your talents are equally developed in all three primary dimensions. This is true as long as you find the game-role personally rewarding and challenging. It really depends on your personal choice, and what kind of game-role you would most like to perform. You have the talents to do well in just about any game-role, whether playing at home or on the road. Since you tend to be objective and balanced in almost any game situation, you might also consider other game-roles or game positions, if these seem attractive to you.

Motivated by: You are motivated by multi-faceted, complex game challenges, and you enjoy demonstrating your athletic skills, talents, and innovative moves. You are also motivated by decision-making freedom regarding play selection options and possibilities, and you may prefer being your own coach.

Sports development opportunities: Your greatest opportunity for growth is centered in maintaining strong personal identification with your current sport, game-role(s), and team responsibilities. You enjoy getting involved in new challenges, but, if they become routine or "easy" for you and you don't feel challenged, you may not want to stay engaged for very long. You could also

benefit from better harmonizing your personal needs and goals with the needs and goals of your team toward a more successful sports career.

Best sports performance climate: You will learn, work or perform best in a team or game atmosphere where there is an open exchange of ideas, planning and strategy, and where feedback for your opinions is readily available. You also prefer an environment where responsibilities and decisions are shared, and your input and creativity are appreciated and challenged on a regular basis.

The system culminates with the *Playroom for Life*, a formal axiological progressive coaching system.

11. Formal Coaching System

The player-styles, due to the axiological formulae, lead us to a stage in the formal coaching system that has the three-part axiological formulae as its foundation. This formal axiological coaching system is not yet completed. We are working on it with a deliberate slow pace, since we have to gather a great deal of information on how the player-styles tell us what exercises and training a player needs for further developing his or her potential. We are also gathering more experience with the *dialectic* that exists between external judgment and internal desire. We anticipate the formal coaching system will be complete by the end of this year.

The player-styles listed above map directly into the formal axiological coaching system, outlined in our 2007 Hartman Institute Conference in the presentation, "The Axiological Dialectic." We restate this outline here in sports language. The notations using directional arrows show the progression of the *axiological dialectic* for developing human/athletic potential.

26 Sports Development Stages: The 26 chapters of the *Sports Playroom for Life* — driven by Axiological dialectic:

Tri-dim Codes	**Game-stage**		**Self-appreciation stage**
1. S > E > I	Knowing the Game	→ ⇩	Knowing Your Athletic Self
2. S > I > E	Purpose of moves / teammates	→ ⇩	Purpose of Your Actions
3. E > S > I	Exploring Game/Play Potentials	→ ⇩	Exploring Self potential
4. E > I > S	Choosing Your Position	→ ⇩	Choosing Your Self
5. I > S > E	Commitments to Teammates	→ ⇩	Commitment to Self
6. I > E > S	Holistic Integration of All Plays	→ ⇩	Caring for Your Own Self
7. S > (E = I)	Established Right and Wrong	→ ⇩	Ethics to Live By

8. E > (I = S)	Practice and Preparation	→	Situational Play Success
		⇩	
9. (E = S) > I	Playing with Purpose	→	Personal Game Roles
		⇩	
10. I > (E = S)	Unique Skills of Other Players	→	Sharing with Teammates
		⇩	
11. (I = S) > E	Mentoring Other Players	→	Investing in Your Potential
		⇩	
12. (I = E) > S	Teamwork with Others	→	Being a Living Example
		⇩	
13. I = E = S	Versatility/Adaptability	→	Full Self-integration

Each of the "player-styles" relate to the stages in the formal coaching system by three-part axiological formulae. In each chapter of the *Playroom for Life*, there are several axiological exercises for improvement and we continually add to this as we gather more feedback. It is assumed that if a player's PSP scores integrate to pattern #4, then that player would go to Chapter 4 of the *Playroom* for the initial coaching suggestions that would best suit his or her growth areas. Then, they may proceed to chapter 5 and beyond. It is also recommended that they review the exercises below their score pattern to ensure that all the bases are covered.

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A SUGGESTED CONTEXT FOR AXIOLOGY

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Abstract

Just as reflection on ethics is grounded in moral experience, axiological reflection has an experiential ground in both appreciation of value and negative value experiences, such as loss or pain. This primordial experience of value can be termed "axiological shock." Secondly, any dichotomy or divorce of fact and value must be rejected. The work of Hilary Putnam describes the confused effort to divorce fact and value. It is possible to reason about values because values are grounded in the factual world and facts are value-laden. Epistemic, aesthetic, and moral values permeate our language, which is often both descriptive and evaluative. Finally, the intellectual context of axiological reflection is explored. Adjacent disciplines such as metaphysics, theology, sociology, or psychology are important for a holistic view of value. However, the integrity of axiology must be maintained, without reducing it to an aspect of some other discipline.

Introduction

This is an attempt to say something about the context in which axiological work takes place. I have great admiration for the contributions of Robert S. Hartman and others who have probed deeply into the nature of value. In this paper, I do not attempt to add to their work, nor do I critique it. Rather, I explore three aspects of the context in which we reflect about value. (1) I suggest that the experiential basis of axiological reflection is in what I call "the axiological shock." (2) I affirm Hilary Putnam's work in critiquing the "fact-value dichotomy," which permeates popular culture and has a complex philosophical history. Such a dichotomy makes axiological reflection meaningless. Following Putnam, I give some of the reasons many philosophers hold that the dichotomy does not

survive examination. (3) I explore the relations between axiology as an intellectual discipline and several adjacent disciplines.

Immanuel Kant wrote *Prolegomena to Any Future Metaphysics*. He introduced considerations that, indeed, metaphysicians continue to deal with centuries later. Though I in no way mean to compare myself with the great Kant, I believe these three considerations need to be considered by anyone seeking to do detailed work in axiology.

1. Axiological Shock

The great theologian Paul Tillich wrote about "the ontological shock" in which humans become aware of the basic issue of our being and possible non-being. We realize that we exist but that it is not at all necessary that we exist. Beginning with the mystery of our own being, we run into the mystery of being itself as "the original fact which cannot be derived from anything else." As we ponder our own being, our possible non-being, and the thought of being as such, we are at "the beginning of all genuine philosophy" (Tillich, 1951, 113). Ontology is that branch of philosophy that has to do with the very idea of being itself, what it means for anything to be real or to exist.

While this language can sound intimidating, I think Tillich is getting at a universal experience. I experience ontological shock when I brood for very long over either time or space. I can ponder the immensity of time that preceded my conception and the immensity of time that will follow my death. Yet, at this very moment, I exist. Indeed, unlike a rock, I am conscious I exist. I ponder why I should exist at this very moment in time, though so many people have either already died or not yet been born. I don't necessarily know where to go next with these thoughts, but I have this experience. It is an odd experience, but it seems to be critical to being fully human. Or I can ponder the immensity of space, an immensity I read about in books on astronomy, but which I can't really picture. Yet, at a particular point in space, I exist. I can wander the low levels of the great mountains of Montana and not be within sight of another human in any direction. It seems odd that this consciousness that I am is here, looking around. If I visit a great city, I'm surrounded by tens of thousands of other humans, yet I am uniquely the one human who is right here. The ontological shock is that I exist here and I exist now.

Tillich saw this encounter with my own being as threatened by three major things: death, guilt, and meaninglessness. In early cultures such as those of Egypt and Greece, death was the dominant threat to the security of a human being. In the Middle Ages, guilt and sin threatened the moral being of humans. And in the modern world, we question what meaning human life has in the immense universe; we contemplate the possibility it may all be meaningless. We need to find the courage to be, to affirm our existences, in spite of the threats of death, guilt, and meaninglessness (Tillich, 1952).

I suggest that there is also an axiological shock, similar to but different from the ontological shock. There are intensive and pervasive moments when we become aware that things matter, that we care about things, that things are valuable. This axiological shock is the experiential basis of all later axiological reflection, just as the ontological shock is the basis of all ontological reflection. The axiological shock is one of the primordial experiences that shape human life. I can sit on my back porch, lost in the several dozen shades of green that pervade my back yard, listening to the birds, breathing the fresh air, watching a slight movement on the ground, wondering if it is a rabbit or a squirrel. Usually I am conscious of all this, but not conscious of my consciousness. I am "lost" in it, as we say. Then I make a slight inner move and become aware of what I have been doing, but then it is difficult to lose myself again. Or we can stare at the delicate features of our baby, tracing a finger along its skin. Others may become lost in the swells of music performed by a fine orchestra. I can realize that I am taking joy in the sheer fact of being alive. The ontological shock stuns me with the fact of my existence; the axiological shock causes me to confront the joy of existence. The examples are endless. Without this primordial shock of realizing that things have value, there would be no point in doing axiological research.

Just as there are threats to our being in death, guilt, and meaninglessness, there are also axiological threats. Pain, ugliness, and loss are among the major threats to our sense of the value of things. Grief over the death of a loved one is perhaps the most profound experience of loss. Loss shocks us into the awareness of the value of what was lost. Anger can be an axiological shock, particularly anger over watching injustice unfold before our eyes. Angry over injustice, we wonder what all these things that matter add up to. A different but related discipline, ethics, begins when we brood over some moral confusion. Perhaps, as a child, we confront a situation in which we wonder if we have to tell the whole truth, or whether we should have told the whole truth. If that child continues to brood over these and similar dilemmas, that child will grow up to be an ethicist, regardless of how he or she makes a living. An ethicist is simply one who attempts to think about these things in an orderly way. Both the experience of joy and the experience of loss can, in a similar way, lead to axiological reflection.

Robert S. Hartman was friends with, and influenced by, the work of Abraham Maslow (Maslow, 1968; Edwards, 2008, 96-100). Maslow thought that the psychology of his time tended to be preoccupied with the abnormal, the many ways in which human life goes wrong. He thought that not enough attention had been directed to the psychology of flourishing humans. What factors lead to a fulfilled life? What are the characteristics of a flourishing, joyous, creative life? He did not have in mind some kind of "Superman," but rather the many real humans who flourish. What's the psychology of things going right, instead of going wrong? He often wrote of "peak experiences," experiences that are intensely, richly fulfilling, the peak of the mountain of human life, so to speak. Obviously, such peak experiences provide an axiological shock. But I bring the

subject up to insist that one doesn't have to have a peak experience in order to have an axiological shock. The examples I have given, including such things as being absorbed in looking at the greening of trees or simply being glad to be alive, are not rare experiences. They are not the peak of axiological experience; they are more like the beginning of axiological experience. I believe that both creative, fulfilled people and seriously disturbed people experience the axiological shock. Axiological shocks are inclusive and even ordinary. Peak experiences are sub-categories of a broad range of axiological shock. Children can experience axiological shock (I remember clearly!). It is more debatable whether small children can experience peak experiences. I certainly remember intense experiences as a child. However, one hopes that certain forms of adult peak experiences might never be experienced by children. Examples would include intense sexual experiences, hallucinogenic drug experiences, the experience of courage, loyalty, and sacrifice in war time, reunion with a loved one after many years of separation, and the exhilaration of accomplishment in certain extreme sports, such as mountain climbing.

Just as ontological shock induces us to think in a careful way about being itself, axiological shock induces us to ponder in a deep and orderly way what it means to value, or value itself. We want to sort through all the things, sometimes conflicting, that we value. We want to decide which are the more important values. Then we realize that wanting to know which values are "more important" is itself a value. We become axiologists.

We need a much more detailed phenomenology of axiological shock than I have given. I hope work can be done on this. I believe this experiential event is the ground of axiological reflection.

2. The Fact-Value Dichotomy

A widespread assumption, amounting almost to a cliché, suggests that facts and values are two radically different kinds of things. "Facts" tend to be associated with a cluster of terms such as real, objective, descriptive, hard, quantitative, scientific, supported by evidence, etc. "Values" tend to be associated with subjective, relative, fuzzy, qualitative, literary, etc. People talk about "value judgments" as something that we all make, but as lacking in any definitive reality.

This dichotomy has a history, emerging as an assumption only a couple of centuries ago. This tendency towards a dichotomy began with Scottish philosopher David Hume's insistence that no "ought" can be derived from an "is."

This assumption has been subjected to critical scrutiny by careful thinkers. Before real axiological work can begin, we need to become clear about the status of this dichotomy. Philosopher Hilary Putnam has traced the history of this dichotomy and the various critiques that have been made of it. Hume's point

has evolved over the past centuries and found its twentieth century home in the work of Logical Positivists. Hume worked with a simple concept of a "fact": a fact was supported by sense impressions. This understanding continued well into the twentieth century in the work of early Logical Positivists.

The problem is that few serious thinkers take Logical Positivism seriously anymore. The dichotomy has been critiqued by philosophers Philippa Foote, Iris Murdock, John McDowell, and David Wiggins (Putnam, 2002, 35).

Following American pragmatist John Dewey, Putnam holds that one can significantly make a fact-value *distinction*, one that is useful for certain purposes. However, this is very different from a fact-value *dichotomy, dualism, or divorce*, which confines value judgments to a private inwardly personal world, in which it is impossible to make a rational argument about values, a world in which facts are valueless and values are arbitrary (Putnam, 2002, 9).

This dichotomy keeps "us from seeing how evaluation and description are interwoven and interdependent" (Putnam, 2002, 3). Empiricists following Hume "failed to appreciate the ways in which factual description and valuation can and must be *entangled*" (Putnam, 27). This "entanglement" of fact and value "undermines the whole idea of an omnipresent and all-important gulf between value judgments and so-called statements of fact" (Putnam, 8).

A detailed discussion of this issue would involve Kant's distinction of analytic and synthetic judgments, the nature of mathematics, the philosophy of science, everyday value language, and much more. Putnam's essay explores much of this detailed work, and I refer readers to the essay for greater insight. My purpose in this essay is to point out its importance for serious work in axiology.

An important point is Putnam's insistence that the scientific method itself involves value judgments. The practice of science involves judgments about "coherence," "plausibility," "reasonableness," "simplicity," and even the "beauty" of a hypothesis. Such examples mentioned by Putnam are both descriptive and value-laden (Putnam, 2002, 31). In addition to scientific method, the science of today involves many complex concepts in relativity theory, quantum mechanics and, indeed, virtually every field of science that undermine any simplistic understanding of "fact." Modern science involves many important ideas that are not "facts" in Hume's concept of sense impressions.

Putnam points out that Logical Positivists really did not explore the full range of values. When they did explore values, it was centered on a concern with ethics, which was relegated to the status of "emotivism." Little attention was paid to aesthetics or even the epistemic values implicit in scientific work itself. Truth is an epistemic value with descriptive aspects, as is the aesthetic value of beauty. Most of the effort of Positivists went into an attempt to define "fact" in such a way that the definition would not be undercut by the next development in science. The crucial point at stake is whether it is possible to reason about such values as truth, beauty, and goodness.

Most important, however, are Putnam's observations about the nature of language about value. He distinguishes between the "thin" concepts such as "good" and "ought," that are properly scrutinized by philosophers, and the "thick" concepts that most of us more normally use. These include "concepts that defy simple classification as 'descriptive or normative' — concepts like the concept of cruelty..." (Putnam, 2002, 24).

Putnam points out that a historian who described Nero as "cruel," and was then asked whether the term was meant to be descriptive or evaluative, would be puzzled by the question and would probably say "both."

Other thick terms might include the concepts of crime, generous, elegant, skillful, strong, gauche, weak, and vulgar (Putnam, 2002, 35). Each of these terms seems to have both descriptive and evaluative overtones.

If values are ephemeral and subjective, alienated from factual reality, then axiology might entertain some people for a while, but we cannot defend the thought that it is an important enterprise. A distinction is properly made between fact and value, but a divorce between fact and value undermines value and strips facts of significance.

Robert S. Hartman frequently discussed the "fact/value dichotomy" (Hartman, 1967, 156-157, 217-227) and arrived at a view very similar to Putnam's. According to Hartman, "fact" and "value" are in a sense "two sides of the same coin." This means that all facts are value-laden, and all values are fact-laden. All values are fact-laden in the sense that empirical or descriptive properties function as the good-making properties that constitute the sets of value predicates by which we measure the goodness of anything. A good x has descriptive properties such as a, b, c, d, e, f, g, and so on. They function as the standard by which we measure the goodness of x because they have been selected as the properties that an ideal x ought to have. Some of these properties, say a, b, and c, define x and serve as the common denominators by which we identify x (and all other members of its class) as being the kind of thing that it is. They are x's factual properties; but x can have additional properties like d, e, f, and g that go beyond its mere definition. X is a car if it has properties a, b, and c; but a merely factual car isn't much of a car. A good car has many additional properties such as d, e, f, and g, all of which are both descriptive, in that a good car in fact has them, and normative, in that its goodness consists in its having a complete set of them. Furthermore, even facts are value-laden. A, b, and c define x, in this instance, a car. But they have been humanly *selected* as properties that are so important, interesting, or valuable that they can function as common denominators for all instances of x — in this case, all cars. So it is with all facts and values. There are no values without facts, and there are no facts without values, according to Hartman.

Hartman was convinced that there are intrinsically valuable entities in the real world, and their intrinsic value is part, indeed a significant part, of their full description. Once this is granted, then it is possible to give meaningful

definitions of extrinsic and systemic values. But before this enterprise can be undertaken, it must be acknowledged that facts are valuable, and intrinsically valuable entities are part of the factual world. We have no human experience of a purely factual world, devoid of value. The world we experience is already and always laden with value. Our knowledge of the world is saturated with valuations and the world we know is drenched in value. Once we have freed our thinking of the mistake of divorcing fact and value, we can begin the work of axiology. I would add that we can't pretend to be interested in a world that would be, by definition, uninteresting, since "interesting" is one of those rich, thick words we use in normal discourse that is both descriptive and evaluative.

Hartman defined intrinsic value as attaching to conscious individuals. That is a key part of his axiology. But before one can get to the point of defining intrinsic value, the relationship of value as such to the real world needs to be clarified.

These thoughts suggest that axiological inquiry is grounded in a certain kind of value experience, what I have called "an axiological shock." This experience is similar to, but distinguishable from, what Tillich calls the "ontological shock." Our axiological shock induces us to experience a world that is really there and really valuable. Everything about us, shimmering leaves and loved ones and music in the air, and everything "about" us in a different sense — who we are and how we proceed with things — is drenched in value. A dichotomy of fact and value simply would not occur to us if we had not read too much bad philosophy or watched too many bad detective stories, demanding "just the facts, M'am."

3. The Context of Axiological Reflection

We can reflect on all these values. We can read Nicolai Hartmann's *Ethics* (Hartmann, 2002) and realize that cultures are shaped by coherent schemes of value. Nicolai Hartmann, who should not be confused with Robert S. Hartman, particularly pays attention to the Greek cultural vision and the vision of the Christian Middle Ages. For Hartmann, the values implicit in these cultures are aspects of a quasi-mathematical realm of value, aspects of which become incarnate in a particular culture. We can read Karl Jasper's *The Origin and Goal of History* (Jaspers, 1953). Jasper claims we have lived off the values of what he calls "the axial period" in human history. A few hundred years, from the time of Buddha and Socrates to the time of Jesus, shaped the values our world has lived on since then. The Renaissance and the Enlightenment were important, but, as their names suggest, they primarily involved the rebirth of values from the classical axial period. Jaspers suggests that the issues facing us have changed dramatically and that we need a new axial period that would do for the future what the classical axial period did for so many centuries.

And we can read Robert S. Hartman, who contributed much to our understanding of axiology. Among his greatest contributions, I would mention the emphasis on systemic values. Other philosophers have worked with intrinsic and extrinsic values, but, so far as I know, Hartman was the first to describe the specific kind of value we call systemic. I would also mention his emphasis on valuation, in addition to values. The ways we hold our values, our valuational styles, are of critical importance. I also appreciate the way in which he sought to formalize axiology, so that a new set of questions emerges, questions (and the answers people give) that might be scientifically sampled and assessed, building up a body of verifiable information. These are simply a few aspects of his work that I personally appreciate.

It is likely, of course, if history is any guide, that any new axial period will not be shaped by thinkers such as Hartmann, Jaspers, and Hartman. On the other hand, the next axial period might not be primarily shaped by a religious figure such as Buddha or Jesus. It will, nonetheless, probably be a charismatic figure able to draw on many earlier currents, just as Buddha drew on Hinduism and Jainism, and Jesus drew on the Prophets. The work we do in axiology, we have reason to hope, may be a trickle in that deeper current that will creatively shape the values of the future.

Once we have experienced the axiological shock of our value-drenched world, and reflected on it in the disciplined, orderly way of philosophical axiology, there is an understandable tendency to go one step more and explain this valuable world. We feel incomplete, perhaps, until we have understood something more, the value, it could be said, of all these values. (Or until we have "stood-under," rather than understood, these values. We want a perspective outside what we have learned that will ground or be "under" our axiology.)

One way people do this, of course, is to move into theology. Some thoughtful people move to the thought of a God who is the "Supreme Value," the "Creator" of value, or the One who gives value to all things by creating, knowing, or loving them. Such a God would not only, it is suggested, explain the existence of all things, but also explain the value of all things, both by creating and by judging those things.

Robert S. Hartman's approach to these issues is interesting. Hartman held that God is among the intrinsic values, that is, a conscious individual. Also, he seems sympathetic to Anselm's definition of God as the "greatest" (presumably, among other things, the most valuable) conceivable being. He does not derive his axiology primarily from a theology of God's giving value to things by creating them or loving them, yet he nevertheless applies his own axiology to God in a cohesive way. God is intrinsically valuable because God is a conscious individual, just as other entities are thus valuable since they are conscious individuals. Hartman works from *within* his axiology. God does not *explain* value; God *exemplifies* Hartman's value theory. If there is a God (and Hartman

believed there is) then God is intrinsically valuable in that God is a conscious individual.

However, in his own way, Hartman does make a place for God's giving value to all things by creating, knowing, and loving them. Since God, as intrinsically valuable, can be combined in positive ways with other values, God does in a sense give value to all things by knowing, creating, and loving them. Where "x" is any creature, "God knows x," "God creates x," and "God loves x" are all value compositions (within Hartmanian axiology) that have greater value than mere "x" alone *or mere "God" alone*.

Other people want to move in a different direction. Rather than elevating value into a supreme value known as God, they want to undercut or "explain away" the world of value. We have already looked at the attempt to separate value from "fact," which would end up eviscerating value. Or they might want to give a sociological, sociobiological, or psychological explanation of value, making axiology a subspecies of some other discipline, just as some would make axiology a subspecies of theology or metaphysics.

I want to suggest a third approach. It is possible simply to live in the mystery of the ontological and axiological shocks, living fully a life in this value-saturated world, without moving to an explanation that elevates value, as theology does, or that demeans or deconstructs value, as some other approaches do. There is enough to keep us busy with the zillions of fascinating things that exist. This approach would be one of dwelling in and celebrating the mystery of existence and value. As Milton Munitz says, "Science concerns itself with the understanding of the phenomena empirically observable in the world. In no way, does it concern itself with the fact of the existence of the world itself" (Munitz, 222; Edwards, 2001). I think a similar point can be made about the relation of science and value. On the other hand, it might be said that to "explain" value theologically simply moves the mystery to a different realm.

It is not my purpose to urge any of these three approaches on the reader. But I am concerned to protect the realm of axiology from other domains. Axiology is disciplined reflection on the valuable world and world of values we experience. This is what it means to be an axiologist. There is no reason, of course, why the same person who does axiology cannot also "do" theology or metaphysics or sociology or psychology. Many people do two or more of these things. However, as axiology is perhaps the least historically grounded and least widely practiced of these disciplines, it is important to insist on the integrity of the discipline of axiology itself.

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ORGANIZING FOR GOOD

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Abstract

The following article summarizes the challenges organizations face and what it will take to manage these challenges effectively. The central premise is that the "scientific management" framework (Taylor, 1911) developed by Frederick W. Taylor in 1911 has served us well but now needs to be replaced by Robert S. Hartman's concept of "organizing for good."

After summarizing the challenges organizations face, the article uses Robert Hartman's definition of goodness and his ideas of the intrinsic, extrinsic, and systemic dimensions of how we make decisions to describe the work organizations need to do to be effective in a changing world.

Every organization faces challenges. The issue is to be clear about what they are, how we have approached them in the past, and how the idea of achieving excellence and organizing for good can help deal with them effectively in the future.

Frederick Taylor believed the central challenge at the start of the 20th century was "the question of national efficiency." As we start a new century we still face this challenge — and we have others as well.

1. Challenges

A. Legitimacy and Trust

One of the most significant challenges we face has to do with legitimacy: the extent to which we can trust the organizations we have created.

Every organization — regardless of whether it is a public company, an agency of government or a not-for-profit — requires the trust of the people it serves to prosper. The difficulty is that too many of us don't trust the institutions we have created. The challenge is serious: Warren Buffett suggested that what is at risk in the private sector is the loss of trust in "the most powerful wealth producing system in the world" (Shireman, 2003). The companion risk in the public sector is the ability of government agencies and not-for-profit organizations to maintain the loyalty and support of people they serve.

The difficulty we have trusting organizations is usually a result of some combination of the following issues:

• Too many organizations focus on their own well-being — organizational profits and operations rather than people and service.

• Too many organizations have trouble telling the truth. William Lutz, an English professor at Rutgers University, coined the phrase "double speak" (Lutz, 1990) to describe the ways in which people and organizations use words to obscure the truth. Lutz identified four forms of doublespeak:

1) *Euphemisms* — words or phrases chosen to avoid reality. Businesses no longer lose money; they have "negative cash flow," "deficit enhancement," "net profit revenue deficiencies" or "negative contributions to profits;"

2) *Specialized jargon* — companies don't fire people; they make "workforce adjustments," "census reductions," or institute programs of "negative employee retention."

3) *"Gobbledygook*" — words chosen to confuse or overwhelm an audience.

4) *Inflated language* — making the ordinary seem extraordinary. Used cars have now become "preowned" or "experienced cars."

It's hard to trust organizations when you can't understand what they are saying or can't be sure they mean what they say even when you do understand them. Too many organizations do things that are just dumb, others that are foolish, and still others that are egregious and, in some cases, criminal.

• *The Dumb*: CBS Sports used to dub bird sounds to provide background at golf tournaments. Yulee Larner, a former President of the Virginia Ornithological Society, noticed the white-throated sparrow could be heard in the background at a tournament being played in Colorado; the difficulty was, the bird isn't found in the region. Larner was delighted to hear the hermit thrush in the background at a tournament in Kentucky, but there was the same problem. It was silly and CBS stopped the practice: they now spread birdseed near microphones to attract birds (Fritsch, 2000, WK 2). Equally silly was the decision by CBS staff to retouch

publicity pictures promoting Katie Couric. CBS wanted us to trust her as their new evening news anchor — and then let a staff member introduce her with photographs that had been doctored to make her appear slimmer. It was dumb (Johnson, 2006, 3D).

• *The Foolish*: Film critic David Manning of Connecticut's *Ridgefield Press* loved the movie, *Hollow Man*, and several other Sony movies. The difficulty was, Manning didn't exist. Manning was the creation of two Sony executives who made him up and then wrote positive reviews (*Fortune*, 2001, 140). Tribute MasterCard sends applications to potential customers offering a credit card with a $500 dollar limit. If the recipient accepts the card, and doesn't use it for a year, the fees would be $257. That's just wrong (*Consumer Reports*, 2006, 63).

• *The Egregious*: The decision by Hewlett Packard executives to spy on members of their Board and senior executives is a particularly sad example of egregious behavior, especially given the company's rich history of serving as a model of how companies should be run. What was called the "H-P Way" was a symbol of excellence. The people involved in the spying foolishness disgraced themselves and betrayed the great traditions of one of the country's finest companies. The H-P case is a good example of Robert S. Hartman's frustration with the law. What the people involved in the spying scandal did may or may not have been legal; it clearly was wrong.

The scandals and behaviors associated with organizations that have achieved the notoriety of WorldCom, Enron, and others has been much more serious. World-Com's illegal behavior affected hundreds of thousands of people: among them the company's own employees who lost their pensions, stockholders who lost the value of their investments, vendors who lost business and had to lay off employees, people working for competitors who were terminated as those competitors tried to match WorldCom's profits, and the thousands of people who worked for their vendors. The irony in these cases, and others like them, is that senior executives, who had previously justified their salaries by asserting they controlled their organizations and were personally responsible for their success, suddenly began saying they knew little about the business or decisions made by the people who worked for them.

Organizations also have trouble doing what we expect them to do. Some crime laboratories have basic operating problems. These problems include missing files, contaminated evidence, and results that have been misinterpreted (Willing, 2006, 3A). Comair, the regional subsidiary of Delta Airlines, cancelled 1,100 flights when its computer system crashed. When the $14.6 billion dollar "big dig" project in Boston had problems that led to the death of a newly married 38 year old woman, this was described by Governor Mitt Romney as a "systemic failure, not an anomaly or a fluke" (Beam, 2006, 22; Brooke, 2006, 3A).

In each of these examples, the people and organizations involved either didn't use their judgment or were unable to do what was expected of them. In the examples of poor judgment, the people involved lacked an understanding of the

meaning of their actions or, more regrettably, understood what they were doing and went ahead anyway.

In the cases of system problems, or cases in which people and organizations were unable to do what was expected of them, the issue usually involved an over-reliance on scientific management.

B. Meaning and Work

A second challenge is the need for organizations and their leaders to understand that work should have meaning.

The author, Thomas Moore, pointed out that one of the central dilemmas of our time is what he calls "the loss of soul" (Moore, 1992). In Moore's view, the soul has to do with genuineness and depth — what Hartman would have described as being fully who we are. The poet, David Whyte, talks about this loss of meaning when he talks about getting caught up in "busyness" (Whyte, 2001). Peter Senge describes the same phenomenon well when he observes, "We often spend so much time coping with problems along our path that we forget why we are on that path in the first place. The result is that we only have a dim, or even inaccurate, view of what's really important to us" (Senge).

One article in the *Harvard Business Review* began, "Burned-out, bottlenecked and bored. That's the current lot of millions of mid-career employees" (Morrison, Erickson, and Dychwald, 2006, 79). In other more positive cases, employees in one client organization say things like, "I understand what is expected of me at work," "My job enables me to use my strengths," "My supervisor communicates openly and honestly," and "I am treated as a valuable member of my department." In these cases, the organization and its managers have been able to be clear about the meaning of their work and the value of the people who do it (Overman, 2006).

The point is that having to deal with a glut of information and respond to demands to do things more quickly often make it harder for managers to remember what matters. In too many cases, organizations get so caught up in either managing the systems they have created or trying to achieve short-term financial results that the work they actually do loses its meaning.

For most of us, work is only a part of our lives. It may and should be an important part, but it is still only one aspect of who we are. When we are not at work, some of us volunteer to read stories in our children's kindergarten, others write poetry, others sing in church choirs, and still others referee high school sports events. The meaning of what we do with our lives matters to us, and organizations suffer when they lose sight of the fact that we want work to have the same meaning as activities we care about in other parts of our lives. The fact is, as the demographic forecaster Bruce Clarke eloquently puts it, "People like work; it's jobs they can't stand" (Clark, 2004).

C. Change

A third organizational challenge is the need to deal effectively with change. We have always had change, but the point now is that the process of change is different than what it was for previous generations. Specifically, the changes organizations experience are different now because they are:

• *Faster* — Changes that used to occur over centuries and lifetimes now occur within lifetimes, decades, and sometimes just years. Europe went through the industrial period in 200 years, the United States in 100, and Japan in approximately 50. Changes in air transportation are a good example of changes that have occurred over a single lifetime. My grandfather was born in 1900, so, he was 3 years old when Wilbur and Orville Wright made their first plane flight; he was 27 when Charles Lindberg flew from Long Island to Paris; he was 46 when Trans World Airlines made the first commercial intercontinental flight from New York-to-Paris service; and he was 69 when astronaut Neil Armstrong took "one small step for man and one giant leap for mankind" on the moon, July 20, 1969. In the space of my grandfather's lifetime, we went from learning to fly to landing on the moon.

• *Pervasive* — Change now affects every area of our personal and organi-zational lives simultaneously. Job expectations have changed. The emergence of tele-vangelists and mega-churches has changed how many of us worship. Where we shop has changed as well: Wal-Mart is now the nation's largest grocery store; Costco is the largest seller of wines; General Motors is one of the nation's largest banks; and UPS is a major computer service company.

• *Constant* — People in earlier generations organized their lives around the idea of stability and understood changes as interruptions in an otherwise stable world. There might be change, but after whatever changes occurred, things would "return to normal." Now, the reverse is true: change is the constant, and stability is the exception. As numerous clients have pointed out to me: "It's always something."

These changes in change itself mean that people and organizations that want stability will invariably — and always — be disappointed.

The changes in the nature of change are one of the clear reasons we have to think about how we manage differently. When the world changes constantly, there can never be a stable "one best way."

D. Technology

Organizations in every field have to deal with the impact of emerging technologies. The challenge is real, because all emerging technologies share the following four characteristics.

First, they become (in some combination) smaller, faster, and cheaper. This is especially true of technologies that have their roots in computer chips and

communications systems. The original ENIAC (Electrical Numerical Integrator And Calculator) computer was patented on June 26, 1947. It contained 17,468 vacuum tubes, along with 70,000 resistors, 10,000 capacitors, 1,500 relays, 6,000 manual switches, and 5 million soldered joints. It covered 1,800 square feet of floor space, weighed 30 tons, and consumed 160 kilowatts of electrical power (Bellis). By contrast, the Apple Ipod weighs 5.6 ounces, has a 60-gigabyte hard disk drive that holds thousand of songs, and serves as a backup disk drive. Adidas (and others) now make sneakers that include computer sensors to adjust the softness of the mid-sole to respond instantaneously to running conditions (*Consumer Reports*, September 2005, 9). Nike and Apple have now developed a running shoe that transmits data to an Ipod. In each case the capacity of new technologies exceeds those of the ENIAC by geometric orders of magnitude.

Second, emerging technologies provide us with, as the philosopher Heinz Pagels observed, "a new angle on reality" (Pagels 1989). Linda Dillman's ability to go through thousands of bits of Wal-Mart data to determine what people would buy after a hurricane is one example of how our perceptions of reality change because of the capabilities of new technologies. Tools we now take for granted — such as simple Excel spreadsheets — enable us to manage more data and analyze it from different perspectives than Frederick Taylor and his colleagues could ever have imagined. High powered telescopes enable us to explore the universe, and magnetic resonance imaging (MRI) technology lets us explore minute changes in brain waves in the human mind.

Third, new technologies raise questions about the relationships between ourselves and the machines we have created. In the early 1900s, the primary benefit of most new technologies was their contribution to enhancing physical capabilities: steam shovels, railroads, and machinery enabled us to do more physically and do it faster.

Now technological innovation is different. Ray Kurzweil has written about "sentient machines" — machines that have feelings — and his ideas have touched off debates about what may or may not be the limits of computers and emerging technologies (Kurzweil, 1999). Kurzweil writes, "By 2009 computers will be embedded in our clothes. By 2019 they will be embedded in our bodies. By 2099, human and machine intelligence will have merged." Kurzweil's forecasts may be conservative: computers are already embedded in clothing materials to control temperature. Similarly, cardiac pacemakers are already embedded in our bodies to control otherwise defective hearts.

In this same vein, Bill Joy, one of the original developers of Sun Microsystems, suggested that the machines we are creating will be capable of acting independently. Joy has gone even further and suggested machines may not need us, because we are too emotional and inefficient (Joy, 2000).

While Joy's suggestions have a certain dramatic flair, there are already machines that act as he describes. Clothes dryers determine when clothes are dry and turn themselves off. Rain-sensing windshield wipers are now standard in

many luxury model cars (Krebs, 2002). Self-defrosting refrigerators, automobile braking systems, ane other everyday examples are now so common we take them for granted. Sonar systems now help fisherman track fish. These systems are good examples of Pagel's observation about how technologies change our angle on reality. These technologies prompted writer Joshua Davis to question at what point fishing becomes too easy (Davis, 2006, 32).

Finally, developments in biotechnology raise questions about the meaning of life itself. We have had the capability to replace physical body parts such as knees, hips, and hearts for some time. Now we are learning how to manipulate molecular and genetic structures to alter and design or redesign human life itself. Mood altering drugs that bring relief to people suffering from depression are one example of this ability to reshape our behavior and to some extent alter who we are. Given developments in biotechnology, we are going to have to go beyond extrinsic thinking about how to manage new technologies and think intrinsically about what they mean as well.

E. Complexity

Simply put, every area of our lives is increasingly complex — in many cases too complex.

• *Products*. The instructions to put in a basic child's safety car seat in the back seat of a car take 39 pages.

• *Legislative process*. The number of bills introduced in the Arkansas legislature increased by 41% between 1997 and 2003 (Arkansas State Legislature, 1999).

• *Organizations*. The media analyst and writer, Ken Auletta observed that between 1977 and 1987, the number of stories on the NBC evening news dropped from 2,496 to 1,564, while the cost of each story went from $12,400 to $63,000. Of the total number of reporters, the top 10 accounted for over 85% of the stories that aired. There were fewer stories featuring fewer people, while the costs for people and for producing the stories went up. The executives responsible initially defended how they ran the news division — because they had always done it that way (Auletta, 1991, 331-333). The point is clear: our organizations are too complex; there is too much paper and too many steps in the processes we use to accomplish what we need to do.

Meetings are wonderful examples of often unnecessary complexity. Managers complain about too many meetings; or, to say it more carefully, they complain, not that there are too many meetings, but that we have the same meetings over and over again. According to one study, too many meetings actually make us "grumpy" (Allen, 2006). In a study printed in *Group Dynamics*, two social science researchers found — in language that reflects the earlier discussion about meaning and work — that meetings left employees feeling stressed, exhausted, and burned out.

This complexity is the inevitable result of preoccupation with an approach to management that emphasizes refining "the system" and gives too little attention to determining whether what we are doing makes sense or needs to be done at all.

Robert S. Hartman's observation on complexity and systems was, "When rules, procedures, regulations and systems prevail over people, when there is pressure to meet the quotas, and when the quotas are always being raised there will always be problems" (Hartman, 1962). Hartman was right when he said it forty years ago, and his observation is even more important today

2. Approaches

Over the last several decades, we have tried to deal with these challenges, and the approaches we have taken tend to fall into one or more of three broad categories.

A. More and Better Scientific Management

The "more and better" approach has been based on applying updated versions of Frederick Taylor's original ideas. These have included "quality," "lean," "kaizen," "Six Sigma," and numerous other contemporary versions of Taylor's scientific management. The result is a continuing introduction of new "programs of the week" that lead to confusion among managers and cynicism among workers who find it hard to overcome the belief that management's interest in this "program of the week" will be replaced by the next new idea a week, month, or year later.

The problem is, whichever one of these "more is better" approaches is chosen, it is usually implemented in a vacuum: the focus is on the program (the extrinsic) rather than on a balanced approach that also includes people (the intrinsic) and systems (the systemic). Very few of us want to work for the sake of "hitting a number," but most of us will do what needs to be done when we understand why it matters. Scientific management efforts that focus on efficiency will inevitably fall short of what they can achieve unless managers remember that personal, practical, and systemic values need to be in balance.

B. Structural Management

One of the great scientific insights of the early 1900s was that structure matters. Now, as we start a new century, it is clear that relationships matter as much as or more than structure.

The structural approach has limitations because it turns our attention inward toward the organization and how it works in the present rather than outward toward the people it serves and the future. Example: a frequent debate in organizations is whether they should centralize or decentralize decision-making.

From Taylor's perspective, the question centers on the system: which approach will help us achieve the one best way. From Hartman's perspective the question centers on asking which approach will best serve people.

Structure is important, but a preoccupation with it overlooks the reality that in every organization people accomplish work because of personal relationships — not because of formal structures. These may be relationships they have developed with colleagues in their own departments, with people in other departments, or with people they work with in other organizations; but the point is that it is the relationships rather than the structure that matters. In speeches over 20 years, when I have asked people if they look at the organization chart to determine who they should talk to solve a problem, the reaction is usually giggles or outright laughter — people don't look at the organization chart; they ask the friends and colleagues they trust to identify people who can help them get done what they need to do.

C. Personal Approaches — People and Politics

Other organizations emphasize the intrinsic and usually stress personal relationships, collaboration, team building, and the need for people to work together.

The personal approach is apparent in conversations when managers talk about the organization as a family.

- Families are bound by blood; organizations are bound by a common purpose and the ability of people to contribute to achieving that purpose.
- You are in a family throughout your life; you are part of an organization as long as the relationship is mutually beneficial.
- In most families, regardless of your behavior, you are still a part of the family; organizations have standards, and people who don't meet them leave voluntarily or are asked to leave.

The personal approach is important, but there are problems when organizations emphasize it at the expense of the practical or systemic.

Hartman recognized that when organizations overemphasize people and the intrinsic, they get in every bit as much trouble as when they overemphasize the extrinsic and scientific management, This was the reason he was so insistent on balance.

D. Economics: Money, Finance, and Motivation

The economic approach is based on the ideas that money is a key motivator, and organizations can create a clear relationship between what we want people to do and how they are paid. These two ideas were a central part of Taylor's use of money to motivate "his men."

The approach works well in some cases but not so well in others. The problem has been especially difficult in determining how to compensate senior

executives. Corporate boards have tried various approaches, and to date none has been satisfactory. The point is clear: structural and economic approaches won't work, because anyone who wants to will always find a way to beat the system. We can never design a system that "can't be beat," so we have to find other ways to encourage people to behave sensibly.

3. Organizing for Good

Organizing for good provides a more useful framework for thinking about organizations and management. The approach differs from scientific management, because it values the systems and practical elements of an organization to the extent they support people.

A. Managing the Intrinsic

Managing the intrinsic means that the organization focuses on the people it serves and affects. Managing the intrinsic means that organizations are committed to hiring the best candidates and then placing people in positions where they can be effective and develop their capabilities. This means that to be effective, organizations have to address the following issues to choose and manage people well. The key point in managing the intrinsic side of an organization is to remember that what organizations accomplish is, as my friend Peter Fraser observes, because of people, not in spite of them.

• *Choose People*: The first thing that effective organizations do is pay attention to who they hire.

In these organizations, managers understand that choosing who they hire is one of their most important responsibilities, rather than a distraction that takes time away from their real work. In his books, *Good to Great* and *Built to Last*, Jim Collins emphasizes the importance of people. Collins's conclusions were based on an analysis of hundreds of organizations (Collins, 2001, 2004). Hartman's work provides the framework for Collins's analysis. Collins reached his conclusions based on his analysis; several decades earlier, Hartman reached the same conclusions by thinking about what it meant to organize for good.

In contrast to Taylor's view that his men should "do what they were told," Hartman's approach and Collins's research highlight the importance of judgment and how people make decisions.

In simple terms, choosing people well means managers hire carefully because they know it improves the quality of the work force and the effectiveness of the organization.

• *Right People, Right Work*: The second intrinsic consideration is placing people in positions that are consistent with how they make decisions.

Some jobs require discipline and the ability to follow directions; financial management, bookkeeping and the willingness to perform rote tasks on

an ongoing basis are examples. Others, such as corporate planning functions, require the systemic capacity to see patterns. Still others, such as marketing and selling, are best filled by people with a strong sense of self worth.

Research using the Hartman Value Profile clarifies the importance of judgment. Successful middle managers have a stronger systemic orientation and are generally balanced across the three dimensions. Effective senior executives, those who are respected and effective rather than incompetent or self-centered, are usually balanced and have strong intrinsic capacities. They are able to energize people and build commitment to what needs to be done. They have technical capabilities and those technical capabilities support their ability to work with people. The important point is that technical skills by themselves are useful in middle management and necessary but not adequate to be effective as a senior manager. Senior managers need to be balanced. Those who are good with people but lack practical skills (the extrinsic) or the capacity to see patterns and plan (the systemic) are likely to be ineffective.

• *Developing Recognizing and Rewarding Judgment*: Developing and rewarding judgment means we have to be honest with people, let them know where they stand, and reward them for performance.

Weak performance review systems get organizations into trouble for several reasons. First, they allow weaker managers to avoid dealing honestly with their employees. The phenomenon is an example of systemic and intrinsic weakness in the organization. Weak managers tend to be unclear about how what they do relates to the overall strategy of the organization — a systemic weakness — and therefore are unable to set standards for their employees, because they don't know what is expected of them or what should be expected of their employees.

Every performance review should cover three areas: what employees do well, what they do adequately, and what they need to improve. By definition we can't be good at everything, because it would assume, in Hartman's terms, that we have reached our full potential and become fully who we ought to be. Not straightforwardly telling employees what they need to improve denies them the opportunity to grow. It's unfair, dishonest, and wrong.

The first part of developing and rewarding people's performance means that organizations care for and respect their employees enough to tell them the truth. It also means they have clear written standards for what needs to be done (the systemic) and consistent expectations for how people will be evaluated (the extrinsic). When organizations are committed to organizing for good, performance reviews, like the hiring process, become an important management responsibility. This approach reflects Hartman's belief in the importance of the intrinsic, as well as Herzberg's insights about what actually motivates employees. Recognizing and rewarding performance provides each of us the opportunity to be acknowledged for what we have accomplished and gain a better understanding of how we can improve.

The second part has to do with investing in staff development. We used to be able to think of our lives as linear experiences: we would go to school, grow up, get married, work, and then retire. Because this linear world was generally stable, we could apply what we learned in our youth throughout our careers.

Now, because of challenges discussed earlier, each of us has to continue to learn throughout our lives. Effective organizations invest in the training and development of Boards as well as executives, managers, and staff, because it improves the organization's competence and the ability of its employees to grow, learn, and become increasingly effective. Money spent on training is an investment, not a cost, because it improves the staff's judgment and ability to do work well.

Effective organizations invest in developing employee capabilities and then recognize and reward performance because these provide the most direct ways for the organizations and the individuals to become what they ought to be.

• *A Note on People and Teams*: Teams and collaboration are increasingly important; learning to use them well means thinking differently about how we organize them.

A team is a group of people with common purposes and objectives that they need to accomplish together. A well-structured team will include three types of people: a) people doing the work; b) people affected by the work being done; and c) others who have insights, experiences, or understandings that can contribute to the work of the group.

Thinking about teams differently means, first, teams will always have attributes that are distinct and different from the attributes of any of their individual members. The Miami Heat basketball team, for example, has a character and personality that is distinct from individual players such as Shaquille O'Neal or Dwayne Wade. Second, thinking differently about teams means understanding what "consensus" means. We tend to think consensus means we have discussed an issue and everyone agrees. It doesn't. General Electric has a better definition that recognizes the importance of diversity and the need for organizational discipline. In General Electric's view: Consensus doesn't mean every one has to agree. It does mean everyone supports the decisions because they know their views have been heard. People support the decisions because they are the best possible under the circumstances

Third, thinking about teams differently means that we have to think about diversity differently. Diversity is important because it ensures that perspectives which might not otherwise be considered are part of the discussion. Groups that are too much alike find it hard to learn because each member brings less new information to the table. Homogeneous groups are good at doing what they do well but are less able to investigate alternatives or conceive of a future different from the present.

Diverse teams include people who have a wide range of experiences and perspectives. In practical terms, diverse teams include people drawn from different operating units — e.g., manufacturing, sales, and finance — depending on the nature of the work to be done. Finally, in Hartmanian terms, it includes people who are animated by intrinsic, extrinsic, and systemic considerations.

There are examples of situations in which teams have been especially effective. At Pixar, the producers of movie hits such as *Toy Story*, *Monsters*, and *Cars*, people stay together through successive projects. Unlike traditional Hollywood practices in which groups working on projects are assembled for a single project and then move on to other work, Pixar believes there is value in continuity. The Allen Edmonds Shoe Company expanded facilities in the United States in the belief that if people could work in teams rather than independently, and the company invested in the technology to support them, the company would be more successful than if they outsourced the work (McGregor, 2004, 85).

The intrinsic is an essential component of organizing for good, but effective organizations have to be clear about extrinsic and systemic requirements in order to design teams well.

B. Managing the Extrinsic

Extrinsic considerations are important, because they provide the bridge between the abstract world of planning and ideas and the practical ability to do what needs to be done to serve people. Organizing for good means organizations master four issues: simplicity, accountability and discipline, operating excellence, and innovation.

• *Simplicity* — Organizing for good requires simplicity.

The principle goes back as far as Aristotle who made the point that "Nature operates in the shortest way possible." William of Occam, a 14th century Franciscan Friar, wrote, "When you have two competing theories, which make exactly the same predictions, the one that is simpler is the better." Scientists talk about an "elegant" theory as one that embraces all of the known facts without extraneous components or considerations.

In the early part of the last century, Henry Ford exemplified simplicity: he kept the same Model T design for 15 million Model Ts from 1908 until 1927. In this century, Fred Brooks, the manager of IBM's System/360 and OS/360 software efforts wrote, "Adding people to a late software project makes it later" (Brooks, 1975). Rather than helping accelerate progress, additional people add complexity and slow the work down.

Abraham Lincoln was once asked how long a man's legs should be. He responded, "Long enough to reach the ground." The point is clear: simplicity is an essential component of achieving excellence and organizing for good.

• *Complexity* — Complexity is a problem for three reasons.

First, things that are complex are hard to understand.

Second, products and processes that are complex are more likely to break down.
Third, products and processes that are complex are more expensive than those that are simple. This means we need to simplify people, paper, and processes.

• *People* — Organizations need to have the correct number of people to do the work that needs to be done. People create complexity. When organizations have too few people, they burn out and do poor work. When organizations have too many, managers and staff create processes, paper, and unnecessary work.

• *Paper* — Much of the paper work in most organizations is either duplicative or unnecessary. Effective organizations reduce paper.

• *Processes* — Simple processes reduce complexity and costs and make it easier for people to do what needs to be done and do it well.

• *Accountability and Discipline* — Organizing for good means that the organization is disciplined and people associated with it are accountable for what they do.

These qualities have been hard to achieve because we misunderstand what discipline means. Most of us tend to view discipline as a constraint on freedom rather than as the quality that enables us to be free. When organizations are disciplined and effective, people are free to do what needs to be done. Conversely, when organizations lack discipline, people spend time on office politics, cajoling the reluctant, writing unnecessary memos and emails, copying their boss's bosses and numerous others on memos and emails, debating what needs to be done, and endlessly jockeying for position.

Being disciplined means that managers and employees have straightforward discussions about what needs to be done. In these organizations, people say what they mean and mean what they say. It also means they do what they say they will do. In these organizations, people complete assignments on time, return telephone calls, and complete responsibilities such as personnel evaluations effectively and on time.

There is a striking difference between behavior and language in organizations that are disciplined and those that are not.

The language in undisciplined organizations includes phrases such as "We're working on it," "The (chose one) committee/task force/process team is working on it," "I'm not sure," "They're dealing with that," "I'll find out and get back to you," or "They (whoever they are) won't cooperate." The language is usually process oriented and filled with vague phrases and responses. In disciplined organizations, by contrast, people talk about what has been accomplished and dates by which work either has been or will be done. People in these organizations are clear about who is responsible and what they will do.

When organizations are undisciplined, there is a lack of clarity. It is difficult for people to know what is expected of them, hard for managers and staff to evaluate each other, and, not surprisingly, difficult to hold people responsible when things go wrong or reward them when things go well.

• *Operating Excellence* — Effective organizations are committed to operating excellence.

Taylor was correct about the benefits of systems. He was wrong when he put systems ahead of people. Similarly, today's managers are wrong when they think of achieving operational excellence as an end in itself rather than as being important because it enables them to serve people well.

When properly understood, strong and well-understood operating systems make it easier for people to communicate, because there is a shared vocabulary and a common understanding of what words mean. These systems make it easier to clarify expectations and for everyone who is part of them to understand what is expected of them.

The difficulty many organizations have when they try to implement a consistent operating system is that the systems is seen as another ploy to increase profits, or as an end in itself, rather than as a way to help employees become more effective and enable the organization to serve people well.

• *Innovation* — Because change is constant, innovation is an essential part of organizing for good. Peter Drucker identified seven sources of opportunities for innovation:

1) *The Unexpected* — An unexpected success, failure or outside event can be a symptom of a unique opportunity.

2) *The Incongruity* — A discrepancy between reality and what everyone assumes it to be, or between what is and what ought to be, can create an innovative opportunity.

3) *Innovation based on process need* — When a weak link is evident in a particular process, people work around it instead of doing something about it, so an opportunity is present to the person or company willing to supply the "missing link."

4) *Changes in industry or market structure* — The opportunity for an innovative product, service or business approach occurs when the underlying foundation of the industry or market shifts.

5) *Demographics* — Changes in the population's size, age, structure, composition, employment, level of education, and income can create innovative opportunities.

6) *Changes in perception, mood, and meaning* — Innovative opportunities can develop when a society's general assumptions, attitudes, and beliefs change.

7) *New Knowledge* — Advances in scientific and nonscientific knowledge can create new products and new markets.

Innovation is essential because there will always be a new idea or better way. Successful organizations promote and encourage innovation.

C. Managing the Systemic

Systemic Values are most usefully thought of as characteristics that shape our behaviors, rather than as attributes we possess. A United States Army pamphlet, *Values: The Bedrock of Our Profession*, states: "Values are what we, as a profession, judge to be right. They are more than words — they are the moral, ethical, and professional attributes of character"(National Defense University).

Organizational values are essential because they provide the framework and guidance for how managers and staff are expected to make decisions. When they are well understood, people throughout an organization know what is expected of them. In Hartman's terms, extrinsic and practical abilities to act on what we believe will enable individuals and organizations to become fully who they ought to be.

Scientific management is useful because the approach helps us figure out how to do something; it is not useful in helping us determine whether what we are doing is the right thing to do. The difficulty comes when organizations fail to act on what they say they believe. One company stated in their "Principles of Human Rights" that they would "Treat others as we would like to be treated" and "Work with customers and prospects openly, honestly, and sincerely." The company was Enron, and the obvious problem was that while they had clear statements of principles (the systemic), they failed to act on them (the extrinsic); and, as a result, people got hurt. Enron did well at scientific management; it ran the business and met the numbers. It failed miserably at organizing for good because the leadership was corrupt. When people and organizations become preoccupied with the systemic or the extrinsic, they invariably get into trouble because becoming preoccupied with efficiency obscures whether what we are doing is appropriate.

The United States Coast Guard is good example of an organization having clear values and the ability to act on them. Interestingly, the Coast Guard has never had a clear and consistent mission. Over the course of its history, it collected taxes from smugglers, chased pirates, rescued people at sea, and worked on oil cleanup projects. Wil Milam, one of the Coast Guard's rescue swimmers, says, "Take care of people, and the mission will take care of itself." This sense of values is reflected in stories of Coast Guard officers ignoring superiors to make decisions about what they thought was right for people. Clear Coast Guard values include the ability to improvise, a commitment to decentralization, and a reliance on accountability, because, as, one officer says, the Coast Guard is so small, "There's no place to hide," so people make decisions and take risks (Ripley, 2005, 51).

Another example: Jeffrey Immelt, the Chairman of General Electric, talked about four qualities he believes will keep General Electric successful; one of them is virtue. Immelt argues that to be a great company you have to be a good company, and he says, "Good leaders give back. The era we live in belongs to

people who believe in themselves but are focused on the needs of others." Immelt makes it clear that operational excellence and productivity are still important, but it is equally clear that he has moved beyond scientific management. At the same time, he is clear that "If this wasn't good for business, we probably wouldn't do it"(Gunther, 2004, 176). From this perspective, Immelt has embodied Harman's belief in the importance of the intrinsic and the need to balance the intrinsic with the practical and the systemic.

• *Vision*: A vision of the future is important because it provides a framework for decisions, clarity about what the organization believes matters, and, if sufficiently compelling, engages people who will do the work in the pursuit of the vision.

Some organizations use vision statements as descriptions of their desired future; others use them to clarify what matters to them. However they are used, vision statements clarify how the organization will make decisions. They matter, especially during periods of change, because they help people and organizations clarify what matters. The "Tattered Cover" bookstore in Denver has a clear vision. According to the owner, Joyce Meskis, "It's all about the books" (O'Driscoll, 2006, 3A). That vision may not meet a purist's standard for what a mission statement ought to be, but it provides the basis for the decisions she made to give 1% of its pre-tax profits to not-for-profit community organizations, sponsor author presentations, hire knowledgeable staff, defend privacy rights in cases that have gone to the Supreme Court, and sponsor events such as "Banned Book Week," which, as the store's web site says, "... reminds Americans not to take reading, a precious democratic freedom, for granted" (Tattered Cover website). Mike Eskew, the Chairman of UPS, says the company's vision is "... to enable commerce." UPS repairs Toshiba laptops and manages warehouses with spare parts for Bentley automobiles and supply stores for Nike (Lynch, 2006, B1).

Debates about distinctions between an organization's mission, values, and vision will continue; what matters is that however it's constructed or used, it has meaning for people in the organization.

• *Money and Finance* — Brandeis's original argument drew national and worldwide attention to Taylor's work and, more specifically, to issues related to costs. Over time, this attention to costs and the efficient use of capital has become a central, if not the central, focus of organizational executives. The difficulty is that we have lost balance as well as an understanding of the meaning of money, more specifically, of net income. Increasing net income and cash flow has become an end in itself rather than a means of understanding how we can achieve excellence.

Net income tells us three things about an organization:

1) *How well it understands the people it serves.* If an organization understands the people it serves and produces products or services they need, net income goes up; when it doesn't, net income goes down. Example: When Ford Motor

produced the Edsel and few people bought it, Ford lost money. (Ford sold 110,000 cars over a 3 year period; by comparison the Chevrolet Impala sold 599,655. Conversely, shortly after Steven Jobs introduced the Apple Ipod on October 23, 2001, sales began to grow rapidly. No amount of efficiency can overcome the problems that come from making something nobody wants.

2) *How simple the systems are*. When systems are simple and make it easier for people to do their jobs, net income goes up. When systems are complex they become increasingly expensive, and net income goes down. Hartman's point was that a thing is good to the extent that it is what it ought to be. The application for organizations is that their systems should be no more complex than necessary. This reinforces Taylor's central point about the need to reduce variation to improve quality.

The difficulty has been that organizations have focused on the "program of the week" (the extrinsic aspect of variation) through efforts such as "quality," "re-engineering," "process management" or any one of a number of others, rather than focusing on the value of simplicity and the idea of striving for excellence.

3) *How well people get along and how well they are placed in positions are consistent with what Robert Hartman called "value tendencies*." First, when people get along and help each other, quality goes up and costs go down. This is another example of the idea that when people don't get along, costs go up: they write more memos, hold more meetings to clarify what needs to be done, and hire more staff, because they don't trust their colleagues. When they get along, they talk to each other about what needs to be done, have fewer meetings because they understand each other, and need fewer people because they go out of their way to help each other adjust to changes in what they need to do.

Second, when people are doing work that is consistent with their value tendencies, they are more effective than when they are doing work that asks them to change who they are. Some people are disciplined; others value creativity. Some are able to deal with difficult people; others aren't. This doesn't, as Hartman consistently pointed out, make them good or bad (morally); it makes them different. When people do work and are in positions consistent with their value tendencies, they are invariably more effective than when they aren't.

The preoccupation with money as an end in itself rather than a way to gain insight into ways we can improve our effectiveness always leads to trouble. When organizational leaders focus on financial manipulations rather than the business itself, sooner or later they get into trouble — and sometimes into court. The litany of scandals over the last decade has in large part resulted from this confusion and the meaning of money.

It's as simple as understanding that focusing on money as an end itself leads to trouble. Serving people well and caring about what you do leads to success.

4. Summary

Great transformations have two common attributes.

First, they change institutions and how people work. Two good examples of how the process works come from agriculture and retailing.

In the middle 1800s, farmers began changing how they farmed. The 1862 Morrill Act directed the land-grant colleges it created to do agricultural research, and the results encouraged farmers to use scientifically-based information to make decisions in much the same way Taylor would introduce scientific management to manufacturers decades later. Shortly after the turn of century, farming changed again: tractors and machinery began to do what men and animals had done previously. In the latter half of the 20th century, farmers adjusted again: this time to globalization, the emergence of an information society and the development of computers. Tractors and combines now process information on crops and global financial markets as routinely as draft animals once ploughed the fields. The ability of farmers to adjust, adopt new technologies, and improve their productivity has been one of the extraordinary achievements of the last 200 years.

Retailers have demonstrated this same ability to adapt to a changing environment. In the 1800s, as the country expanded, a young railroad clerk began to sell goods to people in small towns along the railroad line. Richard Sears took advantage of early communications technology — the telegraph, and transportation technology — the railroads, to bring products to people in small towns. Retailers adapted to the growth of the cities with downtown department stores, the emergence of the suburbs with malls, and more recently to the internet, with web sites enabling people to shop from anywhere they choose.

The second significant characteristic of great transformations is that they encourage the development of entirely new industries, institutions, and ways of doing things.

The small family farm has given way to the agricultural conglomerate, and the neighborhood grocery store that sold us food has given way to the supermarket that has a bank, a post office, and sells us tickets to symphonies and sports events, as well as groceries. The emergence of the automotive and clothing industries in the early 1900s, and more recently, the computer and information industries, are examples of entirely new industries that have developed since 1911. Companies such as eBay and Amazon.com, not to mention even newer companies such as Myspace.com and Youtube.com are examples of these new institutions.

This process of transformation doesn't mean that we throw out all we have learned; more specifically, it doesn't mean we abandon scientific management. It does mean we need to manage differently and, more importantly, to think about what it means to achieve excellence and organize for good.

The following seven points become the basis for how we need to think about management — and how we need to manage.

1) *People Matter: Systems Can Be Changed*. Organizing for good means we need to understand that systems have value to the extent they benefit people: they have little value when they become ends in themselves.

When we organize for good, the key question is, "What does what I am doing mean for people?" rather than "How can I make the system more efficient."

Some managers and companies already think this way. Their work has been described under labels such as "mass customization," "customer service," or "exceeding expectations;" but, whatever the label, the focus is on putting people first. EBay is the 21st century electronic version of the town square; people come together through the Internet rather than walking to the town square. EBay has 114,000,000 registered worldwide users who buy, sell, and trade products in 50,000 categories containing 2,9000,000 items trading at the rate of 1,020 each second (Fluckinger, 2005). Clothing companies such as Levi Strauss and Brooks Brothers use communications and information technologies to fit blue jeans and suits individually. Benefit plans have also changed: a growing number of companies now have some form of "cafeteria benefit plans" for their employees. Traditional approaches based on a limited number of fixed and well-defined benefits are giving way to "cafeteria plans" that provide a wider range of choices to respond to the needs of an increasingly diverse work force. In medicine, pharmaceutical researchers are focusing on the development of "designer drugs." These hold the promise of replacing drugs that provide general relief to masses of people with drugs individually tailored to each person's unique condition and genetic makeup.

2) *Effectiveness Matters More Than Efficiency*. Achieving excellence means focusing on effectiveness rather than efficiency.

Efficiency limits our thinking to how well a system accomplishes what it is intended to do; effectiveness encourages us to think about how well systems meet the needs of people they are intended to serve.

In 2006, Dell Computer had to deal with customer technical support issues that highlight the difference. Dell has always focused on speed and customer support. This focus translated into metrics that measured how many calls technical support people could handle. The focus was on the system and the number of calls Dell technical people handled, rather than on customers and how well their questions were answered. Not surprisingly, efficiency went up and customer satisfaction went down. As Michael Dell belatedly observed: "When you handle the call faster, you solve 90% of the problem, instead of 100%." Now Dell focuses on how well they solve the customer's problem rather than the number of calls the technical person handles. The result is better customer service and more effective systems. There were 2 million fewer customer service calls because Dell customers got their questions answered on the first call rather than

having to call back — the system had become more effective — and more efficient (Kirkpatrick, 2006).

Focusing on effectiveness will always lead to greater efficiency.

3) *Balance is Essential: There is no one best way.* Russell Ackoff, organizational theorist and Anheuser Busch Professor Emeritus of management science at the Wharton School, has the clearest explanation for why there never has been — and never will be — one best way. Ackoff's point is simple: you can a) optimize the system, or b) optimize the sub-system, but c) optimizing one means that by definition you can not optimize the other.

The "best way" to do work in a single unit will never be the best way for another unit or the organization as a whole. Designing an effective system means managers have to make judgments about how to balance or prioritize the competing and legitimate needs of the overall system and its components: you can't optimize both.

In addition to the system problem described by Ackoff, managers will never be able to develop one durable best way because they have to adjust to change. The reality, as one client said, is that, "It's always something."

Thinking about balance encourages managers to think about how to balance the needs of their own department with the needs of other departments and the organization as a whole. It also encourages them to think about people — how what they do affects customers, colleagues, shareholders, suppliers, or anyone else their actions may touch. It turns their attention to people and effectiveness rather than to efficiency and systems.

4) *Encourage People to Develop and Use Their Judgment*. Taylor was trying to eliminate judgment; in 2006, encouraging employees to use their judgment is essential.

Effective leaders understand Peter Fraser's observation that companies "... are successful because of people, not in spite of them." People who care about their work and understand what they are doing and why it matters will always outperform people who are merely "going through the motions." The discipline of Taylor's systems, and his desire to eliminate workers using their judgment, are especially good examples of ideas that may have worked well in the past but won't work now or in the future. Herzberg's work extending over 50 years, and the practicalities every manager grapples with today make it clear that most employees want to be engaged with their work and proud of what they do.

Thinking differently is an essential first step; but, as Robert S. Hartman would have pointed out, thinking differently (the systemic) is not enough — we have to act differently, and this means changing how we manage.

In addition to the points in the discussions of people and organizations, there are additional steps we can take to manage more effectively. These are described below as transitions from what we do now to what we can do to be more effective in the future.

5) *Manage By "Value First, Rules Second*." Organizing for good means understanding that values matter more than rules.

In almost every case of executive malfeasance, the argument for the defense has been the same: what the executive or the company did didn't break the law. This was the point Robert Hartman reached early in his career; the law could tell you what was legal or not legal but not was right or wrong. The defendants and their lawyers may be right; but the standard is too low.

There will probably always be executives who focus on rules rather than values. Some politicians will choose to comply with the letter, rather than the spirit, of campaign finance law; some business leaders will enrich themselves at the expense of others; some academics will skirt the edges of intellectual integrity. Some people will always decide they can beat the system.

The positive side of recent personal and corporate scandals has been a growing understanding of the importance of values. Business schools have begun to develop courses on ethics to address the problem Warren Bennis and James O' Toole described. At the Harvard Business School, ethics courses that were optional in the 1980s have now become mandatory (Farrell, 2006, 4B). Legislative and regulatory requirements may be helpful, but organizing for good means that we need to understand that complying with rules is the minimal standard; only managing according to values will lead to durable success.

6) *Emphasize Meaning Over Mechanics.* Most people would like to know their work has meaning.

The meaning may be in the work itself, in the values of the organization, or in the pride people derive from working with friends and knowing they are good at what they do. In a radio interview, one NASA scientist talked about the meaning of her work as a spiritual journey into the universe and the mind of God. Martin Rosenblum, the Harley-Davidson historian, says he works for the company because it has "soul," and he describes the customization of bikes as "As a sort of folk art ritual where the rider recreates the bike as an innovation of himself or herself" (Matthews).

How we view our work determines the extent to which it has meaning. Real-estate people can decide whether they want to "sell houses" or help people "find homes," and insurance salespeople can decide whether they are "selling policies" or helping people "protect their families." People get frustrated if they think of what they're doing as 'just a job;" they are slightly more interested in "work;" but in every case the people who are outstanding see what they do as a "calling;" the work has intrinsic meaning.

Organizing for good means organizations understand that they will be successful to the extent they treat employees as fully human and are interested in their hearts and minds as well as their arms and legs.

7) *Manage Experiments Rather than Make Decisions*. Properly understood, using the scientific method means that executives manage experiments and keep looking for better ways to accomplish what they need to do.

Effective executives manage an ongoing set of experiments to find better ways to serve people, rather than defending whatever approach they happen to be using at the moment. They are constantly adjusting what they do and how they do it in response to the many challenges described earlier.

At the end, we have returned to where we started. In 1911, Frederick Taylor's ideas represented a powerful application of ideas that led to significant improvements in all our lives. Now we need to move on.

Robert S. Hartman's ideas hold the potential to help ourselves and the organizations we have created become what they ought to be. The question is: What can each of us do to become fully who we ought to be and to develop organizations of which we are proud and that we respect.

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KNOW THYSELF, KNOW THY PSYCHOLOGY

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Abstract

Do we adopt our theories of mind on the basis of the values we have, i.e., on the basis of who we are? Do our theories of mind adequately explain our values? Do values enter into the structure and constitution of diverse psychological theories? Can Hartmanian axiology shed any light on such issues? This article explores such problems in light of the Hartmanian hierarchy of systemic, extrinsic, and intrinsic values and valuations. It shows that and how central state materialism is organized around systemic values, B. F. Skinner's behaviorism around extrinsic values, and Abraham Maslow's psychology around intrinsic values. It identifies Maslow's indebtedness to Hartman. It distinguishes between practicing or actually living in and by a psychological theory (intrinsically valuing it) and merely preaching it (systemically or extrinsically valuing it). Practicing or living in a theory involves (1) truly believing it, i.e., being willing to act upon it, and (2) taking account in one's day to day living only of the entities or properties that the theory classifies as "real." Those who preach but do not practice the theories they espouse face serious unresolved conflicts between their thinking and their living. Can anyone really live in purely or predominantly systemic and extrinsic psychologies? The best psychologies, like the best people, are those richest in good-making properties.

Introduction

"Psychologism" traditionally connoted the view that "All abstract theories can be explained by psychology as expressions of psychological dispositions and propensities." Psychologism affirms that different general theories or worldviews express and manifest different psychological tendencies, and people adopt or are attracted to them, not because they are known to be true, but because they personally have the relevant propensities. We hold our basic worldviews, not for rational reasons, but because of our individual psychological makeup. Applied to itself as a theory, psychologism is self-refuting, but some carefully delineated place may yet remain for psychologistic explanations. No doubt, many abstract

questions can be answered adequately and many theories can be confirmed or falsified using rational scientific and philosophical methods and evidence-giving procedures. Yet, the fact remains that at the most abstract level, rational arguments and "scientific methods" fail us in the sense that they are not sufficiently powerful to bring all rationally competent authorities into agreement. Where our best minds do not agree about what rational and scientific methods authorize us to believe, psychologistic explanations may have a legitimate place.

A well recognized "brute fact" is that the worldviews and basic theoretical commitments of perfectly competent and professionally well trained psychologists, philosophers, and theologians do not agree. The "experts," our best scholars with impeccable academic credentials, cannot seem to resolve their most fundamental differences. At the most basic level, neither rational nor revelational methodologies at their best seem to produce "intersubjective validity and agreement." The "experts" tend to choose sides anyway, even if their commitments are only tentative. Why so? We must search beyond rational and revelational evidence to explain this, and the best explanation seems to be psychologistic, recognizing that every person's psychology is always formed in part by culture, historical circumstances, economic conditions, genetic endowment, and past personal choices — all of which are value-laden realities. No matter how well or poorly developed, all of us have basic views of the world and of our places within it. After all is said and done, both the "experts" and ordinary people seem to adopt the most basic elements of their worldviews simply because they are the kind of people that they are, that is, because the theories that they affirm or to which they are attracted express certain enduring psychological propensities, and they have those propensities. Psychologists, philosophers, and theologians gather together in, and affiliate themselves with, "schools" or communities of like-minded persons, not because reason decisively triumphs, but because their own psychological predispositions and values triumph. This is true even of Pyrrhonists (skeptics). Having basic values applies just as much to groups and communities, where values are shared, as to individuals. Psychological, philosophical, and theological "schools" seldom talk to one another, have little respect for one another, and put down outsiders who disagree with them as often as they can. Pettiness and prejudices are as rampant in academia as anywhere else.

If this is so, then anyone who makes any kind of basic commitment in psychology, philosophy, theology, or what have you, must eventually face the question, "Who am I?" Everything else seems to hang on the answer to this and the closely intertwined question, "What are my most basic values and priorities?" If the results of our search for general psychological, philosophical, or theological perspectives finally depend on who we are, then the ultimate task of anyone with psychological, philosophical, or theological curiosity and inclinations is: KNOW THYSELF. Here, at last, everything comes to rest. After all is

said and done, and there is a lot to be said and done, we can only confess who we are to one another.

The major objectives of this article are to open an ongoing dialogue on (1) how values enter into the structure and constitution of psychological theories, (2) the extent to which values enter into a person's or group's adopting or affiliating with psychological theories, and (3) the extent to which Hartmanian axiology is helpful in dealing with the first two issues. The following discussion will seem very elemental to some, which it is, but it is offered as only a beginning, not as a final outcome. It is offered only as an invitation to further reflection and discussion.

Perhaps Hartmanian axiology (to which I am partial) can help us to know ourselves and to understand why we and others have the general worldviews that we have, including the "theory of minds" by which we live or that we professionally sponsor. Hartmanian axiology assumes that our personalities are structured around our values, so to know ourselves, we have to know our values. Furthermore, once we know our values, perhaps we can understand why we are attracted to the basic value-laden worldviews to which we subscribe. We can best understand why we believe what we believe by coming to know what kind of persons we are. We are primarily what and how we value, and what and how we value explains not only who we are but also why we hold our most fundamental beliefs, our general worldviews.

Everyone has a general worldview or comprehensive conceptual perspective, but the worldviews of diverse individuals exist in various stages of emphasis, development, or disarray. General worldviews are composed of many elements. Values, practicalities, psychologies, philosophies, and theologies are key elements in our most general worldviews. However well or poorly developed, most if not all human beings have theories of mind, of reality, of good and bad, of what to do, of how we know, and of ultimate reality. Psychologists sometimes wonder if the other animals have theories of mind, but most do not seriously doubt that ordinary people do. The present discussion will concentrate on theories of mind or psychologies, and it will explore the question of whether "who we are" with respect to our values explains our psychologies and why we hold them. Later essays in this journal, perhaps by myself or by other authors, may attempt to show how our values explain our philosophies and theologies as well as our psychologies. You are invited to participate in writing such essays.

Saying that our values explain our psychologies may seem to some to "have the cart before the horse." Isn't it just the other way around? Doesn't psychology explain who we are, including what and how we value? And if so, how can "who we are" explain our psychologies? This problem is like "Which came first, the chicken or the egg?" Explanations at this level can go both ways. They are not mutually exclusive; each may be appropriate relative to some particular human purpose.

Most psychologists think that psychology explains who we are, including what and how we value, but which of the innumerable available psychological theories should we consult for information about and confirmation of this claim? *How do we choose the right psychology*, in light of the fact that liteterally hundreds of psychological theories and "schools" of thought are out there? As far as values are concerned, many prominent psychologists claim that psychology explains human values. For example, B. F. Skinner argues for this in depth in Chapter Six of his *Beyond Freedom and Dignity* (Skinner, 1972) and elsewhere; but why should we start with or adopt Skinner's psychology of value rather than someone else's? Hartmanian axiology invites us to look first at the values built into any psychological theory before we accept its particular account or explanation of human values and psyches. Look first at how human values explain psychology before considering how psychology explains human values. Of course, many will want to start with, "How does psychology explain our values?" and that is perfectly legitimate. What follows, however, should disclose that an axiological approach to psychology has great explanatory power. Parallel explanations could easily be given of philosophy, theology, and other aspects of general worldviews. The result would be a kind of axiological perpectivism, according to which people are attracted to and adopt the most basic features of diverse world views partly because they have different basic values.

Here is how to explain psychology axiologically. Axiology identifies at least three different approaches to or forms of psychology that depend on which of the three basic kinds of value — systemic, extrinsic, and intrinsic — is dominant. People shopping for a psychological theory to live by are attracted to and tend to adopt a given psychology on the basis of their own predominant values. In existing psychologies, the three axiological or value orientations are almost never totally pure, either theoretically or in personal affirmation. They are usually combined with one another, so we must look at dominant and hierarchical values, not for value dimension exclusivity. Some psychological theories are predominately systemic, some predominately extrinsic, and some predominately intrinsic, but few if any are ever purely one without the others. Psychologies moving beyond such purity are headed in the right direction. The best (i.e., the most comprehensive, parsimonious, consistent, factual, rational, defensible, plausible, and desirable) psychology will be the one that is axiologically the richest, the one that incorporates balanced proportions of all three dimensions of value in an appropriate value hierarchy.

The three psychological theories examined in this article will seem excessively simplistic, perhaps even antiquated, to most readers, as indeed they are, especially the first two. They are chosen to illustrate how systemic values in the first case, extrinsic values in the second case, and intrinsic values in the third case are embedded in particular approaches to psychology. Most current psychological theories, especially those actually used today by clinical psychologists, are not so simple or so pure as these, but this just means, as

suggested in the preceding paragraph, that they are "headed in the right direction." Further discussions of values in more complex psychologies is hereby invited, to be considered for publication in this journal, particularly those that are rich enough to be useful to the clinical psychologists, who are on the "front line" in applying psychological theories to real human beings.

Psychologists, like everyone else, may disagree about the value hierarchy, that is, about which human values are first and foremost. For some psychologists, systemic values come first, for others extrinsic values are on top, and for still others intrinsic values have the highest worth. Psychological theories are primarily built upon and around the values that are judged by their creators to be first and foremost.

As background, recall axiology's three different forms or dimensions of value (what we value) and valuation (how we value).

With respect to *values*, value objects, or WHAT we value:

Systemic values or value objects are conceptual constructs like: ideas, concepts, beliefs, rules, systems, doctrines (whether psychological, philosophical, theological, or what have you). The purest systemic values are the most formal conceptual constructs, for example, the many existing varieties of logic and mathematics.

Extrinsic values or value objects are means to ends — useful things and processes in our common everyday external sensory world, such as: material possessions, things in our environment, physical causal processes, our own bodies and those of other people, and the personal, professional, social, moral, religious, etc. actions and roles that we execute or act out through our bodies.

Intrinsic values or value objects are ends in themselves, worthwhile for their own sakes, or in, to, and for themselves: specifically, individual human beings, God, animals, and all conscious beings in their full definiteness and concreteness.

With respect to *valuations*, HOW we value:

Systemic valuations are "objective" or "disinterested" judgments unaccompanied by distorting (e.g., unconscious, self-interested, or otherwise biased) feelings or emotions. Systemic judgments tend to be "all or nothing," "black or white," reductionistic, and oversimplifying.

Extrinsic valuations are ordinary everyday interests, manifesting themselves in practical judgments and behaviors, as well as normal everyday choices, desires, emotions, moods, and attitudes. They may include self- interestedness, other-interestedness, society-interestedness, or any other practical interests and judgments.

Intrinsic valuations are the most intense forms of self-identification-with-valued-objects. They involve intensely-focused-on-individuals judgments plus the powerful feelings manifest in identification-with-others, love, compassion, empathy, concentration, creativity, autonomous decision-making, devotion, and mystical or spiritual union.

With these distinctions now before us, the claim that "Adopting a psychological theory or a 'theory of mind' (in a very broad sense of 'mind') is determined by and expresses who we are" must be reconsidered. Does this apply to the psychology that we actually believe and by which we actually live, or to the psychology that we publicly or professionally profess, or to both? Simply put, does this apply to the psychology that we practice, or to the psychology we preach, or to both? Expressed axiologically, does this claim apply only to the "theory of mind" that we value intrinsically, i.e., with which we most fully identify, or to the one we value extrinsically, i.e., that we find useful or expedient in everyday practical situations, or to the one we value systemically, i.e., that we approach only "objectively" or "disinterestedly" and with little or no personal involvement? Or somehow all of the above?

The best answer seems to be that we adopt the "theory of mind" by and in which we most constantly live and with which we most intensely identify — largely because we are the persons that we are and have the values that we actually have. Of course, we all have all three kinds of value, so the value dimension that is dominant, i.e., the one that comes first in our personal hierarchy of values, has the most influence on the theories we really take seriously or believe in the realms of psychology, theology, and philosophy. The "theory of mind" that we really believe, the one by and in which we actually live, is not always the same as the one that we profess and to which we subscribe publicly or professionally. Sometimes we relate only systemically (objectively or disinterestedly), or only extrinsically (out of expediency or practical utility) to the theories we espouse and profess, while actually believing and living by and within quite different theories of mind. Sometimes an enormous practical or personal gap separates us from our theories, and that can create complex unresolved psychological problems, tensions, and distresses. Seriously professing what we do not and can not practice can be very frustrating!

Now, let's consider three different value-based, value-laden approaches to psychology or the theory of mind or psyche. Only one prominent instance of each will be given, though innumerable instances are available. Most "theories of mind" in "psychology today" are much more complicated than these, or at least than the first two of them. In the first, systemic values are dominant; in the second, extrinsic values come first, and in the third, intrinsic values prevail. Other values may and usually do sneak in, so we are talking here about dominance, not purity.

1. Systemic Central State Materialism

Systemic psychologists employ very abstruse theoretical constructs as their most basic explanatory concepts and values. The basic concepts of systemic psychologists have minimal if any direct extrinsic empirical reference or significance; intrinsic and extrinsic values and valuations are either dismissed

altogether or reduced to and identified with something that they are not. Since the purest conceptual constructs are mathematical or formal in nature, the purest systemic "theories of mind" will attempt to reduce the entire subject matter of psychology to something pseudo-formal or pseudo-mathematical. Traces of the empirical or even of the intrinsic will almost inevitably creep in, however.

Systemic psychology can take many forms. We will turn to philosophers (only a few, mind you) to find a theory of mind that is sufficiently abstruse to count as almost purely systemic. The obvious and most representative example of systemic psychology considered here is often called "central state materialism," according to which all psychological properties and processes are in reality *nothing more* than physical properties and processes occurring in lawfully ordered patterns within the human brain and central nervous system. Reductionism is central to central state materialism.

When systemic psychologists take quantitative physics as their ideal explanatory model, they reduce "in principle" all external behaviors and all internal thoughts, feelings, choices, etc., to the external or formal entities and constructs of mathematical physics. Thomas Hobbes, a precursor of today's central state materialism, said that thinking is nothing but "matter in motion," more specifically, "motion in the head." Today's central state materialists are a bit more sophisticated than Hobbes, but they still hold that thinking and all other psychological properties are in reality nothing more than matter in motion in various parts of the brain and central nervous system. They reduce all internal psychological properties to formal mathematical relations between external physical or material things and processes like brain waves, firing synapses, active chemical neurotransmitters, underlying genes, and electromagnetically functioning brain structures. They recognize the reality only of those properties of matter that can be mathematically quantified. Both Sigmund Freud (Wallwork, 1991, 20-23, 26, 40-43, 147) and B. F. Skinner (Skinner, 1953, 27-29) found physiological reduction-ism very attractive, but their actual applied psychologies were quite different and thus much richer in content. Among philosophers of mind today, systemic reductive central state materialists are a dime a dozen. Versions of reductive central state materialism will be found, for example, in: (Churchland and Churchland,1988), (Dennett, 1991), (Feyerabend, 1963), (Rey, G., 1983), (Rorty, 1970).

Before moving on, we should reflect a bit on reductionism. Reductionism is very attractive to (valued by) scientists in general, as well as to psychologists who think that physics is the ideal model for all "real" science, including psychology. For reductionists, the rational value of "simplicity" triumphs, and "comprehensiveness" is slighted. Extreme psychological reductionists do allow a few empirical data to get in under the wire, data located through and derived from special scientific apparatuses like microscopes, x-rays, electroencephalograms, and brain or body scanners. They tell us that when we observe such rarefied physical or physiological data, we are actually looking at psychological

processes and properties as such. The two are identical, but reduced to physiology, i.e., having only the quantitative properties of matter. (What if the two were identical — but reduced to psychology, i.e., to the qualitative properties of psyches?) Behaviorists, offering a less extreme reductionism, convert all psychological properties into gross behaviors that can be observed everyday by the so-called "external senses" without special equipment. Behaviorism will be examined later as paradigm extrinsic psychology. Central state materialists, by contrast, are much more systemically reductive; they attempt to reduce all psychological properties to very abstract, formalistic, and not immediately observable entities and processes, that is, to atoms, elements, and chemical compounds in motion in the brain and central nervous system. Psychological reductionists proceed by eliminating properties, either by ignoring them, or by theoretically dismissing them as illusions, byproducts, myths, or transient delusions of "folk psychology." They think that only the formally measurable attributes that philosophers call "primary properties" are real, e.g., size, shape, position, motion, and duration.

Hartmanian axiology says that properties (the good-making ones) are the key elements in and of valuable entities, so taking account of actual properties is very important. The poorer in good-making properties something is, the more worthless it is; the richer in good-making properties anything is, the better it is. Hartmanian axiologists repudiate reductionism because it always proceeds, not by emphasizing or including properties, but by dismissing or excluding them. In *The Structure of Value*, Robert S. Hartman wrote, "There is a jocular saying that the philosopher knows less and less about more and more until he knows nothing about everything, while the scientist knows more and more about less and less until he knows everything about nothing. There is a grain of truth in this saying . . ." (Hartman, 1967, 44). Certainly this is true of reductive scientific explanations in psychology or elsewhere; they offer us less and less to know more and more about, and in the end they offer us much ado about almost nothing. In particular, they offer us less and less to value and to base our self-knowledge or value judgments upon.

As psychological reductionists like central state materialists proceed further and further into abstractions and conceptual constructs, they offer us less and less valuable worlds in which to live — few and fewer properties, good-making or otherwise, to take into account. A "real" world of *nothing more than* matter in motion (size, shape, position, motion, and duration) is far from "ideal" with respect to values by which anyone can or should actually live. We either value illusions, myths, byproducts, and the delusions of "folk psychology," reductive materialists say, or else we value reality. And what is our own psychological reality, according to central state materialism? It affirms that human souls or psyches, like the entire universe, is nothing but "matter in motion" — expressed perhaps in morecontemporary language. Not only is it reductionistic, it also tends to be totalitarian; that is, it exemplifies the "black or

white," "all or nothing" thought patterns typical of all systemic-minded ideologies.

What, according to central state materialism, are human thinking, choosing, love, compassion, worship, mystical union, conscience, and consciousness? *Nothing but* matter in lawful motion in certain parts of the brain, it answers. When you see certain parts of the brain light up in brain scanners, you are seeing *all there is* (except, perhaps, for more of the same that could "in principle" be revealed by more powerful scanners). Similarly, hatred, violence, torture, envy, and all human vices really involve "nothing but" matter in motion. All the good and bad things that we do unto self or others are nothing but matter in motion. "Nothing but" and "all there is" are the axiologically troubling, "black or white" systemic claims. Matter is indeed in motion in various parts of our brains when we think, choose, feel, and act; but is that all there is?

After central state materialists have done their work, we are left with very little to value or respect in ourselves or in other people. We are left with almost nothing but systemic abstractions or constructs. All the facts and practical values of ordinary life, normal extrinsic sensory experience, and intrinsic self-awareness totally disappear and are simply not available to central state materialists who are true to, live in, fully identify with, and intrinsically valuate their own theories. They can make no appeal to the facts and experiences of everyday life for any reason whatsoever, since they simply do not exist according to "nothing but" minded central state materialists.

Many serious philosophical critiques of reductive central state materialism are available in the literature. For present axiological purposes it will suffice to recognize that no one can live exclusively in, by, and with the purely systemic values and valued-objects of central state materialism. Living in and by a theory of mind, or any theory, involves (1) truly believing it, i.e., being willing to act upon it and (2) taking account in one's day to day living *only* of the entities or properties that the theory classifies as "real." No matter how or where physical processes are located in the brain, or how complex they are when compounded, no central state materialists can write their articles or books by taking account *only* of matter in lawful motion. With nothing more than matter in lawful motion in mind, central state materialists could not eat their food, wake up in the morning, converse with their friends, family, and colleagues, love their spouses and children, or brush their teeth. No one can actually live in and by this theory of mind, but who would even want to?

We are often told that one distinctive thing about us human beings is that we have a concept of ourselves, but the other animals do not (which may not be true as an absolute since at least some of the great apes seem to have some self-recognition and self-awareness capacities); but what kind of self-concept could reductive central state materialists have of themselves when they are true to their own theory of mind? At best, faithful, living, and breathing central state materialists could value their own theories systemically or extrinsically, but not

intrinsically. They cannot and do not practice what they preach, for extrinsic and intrinsic values inevitably creep into their lives. No one can live entirely without them. As Shakespeare's Hamlet might want to put it, "There are more things in Heaven and Earth than are dreamt of in your philosophy, Horatio."

What is so great or valuable, after all, about matter in lawful motion? By the same token, what is so bad about it, assuming that it is not the whole story? What kind of people with what kind of values would be attracted to reductive central state materialism as a theory by which they could actually live? What would be the psychology of central state materialists who do indeed personally and intrinsically try to identify with this theory of mind? They would have to be excessively and predominantly "left-brained" intellectuals whose primary "ivory tower" values are conceptual or systemic, people for whom extrinsic practical and intrinsic personal values are underdeveloped, hardly known, absent from mind. One thing for sure, they are people who cannot live exclusively in and by their professed values and beliefs, just as David Hume could not live in and by his skepticism. If not that, then they are people who cannot be true to themselves, that is, true to their own theories, people who must constantly live a lie or in conflict with their own "truths." The richer their lives are in practical and personal values, the more they live in tension with their professional or theoretical convictions or professions. According to their own theories, extrinsic and intrinsic realities and values do not even exist; yet, they cannot and do not live without them.

Of course, many people who subscribe "officially" to central state materialism may be perfectly sane, sociable, delightful, charming, loving, compassionate, commonsensical, and conscientious people. For example, commenting on his perspective on "an MRI image of a normal human brain," Paul Churchland wrote, "This particular brain is in fact well known to me via more conventional informational pathways. It is the brain of my wife and colleague, Patricia Churchland, and it is very dear to me" (Churchland, 1995, 159. Thanks to my dear friend, Tom Dicken, for calling this quote to my attention.) Notice that in appealing to "conventional informational pathways," he makes use of sources of information not allowed by his theory, strictly construed; and his "it is very dear to me," shows that he is capable of intrinsic valuation, assuming that he does not reduce being "very dear" to nothing more than firing brain synapses, i.e., to mere matter in motion, and that the "brain" of his wife is construed metaphorically, not literally.

Central state materialists have serious unresolved conflicts. They cannot and do not practice what they preach; they cannot act upon, and solely upon, their professed beliefs; and in living their lives, they cannot take account *only* of the "primary" properties that their theory proclaims to be solely real. If they are aware of the conflict, this could be a source of significant discomfort and distress. They may think that intellectual honesty requires them to be reductive central state materialists, but could intellectual honesty ever require anyone to

dismiss theoretically almost everything that makes living a human life both possible and worthwhile, and to regard almost every form of human experience as an out-of-touch-with-reality illusion?

Systemic psychologies reduce human existence and human worth to extremely limited sets of "nothing more than" properties, but some reductions are more extreme and abstruse than others. A much less extreme but quite fascinating eliminative reductionism was discussed by Robert S. Hartman: Thomas Mann's treatment of the scientist who finds the woman he loves to be nothing more than the systems that he views in her x-rays. (Hartman, 280-286). Yet, the x-rays really turn him on! Shades of Paul Churchland! The more thoroughly empirical and/or personalistic and less formalistic reductionism gets, the richer it becomes in extrinsic and/or intrinsic properties and values. This brings us next to behaviorism, a psychology that theoretically incorporates only the extrinsic values present in ordinary sense experience, while making little or no place for consciousness, inwardness, and active subjects.

2. Extrinsic Behaviorism

Extrinsic psychologists center on things that are given to us in ordinary everyday sense experience, not just on conceptual constructs, brain waves, MRIs, and the like. The core realities and values they recognize are familiar everyday empirical extrinsic objects, processes, and activities. They may pay lip service to the ultimacy of abstruse systemic objects like matter within the body in lawful motion, but they mostly tell us to concentrate exclusively on ordinary sense experience if we want to know ourselves and other people (and to control other people). Behaviorists make no legitimate place at all for intrinsic values and valuations because they try to convert all intrinsic properties into extrinsic properties (Skinner, 1953, 31). They attempt to redefine inner "hunger" as nothing more than external "eating." "Pain" becomes nothing more than external "pain behavior." "Joy" or "pleasure" is redefined as nothing more than "making joyful noises" and the like. "Conscience" becomes nothing more than "operant conditioning," or the impotent epiphenomenal results thereof. "Thinking" is just "talking inaudibly." Love is nothing more than "affectionate behavior." "Purposes" are simply "goal-directed behaviors," nothing more. Behaviorists identify all inner psychological properties with external, extrinsic, sensory, behavioral properties. They notoriously dismiss consciousness and all its contents, processes, and activities as irrelevant, if not nonexistent.

Metaphysical behaviorists of the Watsonian variety flat-out deny the existence of consciousness and all its contents, processes, and activities. *Methodological* behaviorists just dismiss them as methodologically irrelevant to "science" and scientific knowledge, which must be based entirely on information given by the "external" senses. They do not deny their existence or the existence of consciousness and its structures and contents, but, like B. F. Skinner, they

suggest that consciousness and its ingredients are worthless and ineffective. As I read him, Skinner waffles, but he is not far removed from Watsonian metaphysical behaviorism. He dismisses all inner psychological properties and states like consciousness, pleasures, pains, feelings, thoughts, choices, etc. as "by-products," by which he means that even if they exist, they are causally ineffective and do not explain or account for anything. Skinner seems to be what philosophers call an "epiphenomenalist" (Skinner, 1972, 181-186). Mind exists, but it isn't worth a damn. Only external physical or behavioral properties really explain anything, according to epiphenomenalists and behaviorists, who relegate all that we are and do as conscious beings to some hidden-away and impotent psychic cesspool.

The whole realm of intrinsic value is somehow dismissed in Skinner's extrinsic-value reductionism. External conditioning or reinforcement explains everything, Skinner contends, and the inner self with its alleged "freedom and dignity" explains nothing, because it is very close to nothing. He believes there is no such thing as inner personal initiative, creativity, choice, attention, and self control; we do not control our environment; our environment controls us — completely. Individual persons can control and be controlled by others, but they cannot consciously control themselves. As Skinner puts it, "[A] person does not act upon the world, the world acts upon him" (Skinner, 1972, 202) and "Man is a machine in the sense that he is a complex system behaving in lawful ways, but the complexity is extraordinary" (193). Skinner dismisses consciousness and all inner psychological properties, processes, and activities as both causally ineffective and as dangerous distractions from survival values (173). Axiologically regarded, behavioristic psychology is a dangerous psychology, precisely because everything that has the highest value in human existence is degraded into almost nothing, or at least into something nearly worthless that it is not.

As a reductionist, Skinner is much less extreme than central state materialists. He allows intrinsic psychological properties to be redefined and identified with ordinarily observable extrinsic physical behaviors, not solely with matter in motion within the brain and central nervous system. He especially emphasizes two external empirical extrinsic elements in developing his own explicit theory of human values. He acknowledges the value or goodness of both *survival* and *positive reinforcers*. The value of one may be reducible to that of the other, but which to which? Skinner cannot seem to make up his mind. He claims that survival has value only to the extent that it results from reinforcers; he also claims that reinforcers have value only to the extent that they contribute to survival.

In his explicit theory of value, Skinner insists that only extrinsic external reinforcers have positive worth. *By definition*, "good" just means "*positive reinforcers*," understood to be external processes and actions that will dispose us to do something more than once. *By definition* "bad" just means "*negative reinforcers*," understood to be external processes and actions that will dispose us

not to something more than once. He also concedes that in a secondary sense, the *results or consequences* of positive reinforcement may be regarded as good (Skinner, 1972, 97-99, 102, 104). However, it makes perfectly good sense to ask, "Are positive reinforcers good?" The question is not self-answering, as is, "Is goodness good?" So "good" and "positive reinforcers" are not synonymns. Also, positive reinforcers can be bad, so how can that be the very definition of "good"? Smoking and crack cocaine are positively reenforcing, at least initially, but that does not mean that they are good in themselves or in their consequences. Skinner's definition of "good" just doesn't work. The only thing that Skinner can imagine to be common to all good things is positive reinforcers. Too bad he never heard of Robert S. Hartman's definition of "good" as "concept (or standard) fulfillment." Hartman's account could allow "positive reinforcers" to be one good-making property among innumerable others, but surely that is not the whole story, the only good-making property, much less the proper definition of "good."

Skinner also heavily emphasizes *survival* as a fundamental natural human value or good, (Skinner, 1972, 99, 104, 114-115, 130, 136-137, 143-147, 173-174); but this opens a deep explanatory gap in his theory. (Unlike most evolutionary psychologists, he does not seem to be too keen on *reproduction* as a natural value.) Survival cannot be viewed as a primary good, on his grounds, because only positive reinforcers are "good," by definition. Perhaps, though, survival is good secondarily, that is, because we are externally conditioned to value it, to keep on surviving, but is that really the *only* reason that survival is such a good thing?

Contrary to his own definition of "good," Skinner repeatedly advances survival as the one and only naturally given end or good of human existence, with empirical reinforcers being means to that end. Individual actions, social customs and institutions, and favorable natural processes can all be positive reinforcers that contribute to survival. Sometimes it is individual survival, sometimes group survival, sometimes cultural and institutional survival, sometimes the survival of the species. Survival, nonetheless, is the one and only naturally given end of all existence, and external reinforcement is a means to that end, according to Skinner. On page after page he claims that all human behaviors and psychological properties are reducible to and explainable in terms of these two extrinsic empirical concepts, survival and reinforcers; but he doesn't seem to know which is the means and which is the end. Neither of his ends are intrinsic ends anyhow. His only "goods," positive reinforcers and survival, are extrinsic goods. If survival and positive conditioning are everything, what a dismal view of human existence! What a drastic "all or nothing" oversimplification of the complexities of human nature, experience, values, and valuations! Survival actually is a necessary minimal extrinsic condition for living an intrinsically worthwhile and fulfilling personal life, but that isn't the whole of it, or even the half of it. Yes, we are all naturally social beings who partly form, and are partly

formed by, one another; so being socially conditioned or influenced has a place in living an intrinsically worthwhile human life; but this needs much further examination, clarification, and evaluation. Behaviorism only trivializes it.

Two additional abstruse philosophical objections to Skinner's position are worth considering.

First, if all human psychological properties, including human beliefs, are entirely reducible to survival and reinforcement, this applies in an embarrassing way to psychological theories themselves, including Skinner's own. If Skinner is right, then the only reasons why Skinner believes Skinner are (1) that his *theory* somehow contributes to survival (far fetched, since our ancestors survived so long without it, and we might not survive very much longer even with it) or (2) that an external someone or something pressured or conditioned him into believing himself. He can't believe his own theory simply because it is true, or because it is adequately supported by empirical or scientific evidence. If he is right, all rival theories and theorists are in the same boat; but that just means that *no one* can believe *anything* because it is true, or because it is adequately supported by adequate evidence. So, why then should we believe Skinner?

Second, Skinner's explanations of how all human behavioral and psychological properties are reducible to survival and reinforcers are all viciously circular. He never gives any substantial evidence for this claim; he never gets beyond explaining that X, Y, and Z are reducible to survival and reinforcers *because* they are reducible to survival and reinforcers! Say it often enough, and people will believe it! I guess a behaviorist would think that! Maybe that's how behaviorism works! Karl Popper pointed out that no theory can really count as "scientific" unless some empirical evidence could count against it; but Skinner will simply not allow any evidence to count against his theory; hence, it is viciously circular. All competing explanations are just summarily dismissed on the grounds that survival and reinforcers explain everything.

Axiologically, the most serious objections to Skinner are (1) that his definition of "good" is too simple-minded, as previously indicated; that (2) he oversimplifies the complexities of human psychology, and, correspondingly, (3) that he makes no place for the complexities of human value, most especially, intrinsic value, the most fundamental and valuable kind of human value. It should not surprise anyone that we human beings have very little inherent value or "dignity" once all of our intrinsic good-making psychological properties are stripped away and reduced to near nothingness, or to something extrinsic! But why should any sane person allow Skinner or any other behaviorist to get away with that? Should any thoughtful person ignore the whole domain of human consciousness and all its distinctively intrinsic good-making properties? Much more plausible, and much more in accord with the richness of human experience and value, is Abraham Maslow's intrinsic psychology, considered next. Survival, devoid of all else, is like the Vice-presidency as characterized by John Nance

Garner, "Not worth a bucket of warm spit!" Yes, all else depends on it, but that does not mean that all else can be reduced to it in reality or in value.

So what would behaviorists have to be like who actually live by and within their own behaviorism, who actually identify personally with and thereby intrinsically valuate their own theory of mind? *We* can ask this question, even though consistent behaviorists themselves could not, since the notions of intense inward identification and intrinsic valuation make no sense in the behavioristic scheme of things. However, that someone could actually live in and by behaviorism is much more believable than that someone could actually live in and by central state materialism. Behaviorism takes the whole sensory world into account, and many people seem to live mainly or predominantly in and by that world alone.

Behaviorists who actually live in their behaviorism would have to be people who are aware almost entirely of the external sensory world but who have little or no direct inner or introspective awareness of their own consciousness and all its contents and activities. That there actually could be such people might not be a very great surprise. Søren Kierkegaard thought that most ordinary people have no "inwardness," as he expressed it. Re-expressed in axiological terms, this means that most people are stuck at systemic or extrinsic levels of psychological development and are undeveloped intrinsically. For this reason, they have little or no intrinsic self-awareness. They are conscious but have little self-consciousness or direct awareness of their own inner feelings, choices, thoughts, etc. Perhaps behaviorists are really just "inauthentic," i.e., not true to themselves.

We are often told that having a capacity for self-awareness is a fundamental difference between us human beings and all the rest of the animals, but many people may not be very far removed most of the time from simple first-order consciousness without second-order self-awareness. Most modern psychologist recognize the existence of inner unconscious and semi-conscious states, as well as conscious-ness and self-consciousness, but none of these are perfectly identical with the external behaviors that express them. People who actually live in and by behaviorism can make no direct place for any of these. Ignoring all inwardness may be perfectly compatible with their own psychological constitutions, if their awareness is focused almost exclusively on data derived from the external senses, and they have little or no direct awareness of their own consciousness. The thought that such people might actually exist is alarming, but perhaps they do in vast numbers. Even more alarming is the thought that powerful and influential psychologists like John Watson and B. F. Skinner, and like-minded philosophers, the so-called "logical positivists," might actually be telling the truth about themselves! Personally, I do not know such individuals well enough to judge, but perhaps they are attracted to extrinsic values and extrinsic psychologies because they are just glued to the external sensory world and can't find themselves, their own inner selves, their own

thoughts, feelings, choices, etc. If so, they should not judge all others by themselves!

"Know thyself" is both a psychological and an axiological imperative, but it means a whole lot more than "Learn about your brain chemistry" or "Describe what you can see of yourself in your mirror, or what has conditioned you." Of course, I personally do not know what most professing behaviorists are or were really like. Like professing central state materialists, many behaviorists may also be perfectly delightful, loving, sensitive, conscientious, and introspective people. But this means that they do not personally identify with and live by and in their own theories. They too have serious unresolved psychological problems: they do not practice what they preach, and there is an enormous discrepancy or conflict between their professed theory of mind and the one that actually governs and regulates how they live. Unfaithful behaviorists make a place theoretically only for extrinsic goods, properties, and relations; but they definitely take account also of systemic and intrinsic goods and properties in actually living their lives.

What kind of a self-concept could behaviorists have who are true to their own theories? They would have to think of themselves as nothing more than external and physical *things* or *objects*, dynamic, frenzied, complex, stimulus-response things to be sure, but mere things nonetheless. Mere things have no freedom and dignity. With that, we can agree! But are we really nothing more than mere things? And are we morally justified in treating one another as nothing more than mere things? Aren't there far more things in Heaven and Earth than are dreamt of in this philosophy also?

3. Maslow's Intrinsic Psychology

Intrinsic psychologists take the full range of human properties into account without distorting any of them — the physiological, the external and public behavioral, and inner selfhood consisting of conscious awareness, occasional awareness of that awareness, and the vast intricacy of inner thinking, feeling, and choosing, etc. According to axiological psychology, the intrinsic person is the total person, the integrated set of all of his or her properties, whether good or bad, whether systemic, extrinsic, or intrinsic. Distinctive of intrinsic psychologies is inner consciousness, with all its intricate structures, contents, and activities, with all its inner thinking, feeling, choosing, and doing, and with intermittent awareness of being aware. Intrinsic selves or persons have all of their physiological, behavioral, and physical properties, but they also have or are inner selves, having freedom, dignity, and glory.

An aside to philosophers: Emphasizing the reality of consciousness and self-awareness does not commit intrinsic psychologists to any kind of Platonic/ Cartesian mind/matter dualism. For all we know, consciousness is spatially extended, even if it is not directly experienced that way. That is what the

mind/matter dualism controversy is all about. Platonists and Cartesians define "body" as something that has spatial extension (size, shape, position, motion, etc.); and "minds" (psycho-logical entities), by definition, are utterly space-less (except maybe for having a position somewhere in the brain). The whole controversy makes the wrong assumptions from the very outset. Mental processes and activities may very well be spatially extended and partly observable externally in brain scans or other monitoring devices — while *also* possessing all their inner psychological properties. If realities with spatial properties can also have psychological properties, the whole "dualism" controversy is a blind alley from the very outset (Edwards, 1990). The real enemy is reductionism, not dualism; psychological properties (which we now know how to measure axiologically) are just as real as physically measurable spatiotemporal properties. You can't have one without the other — like "Love and Marriage" in that old song.

One more paragraph for philosophers may be in order. Philosophers worry about lots of things that are of no concern to most ordinary sane people. One persisting philosophical problem is that of "other minds." To avoid the purely cognitive and systemic connotations of "minds," calling this the problem of "other subjects" might be more appropriate. This is the problem of how we know that other subjects exist. How do we know that we are not the only subject or mind in existence or in the universe? The existence of other subjects is notoriously hard to "prove" philosophically. The solipists says that no other subjects exist. All other human bodies are mere phenomenal appearances or mindless automata. Forget, for the moment, the solipist who wonders why there aren't more solipsists, since solipsism is such a reasonable position! Both positions we have examined thus far, reductive materialism, and metaphysical behaviorism, have an interesting solution to the problem of "other subjects." This is not really a problem, they tell us, because *no subjects exist at all, not even the solipsist!* The best refutation of these extremist psychologies is that our every waking moment of experience says otherwise! From immediate experience, we know perfectly well that we are conscious, experiencing, thinking, and feeling subjects. Being true to experience requires us to take conscious subjects, including ourselves, seriously. If we take them seriously enough and value them appropriately, we are into intrinsic psychologies.

Abraham Maslow, a personal friend of Robert S. Hartman's, developed an intrinsic psychology. He is not the only prominent intrinsic psychologist by any means; Hartman himself was one, and many more exist today; but Maslow will serve for now as our example of an intrinsic psychologist. His intrinsic psychology was not perfect, since nothing is, but his complex "hierarchy of needs" comes much closer to the real truth about us human beings than systemic reductive materialism or extrinsic behaviorism. I will not outline Maslow's complete psychology, or repeat the details of his now famous "hierarchy of

needs," but I will accentuate several important points about his intrinsic psychology.

First, Maslow does not deny the existence of human consciousness and self-awareness, and he does not attempt to transform all inner psychological concepts into outer behavioral concepts. Maslow tells us that having children of his own turned him away from behaviorism for good. As he put it, "Our first baby changed me as a psychologist. It made the behaviorism I had been so enthusiastic about look so foolish that I could not stomach it any more. It was impossible;" and his second baby taught him the reality and value of human uniqueness (Maslow, 1972, 169)! Maslow's psychological concepts refer and apply to inner intrinsic selves, not just to external bodily behaviors.

Second, Maslow's repertoire of human psychological properties is incredibly richer than anything offered by extremely reductive central state materialism or behaviorism. Of what elements or properties is the human psyche composed? Systemic reductive materialists answer: "Matter in motion." Behaviorists say: "Bodily behaviors centered around survival and social conditioning." The second answer is much richer in properties than the first, but all of these are either systemic or extrinsic properties. Some behaviorists would add "reproduction" to "survival," as a basic natural value, but that still does not take us very far. Reductionistic psychologies can be very intricate and detailed, but they always lack something very significant, namely, inwardness.

By comparison, Maslow's repertoire of human psychological concepts is incredibly richer in properties, if for no other reason than that they have inwardness or consciousness components and referents. In intrinsic psychology, psychological concepts have internal psychic, not just external physical or conceptually formalistic, meanings (connotations) and referents (denotations). In explaining his "hierarchy of needs," Maslow introduces a vast diversity of natural human properties that involve consciousness: hunger, sex, thirst, sleepiness, warmth, coldness, pains, discomforts, anxieties, frustrations, yearnings for safety and security, desires for beauty and truth, curiosity, desires to learn and know, drives toward self-actualization, creativity, honesty, humor, realism, spontaneity, problem-solving, interpersonal intimacy, love, unselfishness, morality, conscience, personal responsibility, objectivity, uniqueness, individuality, autonomy, freedom, peak experiences, etc., etc. The list could go on and on, but the essential point is that Maslow gives us a lot more to work with because he offers us a much richer, more developed, more comprehensive, more satisfying, more accurate, more introspective, and more intrinsic psychology. People can and do have far more good-making properties on this theory.

Maslow's crowning achievement was his concept of "self-actualizing persons," those who become all that they can be, who are the most complete, most fulfilled, most conscientious, most responsible, most creative, most empathetic and compassionate, most developed in their capacities and potentialities, and are most fully human. Instead of studying the worst specimens

of humanity, Maslow resolved studied the best! Maslow acknowledged explicitly that his search for maximally self-actualizing persons "accords with Hartman's axiological approach to the same problem of defining the good human being as the one who has more of the characteristics which define the concept of 'human being'" (Maslow, 1959, 126). Maslow also explicitly acknowledged in a book completed in 1971 that his own preferred way of both thinking and speaking about self-actualizing persons as most "fully human," . . . "was suggested to me about fifteen years ago by the axiological writings of Robert Hartman, who defined "good" as the degree to which an object fulfills its definition or concept" (Maslow, 1972, 28-29).

Hartman recognized a minimal or foundational level of intrinsic goodness at which all persons have equal, (and he would say "infinite"), human worth. No one ever falls below that level of intrinsic worth. But on top of that minimal and egalitarian foundation, he laid a superstructure of degrees of self-realization, according to which some people (e.g., Maslow's "self-actualizing persons") are far more developed intrinsically and otherwise than others. Some people are truer to themselves than others, some actualize their own idea or ideal of themselves better than others, some are more introspective, thoughtful, disciplined, conscientious, loving, empathetic, and compassionate than others, and so on. Given this super-structure of degrees of self-realization, who comes out on top? Obviously, those whose lives are richest in good-making properties, whether they be systemic, extrinsic, or intrinsic, or "all of the above." Such people are not only most fully human, they are also most fully themselves, most faithful to their experiences and concepts of themselves, most-self-full-filled. Their lives are as rich in good-making properties as human lives can be. They live as abundantly as human beings can live. What more could we ask?

Finally, do people construct, and are they attracted to, psychological theories out of their own value dispositions? Will predominantly systemic people most value systemic psychologies, extrinsic people extrinsic psychologies, and intrinsic people intrinsic psychologies? More empirical work on this is needed, no doubt, but likely, out of their own constitutions people adopt only the theories of mind that they practice, not necessarily those they profess! Determining whether theorist live in the theories they profess should be relatively easy to do: if in their daily living they take account of and act upon only those properties that their theories proclaim to be important and real, then they live in their theories; if they take account of and act upon properties not recognized as important or real by their theories, then they do not live in their theories. Even so, this doesn't mean that people are stuck where they are. Determinism isn't everything, even if it is almost everything! People can choose to change themselves or to be changed by others — hence psychotherapy, education, moral development, insight, inspiration, personal decisions, and spiritual growth. In Hartmanian axiology, "Who is the best person?" and "What is the best psychology?" have similar answers: "The one that is richest in good-making properties." So, who is likely to

be most attracted intrinsically to and live in intrinsic psychologies like Maslow's or Hartman's? Presumably, people who want to live the most intrinsic, complete, abundant, fulfilling, creative, moral, spiritual, and satisfying human lives, the best lives humanly possible! Know thyself; know thy psychology! Know thy psychology; know thyself!

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HVP SCORES AND MEASURES EMPLOYED IN MEDICAL SCHOOL ADMISSIONS

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Abstract

The Hartman Value Profile (HVP) is employed as a test of the important value content or dimensions associated with commonly employed criteria for medical school admissions such as the GPS, MCAT, and other measures which serve as proven predictors of performance in medical schools. However, these measures fail to assess competence where professionalism and ethical sensitivity are concerned. By examining the value content of some commonly employed medical school admissions tests, this pilot study seeks to clear a path for future studies of values in the context of medical education and the practice of medicine employing advances in axiological science.

Introduction

Without the cooperation of Matthew Johnson, M.D., former faculty member of Chicago's Loyola University School of Medicine, this study would not have been possible. Dr. Johnson's concerns about professionalism and ethical sensitivity in medical education and practice resulted in his interest in axiological science as unfolded in the pages of *The New Science of Axiological Psychology*. Dr. Johnson's collection of data is appreciated, as is his review of the relevant literature incorporated in my presentation of his independent analysis of these data.

Psychologists classify mental testing as either aptitude tests, intended to predict academic performance, or as achievement tests, intended to assess what is learned. The differences between them are not clear-cut, for one's vocabulary influences aptitude tests, and one's aptitude for learning and test-taking influences grades on achievement tests. Most tests, whether aptitude or achievement, try to assess both ability and its development. Aptitude tests predict future performance, while achievement tests assess current performance.

Admission to medical schools remains a competitive and complex process employing a variety of tests and measures. The most commonly employed criteria for admissions include undergraduate grade point average (GPA) and scores from the Medical College Admissions Test (MCAT), which are proven predictors of academic performance in medical schools and licensing exams. As such, they are useful measures, but they fail to reflect competence where professionalism and ethical sensitivity are concerned. At present, The Association of American Medial Colleges urges all medical schools to be concerned about professionalism and ethical sensitivities as conductive to the practice of medicine (2001). Epstein (2002), Swick (1999), Arnold (2002), and Hemmer (2000) call attention to the failure of medical school admissions procedures to assess the professionalism and ethical dimensions conducive to the practice of medicine.

In addition to GPA and MCAT measures employed in medical school admissions, personal statements or essays are used, along with interviews. Fulford (1989) suggests in *Moral Theory and Medical Practice* that the inclusion of essays and interviews in medical school admissions identify levels of professionalism and ethical sensitivity to some degree, but personal statements, essays, and interviews are susceptible to error and bias where quantification is concerned. Different backgrounds on the part of those scoring essays and interviews introduce both errors and inconsistent results. Wallick, Cambre, and McClugage (2002) point out that there is no standardization of such procedures, and scoring is subject to bias in favor of applicants with demographics and personalities similar to the judges. Salvatori (2001) reports that even when standardized procedures are introduced, such bias is not eliminated.

Assessing the professionalism and ethical sensitivities of medical applicants takes us into the very different world of the professional and ethical (normative) values that are embedded within a person's general capacity to value. This raises questions about identifying, clarifying, and measuring value and valuation. The concept of "value" remains the most important but lest understood and least researched major concept in psychology and the social sciences. This concept has obviously remained subjective, intangible, and highly abstract in spite of its social and psychological importance. The surplus meanings associated with this concept in the popular imagination and general culture have not facilitated our general understanding of the importance of professionalism and ethics in medial school admissions and education or in the practice of

medicine. Medicine has evolved as a natural science discipline without the benefit of a value science to guide it; yet, there are values in the world of facts, and we ignore them at our peril. While medicine traditionally focused on facts, as revealed by natural or material science, medical education and practice cannot escape the importance of focusing on values, as in values appreciation, values clarification, and values measurement.

The question before us is, "Can identifying and measuring the professional and ethical values important to medical education and practice be grounded in science?" Until recently, this was not the case, for identifying and quantifying values remained in the hands of a few academic psychological and philosophical theorists, and its practical applications were undeveloped. Not until the publication of *The New Science of Axiological Psychology* in 2005 did a clinically relevant, empirically validated, and practically applicable science of values and values-assessment become available to behavioral science, social science, and the medical profession. The scientific study of ethics and moral reasoning stands to profit the advancement of professionalism and ethical sensitivities in any profession. Prior to my work validating the Hartman mathematical model of value phenomena and its derivative value profiling methodology, there was no systematic empirically grounded science of values for the medical profession to use in exploring the value-centric dimensions of professionalism and ethics in medical education or the practice of medicine.

All this began to change in the latter half of the Twentieth Century with the publication of *The Structure of Value* in 1967 by Robert S. Hartman, followed by my more recent validation of this formal theory of value.

Philosopher Robert S. Hartman's theory of value, which he called "formal axiology" to distinguish it from the philosophical discipline of axiology going back for centuries, was not well received by his peers because his approach was not fashionable in philosophical circles at the time. Nor was it well received by psychologists and social scientists, but for different reasons: Hartman offered no empirical evidence in support of his theory or its prediction of the existence of three core dimensions of value and valuation. The publication of *The New Science of Axiological Psychology* in 2005 changed all this. This book gives summaries of many systematic studies which demonstrate the validity of Hartman's mathematical model of value phenomena and its correct prediction of the existence of three underlying dimensions of value and valuation that contribute to the full range of values, valuations, and morals associated with individual and collective human behaviors.

This advance in axiology, the study of values, valuations, and morals, also derives from two instances of converging psychological and philosophical thought that I call the "Pomeroy-Hartman" and "Ellis-Epictetus" syntheses. The first refers to my validation of philosopher Robert S. Hartman's formal theory of value, and the second refers to psychologist Albert Ellis's integration of the philosophy of Epictetus with clinically relevant cognitive psychology, grounded

in a focus on belief systems and their underlying value dimensions. My integration of these two events gives birth to empirical axiological science and axiological psychology as its foremost application to date. The other prominent application of axiological science is "The Hartman Value Profile" (HVP), an application of Hartman's *a priori* value theory subsequently validated by Pomeroy (2005) and employed in the present study of the value dimensions of medical school testing. The HVP might be expected to play a significant role in our evolving understanding of professionalism and ethical sensitivities, which are of increasing concern to medical schools training tomorrow's physicians.

Evolving axiological science and psychology brings a precision language and a proven methodology to the quest for a deeper appreciation of the ethical and moral dimensions of professionalism and moral sensitivities in the context of medical school admissions, medical education, and the practice of medicine. This precision language provides a methodology for identifying, clarifying, appreciating, and measuring values to anyone seeking to explore values in any context. The availability of this new science dates from the publication of my book, standing on the head and shoulders of philosopher Hartman's mathematical model of value and moral phenomena. Historically, the quantification of values (where ethics and morals are generally considered to involve normative values) has been a problem because of the subjective and intangible nature of values and their normative cousins, morals and ethics. With the advent of axiological science and psychology, we now have a way of assessing the general capacity to value permeating all expressions of professionalism, ethical sensitivity, and moral reasoning. These are of increasing concern to those in charge of medical school admissions, given the recommendation by The Association of American Medical Colleges that admissions focus also on matters of professionalism and ethical sensitivities conducive to the practice of medicine, beyond mere academic achievements or the profiling of values and ethical sensitivities derived from the analysis of error-prone and often biased applicant essays and interview data.

Adding a values-based assessment procedure to historically academic-based assessment procedures responds to the challenge of The Association of American Medical Colleges to develop assessment and training capabilities relevant to professionalism and ethical considerations in the practice of medicine.

In this discussion, "non-moral value" relates to the allocation of resources and behaviors and applies to anything that might be prioritized that does not reflect upon the value of individual persons or our collective human life. Examples of non-moral values include the economic price of goods and services, the beauty of art, the utility of machines, the viability of organisms, the stability of societies or ecosystems, and the enjoyment of experiences. In the language of emerging axiological psychology and science, these "non-moral values" lie in the dimensions of extrinsic (E) and systemic (S) values and valuation. Suffice it to say, axiological theory (formal axiology) predicts the existence of three core dimensions of value and valuation, or what is loosely referred to as three-

dimensional "value-vision." Pomeroy (2005) presents empirical tests and measures that validate Hartman's prediction of the existence of three core dimensions of valuation or value-vision, effectively transforming Hartman's mathematical model of value and moral phenomena into an empirical science of values, valuations, and morals. For reasons of space, I cannot here explore in detail the implications and applications of axiological science or its foremost applications — axiological psychology and HVP-valuemetrics.

The concept of "moral-value" is of concern to those focusing on professionalism and ethical sensitivities. It concerns the individuality and uniqueness of human beings within the context of family, society, community, and nation. Axiological science identifies the dimension of "moral value" as involving intrinsic (I) habitual evaluative habits. The value profiling methodology capable of identifying and measuring the sensitivity of and to this dimension of value-vision is The Hartman Value Profile (HVP). The American Association of Medical Colleges promotes awareness of moral-values [the intrinsic (I) dimension of value-vision] by recommending that medical students be trained to value human life and the quality of human life with sensitivity. The "Medical School Objectives Project Advisory Group" of The American Association of Medical Colleges (1998) states that the dimensions of professionalism and ethical awareness include integrity, altruism, caring compassion, cultural sensitivity, dedication, empathy, humility, loyalty, and respect. These are manifestations of a general capacity to value in the intrinsic (I) dimension with support coming from the remaining dimensions of valuation that include extrinsic (E) and systemic (S) value-vision. The realization of capacities for integrity, altruism, caring compassion, cultural sensitivity, dedication, empathy, humility, loyalty, and respect depends on the sensitivity, balance, and order of influence of the Intrinsic (I), Extrinsic (E), and Systemic (S) dimensions of value-vision.

As previously noted, the search for scientific precision in identifying and assessing values has suffered from neglect, given the absence of proven methods for identifying and assessing the structure of valuation and the relation of this structure to behaviors such as professionalism and ethical sensitivity. Historically, the identification, classification, and quantification of values remained a challenge to human imagination and reason for thousands of years, despite the fact that we daily confront values in a world of facts, while being armed only with a science of facts called "natural science."

This asymmetric evolution of natural science, the science of nature, gave us advances in medicine, but without corresponding advances in the study of human nature and the human condition, which is best understood in the context of a science of values, for values are the building blocks of mind. Our studies of the brain and body have outpaced our studies of mind largely because natural science is the wrong science for studying mind, which rests largely on an architecture of values giving birth to belief systems, peak experiences, the

existential search for meaning that defines self, and the transcendental consciousness of spirituality, faith, and, beyond the individual, the collective phenomena of the world's religions.

The reality of values in a world of facts demands that we develop a second science, a science of values to compliment our ancient science of facts that began with the Greeks, then was refined following the more recent contributions of Galileo, Newton, Einstein, and many others. Our world of run-away natural science (Monopolar Science) without moral science checks and balances has given us tragically flawed civilizations and their discontents where the "canaries" of war and now terrorism have embodied evil in the world. The emergence of axiological science gives the world something different. It gives us a second science, a Multipolar Science, as distinguished from the historic Monopolar Science of facts to the exclusion of values; and human nature must be understood in terms of a science of values/facts, the integration of which is Multipolar Science.

Historically, axiology is that branch of philosophy which studies value judgments in all areas of human activity including aesthetics and ethics (Edwards and Davis, 1991). Axiology addresses such questions as, "What is the value of human life?" "What is the highest good for human beings?" What behaviors are right and wrong?" and "What behaviors are good for society?" — all of which are relevant to professional and ethical competences in the field of medical education and medical practice.

Hartman's system of formal axiology or formal value theory includes procedures, the "Hartman Value Profile" (HVP), for assessing a person's general capacity to value in three core dimensions. This assessment procedure is not a test to be passed or failed; it assesses an individual's habitual evaluative styles. It measures a person's capacity to value in general and in three basic dimensions of value and valuation, as predicted by Hartman's formal axiology or value theory. These dimensions are identified as: Intrinsic (I) value-vision; Extrinsic (E) value-vision, and Systemic (S) value-vision, all three applying to both Self and World. The HVP is composed of two lists of eighteen items expressed as phrases or quotations. To take the profile, a person rank-orders (prioritizes) them in terms of her or his personal sense of good or bad. The results reflect an individual's own preferences, measured by Hartman's mathematical model of valuational styles. These are systematically validated in *The New Science of Axiological Psychology,* which effectively transformed Hartman's value theory (formal axiology) into an empirical science of axiology, This book summarizes many studies that directly validate the Hartman Value Profile (HVP) and indirectly validate the theory of formal axiology, from which this instrument is derived. These data demonstrate validity, reliability, and non-discrimination as to race, age, or gender of the HVP in a manner consistent with the American Psychological Association's guidelines for the analysis of behavioral assessment procedures.

The emergence of axiological science and axiological psychology from Hartman's formal theory of value has proven relevance for career guidance and placement and for evaluating individuals for management positions, customer service positions, and sales positions, at over twenty Fortune 500 companies where HVP-Valuemetrics has successfully facilitated work-world performance, compliance with professional standards, and increased job satisfaction.

HVP-Valuemetrics has several potential applications in healthcare and medical education. It may be used to promote professional and ethical values appreciation, clarification, and measurement. I have applied axiological science to measuring presenting psychological problems in clinical practice and to assessing professional and ethical values (PE) of the sort possessed by aspiring medical school applicants and medical students. This study summarizes findings concerning the core dimensions of value-vision possessed by a small sample of aspiring medical school applicants and students. Because of the sample size, the present study must be seen as a pilot study informing much needed future studies of the general capacity of aspiring medical school applicants and students to value in ways that promote professionalism and ethical-moral sensitivities, as defined by the Medical School Objectives Project Advisory Group of the American Association of Medical Colleges (1998).

1. Materials and Methods

The purposes of this study are to examine the axiological correlates of medical school admission tests and thereby to introduce the new fields of axiological science and psychology to the profession of medicine and to its medical school admissions procedures.

For this study, the Hartman Value Profile was administered at a medical school in a large metropolitan area to a random sample of first through fourth year medical students on whom the following performance measures were also available: Undergraduate GPA Scores, Undergraduate MCAT Scores, Pre-Clinical Course Grades, Clinical Rotation Grades, United States Medical License Exam Step 1 Scores, and Admission Interview Narratives. The HVP was scored employing my proprietary software based on procedures and calculations presented in Hartman's *Manual of Interpretation* (Hartman, 1973). A second edition of the *Manual ...* (2006) is available to research scientists and licensed clinicians through the Robert S. Hartman Institute. Computer software for scoring the HVP is available for purchase from the author at: drleonpomeroy@verizon.net.

The null hypothesis in the present investigation reads: "There is no association between HVP scores and the above mentioned performance measures." Measures of statistical significance permit the rejection of this null hypothesis where the probability of chance producing the observed results is $p < .05$. I hope that this HVP study will reveal new approaches to assessing medical school preparedness and competencies, especially in the area of professionalism

and ethical sensitivities, and that others may find potential applications for HVP-Valuemetrics in a variety of areas of medical education and health care.

A. Section One Results

In this section I present average HVP scores obtained from the sample of N = 55 medical students involved in the present study of valuational patterns as defined by the scales of the HVP derived from our mathematical model (Hartman, 1973) and validated by my research (Pomeroy, 2005).

Figures 1 – 28 present average scores on a section of HVP scales of proven significance for assessing a person's general capacity to value that underlies all considerations of professionalism and ethical sensitivity.

Figure 1 depicts the individual RHO-1 and RHO-2 scores for each of the 55 medical applicants, where Rho-1 is an index of the general capacity to value the world, and Rho-2 is an index of the general capacity to value self. These data reveal on average a greater capacity to value the world than the self, as seen by comparing Figures 2 and 3. Figure 2 is a histogram depicting the RHO-1 scores for all 55 subjects giving a mean RHO-1 = +-0.91; whereas, Figure 3 depicts the distribution of RHO-2 scores for the same subjects with an associated mean RHO-2 = 0.83. These findings are roughly consistent with what I have reported elsewhere (Pomeroy, 2005) for doctors practicing medicine and a sample of university students. This is a comparison of world valuation vs. self valuation skills and sensitivity, where world involves others, social and practical situation, and rules, regulations, and authorities. Self valuation is the source of identity, self-esteem, and a sense of personal efficacy.

For reasons of space limitations, I will not go into detail concerning the following values obtained on indicative HVP scales. The reader is directed to Hartman's *Manual of Interpretation* (Hartman, 1973), and Pomeroy's *The New Science of Axiological Psychology* for further information. I offer the following by way of a tour of axiological horizons for this sample of N = 55 medical school applicants obtained in the year 2005.

Figure 4 depicts a histogram of individual DIF-1 scores with an associated mean of 29.0; DIME-1 scores with a n associated mean of 9.5; DIME-1 scores with an associated mean of 9.5; DIMS-1 scores with an associated mean of 12.1; DIF-2 scores with an associated mean of 39.4; DIMI-2 scores with a n associated mean of 11.9; DIME-2 scores with an associated mean of 14.2; DIMS-2 scores with an associated mean of 13.3; a histogram comparing VDIMI-2; VDIME-2; VDIMS-2 scores; a histogram of VDIMI-1 scores with an associated mean of +0.3; VDIME-1 scores with an associated mean of -2.90; VDIMS-1 scores with an associated mean of -2.90; VDIMI-2 scores with an associated mean of -8.8; VDIME-2 scores with an associated mean of -1.3; VDIMS-2 scores with an associated mean of 2.90; BQR-1 scores with an associated mean of 1.56;

BQR-2 scores with an associated mean of 1.96; BQA-1 scores with an associated mean of 57.8; and BQA-2 scores with an associated mean of 23.3.

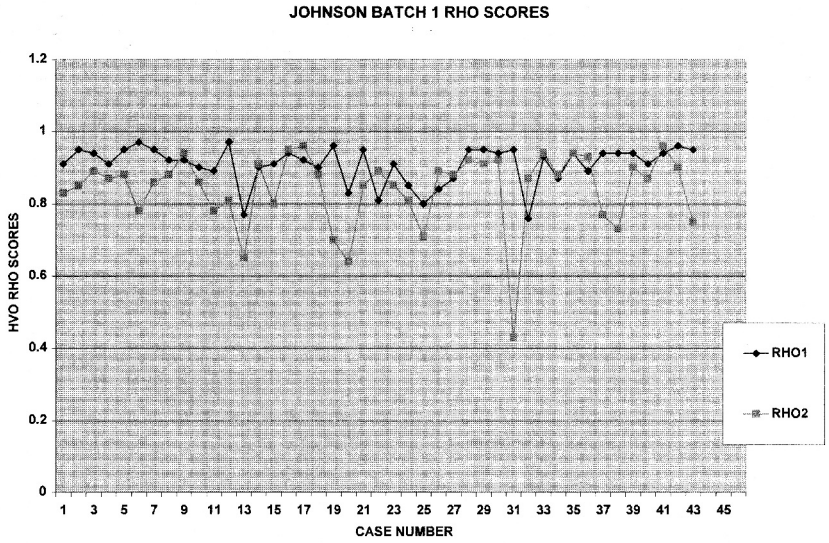

Figure 1. Comparison of obtained RHO-1 and RHO-2 scores. The Higher Rho-1 scores are higher than Rho-2; top and bottom distributions respectively

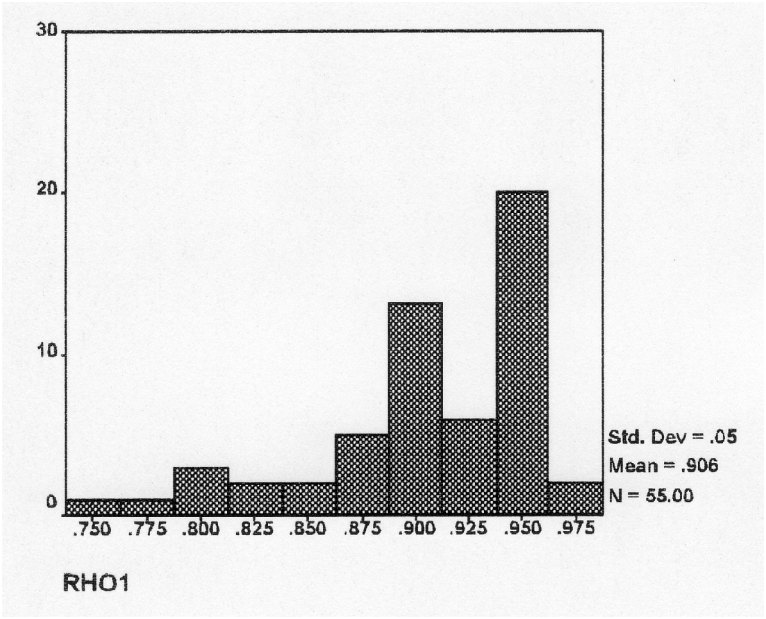

Figure 2. Bar graph of RHO-1 scores. Mean = + 0.91

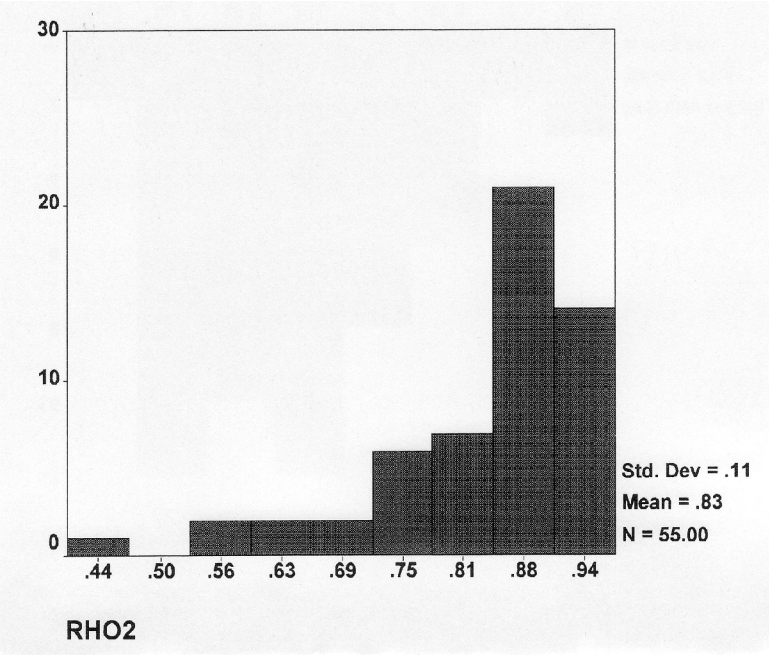

Figure 3. Bar graph of RHO-2 scores: Mean = +0.83

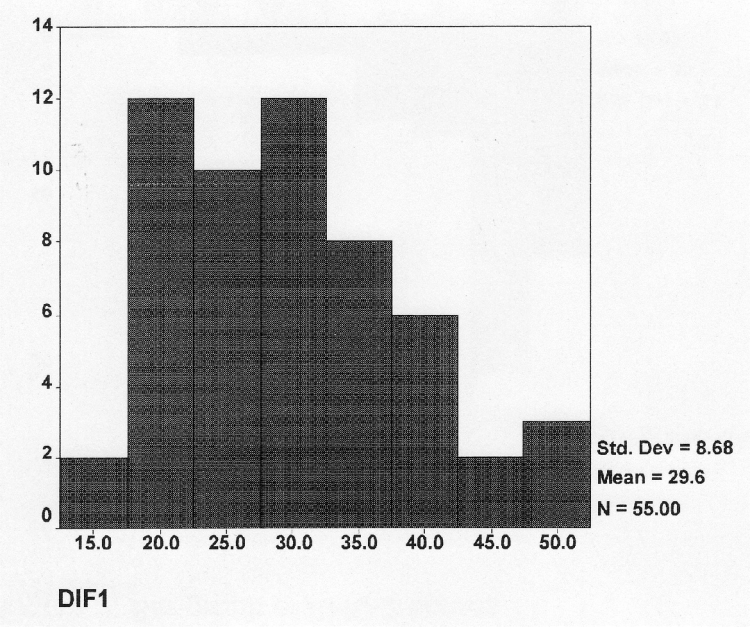

Figure 4. Bar graph of DIF-1 scores

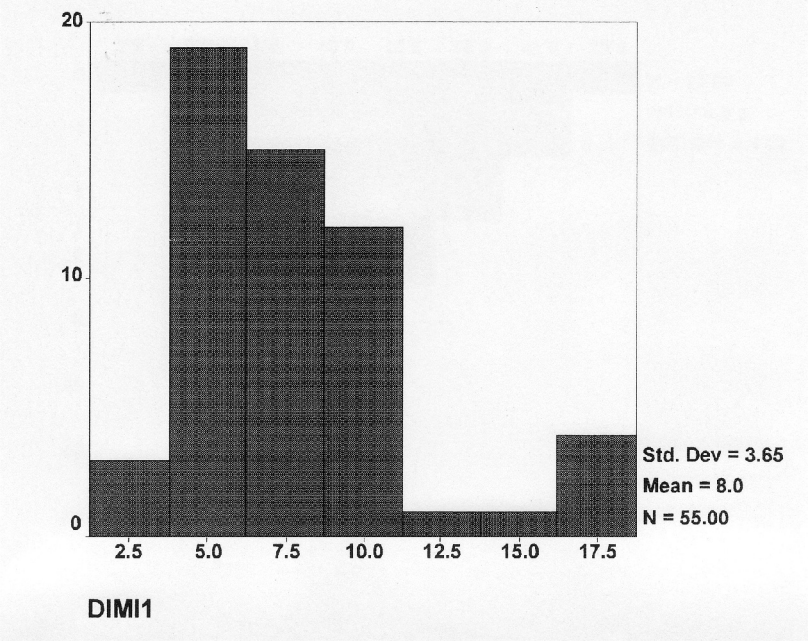

Figure 5. Bar graph of DIMI-1 scores

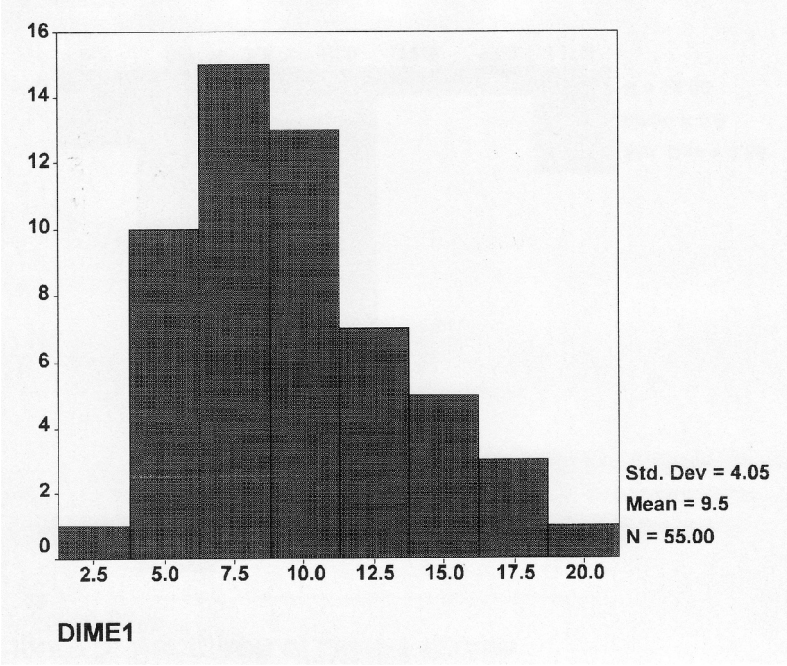

Figure 6. Bar graph of DIME-1 scores. Mean = 9.5

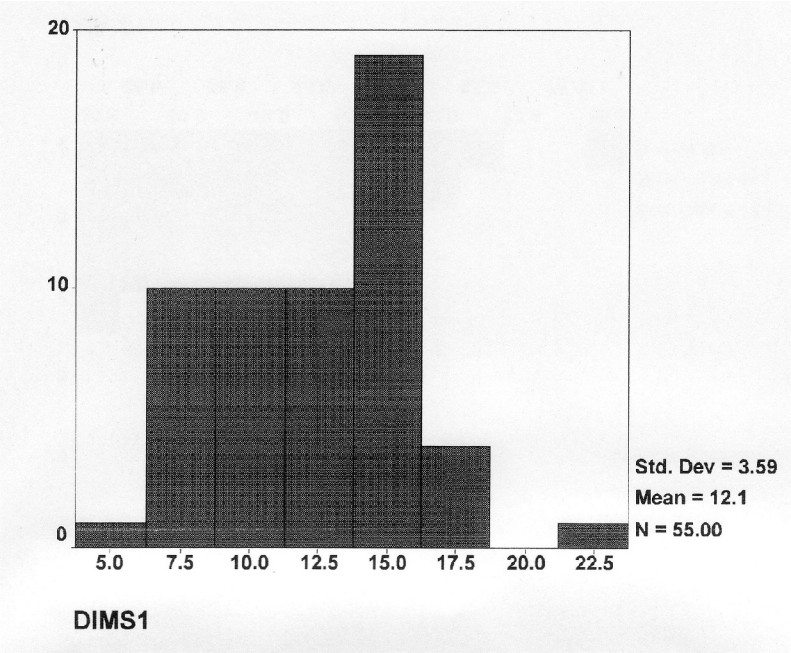

Figure 7. Bar graph of DIMS-1 scores. Mean = 12.1

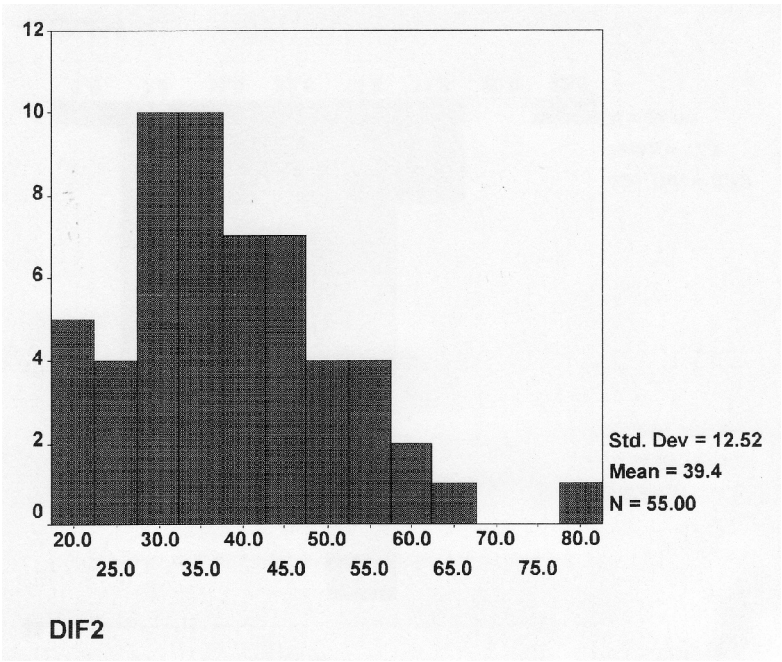

Figure 8. Bar graph of DIF-2 scores. Mean = 39.4

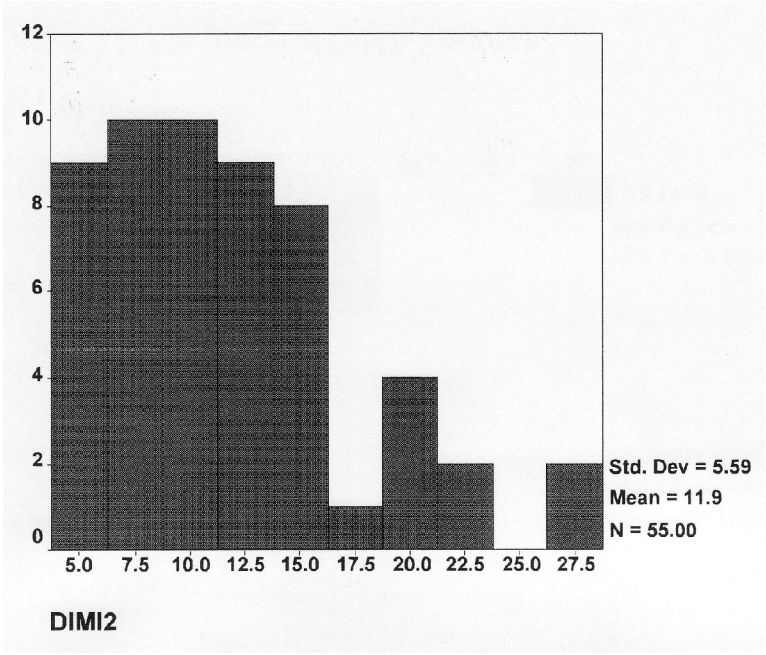

Figure 9. Bar graph of DIMI-2 scores. Mean = 11.9

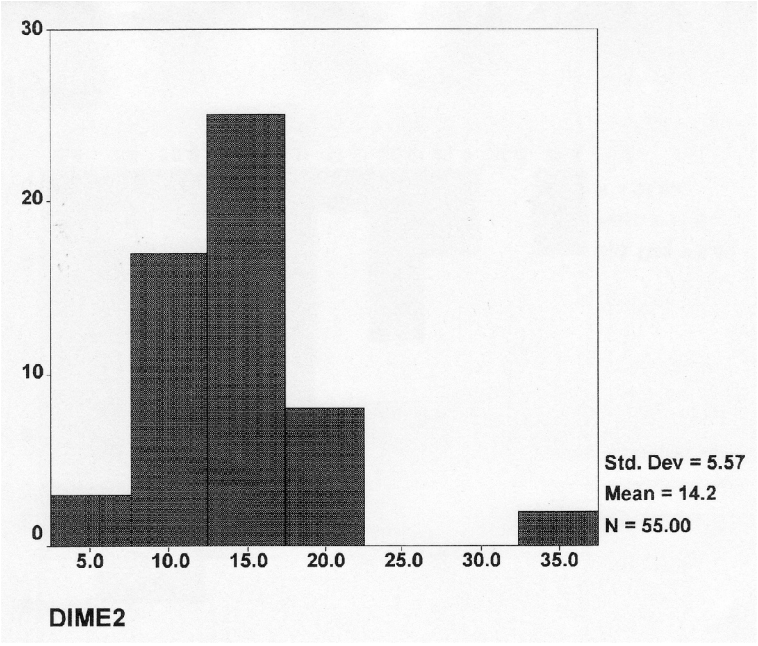

Figure 10. Bar graph of DIME-2 scores. Mean = 14.2

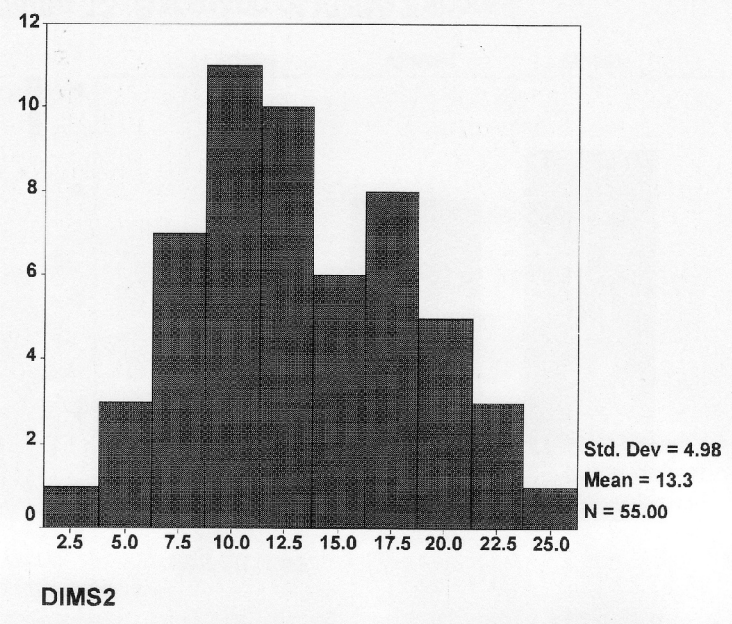

Figure 11. Bar graph of DIMS-2 scores. Mean = 13.3

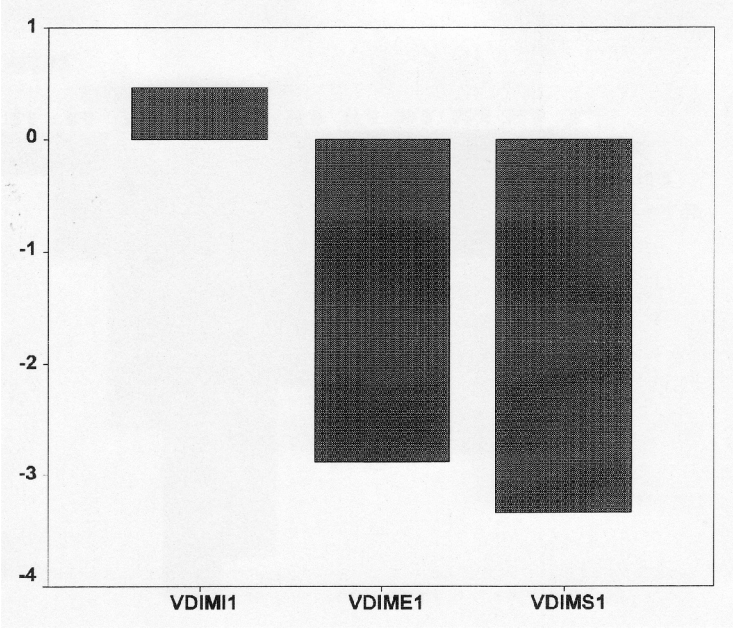

Figure 12. Bar graph of VDIM-1 scores

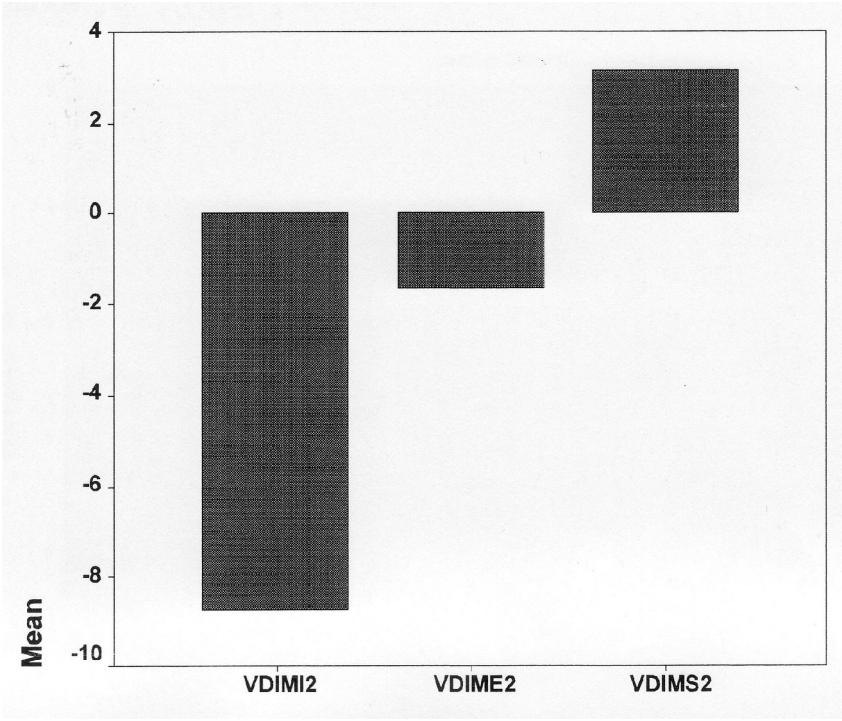

Figure 13. Bar graph of VDIM-2 scores

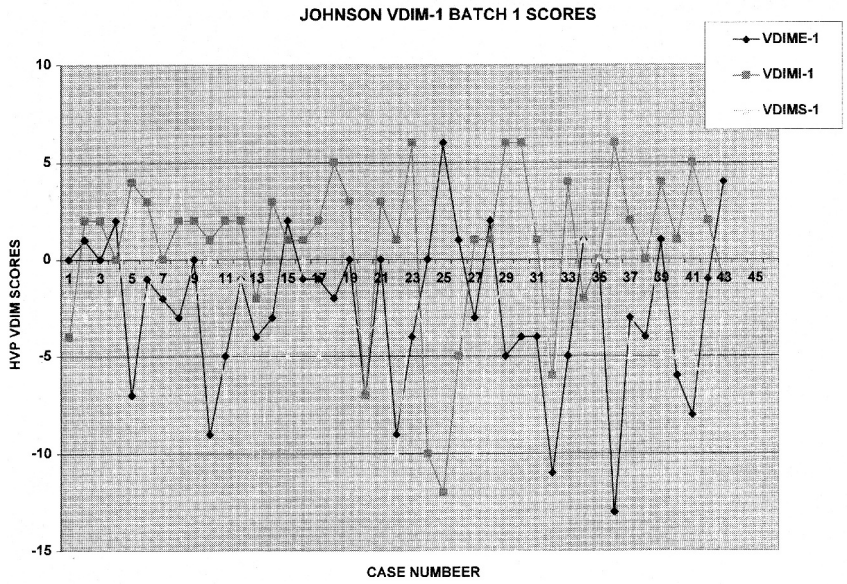

Figure 14. Comparison of VDIM-1 and VDIM 2 scores

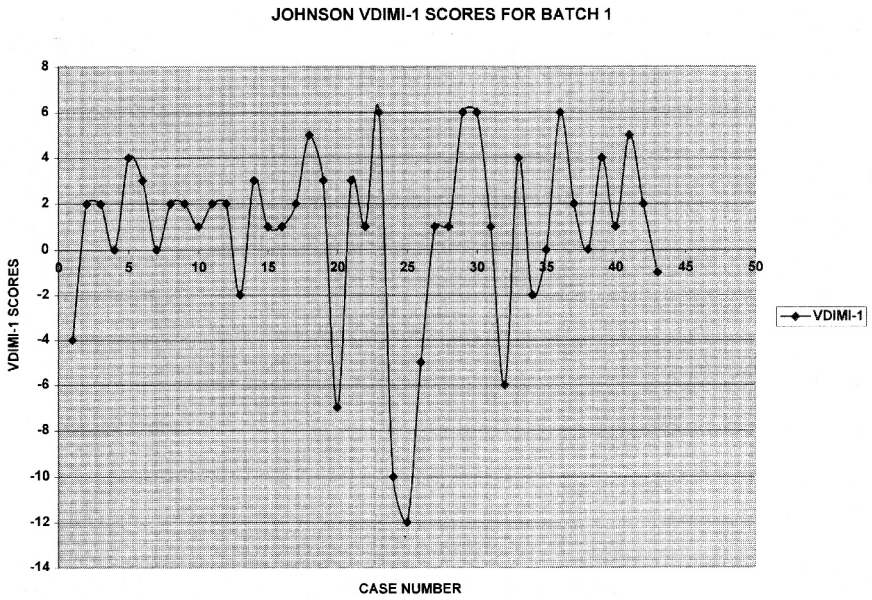

Figure 15. VDIMI-1 scores

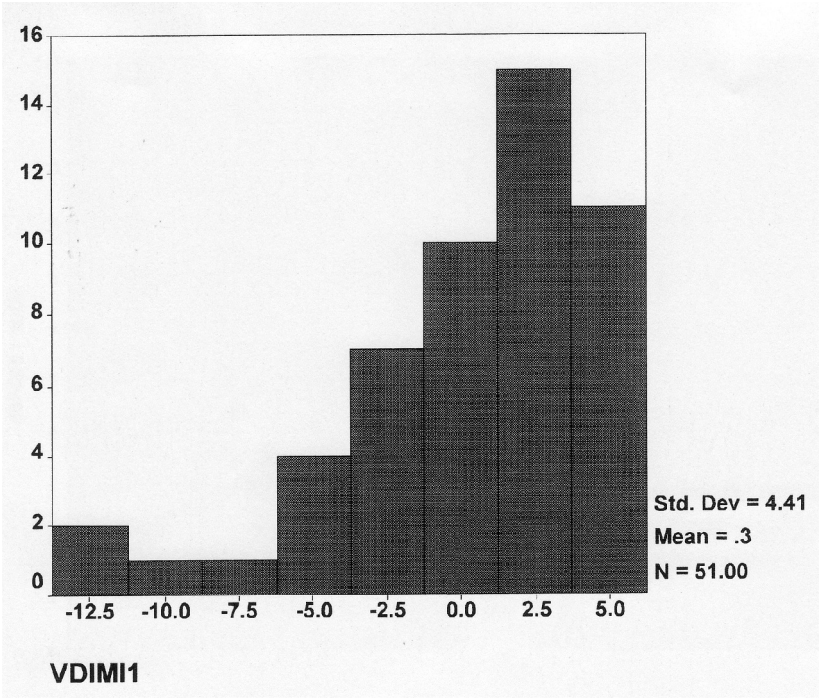

Figure 16. Bar graph of VDIMI scores. Mean = + 0

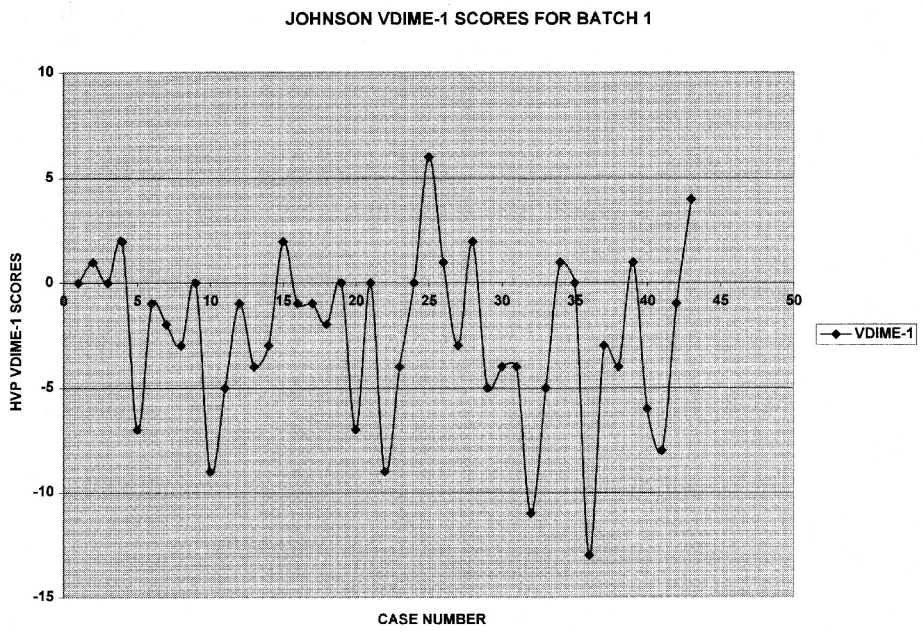

Figure 17. VDIME-1 scores

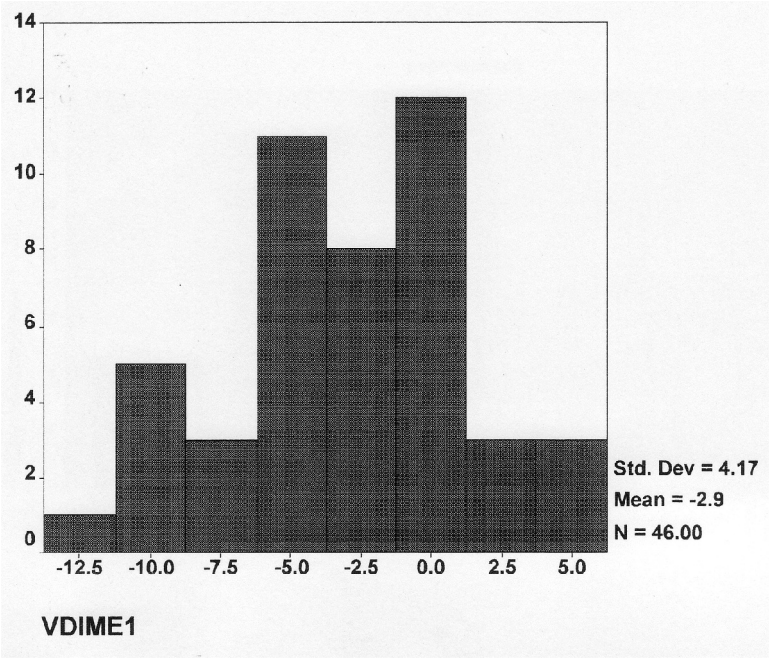

Figure 18. Bar graph of VDIME-1 scores. Mean = -2.9

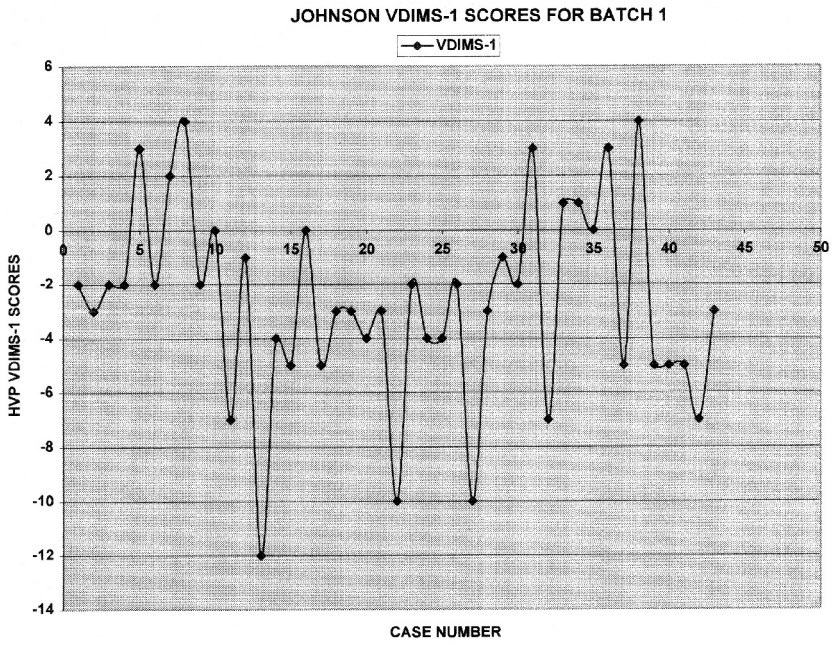

Figure 19. VDIMS-1 scores

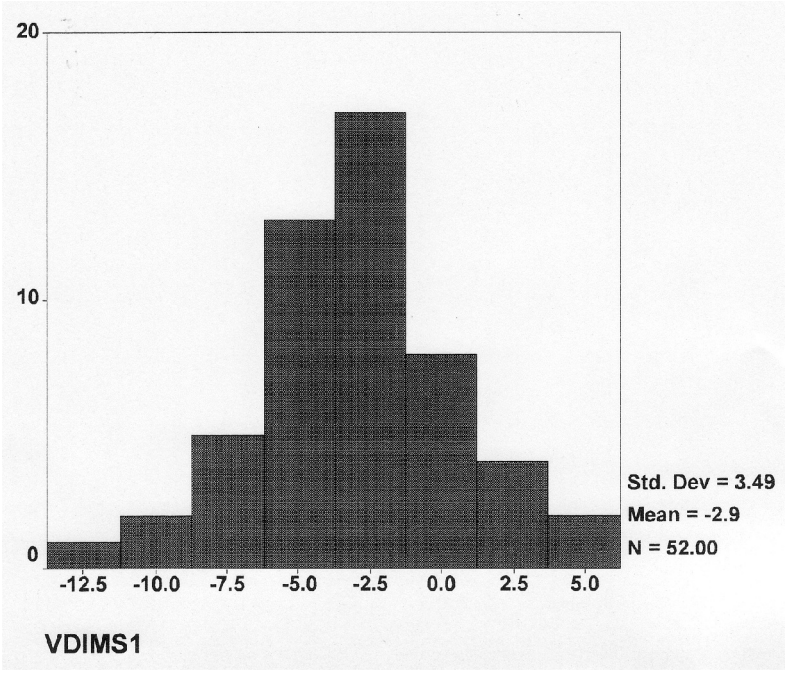

Figure 20. Bar graph of VDIMS-1 scores. Mean = -2.9

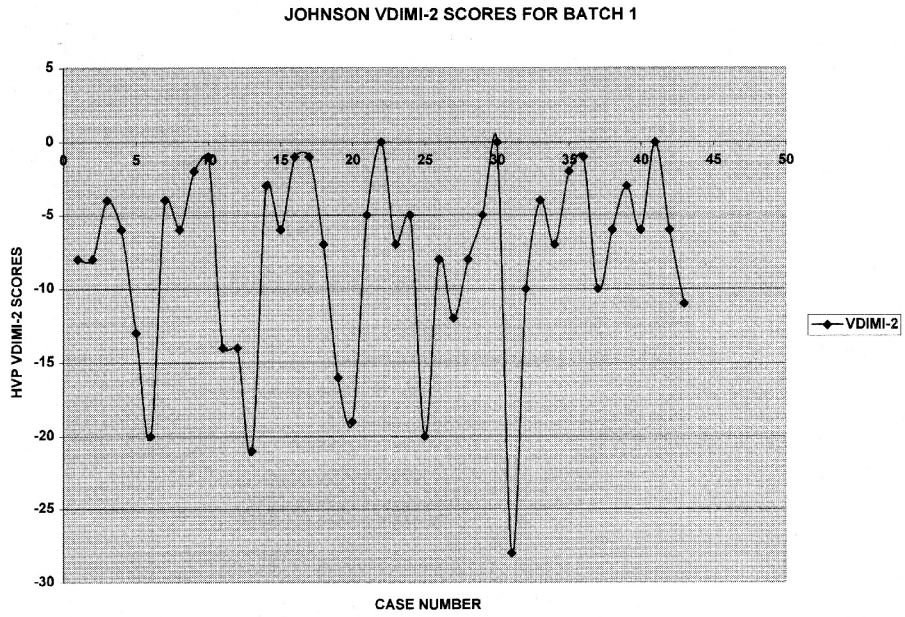

Figure 21. VDIMI-2 scores

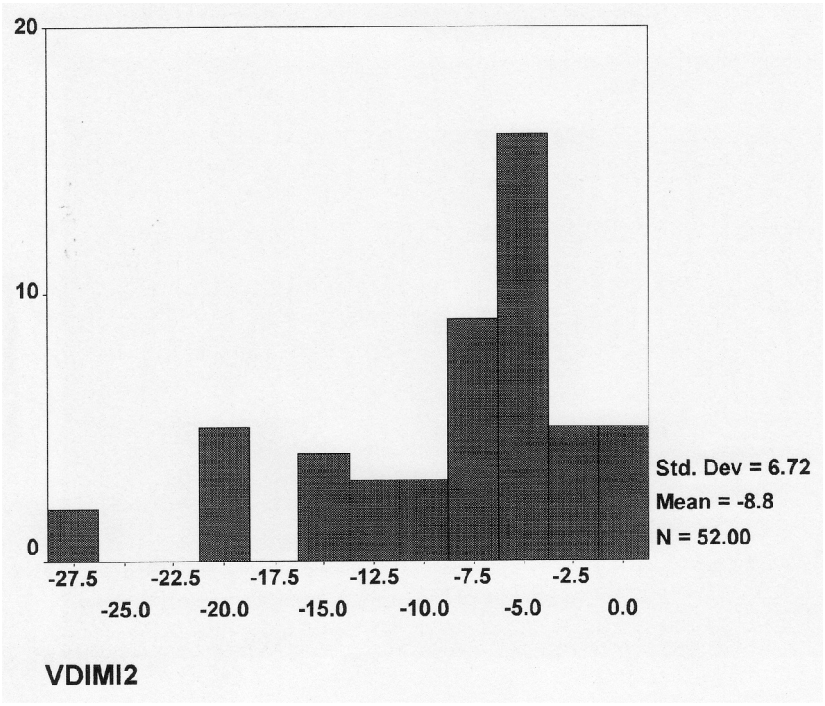

Figure 22. Bar graph of VDIMI-2 scores

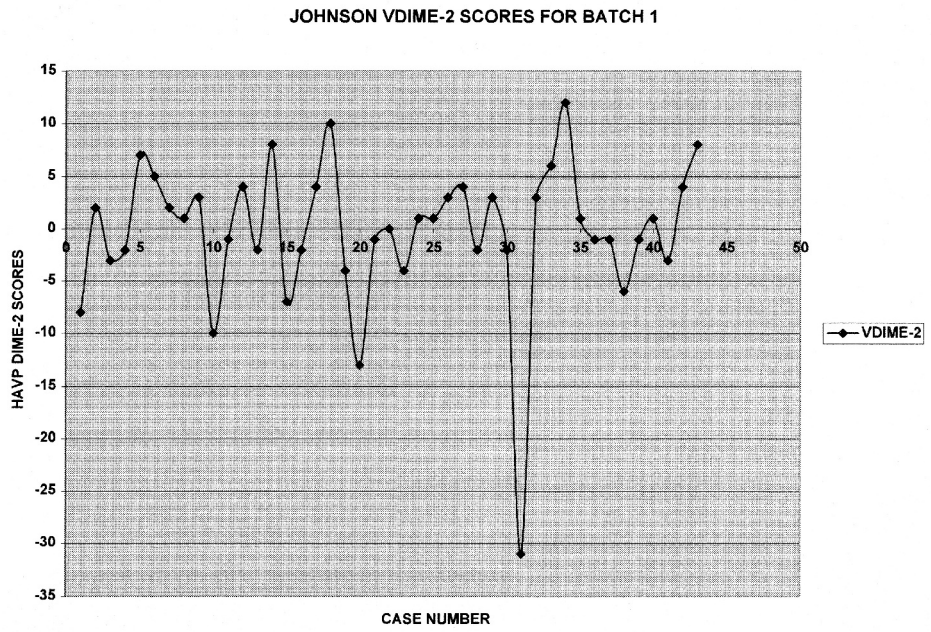

Figure 23. VDIME-2 scores

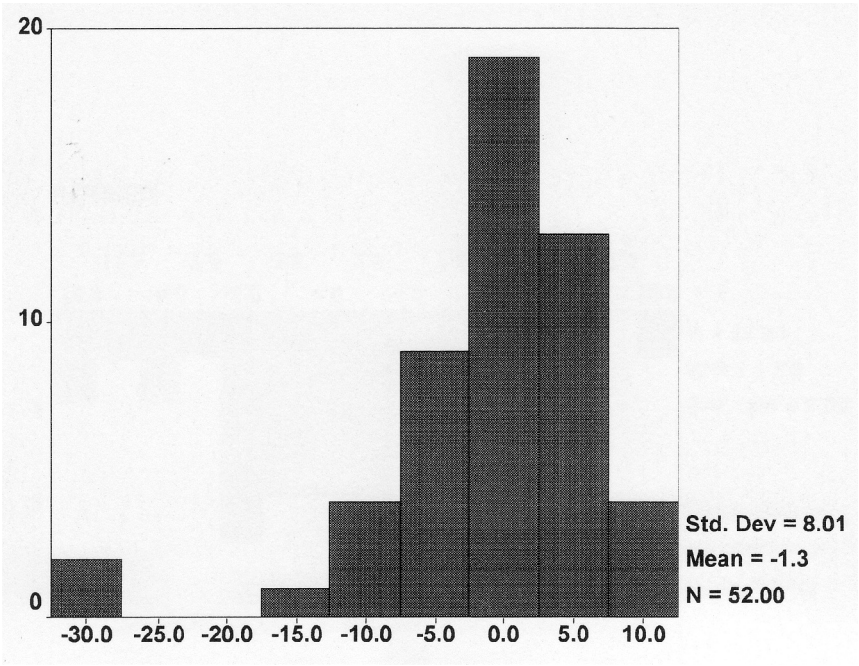

Figure 24. Bar graph of VDIME-2 scores

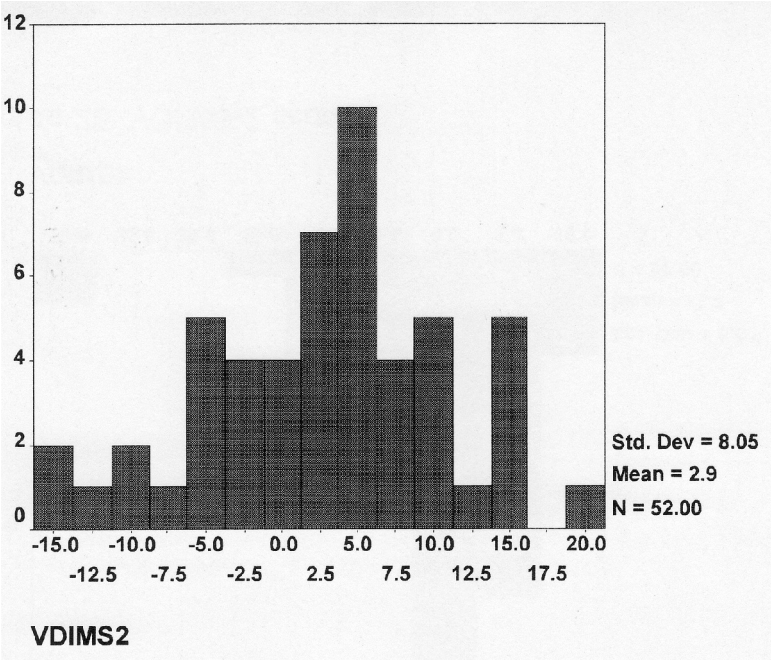

Figure 25. VDIMS-2 scores. Mean = 2.9

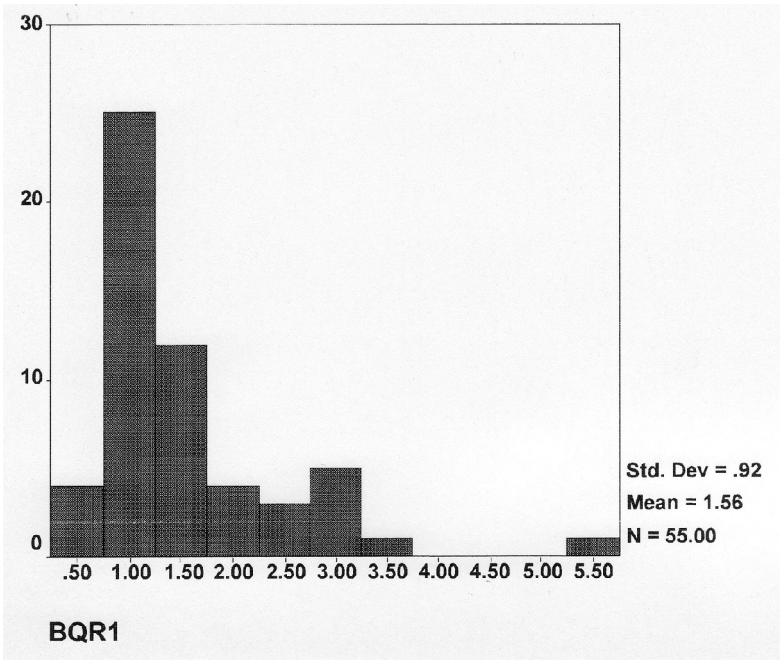

Figure 26. Bar graph of BQR-1 scores

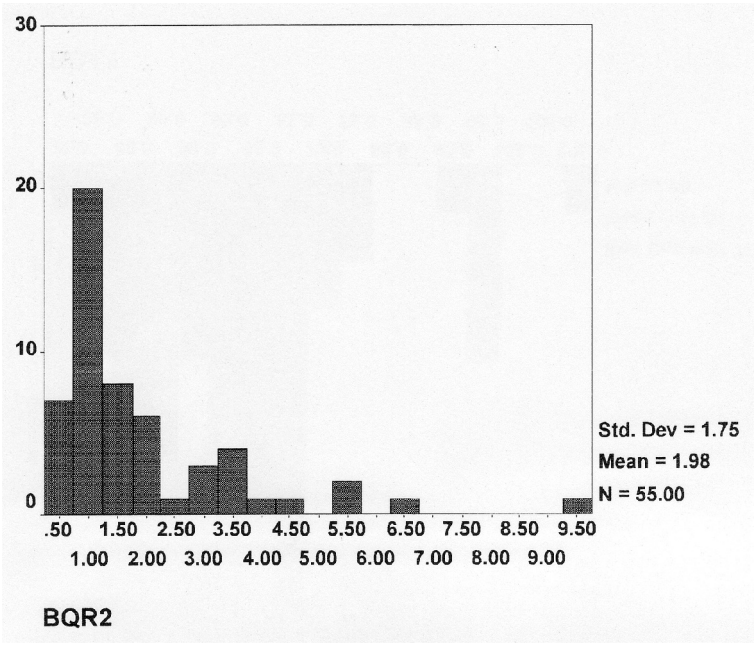

Figure 27. Bar graph of BQR-2 scores

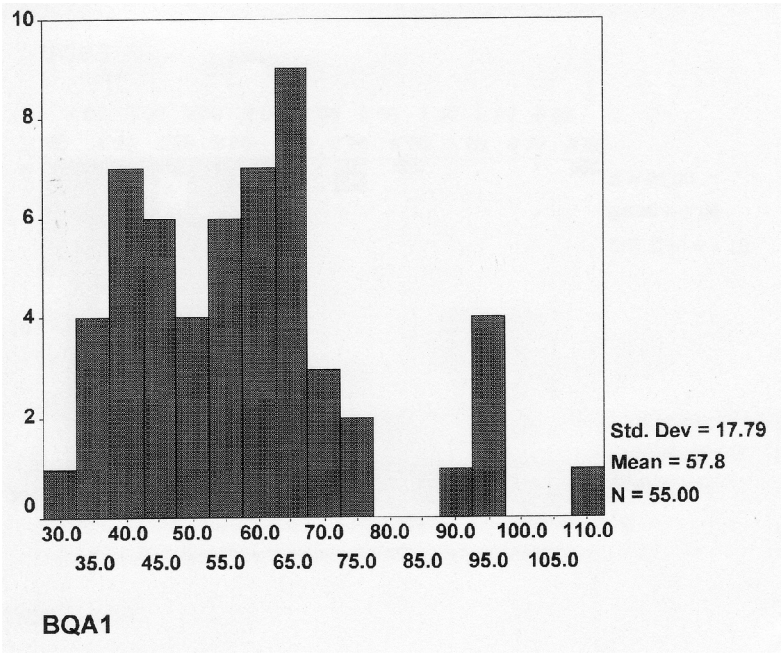

Figure 28. Bar graph of BQA-1 scores

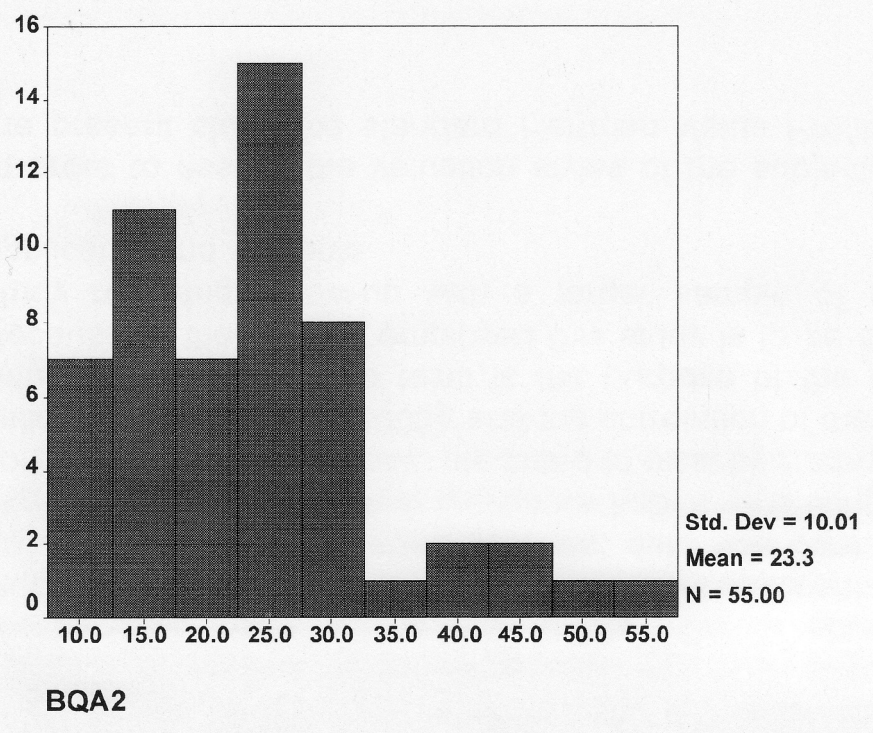

Figure 29. Bar graph of BQA-2 scores

B. Section Two Results

The purpose of this study is to examine the value dimensions of selected medical school admissions tests, employing axiological science and its foremost quantitative application, The Hartman Value Profile (HVP), to achieve a greater awareness of the roles that values play in selecting medical students. A sample of N = 55 medical school applicants and students was chosen, on whom admission test scores plus HVP scores were obtained. The purpose of the present study is to explore their habitual evaluative habits as defined by axiological science and assessed by The Hartman Value Profile (HVP) and subsequently validated in my empirical research. Because of the relatively small sample of subjects employed in the present study, this effort should be seen as a pilot study that requires follow-up studies with larger samples of medical school applicants and students. To assess the valuation styles of these subjects, the standard Hartman Value Profile (sHVP) was used because of the published validity and reliability studies supporting it (Pomeroy, 2005).

Each of the N = 55 subjects was administered the sHVP along with currently used medical school admission tests. A split-half procedure was

employed, whereby subject scores on these tests were dichotomized into high and low scores, permitting a multivariate discriminant analysis of the split halves, in an effort to determine whether the many HVP scores significantly distinguish between high and low scores for each of admissions tests employed in the present study.

Following this data processing, the N = 55 subjects were split into high and low RHO-1 and RHO-2 groups in an effort to determine which admission test significantly distinguishes between high and low RHO-1 and RHO-1 groups. I focus on the RHO scale of the HVP because RHO scores are markers for a general capacity to value self (RHO-2) and world (RHO-1). This nonparametric statistic correlates the subjects' ranking of the HVP test items from good to bad with the normative rankings given by axiological science. The results of Discriminant Analysis of dichotomized (split half analysis) high and low scores on the medical school admissions tests for N = 55 subjects are summarized in this results section; but, first a word concerning Discriminant Analysis. I first employed the method of Discriminant Analysis successfully with biomedical data in an article published in the prestigious *Proceedings of the National Academy of Sciences* (1964). By convention, statistical significance in reporting these data is given by the Wilks' Lambda statistic reaching $p < .05$ as the level of statistical significance.

1) GPA Test Data: ns

GPA SCORES obtained by the N = 55 medical school applicants and students were split into two groups with Group 1 containing those scoring at the high end and Group 2 those scoring at the low end. Having sorted in this manner of split-halves the Discriminant Statistic was employed to determine whether a battery of selected HVP scores could significantly distinguish (discriminate/distinguish) between those scoring high and low on GPA Test data. This is the strategy employed in all subsequent examinations of the power of HVP scales to differentiate between high and low levels on the criterion measures, medical school admission tests, considered in the present study: 1. GPA GRADES; 2. INTERVIEW test data; 3. MCAT BIO test data; 4, MCAT COM test data; 5. MCAT PHYS test data; 6. MCAT VERBAL test data; 7. MCAT ESSAY test data; 8. MS Grade.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1	.614	20.499	22	.552

Classification Results

			Predicted Group Membership		
		GROUP	1	2	Total
Original	Count	1	19	8	27
		2	4	24	28
		Ungrouped cases	4	1	5
	%	1	70.4	29.6	100.0
		2	14.3	85.7	100.0
		Ungrouped cases	80.0	20.0	100.0

78.2% of original grouped cases were correctly classified into High GPA (Group 1) and Low GPA (Group 2), but the overall Discriminant separation of high and low GPA subjects on the basis of HVP scores is not significant ($p = .552$) in spite of the fact that 78.2% correct classification was achieved. The following table reveals the HVP scores for Groups 1 and 2. The RHO scores associated with Group 1 (High Grade Point Average) and Group 2 (Low Grade Point Average) are RHO-1 for Group 1 = 0.91 and RHO-2 for Group 1 = 0.82. Compare these RHO values with the RHO scores associated with Group 2 (Low Grade Point Average) which are RHO-1 for Group 2 = 0.89 and RHO-2 for Group 2 = 0.84 The habitual evaluative styles, defined by axiological science and taken as a valuational profile for high vs. low Grade Point Average students does not significantly differentiate High Academic and Low Academic Grade Point Averages of these medical applicants and students.

Observed Group Statistics

				Valid N (listwise)	
GROUP		Mean	Std. Deviation	Unweighted	Weighted
1	RHO1	.9133	.04977	27	27.000
	RHO2	.8219	.10266	27	27.000
	DIF1	28.8148	8.38055	27	27.000
	DIF2	40.6296	11.08064	27	27.000
	INTPCT1	22.2015	11.37880	27	27.000
	INTPCT2	37.8244	12.52917	27	27.000
	AIPCT1	55.9285	7.70588	27	27.000
	AIPCT2	56.6752	12.95108	27	27.000
	DIMPCT1	32.2707	16.36400	27	27.000
	DIMPCT2	26.1785	15.31689	27	27.000
	DIMI1	7.4444	3.54459	27	27.000
	DIME1	9.1111	3.78594	27	27.000
	DIMS1	12.2593	3.50376	27	27.000

	DIMI2	12.7778	5.50757	27	27.000
	DIME2	14.2593	5.53723	27	27.000
	DIMS2	13.5926	4.60985	27	27.000
	BQR1	1.6456	.75678	27	27.000
	BQR2	2.0944	1.47359	27	27.000
	BQA1	57.7037	18.60173	27	27.000
	BQA2	22.9815	10.96014	27	27.000
	DI2	8.3704	6.90679	27	27.000
	DIF2DIF1	151.2519	59.39876	27	27.000
	DIF1DIF2	74.6963	24.89601	27	27.000
	INT1	7.2222	5.38754	27	27.000
	INT2	16.5185	9.34127	27	27.000
2	RHO1	.8982	.05285	28	28.000
	RHO2	.8461	.11308	28	28.000
	DIF1	30.4286	9.03257	28	28.000
	DIF2	38.1429	13.86633	28	28.000
	INTPCT1	27.7475	9.78341	28	28.000
	INTPCT2	32.9486	13.12450	28	28.000
	AIPCT1	57.2968	8.58129	28	28.000
	AIPCT2	55.8721	9.71856	28	28.000
	DIMPCT1	31.7925	17.42761	28	28.000
	DIMPCT2	31.8489	14.48337	28	28.000
	DIMI1	8.5357	3.73653	28	28.000
	DIME1	9.8571	4.31804	28	28.000
	DIMS1	12.0357	3.73653	28	28.000
	DIMI2	11.0714	5.63013	28	28.000
	DIME2	14.1071	5.69821	28	28.000
	DIMS2	12.9643	5.38504	28	28.000
	BQR1	1.4836	1.05917	28	28.000
	BQR2	1.8668	2.00765	28	28.000
	BQA1	57.9107	17.32107	28	28.000
	BQA2	23.6250	9.19302	28	28.000
	DI2	7.6429	4.62052	28	28.000
	DIF2DIF1	136.2711	73.94968	28	28.000
	DIF1DIF2	87.7254	32.30639	28	28.000
	INT1	9.1429	5.72657	28	28.000
	INT2	14.1071	10.36497	28	28.000
Total	RHO1	.9056	.05145	55	55.000
	RHO2	.8342	.10778	55	55.000
	DIF1	29.6364	8.67599	55	55.000
	DIF2	39.3636	12.52311	55	55.000

	INTPCT1	25.0249	10.86406	55	55.000
	INTPCT2	35.3422	12.95225	55	55.000
	AIPCT1	56.6251	8.11705	55	55.000
	AIPCT2	56.2664	11.32027	55	55.000
	DIMPCT1	32.0273	16.75859	55	55.000
	DIMPCT2	29.0653	15.03421	55	55.000
	DIMI1	8.0000	3.65148	55	55.000
	DIME1	9.4909	4.04545	55	55.000
	DIMS1	12.1455	3.59227	55	55.000
	DIMI2	11.9091	5.58527	55	55.000
	DIME2	14.1818	5.56807	55	55.000
	DIMS2	13.2727	4.98314	55	55.000
	BQR1	1.5631	.91834	55	55.000
	BQR2	1.9785	1.75330	55	55.000
	BQA1	57.8091	17.79396	55	55.000
	BQA2	23.3091	10.00994	55	55.000
	DI2	8.0000	5.81187	55	55.000
	DIF2DIF1	143.6253	67.00875	55	55.000
	DIF1DIF2	81.3293	29.38520	55	55.000
	INT1	8.2000	5.59563	55	55.000
	INT2	15.2909	9.85952	55	55.000

2) INTERVIEW Test Data: sig

The same approach was applied to INTERVIEW test data with quite different results. Discriminant analysis applied to separating high interview (Group 2) and low interview (Group 1) subjects proved statistically significant ($p < .05$). 85.5% correct classification was achieved. This separation into high and low scoring subjects invites an axiological comparison of subjects scoring high and low on this medical school admissions test. The Wilks' Lambda test of a significant axiological separation those subjects scoring high and low on interview scores is highly significant ($p < .021$). The HVP is especially sensitive to the level of interview scores assigned to our sample of N = 55 medical school applicants and students.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.410	37.498	22	.021

Classification Results

		GROUP	Predicted Group Membership		Total
			1	2	
Original	Count	1	23	4	27
		2	4	24	28
		Ungrouped cases	5	0	5
	%	1	85.2	14.8	100.0
		2	14.3	85.7	100.0
		Ungrouped cases	100.0	.0	100.0

85.5% of original grouped cases correctly classified.

From the following Table of "Observed Group Statistics" we observe that those scoring high on the interview test (Group 2) achieved RHO-1 and RHO-2 scores of 0.91 and 0.87 respectively; whereas, those scoring low on the interview test (Group 1) achieved RHO-1 and RHO-2 scores of 0.89 and 0.78 respectively. The marker for generalized anxiety in axiological testing is INTPCT-1 and INTPCT-2. For the group with high interview test scores these scales come in at 23.8 and 30.8 respectively; whereas those scoring low on the interview test score 26.2 and 40.0 respectively suggesting that low interview scores are associated with values more commonly associated with stress and anxiety behaviors, which are known to sabotage most behaviors.

The following HVP scales proved especially powerful (sensitive) in discriminating high and low interview subjects: RHO-2 ($p<.001$); DIF-2 ($p = .001$); INTPCT-2 ($p = .007$); AI%-2 ($p=.003$); DIM%-1 ($p=.036$); DIMI-2 ($p=.013$); DIME-2 ($p=.021$); DIMS-2 ($p=.009$); BQR-1 ($p=.042$); BQR-2 ($p=.046$); BQA-1 ($p=.002$); BQA-2 ($p=.006$); DI-2 ($p=.004$); INT-2 ($p=.002$). The sensitivity of these scales to judges scoring "interview content" yields an overall significant axiological discrimination of high and low groups ($p = .021$).

Observed Group Statistics

GROUP		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1	RHO1	.8922	.06664	27	27.000
	RHO2	.7885	.12666	27	27.000
	DIF1	31.4074	10.88139	27	27.000
	DIF2	44.7037	13.46167	27	27.000
	INTPCT1	26.2489	13.96383	27	27.000

	INTPCT2	40.0196	13.33684	27	27.000
	AIPCT1	59.8556	8.91563	27	27.000
	AIPCT2	58.9130	13.72616	27	27.000
	DIMPCT1	27.2333	16.15856	27	27.000
	DIMPCT2	29.1915	10.90668	27	27.000
	DIMI1	8.4444	4.50071	27	27.000
	DIME1	10.5556	4.59375	27	27.000
	DIMS1	12.4074	3.89535	27	27.000
	DIMI2	13.7778	6.36295	27	27.000
	DIME2	15.8889	6.62938	27	27.000
	DIMS2	15.0370	5.24391	27	27.000
	BQR1	1.8185	1.07597	27	27.000
	BQR2	2.4570	2.06277	27	27.000
	BQA1	65.0926	20.88523	27	27.000
	BQA2	27.0370	11.94130	27	27.000
	DI2	10.2593	6.62508	27	27.000
	DIF2DIF1	160.4826	79.45699	27	27.000
	DIF1DIF2	76.0174	34.02246	27	27.000
	INT1	9.5556	7.23418	27	27.000
	INT2	19.4074	11.06366	27	27.000
2	RHO1	.9186	.02578	28	28.000
	RHO2	.8782	.06074	28	28.000
	DIF1	27.9286	5.51045	28	28.000
	DIF2	34.2143	9.11798	28	28.000
	INTPCT1	23.8446	6.73395	28	28.000
	INTPCT2	30.8318	11.01193	28	28.000
	AIPCT1	53.5100	5.89317	28	28.000
	AIPCT2	53.7143	7.81721	28	28.000
	DIMPCT1	36.6500	16.28278	28	28.000
	DIMPCT2	28.9436	18.37046	28	28.000
	DIMI1	7.5714	2.60240	28	28.000
	DIME1	8.4643	3.19122	28	28.000
	DIMS1	11.8929	3.32598	28	28.000
	DIMI2	10.1071	4.06739	28	28.000
	DIME2	12.5357	3.73653	28	28.000
	DIMS2	11.5714	4.13144	28	28.000
	BQR1	1.3168	.66612	28	28.000
	BQR2	1.5171	1.26528	28	28.000
	BQA1	50.7857	10.44069	28	28.000
	BQA2	19.7143	5.98212	28	28.000
	DI2	5.8214	3.90682	28	28.000
	DIF2DIF1	127.3700	48.40012	28	28.000

	DIF1DIF2	86.4514	23.59872	28	28.000
	INT1	6.8929	2.93560	28	28.000
	INT2	11.3214	6.57748	28	28.000
	RHO1	.9056	.05145	55	55.000
	RHO2	.8342	.10778	55	55.000
	DIF1	29.6364	8.67599	55	55.000
	DIF2	39.3636	12.52311	55	55.000
	INTPCT1	25.0249	10.86406	55	55.000
	INTPCT2	35.3422	12.95225	55	55.000
	AIPCT1	56.6251	8.11705	55	55.000
	AIPCT2	56.2664	11.32027	55	55.000
	DIMPCT1	32.0273	16.75859	55	55.000
	DIMPCT2	29.0653	15.03421	55	55.000
	DIMI1	8.0000	3.65148	55	55.000
	DIME1	9.4909	4.04545	55	55.000
	DIMS1	12.1455	3.59227	55	55.000
	DIMI2	11.9091	5.58527	55	55.000
	DIME2	14.1818	5.56807	55	55.000
	DIMS2	13.2727	4.98314	55	55.000
	BQR1	1.5631	.91834	55	55.000
	BQR2	1.9785	1.75330	55	55.000
	BQA1	57.8091	17.79396	55	55.000
	BQA2	23.3091	10.00994	55	55.000
	DI2	8.0000	5.81187	55	55.000
	DIF2DIF1	143.6253	67.00875	55	55.000
	DIF1DIF2	81.3293	29.38520	55	55.000
	INT1	8.2000	5.59563	55	55.000
	INT2	15.2909	9.85952	55	55.000

3) MCAT BIO Test Data ns

The MCAT BIO test data was split into two halves following the procedure previously outlined. MCAT BIO is another medical school admission test. These data obtained on N = 55 subjects were split into two groups of High (Group 1) and Low (Group 2) MCAT BIO scores and the discriminant separation employing our battery of HVP scales was not statistically significant (p = .339), in spite of an overall 81.8% correct classification of high and Low MCAT subjects. We see that the RHO scores for the high and low academic MCAT BIO groups do not significantly differentiate these groups or split halves.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.563	24.150	22	.339

Classification Results

			Predicted Group Membership		
		GROUP	1	2	Total
Original	Count	1	23	4	27
		2	6	22	28
		Ungrouped cases	0	5	5
	%	1	85.2	14.8	100.0
		2	21.4	78.6	100.0
		Ungrouped cases	.0	100.0	100.0

81.8% of original grouped cases correctly classified.

Observed Group Statistics

GROUP		Mean	Std. Deviation	Valid N (listwise) Unweighted	Weighted
1	RHO1	.9074	.05502	27	27.000
	RHO2	.8159	.12810	27	27.000
	DIF1	29.1852	9.75483	27	27.000
	DIF2	40.6296	14.35578	27	27.000
	INTPCT1	25.1744	11.36871	27	27.000
	INTPCT2	37.3270	13.19952	27	27.000
	AIPCT1	55.0967	7.40089	27	27.000
	AIPCT2	57.6859	12.74041	27	27.000
	DIMPCT1	35.4056	19.66705	27	27.000
	DIMPCT2	30.6322	14.56694	27	27.000
	DIMI1	8.1481	4.46097	27	27.000
	DIME1	9.0000	4.28773	27	27.000
	DIMS1	12.0370	3.94658	27	27.000
	DIMI2	12.5556	5.85947	27	27.000
	DIME2	14.9630	6.76803	27	27.000
	DIMS2	13.1111	5.84632	27	27.000

	BQR1	1.6652	1.03323	27	27.000
	BQR2	2.1693	2.00566	27	27.000
	BQA1	59.8704	20.83802	27	27.000
	BQA2	24.9630	11.45554	27	27.000
	DI2	8.7778	6.57696	27	27.000
	DIF2DIF1	150.8211	72.52695	27	27.000
	DIF1DIF2	77.6989	28.93002	27	27.000
	INT1	8.2593	6.09282	27	27.000
	INT2	16.7778	11.21926	27	27.000
2	RHO1	.9039	.04871	28	28.000
	RHO2	.8518	.08233	28	28.000
	DIF1	30.0714	7.64939	28	28.000
	DIF2	38.1429	10.58550	28	28.000
	INTPCT1	24.8807	10.56177	28	28.000
	INTPCT2	33.4282	12.64944	28	28.000
	AIPCT1	58.0989	8.62784	28	28.000
	AIPCT2	54.8975	9.79961	28	28.000
	DIMPCT1	28.7696	12.91570	28	28.000
	DIMPCT2	27.5543	15.58510	28	28.000
	DIMI1	7.8571	2.73136	28	28.000
	DIME1	9.9643	3.81500	28	28.000
	DIMS1	12.2500	3.28436	28	28.000
	DIMI2	11.2857	5.33928	28	28.000
	DIME2	13.4286	4.08637	28	28.000
	DIMS2	13.4286	4.08637	28	28.000
	BQR1	1.4646	.79887	28	28.000
	BQR2	1.7946	1.48424	28	28.000
	BQA1	55.8214	14.37926	28	28.000
	BQA2	21.7143	8.28590	28	28.000
	DI2	7.2500	4.97121	28	28.000
	DIF2DIF1	136.6864	61.75189	28	28.000
	DIF1DIF2	84.8300	29.91894	28	28.000
	INT1	8.1429	5.18341	28	28.000
	INT2	13.8571	8.29866	28	28.000
Total	RHO1	.9056	.05145	55	55.000
	RHO2	.8342	.10778	55	55.000
	DIF1	29.6364	8.67599	55	55.000
	DIF2	39.3636	12.52311	55	55.000
	INTPCT1	25.0249	10.86406	55	55.000
	INTPCT2	35.3422	12.95225	55	55.000
	AIPCT1	56.6251	8.11705	55	55.000
	AIPCT2	56.2664	11.32027	55	55.000

	DIMPCT1	32.0273	16.75859	55	55.000
	DIMPCT2	29.0653	15.03421	55	55.000
	DIMI1	8.0000	3.65148	55	55.000
	DIME1	9.4909	4.04545	55	55.000
	DIMS1	12.1455	3.59227	55	55.000
	DIMI2	11.9091	5.58527	55	55.000
	DIME2	14.1818	5.56807	55	55.000
	DIMS2	13.2727	4.98314	55	55.000
	BQR1	1.5631	.91834	55	55.000
	BQR2	1.9785	1.75330	55	55.000
	BQA1	57.8091	17.79396	55	55.000
	BQA2	23.3091	10.00994	55	55.000
	DI2	8.0000	5.81187	55	55.000
	DIF2DIF1	143.6253	67.00875	55	55.000
	DIF1DIF2	81.3293	29.38520	55	55.000
	INT1	8.2000	5.59563	55	55.000
	INT2	15.2909	9.85952	55	55.000

4) MCAT COM Test Data: sig

Again the procedure of dichotomizing test data was employed in the case of yet another criterion measure for the screening of medical applicants known as the MCAT COM test score. The N = 55 subjects were split or dichotomized into high (Group 1) and low (Group 2) MCAT COM scores. The HVP scales taken together, as a test battery or multivariate profile, significantly ($p < .05$) separate these split halves revealing an axiological sensitivity to the MCAT COM criterion measure. Consulting the "Observed Group Statistics" below permits us to determine which HVP scales are especially sensitive to this criterion measure.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.463	32.730	21	.049

Classification Results)

			Predicted Group Membership		
		GROUP	1	2	Total
Original	Count	1	23	4	27
		2	2	26	28

	Ungrouped cases	4	1	5
%	1	85.2	14.8	100.0
	2	7.1	92.9	100.0
	Ungrouped cases	80.0	20.0	100.0

89.1% of Subjects correctly classified.

Observed Group Statistics

GROUP		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
1	RHO2	.8352	.12933	27	27.000
	DIF1	30.2963	9.94916	27	27.000
	DIF2	39.2963	14.34148	27	27.000
	INTPCT1	25.7467	12.71933	27	27.000
	INTPCT2	33.4333	13.98861	27	27.000
	AIPCT1	57.3007	8.98049	27	27.000
	AIPCT2	56.6778	11.85597	27	27.000
	DIMPCT1	32.4985	19.25145	27	27.000
	DIMPCT2	29.5415	16.73370	27	27.000
	DIMI1	8.3333	4.35890	27	27.000
	DIME1	9.3333	4.04779	27	27.000
	DIMS1	12.6296	3.84456	27	27.000
	DIMI2	11.9630	5.70749	27	27.000
	DIME2	15.1852	6.62766	27	27.000
	DIMS2	12.1481	5.41155	27	27.000
	BQR1	1.5270	1.01950	27	27.000
	BQR2	1.9841	2.02168	27	27.000
	BQA1	58.5926	21.72336	27	27.000
	BQA2	23.7963	12.27040	27	27.000
	DI2	7.8889	6.49457	27	27.000
	DIF2DIF1	140.8926	71.52477	27	27.000
	DIF1DIF2	83.1415	29.27950	27	27.000
	INT1	8.8519	6.58497	27	27.000
	INT2	14.8889	11.49693	27	27.000
2	RHO2	.8332	.08442	28	28.000
	DIF1	29.0000	7.37363	28	28.000
	DIF2	39.4286	10.75115	28	28.000
	INTPCT1	24.3289	8.90185	28	28.000
	INTPCT2	37.1829	11.82923	28	28.000
	AIPCT1	55.9736	7.29479	28	28.000

	AIPCT2	55.8696	10.98210	28	28.000
	DIMPCT1	31.5729	14.29589	28	28.000
	DIMPCT2	28.6061	13.48940	28	28.000
	DIMI1	7.6786	2.85519	28	28.000
	DIME1	9.6429	4.11154	28	28.000
	DIMS1	11.6786	3.33393	28	28.000
	DIMI2	11.8571	5.56919	28	28.000
	DIME2	13.2143	4.21072	28	28.000
	DIMS2	14.3571	4.35647	28	28.000
	BQR1	1.5979	.82659	28	28.000
	BQR2	1.9732	1.48735	28	28.000
	BQA1	57.0536	13.32732	28	28.000
	BQA2	22.8393	7.41252	28	28.000
	DI2	8.1071	5.18787	28	28.000
	DIF2DIF1	146.2604	63.55594	28	28.000
	DIF1DIF2	79.5818	29.91641	28	28.000
	INT1	7.5714	4.47568	28	28.000
	INT2	15.6786	8.17428	28	28.000
Total	RHO2	.8342	.10778	55	55.000
	DIF1	29.6364	8.67599	55	55.000
	DIF2	39.3636	12.52311	55	55.000
	INTPCT1	25.0249	10.86406	55	55.000
	INTPCT2	35.3422	12.95225	55	55.000
	AIPCT1	56.6251	8.11705	55	55.000
	AIPCT2	56.2664	11.32027	55	55.000
	DIMPCT1	32.0273	16.75859	55	55.000
	DIMPCT2	29.0653	15.03421	55	55.000
	DIMI1	8.0000	3.65148	55	55.000
	DIME1	9.4909	4.04545	55	55.000
	DIMS1	12.1455	3.59227	55	55.000
	DIMI2	11.9091	5.58527	55	55.000
	DIME2	14.1818	5.56807	55	55.000
	DIMS2	13.2727	4.98314	55	55.000
	BQR1	1.5631	.91834	55	55.000
	BQR2	1.9785	1.75330	55	55.000
	BQA1	57.8091	17.79396	55	55.000
	BQA2	23.3091	10.00994	55	55.000
	DI2	8.0000	5.81187	55	55.000
	DIF2DIF1	143.6253	67.00875	55	55.000
	DIF1DIF2	81.3293	29.38520	55	55.000
	INT1	8.2000	5.59563	55	55.000
	INT2	15.2909	9.85952	55	55.000

A larger sample might provide an even stronger level of statistical significance because Discriminant Analysis involves some twenty-five HVP scales. The rule of thumb suggests we need about ten subjects for each variable, and given we're working with 25 variables (HVP scales), this translates to 250 subjects as a minimum for conducting such a study. For this reason I'm relegating this study to the status of a "pilot study," hoping to inspire others to explore the frontier of axiological science and medical education in the future.

The obtained Wilks' Lambda = .049 suggests the HVP scales are collectively sensitive to the MCAT COM dimension of applicant screening. In this examination of the MCAT COM test data the following HVP scales were especially sensitive and effective in discriminating high and low MCAT COM individuals: RHO-2, DIF-1, DIF-2, INTPCT-2, DIME-1, DIME-2, BAR-1, BQR-2, BQA-1, INT-1, and the ratio DIF1 / DIF2.

5) MCAT PHYS Test Data ns

Once again I dichotomized (split) the medical school admissions test known as the MCAT PHYS into those scoring high (Group 1) and those scoring low (Group 2). MCAT PHYS is another criterion measure for screening medial school applicants. Our split half analysis employing the Discriminant statistic using all HVP scales is not significant (p = .177) which suggests that the HVP scales, taken as a multivariate profile, are not sufficiently sensitive to the MCAT PHYS academic measure given our small sample of N = 55 subjects.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.514	27.967	22	.177

Classification Results

			Predicted Group Membership		
		GROUP	1	2	Total
Original	Count	1	23	4	27
		2	5	23	28
		Ungrouped cases	0	5	5
	%	1	85.2	14.8	100.0
		2	17.9	82.1	100.0
		Ungrouped cases	.0	100.0	100.

83.6% of original grouped cases correctly classified.

Observed Group Statistics

GROUP		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1	RHO1	.9089	.05206	27	27.000
	RHO2	.8167	.12941	27	27.000
	DIF1	29.0370	9.12090	27	27.000
	DIF2	41.3704	14.20495	27	27.000
	INTPCT1	24.8593	10.85952	27	27.000
	INTPCT2	35.5607	14.70933	27	27.000
	AIPCT1	55.5485	7.48845	27	27.000
	AIPCT2	58.3941	12.59816	27	27.000
	DIMPCT1	36.1681	17.27918	27	27.000
	DIMPCT2	27.9226	14.78839	27	27.000
	DIMI1	7.3704	3.73289	27	27.000
	DIME1	9.1111	4.16333	27	27.000
	DIMS1	12.5556	3.54459	27	27.000
	DIMI2	12.9259	5.77079	27	27.000
	DIME2	14.8148	6.70842	27	27.000
	DIMS2	13.6296	5.69175	27	27.000
	BQR1	1.6422	1.03005	27	27.000
	BQR2	2.0478	2.01553	27	27.000
	BQA1	59.7407	20.91023	27	27.000
	BQA2	24.5370	11.56913	27	27.000
	DI2	8.0370	6.84713	27	27.000
	DIF2DIF1	152.4356	70.83134	27	27.000
	DIF1DIF2	75.3148	24.75054	27	27.000
	INT1	8.0370	5.76115	27	27.000
	INT2	16.5185	11.53380	27	27.000
2	RHO1	.9025	.05161	28	28.000
	RHO2	.8511	.08066	28	28.000
	DIF1	30.2143	8.35046	28	28.000
	DIF2	37.4286	10.55647	28	28.000
	INTPCT1	25.1846	11.06527	28	28.000
	INTPCT2	35.1314	11.27284	28	28.000
	AIPCT1	57.6632	8.68886	28	28.000
	AIPCT2	54.2146	9.72466	28	28.000
	DIMPCT1	28.0343	15.50830	28	28.000
	DIMPCT2	30.1671	15.45618	28	28.000
	DIMI1	8.6071	3.53123	28	28.000

	DIME1	9.8571	3.96946	28	28.000
	DIMS1	11.7500	3.65782	28	28.000
	DIMI2	10.9286	5.31893	28	28.000
	DIME2	13.5714	4.22890	28	28.000
	DIMS2	12.9286	4.26813	28	28.000
	BQR1	1.4868	.80790	28	28.000
	BQR2	1.9118	1.49223	28	28.000
	BQA1	55.9464	14.31351	28	28.000
	BQA2	22.1250	8.27941	28	28.000
	DI2	7.9643	4.73351	28	28.000
	DIF2DIF1	135.1296	63.21878	28	28.000
	DIF1DIF2	87.1289	32.65001	28	28.000
	INT1	8.3571	5.53249	28	28.000
	INT2	14.1071	7.95980	28	28.000
Total	RHO1	.9056	.05145	55	55.000
	RHO2	.8342	.10778	55	55.000
	DIF1	29.6364	8.67599	55	55.000
	DIF2	39.3636	12.52311	55	55.000
	INTPCT1	25.0249	10.86406	55	55.000
	INTPCT2	35.3422	12.95225	55	55.000
	AIPCT1	56.6251	8.11705	55	55.000
	AIPCT2	56.2664	11.32027	55	55.000
	DIMPCT1	32.0273	16.75859	55	55.000
	DIMPCT2	29.0653	15.03421	55	55.000
	DIMI1	8.0000	3.65148	55	55.000
	DIME1	9.4909	4.04545	55	55.000
	DIMS1	12.1455	3.59227	55	55.000
	DIMI2	11.9091	5.58527	55	55.000
	DIME2	14.1818	5.56807	55	55.000
	DIMS2	13.2727	4.98314	55	55.000
	BQR1	1.5631	.91834	55	55.000
	BQR2	1.9785	1.75330	55	55.000
	BQA1	57.8091	17.79396	55	55.000
	BQA2	23.3091	10.00994	55	55.000
	DI2	8.0000	5.81187	55	55.000
	DIF2DIF1	143.6253	67.00875	55	55.000
	DIF1DIF2	81.3293	29.38520	55	55.000
	INT1	8.2000	5.59563	55	55.000
	INT2	15.2909	9.85952	55	55.000

6) MCAT VERBAL test data ns

MCAT VERBAL test scores are also used in screening medical student applicants. The Discrimiant analysis of High and Low MCAT VERBAL subjects did not achieve statistical significance; although, the RHO-2, RHO-1, DIF-1, DIF-2, BQR-1, INT, INTPCT, and DIF-1/DIF-2 scales approached statistical significance without achieving statistical significance.

Classification Results

			Predicted Group Membership		
		GROUP	1 HW	2 LW	Total
Original	Count	1 HW	23	4	27
		2 LW	5	23	28
		Ungrouped cases	0	5	5
	%	1 HW	85.2	14.8	100.0
		2 LW	17.9	82.1	100.0
		Ungrouped cases	.0	100.0	100.0

83.6% of original grouped cases correctly classified.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1	.514	27.967	22	.177

Classification Results

			Predicted Group Membership		
		GROUP	1	2	Total
Original	Count	1	23	4	27
		2	5	23	28
		Ungrouped cases	0	5	5
	%	1	85.2	14.8	100.0
		2	17.9	82.1	100.0

	Ungrouped cases	.0	100.0	100.0

83.6% of original grouped cases correctly classified.

Observed Group Statistics

	Wilks' Lambda	F	df1	df2	Sig.
RHO1	.996	.209	1	53	.650
RHO2	.974	1.411	1	53	.240
DIF1	.995	.250	1	53	.619
DIF2	.975	1.371	1	53	.247
INTPCT1	1.000	.012	1	53	.913
INTPCT2	1.000	.015	1	53	.904
AIPCT1	.983	.932	1	53	.339
AIPCT2	.965	1.905	1	53	.173
DIMPCT1	.940	3.381	1	53	.072
DIMPCT2	.994	.302	1	53	.585
DIMI1	.971	1.594	1	53	.212
DIME1	.991	.463	1	53	.499
DIMS1	.987	.687	1	53	.411
DIMI2	.967	1.783	1	53	.187
DIME2	.987	.681	1	53	.413
DIMS2	.995	.268	1	53	.607
BQR1	.993	.389	1	53	.535
BQR2	.998	.081	1	53	.777
BQA1	.988	.621	1	53	.434
BQA2	.985	.795	1	53	.377
DI2	1.000	.002	1	53	.964
DIF2DIF1	.983	.915	1	53	.343
DIF1DIF2	.959	2.274	1	53	.137
INT1	.999	.044	1	53	.834
INT2	.985	.819	1	53	.369

7) MCAT ESSAY Test Data ns

MCAT ESSAY scores are also used in screening medical school applicants. Discriminant separation of a high MCAT ESSAY Group 1 from a low MCAT ESSAY Group 2 is not significant (p = .177). Again a larger sample approach N = 300 might be expected to further clarify this finding. The fact that our small

sample analysis of the relevance to axiological science to medical school admissions testing has achieved statistical significance in some areas will hopefully motivate others to continue to explore the relevance of axiological science to the medical school admissions and education.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.514	27.967	22	.177

Group Statistics

GROUP		Mean	Std. Deviation	Valid N (listwise) Unweighted	Weighted
1	RHO1	.9089	.05206	27	27.000
	RHO2	.8167	.12941	27	27.000
	DIF1	29.0370	9.12090	27	27.000
	DIF2	41.3704	14.20495	27	27.000
	INTPCT1	24.8593	10.85952	27	27.000
	INTPCT2	35.5607	14.70933	27	27.000
	AIPCT1	55.5485	7.48845	27	27.000
	AIPCT2	58.3941	12.59816	27	27.000
	DIMPCT1	36.1681	17.27918	27	27.000
	DIMPCT2	27.9226	14.78839	27	27.000
	DIMI1	7.3704	3.73289	27	27.000
	DIME1	9.1111	4.16333	27	27.000
	DIMS1	12.5556	3.54459	27	27.000
	DIMI2	12.9259	5.77079	27	27.000
	DIME2	14.8148	6.70842	27	27.000
	DIMS2	13.6296	5.69175	27	27.000
	BQR1	1.6422	1.03005	27	27.000
	BQR2	2.0478	2.01553	27	27.000
	BQA1	59.7407	20.91023	27	27.000
	BQA2	24.5370	11.56913	27	27.000
	DI2	8.0370	6.84713	27	27.000
	DIF2DIF1	152.4356	70.83134	27	27.000
	DIF1DIF2	75.3148	24.75054	27	27.000
	INT1	8.0370	5.76115	27	27.000
	INT2	16.5185	11.53380	27	27.000
2	RHO1	.9025	.05161	28	28.000
	RHO2	.8511	.08066	28	28.000

	DIF1	30.2143	8.35046	28	28.000
	DIF2	37.4286	10.55647	28	28.000
	INTPCT1	25.1846	11.06527	28	28.000
	INTPCT2	35.1314	11.27284	28	28.000
	AIPCT1	57.6632	8.68886	28	28.000
	AIPCT2	54.2146	9.72466	28	28.000
	DIMPCT1	28.0343	15.50830	28	28.000
	DIMPCT2	30.1671	15.45618	28	28.000
	DIMI1	8.6071	3.53123	28	28.000
	DIME1	9.8571	3.96946	28	28.000
	DIMS1	11.7500	3.65782	28	28.000
	DIMI2	10.9286	5.31893	28	28.000
	DIME2	13.5714	4.22890	28	28.000
	DIMS2	12.9286	4.26813	28	28.000
	BQR1	1.4868	.80790	28	28.000
	BQR2	1.9118	1.49223	28	28.000
	BQA1	55.9464	14.31351	28	28.000
	BQA2	22.1250	8.27941	28	28.000
	DI2	7.9643	4.73351	28	28.000
	DIF2DIF1	135.1296	63.21878	28	28.000
	DIF1DIF2	87.1289	32.65001	28	28.000
	INT1	8.3571	5.53249	28	28.000
	INT2	14.1071	7.95980	28	28.000
Total	RHO1	.9056	.05145	55	55.000
	RHO2	.8342	.10778	55	55.000
	DIF1	29.6364	8.67599	55	55.000
	DIF2	39.3636	12.52311	55	55.000
	INTPCT1	25.0249	10.86406	55	55.000
	INTPCT2	35.3422	12.95225	55	55.000
	AIPCT1	56.6251	8.11705	55	55.000
	AIPCT2	56.2664	11.32027	55	55.000
	DIMPCT1	32.0273	16.75859	55	55.000
	DIMPCT2	29.0653	15.03421	55	55.000
	DIMI1	8.0000	3.65148	55	55.000
	DIME1	9.4909	4.04545	55	55.000
	DIMS1	12.1455	3.59227	55	55.000
	DIMI2	11.9091	5.58527	55	55.000
	DIME2	14.1818	5.56807	55	55.000
	DIMS2	13.2727	4.98314	55	55.000
	BQR1	1.5631	.91834	55	55.000
	BQR2	1.9785	1.75330	55	55.000
	BQA1	57.8091	17.79396	55	55.000

	BQA2	23.3091	10.00994	55	55.000
	DI2	8.0000	5.81187	55	55.000
	DIF2DIF1	143.6253	67.00875	55	55.000
	DIF1DIF2	81.3293	29.38520	55	55.000
	INT1	8.2000	5.59563	55	55.000
	INT2	15.2909	9.85952	55	55.000

8) MS GRADE Data sig

Student MS GRADES were split into a high Group 1 and Low Group 2. Employing many HVP scales once again, an attempt to statistically identify high and low test scores was attempted with successful results. The HVP scales, derived from proven axiological science, significantly identified high and low MS Grades ($p < .05$). The high MS GRADE group achieved RHO-1 and RHO-2 scores of 0.95 and 0.96 respectively; whereas, the low MS GRADE group achieved RHO-1 and RHO-2 scores of 0.90 and 0.82 respectively. In fact there is a 90.9 % level of correct classification of high and low MS GRADE individuals employing this multivariate axiological analysis.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.444	34.095	22	.048

Classification Results (a)

			Predicted Group Membership		
		GROUP	1	2	Total
Original	Count	1	24	3	27
		2	2	26	28
		Ungrouped cases	0	5	5
	%	1	88.9	11.1	100.0
		2	7.1	92.9	100.0
		Ungrouped cases	.0	100.0	100.0

90.9% of original grouped cases correctly classified.

GROUP		Mean	Std. Deviation	Valid N (listwise) Unweighted	Weighted
RHO 1		.9170	.0378	27	29.95481
RHO2		.8548	.08355	27	27.000
DIF1		28.0741	6.52761	27	27.000
DIF2		37.2593	11.27145	27	27.000
INTPCT1		23.2322	10.39338	27	27.000
INTPCT2		32.9115	12.98434	27	27.000
AIPCT1		54.9611	6.98173	27	27.000
AIPCT2		53.9804	7.62037	27	27.000
DIMPCT 1		33.7867	18.61400	27	27.000
DIMPCT 2		27.8893	14.78407	27	27.000
DIMI1		7.5556	3.38927	27	27.000
DIME1		8.6667	3.35123	27	27.000
DIMS1		11.8519	3.25463	27	27.000
DIMI2		10.9630	4.50198	27	27.000
DIME2		12.7778	3.95487	27	27.000
DIMS2		13.5185	5.47983	27	27.000
BQR1		1.4793	.70404	27	27.000
BQR2		2.0052	1.73725	27	27.000
BQA1		53.7222	15.30481	27	27.000
BQA2		21.0556	8.39223	27	27.000
DI2		6.3333	4.04779	27	27.000
DIF2DIF1		136.8900	46.05812	27	27.000
DIF1DIF2		80.9041	26.86509	27	27.000
INT1		7.0370	4.62835	27	27.000
INT2		13.5556	8.58143	27	27.000
RHO1		.8946	.06052	28	8.000
RHO2		.8143	.12521	28	28.000
DIF1		31.1429	10.23326	28	28.000
DIF2		41.3929	13.51361	28	28.000
INTPCT1		26.7536	11.21255	28	28.000
INTPCT2		37.6861	12.71090	28	28.000
AIPCT1		58.2296	8.91038	28	28.000
AIPCT2		58.4707	13.78814	28	28.000
DIMPCT 1		30.3307	14.89872	28	28.000

DIMPCT 2	30.1993	15.45525	28	28.000
DIMI1	8.4286	3.90089	28	28.000
DIME1	10.2857	4.53674	28	28.000
DIMS1	12.4286	3.92927	28	28.000
DIMI2	12.8214	6.41210	28	28.000
DIME2	15.5357	6.56298	28	28.000
DIMS2	13.0357	4.54184	28	28.000
BQR1	1.6439	1.09342	28	28.000
BQR2	1.9529	1.80012	28	28.000
BQA1	61.7500	19.36181	28	28.000
BQA2	25.4821	11.07256	28	28.000
DI2	9.6071	6.80598	28	28.000
DIF2DIF1	150.1200	82.75539	28	28.000
DIF1DIF2	81.7393	32.11888	28	28.000
INT1	9.3214	6.27195	28	28.000
INT2	16.9643	10.84395	28	28.000

A closer inspection of these findings reveals that the higher MS GRADE Group scores higher on RHO-1 (+0.92) than the lower MS GRADE Group (+0.89). They also score higher on RHO-2 (+0.85) than the lower scoring group (+0.81).

The more important scales discriminating high and low MS GRADES are RHO-1, RHO-2, DIF-1, DIF-2, INTPCT, DIME-2, BQR-1, BAR-2 and the INT scores of the HVP. A larger sample (N = 300) might be expected to significantly expand our appreciation of the axiological dimensions of concern to medical education. The universality of habitual evaluative habits driving professionalism and ethical sensitivity cannot be ignored; nor, can the role of emerging axiological science be ignored given its capacity for values appreciation, values clarification, and values measurement.

9) RHO-1 and The General Capacity to Value the World

Instead of using the HVP variables to discriminate high and low test scores, I now turn to the use of our test scores to discriminate high and low RHO scores. I focus on RHO because it is a marker of the overall general capacity to value world (RHO-1) and self (RHO-2). This exercise is my final examination of the relationship between HVP measures (variables of axiological science) and medical school admissions tests previously cited (GPA, INTERVIEW, MCAT BIO, MCAT COM, MCAT PHYS, MCAT VERBAL, MCAT ESSAY, MS GRADE). Of these tests statistical significance was obtained for three of the eight tests: INTERVIEW data, MCAT COM data, and MS Grade data.

The N = 55 subjects where split into those with High RHO scores and those with Low RHO scores. These two groups were then subjected to Discriminant analysis employing a battery of eight tests previously examined. The question being asked is: How effectively do scores on all eight tests identify high and low RHO score individuals? This is another way to look at the relation between these test data and the variables of axiological science given by the HVP. The question is: Will a combined use of the eight medical school admissions tests discriminate high and low RHO individuals?

Our medical school admissions test, taken at once as a battery of scores, permits a correct identification of high RHO-1 individuals 66.7% of the time (a hit), and wrongly identifies high RHO-1 individuals as low RHO-1 individuals 33.3% of the time (a miss). In the case of high and low RHO-2 individuals our medical admissions tests taken together give a correct identification of low RHO-2 individuals 53.6% of the time (a hit), and an incorrect identification low RHO-2 individuals as high RHO-2 individuals 46.4% of the time (a miss). The associated test of statistical significance (Wilks' Lambda) is not significant (p = .848). Overall, the RHO-1 variable of the HVP is insensitive to the medical school admissions tests considered in the present study using a small sample of N = 55 subjects.

Classification Results

			Predicted Group Membership		
		GROUP	1 HR1	2 LR1	Total
Original	Count	1 HR1	18	9	27
		2 LR1	13	15	28
	%	1 HR1	66.7	33.3	100.0
		2 LR1	46.4	53.6	100.0

60.0% of original grouped cases correctly classified.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.920	4.100	8	.848

Instead of employing the HVP scales to examine High and Low end criterion measures (Interview, GPA, and MCAT data) we employ the criterion measures as independent variables in the application of the Discriminant Statistic to examine the power of all such criterion measures to discriminate high and low

RHO-1 scores. These data (above) show a remarkable overall insensitivity of criterion measures to the RHO-1 scores with an obtained Wilks Lambda of p = 0.848.

10) RHO-2 and the General Capacity to Value Oneself

The picture changes dramatically when we examine the capacity of these medical school tests to discriminate high and low RHO-2 individuals included in the present study. While RHO-1 is an index of the general capacity to value the world (people, social-practical situations, systems, order, rules, authorities), RHO-2 is a measure of the general capacity to value the self — self-esteem, a sense of personal efficacy, and apprehension meaning in one's life.

In the case of RHO-2 we achieve statistical significance with an obtained Wilks' Lambda of p = .028. This is a very significant finding. Among the medical test data, the INTERVIEW data are especially strong in distinguishing high and low RHO-2 individuals, and this means the judges scoring interview data were able to significantly (relatively accurately) identify high RHO-2 individuals possessing the qualities of self-esteem, personal efficacy, and an apprehension of meaning in their lives. In addition to INTERVIEW data differentiating high and low RHO-2 individuals, the MCAT PHYS data, MCAT COM data, and MCAT VERBAL data also effectively contribute to the discrimination of high and low RHO-2 individuals in our small sample of N = 55 subjects.

Classification Results (a)

			Predicted Group Membership		
		GROUP	1 HR2	2 LR2	Total
Original	Count	1 HR2	21	6	27
		2 LR2	10	18	28
	%	1 HR2	77.8	22.2	100.0
		2 LR2	35.7	64.3	100.0

70.9% of original grouped cases correctly classified.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.704	17.172	8	.028

3. Conclusions

Three of the eight admissions tests used in the present study (INTERVIEW data, MCAT COM data, MS GRADE data) show axiological sensitivity of the sort picked up by the battery of HVP scales employed simultaneously to discriminate split halves of our eight tests. Of special interest is the INTERVIEW data, where medial school applicants are interviewed by judges presumably possessing some measure of skill in this regard. Our findings support the existence of interviewing skills, for the battery of HVP scales significantly discriminates or differentiates between subjects earning high interview scores and those earning low interview scores.

The RHO scale most sensitive to discriminating high and low split halves in this study is the RHO-2 scale, supported by RHO-2 findings summarized in Section 10 of this study. This is not surprising give the fact that RHO-2 is a marker of self-esteem, personal efficacy, and the apprehension of purpose and meaning. Such individuals will tend to be more focused in bringing motivation to the development of skill sets of the sort needed to practice medicine.

Finally, the reader is advised that the present study shares preliminary findings that await further exploration with larger subject samples. The use of multivariate statistical models on a sample of N = 55, when good statistical practice recommends a minimum of N = 300 subjects, is the reason I refer to this as a pilot study with all the reservations such a designation implies. It is unfortunate that the emerging field of basic and applied axiological science has so few empirical studies to its name. Apart from my summary of empirical findings (Pomeroy, 2005) there is precious little hard data supporting axiological science other than anecdotal studies in the hands of various competing entrepreneurs who, to their credit, have accumulated a modest empirical base which the Robert S. Hartman Institute, with resources at the University of Tennessee at Knoxville, has attempted to bring together in a data bank, but, without success to date. It is hoped that this abbreviated study of the relationship between axiological science and HVP-Valuemeterics and medical school admissions testing and concerns with professionalism and ethical sensitivity will serve to encourage others to contribute to the empirical validation of basic and applied axiological science.

The finding that three of the eight tests under consideration possess measurable value structures as defined by axiological science is encouraging and invites a more probing axiological exploration of professionalism and ethical sensitivity in the fields of medical education and practice.

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FOR EVERYTHING THERE IS A SEASON: MATHEMATICS, HIERARCHY, AND THE PUZZLE OF HARTMAN'S SHINING VISION

Jim C. Weller

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Abstract

This paper is a response to C. Stephen Byrum's article, "A Bushel and a Peck: Robert S. Hartman's Axiology and Transfinite Mathematics." It examines two of Byrum's assertions. Regarding Byrum's first assertion that transfinite mathematics is not necessary to Hartman's axiology, though it provides a good metaphor for "talking about" values, this paper responds that math was Hartman's hope for turning the philosophy of axiology into a science, and then suggests that the math component may be reassuring to intuitive/thinking personalities. Regarding Byrum's second assertion that the domains of value may relate better to each other as a gestalt than in their current hierarchical arrangement, this paper agrees that the current hierarchy bears continued questioning, and then asserts that it may be best to maintain both the analytical and synthetic processes which are alive in the Institute today. The paper continues by asking whether Byrum's work will bring the Institute closer to, or farther from, achieving Hartman's vision, and briefly entertains two different views of what that vision may be. It further questions whether science — or any other system — is capable of fulfilling Hartman's highest vision. The paper concludes with a short discussion of attention density and how the current tensions in formal axiology, and indeed in Byrum's paper, may enhance the fulfillment of Hartman's vision of a better and safer world.

Another Grandchild Prodigy

I wish everyone could know *my* granddaughter, Cammie. (Steve Byrum will have to allow equal air time for a similarly proud grandpa.) I recently made the trek to California for her second birthday party. The next evening she amazed me by fitting together a 24-piece puzzle which would have frustrated me at twice her age. She obviously relished examining each piece as she deftly reconstructed the picture of Pooh, Tigger, and Eeyore. She was clearly more fascinated with the puzzle than with Christopher Robin's friends, for every time she completed the

picture, she barely paused before pulling it apart, mixing up the pieces, and starting over. There is a joy in both analysis and synthesis.

Now that the world knows there are two little girls that are each the best and smartest and cutest, let me address four additional questions. 1) Byrum makes a compelling argument for viewing math in axiology as metaphor, but if we cease to use it, can we really talk about value "science" or "formal" axiology? 2) Byrum seems to prefer the gestalt over a sequential hierarchical model. Is this wistfulness reflective of his season of life, or have we not yet accurately identified the proper relationships among the domains? 3) Will Byrum's paper take us closer to the fulfillment of Hartman's vision or farther away from it? Indeed, what was Hartman's primary vision? I will explore each of these questions in the balance of this response. And I will ask whether the puzzles inherent in Hartman's axiology are best left unsolved.

1. Math as Metaphor Only?

Byrum attributes to Richard Dawkins the idea that we live in a sort of "middle earth" between the infinitely large and the infinitesimally small, between the super fast and the super slow. He points out that most of our concepts are designed to help us survive in a very narrow band of reality. What we don't know far outweighs what we do know. And Byrum quotes J. B. S. Haldane, who says, "The universe is not only queerer than we suppose; but queerer than we can suppose." This means that our "big picture" views are really very small. Our perceived and invented systems are only fragments of actual systems. That of which we are "certain" is likely only a rough model of the reality we haven't yet comprehended, and likely never will comprehend. Therefore, all our symbols of math and language are metaphors, tools for helping us "talk about" things of importance.

It is good to remember our small place in a system too grand to comprehend. A person who is "dead sure" can become a deadly crusader whose version of Truth becomes the standard for judging the acceptability of others, or at least a deadly bore who has no need to listen to others. No one seems immune to the contagion of elevating their systemic views to the level of Truth. Both theists and atheists have been guilty of the blood of those who held differing views. It is, therefore, healthy to remember that our cherished and hard-won beliefs are at best imperfect reflections of whatever truth or reality may exist.

Further, Byrum points out many ways in which we use even math metaphorically without any serious intention of literality, such as when he tells his granddaughter, May, "I love you a bushel and a peck." I am grateful for this new thought. Prior to reading his article, I was guilty of regarding math as that last truly objective, quantifiable citadel of truth. Whatever could be measured was somehow truer or more real than whatever could not be measured.

While I benefit by Byrum's reminders of our limited grasp on reality, and while it is good to acknowledge the metaphorical use of math, I am left with an uncomfortable question: "What of Hartman's vision of value science or formal axiology?" Both are prefaced on a belief that math transforms philosophy into science. "The Philosophers who, starting in the Renaissance, designed the natural sciences did so in two ways: (a) by developing a powerful tool which served as the method of the sciences, namely, the pure science of mathematics, and (b) by designing frames of reference for each realm of phenomena…" (Hartman, 1991, 10). Hartman wrote further that "The formalism of axiology implies its universality (Hartman, 1991, 11)." He believed that mathematics would transform the philosophy of value into the science of value. In the same way that 2 + 2 = 4 is a logic accepted by all, regardless of whether it is spoken in English or French, or written in Arabic or Chinese characters, just so, formal axiology would be universally accepted as the logic of values (Hartman, 1991, 11). In this way, he hoped to bring clarity and agreement in times of ethical dilemmas and hopefully to dis-empower rising despots.

There is good reason for pause before we stray from the math with which Hartman attempted to make axiology "formal." We can't very well talk of the "science of value" if our only approach is poetic. If we use mathematics as a metaphor *only*, then aren't we removing the "formal" from Formal Axiology? Byrum does say that Norm Hirst has called for new "formalisms." Without them, could we claim to be dealing in science? If we aren't, after all, aiming at finding the underlying science of value, are we being true to Hartman's vision? This is considered further in Section 4 of this response.

Perhaps the math should be retained simply because it appeals to a certain personality type. A few years ago, I was standing in my kitchen with Barbara Hernandez, a Ph.D. specializing in marriage and family therapy. I excitedly mapped out Hartman's axiology, and she thrilled me by asking for a concise, clear, and written description of Hartman's theory. I was delighted that my talk had aroused her desire for more knowledge. In the past, I had seen people's eyes glaze over whenever I launched into Hartmanian axiology. Her next comment burst my bubble, and it gave me pause for thought. She said, "I'm not very interested in it, but it sounds great for helping my NTs understand the human side of things." "NTs" (intuitive thinkers) are a personality combination which can be identified by the Myers/Briggs Temperament Inventory. They tend to be careful thinkers who are deep and systematic. I would be curious to see how many RSHI members test out as NTs on the MBTI.

2. Hierarchy, Gestalt, or Wistfulness?

"When I was young, seemed that life was so wonderful, a miracle, oh it was beautiful, magical… but then they sent me away, to teach me how to be sensible, logical, responsible, practical." From "The Logical Song" by Supertramp.

A good puzzle is compelling. First we are drawn to the challenge of solving it, and next we are enchanted as the individual pieces meld into a unified whole. Cammie loves the challenge of identifying individual pieces and solving the puzzle. As I enter grand-parenthood, I am more inclined towards the process of reintegrating life to see the big picture. "The Logical Song" runs through my mind and I wish for a new naivete. I detect the same wistfulness in Byrum's article. He likes his granddaughter's counting "26-30" and doubts if her life will be made richer as she learns more about math. May delights in popping balloons, saying that she is "letting the noise out of the balloons," and Steve wisely spares her a lecture on physics. Her way of seeing the adventure is charming, poetic, and certain to endear a grandpa's heart. It did mine. May is in a time of wonder as she explores her young world. Her simplicity may cause us some wistfulness as we think about our own complex and sometimes fragmented lives.

It is easy to hunger for a time when all our knowledge will coalesce into a unified whole. Byrum and I are right on track, according to James W. Fowler's theory of spiritual development (Fowler, 1995, 184-198). We are symptomatic of Stage Five: Conjunctive Faith, which may start in middle adulthood and run through late life. At Stage Five, we have a "vivid knowledge of divisions of the human family while being desirous of an inclusive community of being" (Fowler, 198). A danger is that we may become "paralyzed by the paradoxes" we are forced to acknowledge. We can become wistful and less energetic than we once were in our quest for knowing.

While I am drawn towards the hope of reintegrating all things, there is also a season for taking things apart. Within the camp of formal axiologists there are "grandparents" who may be eager for an integration of the values, but there are also neophytes still thirsting for precision of language and measurement. This point is important enough to spend time seeing it from another angle.

Benjamin Bloom, the renowned educational psychologist and developer of "Bloom's Taxonomy of Educational Objectives," led a team that studied 120 "immensely-talented individuals" from arts, athletics, medicine, and academics. They published their findings in a book titled *Developing Talent in Young People*. Lauren S. Sosniak, the author of the chapter on "Phases of Learning," reported that whether the highly-talented person's area was physical, cerebral, or aesthetic, each passed through three phases exemplified by three distinct types of teachers. First was the warm, nurturing teacher who was liberal with hugs, praise, and immediate rewards. During this phase the young person acquired a love of the subject. At some point that cherished teacher told the parents "Your child has learned all that I can teach her. She needs a more rigorous teacher. Try Mr. So-and-so. He's a little stern, but can take your child to a level that I can't." Thus began phase two where, after some tears, the pupil began to learn the joy of precision and technical mastery. She developed a passion for perfection and pursued it with diligence. If she was destined to become world-class, a time came when this tougher teacher said, "I have taken you as far as I can. If you will be

elite, you must study under a master (musician, coach, professor, etc.)" Off she went to study under a concert pianist, Olympic coach, or distinguished professor. In this third phase, all the earlier learning was assumed, and the focus shifted to those syntheses and nuances that allowed her to express her soul through her chosen pursuit. The once inviolable rules became benchmarks and indicators. In playing her piece, or developing her stroke, or pursuing a logic, she decided when to tweak or even break rules. She learned to express herself through the slightly modified forms of her chosen medium.

Steve's granddaughter is in that time of joyful exploration, but she will not find a shortcut to her grandfather's wisdom. She will first learn to speak more precisely and accurately about events. The period of taking things apart lies ahead of her, and she must pass through it before she can come to the age of putting it all back together.

Those who approach Hartman's axiology may pass through the same three stages: they are fascinated by the promise of new answers, and they become fascinated with the technical aspects and pursue precision. Then they find ways to reintegrate the three domains, even though the domains will now be viewed differently — and, we hope, more clearly and efficaciously — than before.

Whether or not Byrum is showing some wistfulness for a "new second naivete," he does question the current hierarchy of value, and he gives three reasons for doing so. 1) He may be biased towards placing the Intrinsic on top due to his own attraction to the Intrinsic which favors human life and human interests, 2) Life may be better understood as a gestalt than a collection of disparate parts, 3) Recent validation research shows that strong scores in the Systemic domain are a better predictor of success in leadership than strong scores in the Intrinsic or Extrinsic domains. I, too, question either our current hierarchy of value, or "hierarchy" itself.

However, Hartman was very clear in establishing the standard (SEI) hierarchy. In his search for a definition of good, he settled on the following: A thing is good "if it is what or as it is supposed to be" (Hartman, 1991, 13). Using Thoreau-like resolve, Hartman attempted "to drive life [in this case "value"] into a corner, and reduce it to its lowest terms (Thoreau, 1854, 46)." Hartman identified two basic value objects which he called "the axiological values proper (Hartman 1991, 18)." They were the Extrinsic and the Intrinsic; or, as Rem Edwards says (in application), "things and people." However, Hartman considers the relationship of axiology to logic and quickly arrives at a third value object, the Systemic, which provides a way for us to make sense of the things and people we encounter. He then sets about with "proofs" to show that Systemic objects are not as rich in meanings (value properties) as Extrinsics, which, in turn, are not as rich as Intrinsics. Thus, his hierarchy is established. Just as Byrum is predisposed to place the Intrinsic at the highest value, so Hartman, having watched the Nazis "organize evil," may have been so strongly predisposed to placing the Systemic

at the bottom of the heap that it could not have occupied any other place, even though recent validation studies show its high value for leaders.

If systemic value objects — thoughts, concepts, organizational schema — help us make sense of the objects and people around us, and thereby indicate how we should then live and respond, what position should they really hold? Is a blueprint of a hammer really worth less than a hammer?

Looking at the three value objects from another perspective, one could say that the Systemic belongs at the top of the value structure for the following logic. The human body is an Extrinsic; so is the brain. When we speak of the Intrinsic we are talking about that unique consciousness which is supported by the body and the brain. So the body (E) supports consciousness (I) and consciousness produces systems of thought (S). Why not place the Systemic at the top of the pile?

Could this be knocking on the same door that Byrum is opening? Rather than suggesting a new hierarchy, perhaps we can hold the Systemic in a high and low place simultaneously; a high place because it is the product of the conscious mind and it helps us navigate life, and a low place because it is a mere tool for organizing "real" objects (things and people), and because whatever it creates is a mere image of reality. Perhaps the Systemic can occupy both positions simultaneously. Is it possible that System is a playground, a gymnasium for our mental capacities; but, since its products are mere images of reality, they will always be susceptible to challenge and will continually stand in need of revision or abandonment?

3. Are We Still Pursuing Hartman's Shining Vision?

Will Byrum's paper take us closer to fulfilling Robert Hartman's vision, or is it leading us away? As noted in Section 2, Hartman was counting on math to enable axiology to become a science. He felt strongly that math was the great starting point of any new science. If Hartman's main goal was to create a value science, then Byrum's paper is leading us away from that goal. However, Hartman may have had a higher vision than the science. "I had seen Hitler organize evil, and I had determined to try to organize good" (Hartman, 1994, 43). If organizing good was the greater vision of his life, then Byrum is right on track. The word "organize" suggests that the method will be systemic, but must it be scientific?

Robert Hartman was a modern positivist. Similar to many in his day, he looked to science as the final authority. Yet his own system of formal axiology led him to see people as having higher value than systems. In this way, a great internal tension is inherent in what we call formal axiology. Ironically, it is a system which *demotes* system. Very likely, Hartman could have had it no other way. He wanted to be sure that "Hitler" could not return in any guise. He fought against nuclear armament. He believed that "It is the use of a system which gives

evil the power to extend its range and, at the same time, to assume the resemblance of good. All great evil is systemic evil" (Hartman, 1991, 20).

Perhaps, haunted by the memory of the Nazi war machine, and by Hitler's inhumane and runaway ideology, Hartman was compelled to place the Systemic in the lowest value position, and people, the erstwhile victims of System, in the highest value position — for their own protection.

Are we still placing the highest value on human life and its protection? Can the Systemic be fairly studied and valued without allowing its glorious but impossible perfection to eclipse the real needs and rights of real people? In this postmodern world, do people still believe that science can save us? Is formal science any different here than natural science? Can we look for a different bedrock than the science that Hartman pursued?

Even if we find another foundation, it will still be systemic. So, the question becomes, "Can system save us from system?" Probably not entirely. Restraint is a human quality that exists on a level deeper than the systemic. People have a knack for suspending the best of what they know in order to act expediently. Even a science of value does not have the power to keep a person from "moral disengagement." Albert Bandura identifies eight moral disengagements which a person may use when expedience tempts him or her to suspend moral belief, in order to take unhealthy and unfair shortcuts to desired ends (Bandura, 1986, 375).

Our science, logic, strategic plans, and expectations are powerful tools that can be used for good or for evil. On the good side, Hartman's system helps strong systemic thinkers come to a place where they understand the value of interpersonal relationships, spend time with others, and identifying with them on a non-comparative basis. Hartman's own systemic ponderings led him to the place where he realized that his entire philosophy was not worth as much as his wife. "Oddly enough, my own philosophy has taught me the relative unimportance of my philosophy" (Hartman, 1994. 94).

But on the down side, Hartman's system did not keep him from proposing two foreboding uses of the Hartman Value Profile. First, Hartman sent letters to all U.S. and European airlines proposing the testing of all people who bought airline tickets so that potential hijackers could be identified before they boarded the plane. Second, in 1970 at President Richard Nixon's bidding, Hartman worked with Nixon's psychoanalyst, Dr. Arnold Hutschnecker, to promote giving the test to all school children so that those with violent and criminal tendencies could be identified and treated. Hartman imagined there would be 1,000,000 children in 50,000 therapy groups. Hutschnecker envisioned camps. Fortunately, these uses of the HVP were rejected. *Time Magazine* called them Orwellian.

In an interview for "This American Life," Robert Hartman's son, Jan, spoke about his father's suggestions: "When I heard about it, I just kind of went ballistic… I said, 'This is really immoral, you have to stop Hutschnecker from

doing this. You can't segregate potential criminals from society just on the sense of one test.' … It's just what the Nazi's would have done… What [dad] didn't understand … is that the tool is also a weapon." (Drury, 2003).

System may be Frodo's ring, in that it enchants us, empowers us, and ultimately enslaves us. Systems must be used ethically. Yet, ethics *is* a system, so we return to that inherent tension. In history, systems have not been held in check so much by *systems* of ethics as by ethical people. What is the extra ingredient between the system and the person? The power for good comes from something outside of the system. In other words, human cognition — the "ground zero" of the Systemic — must be joined by human emotion and other faculties for knowing and desiring, before behavior is changed. An ethical person may trumpet a system of ethics to accomplish his or her work in the political arena. But he or she may just as effectively use art, literature, music, or religion to effect change in the social arena.

Is science fully equipped to settle disputes over ethics or aesthetics? Can the mind really settle issues of the heart? Can the rational mind with its thinking rule over the broader self with its other ways of knowing and appreciating?

In the end, a "final proof" is never the final proof. As Samuel Butler said, "He that complies against his will is of his own opinion still." Science does not have the power to change a person's will. Life's crucial questions are considered at a level deeper than numbers.

It is not the math, nor the hierarchy, nor the science that makes a system dangerous. It's our continued fantasy that we can know the Truth in a way that will forever settle the questions and the questing — that we can somehow prove our superiority and our right to control. Yet, something in us that is not math still wants to use math. We want the power and certainty there is in saying, "Look, I have the hard, cold numbers to back me up." Yet, "hard" and "cold" are words better suited to a mortuary than a nursery. As has been said, "Figures can't lie, but liars can figure." Any system — math, hierarchy, or science — is a beautiful and living thing only when it supports a beautiful and living thing.

If in some golden future we have a laser-sharp science of value, we will find that it must be held accountable by some wisdom deeper than mere science. This should come as no surprise. Medical science has advanced to nearly god-like powers in some areas of healing, yet that science is also held accountable to a branch of ethics. Sometimes it is reasonable *not* to use medicine's machinery, procedures, and chemicals to prolong a life that has become more of a horror than a hope. So medical ethics transcends medical science. Isn't it possible that a "science" of value would eventually be accountable to some "ethic" of value?

Judeo-Christians claim that God implanted some basic fiber of ethics in our souls. "I will put my law in their minds and write it on their hearts" (Jeremiah 31:33). Secular people are beginning to claim that empathy is the root of morality, and that it developed to cause the survival, not of the individual, but of the species. Either way, there is something profoundly human about wanting

things to make sense at a level deeper than autocratic fiat. Larry Nucci has concluded that we evaluate even God through this deep moral sense. Nucci studied the children of conservative theists — traditional Roman Catholics, Amish/Mennonites, and conservative and orthodox Jews. He identified their voice of final authority, whether it was the elders, the Pope, the Scriptures, or God. He found through role play that if the Final Authority asked the children to do something immoral like stealing, the children began to have doubts about the Authority. Nucci pressed a Dutch Calvinist girl with whether it would be alright to murder if it said so in the Bible. She responded with, "No, but if it said in His word that it was alright to kill, then God must be a different kind of God… I don't know. That changes the whole thing. So, I don't know" (Nucci, 2001, 50).

We are pursuing Hartman's vision to the degree that we awaken in people a desire for good and the willingness to invest themselves in its cause, especially when that involves resisting systems run amok.

4. A Puzzling Conclusion?

"See not with the eye of science — which is barren — nor of youthful poetry which is impotent." Henry David Thoreau in his *Journal*, November 1, 1851.

Brain science people today are talking of "attention density." It's an old concept with a new name and a new mental image. Attention density was inherent in the old sayings, "Practice makes perfect" or "If at first you don't succeed, try, try again."

> The term attention density is increasingly used to define the amount of attention paid to a particular mental experience over a specific time. The greater the concentration on a specific idea or mental experience, the higher the attention density. In quantum physics terms, attention density brings the [Quantum Zeno Effect] into play and causes new brain circuitry to be stabilized and thus developed. With enough attention density, individual thoughts and acts of the mind can become an intrinsic part of an individual's identity: who one is, how one perceives the world, and how one's brain works. The neuroscientist's term for this is *self-directed neuroplasticity* (Rock and Schwartz, 2006).

Few things are better than a puzzle for keeping our attention focused keenly and over a span of time. Perhaps the power of Hartman's axiology is that it keeps us puzzling over its development and application. We wrestle with its internal tension between the systemic and the intrinsic. If empathy is the basis of morality, then tension may be the proving ground of empathy. How we treat others as we grapple with differing beliefs may provide for more emotional growth and true morality than if all tensions were resolved. Furthermore,

struggling to understand the tensions, searching for answers, and constructing more helpful models, all keep us convinced that we have a part to play and that our voices really matter. Even further, the resulting attention density may be rewiring our brains towards a healthier understanding of humanly-invented systems and their value, compared to living, breathing centers of consciousness. This knowledge is important for holding ideologies in check. If Stephen Byrum's article inflames discussion, it will increase our attention density and lead us closer to Hartman's most basic vision, a safer, better world.

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IS KILLING TO SAVE LIVES JUSTIFIABLE?

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Frank served as an infantry officer and Army aviator in various command and staff officer positions and was an infantry company commander in the Aleutian Islands during World War II. During the Korean War, he served as an infantry battalion commander and as a staff aviation officer. He retired from the Army in 1964 with the rank of Colonel and senior Army aviator rating.

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During studies for his doctoral dissertation he became acquainted with Robert S. Hartman's work in formal axiology. Upon retiring from Embry-Riddle he devoted his time and effort, aside from going fishing now and then, to studying Hartman's works and writing about this new discipline. He concentrated on applying scientific axiology to ethics. His works include *Valuemetrics: the Science of Personal and Professional Ethics* (Rodopi, 1994) and *Ethical Decision Making for the 21st Century* (self published).

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Abstract

This article explores the application of the mathematical system that Hartman used to develop his calculus of value which in turn underlies formal axiology. Cardinal number arithmetic given in set theory textbooks is this system. Part 1 of this article contains background information on: (1) the nature of cardinal number arithmetic, (2) the manner Hartman adapted it to calculate the value content in situations of human interest, and (3) a modification of one of the calculuses value premises. Part 2 reveals how the modified calculus works in resolving two important problems of a valuation nature not given in Hartman's *The Structure of Value*. They are:

- How to determine when wrongs and badness are justified.
- How to redress wrongs and badness.

In technical terminology, these processes are known as "justifying trans-positions" and "transposing transpositions." Their addition to the scope of the calculus of value improves and broadens the application of formal axiology.

Introduction

Wrongs and badness abound in nature and in human affairs. Animals kill each other. So do people. Lightning causes forest fires and destruction. Nations go to war. Are these things ever justified?

This question, of course, has ethical relevance only when the wrongs or badness are the result of human action. Justifying or attempting to justify wrongs and badness is a common occurrence in everyone's life and in the affairs of state. Our criminal justice system, for example, is based on this process. Wrongs or badness are justified when they are deemed to produce some kind of good. Making this determination with unaided intuition, feelings, attitude, and conscience is the most difficult of all types of value judgments and is fraught with inconsistencies. It should, therefore, come as no surprise that solving this problem is the most complex among the various procedures in ethical reasoning. In his treatise *The Structure of Value: Foundations of Scientific Axiology* (Hartman, 1967) Robert S. Hartman laid the groundwork for the application of the method of science to the study of ethics. The mathematical system in this science, known as the calculus of value, enables the calculation of the value content in situations. The text contains detailed information on the system of logic underlying this calculus, and there are numerous examples of its application. Unfortunately, the problem of justifying wrongs and badness is not among them. However, the application of Hartman's calculus of value to this problem with certain variations will be given subsequently. To facilitate understanding this material, I will review in Part One pertinent formal axiology background information. In Part Two I will apply this information to determine when wrongs and badness are justified.

Part One: Background of Formal Axiology

Hartman's calculus of value is an adaptation of cardinal number arithmetic to the valuation process. A cardinal number is a property of a collection of elements known in mathematics as a set. The cardinality of sets is the number of elements they contain. Conventional set theory recognizes three types of sets which according to their ascending cardinal number hierarchy are — finite, denumerably infinite, and nondenumerably infinite. The elements of a denumerable set are discrete and countable. A nondenumerable set is called a *continuum*. The symbols for these general finite and transfinite cardinal numbers are shown in Table A.

Note that the German mathematician Georg Cantor, who developed set theory, employed the first letter of the Hebrew alphabet, aleph (ℵ), as the symbol for transfinite cardinal numbers.

Table A

Type of Set	Cardinal Number*
Finite	n
Denumerable infinite	$\aleph_0$
Nondenumerable infinite	$\aleph_1$

The arithmetical operation of most interest to us is exponentiation with the cardinal numbers *n, $\aleph_0$, and $\aleph_1$.* See Table B (Lin and Lin, Ch. 6).

Table B

Base	**+ Exponent**		
n	$n^n = n$	$n^{\aleph_0} = \aleph_1$	$n^{\aleph_1} = \aleph_2$
$\aleph_0$	$\aleph_0^n = \aleph_0$	$\aleph_0^{\aleph_0} = \aleph_1$	$\aleph_0^{\aleph_1} = \aleph_2$
$\aleph_1$	$\aleph_1^n = \aleph_1$	$\aleph_1^{\aleph_0} = \aleph_1$	$\aleph_1^{\aleph_1} = \aleph_2$
Base	**– Exponent**		
n	$n^{-n} = 1/n$	$n^{-\aleph_0} = 1/\aleph_1$	$n^{-\aleph_1} = 1/\aleph$
$\aleph_0$	$\aleph_0^{-n} = 1/\aleph_0$	$\aleph_0^{-\aleph_0} = 1/\aleph_1$	$\aleph_0^{-\aleph_1} = 1/\aleph_2$
$\aleph_1$	$\aleph_1^{-n} = 1/\aleph_1$	$\aleph_1^{-\aleph_0} = 1/\aleph_1$	$\aleph_1^{-\aleph_1} = 1/\aleph_2$

Summary of Table B rules:
1. The products of n, $\aleph_0$ and $\aleph_1$ raised to the n power are n, $\aleph_0$, and $\aleph_1$ respectively.
2. The product of n, $\aleph_0$, and $\aleph_1$ raised to the $\aleph_0$ power in each instance is $\aleph_1$.
3. The product of n, $\aleph_0$, and $\aleph_1$ raised to the $\aleph_1$ power in each instance is $\aleph_2$.
4. The product of $\aleph_1$ raised to the n or $\aleph_0$ power in each instance is $\aleph_1$.

In the adaptation of cardinal number arithmetic to determine the value content of situations — the valuation process — Hartman developed a conceptualization of value that involved calculating degrees of goodness of things. Instead of the cardinal numbers n, $\aleph_0$, and $\aleph_1$, the units in calculating degrees of goodness are *value dimensions.* Value dimensions are the offspring of concepts..

Concepts are words or groups of words that name something. They have a structure consisting of: (1) *intension* (meaning of the concept) and (2) *extension* (the set of all referents of the concept). The intension of a concept also is a set. This set consists of the complete collection of the names of all the properties of the thing named by the concept. We will refer to these two sets as the meaning set (M_c) and the referent set (REF_c). A third set of interest to us is the set of actual

properties of any member of REF_c. This is set P. We are interested in three relationships among sets: (1) two sets are equal when they have the same members, (2) they are equivalent or similar when they have a one to one correspondence, i.e., different members but the same cardinality, and (3) set A is a subset of set B if all the members of A also are members of B, but B has additional members not in A.

If we were to inventory all the things in the universe of which we have knowledge, and if we were to classify their concepts according to the magnitude of their meaning sets, we would find at least three groups. The names of these classifications, using Hartman's terminology, are synthetic, analytic, and singular concepts.

The M_c of a synthetic concept is finite. The referents of synthetic concepts are all the intangible things humankind has invented to enhance the acquisition of knowledge, to fulfill human needs and wants, and to support the functioning of society. In order to exist members of set REF_c in this realm must posses all the properties in the concept's M_c. Therefore, $P = M_c$. Examples of synthetic concepts are *numbers, the geometric figures, names of institutions, etc.*

The M_c of an analytic concept theoretically, according to Hartman, is a denumerable infinite set. The referents of analytic concepts are all the tangible things in nature; all things humankind builds and constructs using these materials; and all forms of action and movement. The referent of an analytic concept must have a specified number of properties to be a member of a class, but it need not possess all the properties named in the thing's concept M_c. Set P, therefore, might be a subset of M_c. Examples: *tree, house, walking, etc.*

The M_c of a singular concept is a nondenumerable infinite set. Singular concepts have only one referent, which is a human being (person). In this realm a person's name is a concept, and this includes all the various pronouns that refer to people. P is a singleton set. Therefore P and M_c have the same members, i.e., $P = M_c$. Examples: *person, Columbus, him, etc.*

Robert S. Hartman's quest was to construct the foundations of the science of value (formal axiology). He believed that the method of science involving the use of formulas and systems of numbers to account for various types of facts in the natural sciences does not preclude using the same technique in value science. He visualized value *not* as an enduring and guiding belief of a person or something inherent in an object, but as something to order and account for gradations of goodness. Gradations of goodness are, analogously, the facts of value science, and this science starts with Hartman's axiomatic definition of *good*; to wit,

"Good" — "concept intension fulfillment."

Intensions, as we have seen previously, are concept meaning sets, and the greater the meaning set fulfilled the greater the goodness. Hence, in formal axiology the concept "good" is a variable. We also have seen that the difference

in the three types of concepts is based on the magnitude of their meaning sets. The degrees of goodness associated with these concepts, therefore, have a hierarchy, and the unit that accounts for this hierarchy is known as a value dimension (vdim). The referents of synthetic concepts are things of systemic value, of analytic concepts are things of extrinsic value, and of singular concepts are things of intrinsic value. Accordingly, the three vdims are systemic, extrinsic, and intrinsic, and to a large extent they are the backbone of formal axiology. The hierarchical relationship among types of concepts, types of meaning sets, value dimensions, and goodness gradation is given in the following table.

Table C
Concept, M_c, and Vdim Hierarchy

Type Concept	Type M_c	Vdim	Hierarchy
Synthetic	Finite	Systemic (S	Least
Analytic	Denumerable infinite	Extrinsic (E)	Median
Singular	Nondenumer-able infinite	Intrinsic (I)	Greatest

The symbols for systemic, extrinsic, and intrinsic value are S, E, and I respectively. These symbols have a numerical identity simply because what they represent is identical to what certain numbers represent. Vdims and numbers may be compared to two different positions from which to observe the same thing; i.e., the cardinality of types of sets. When we combine the information in Tables A and B we see that the symbol *S* corresponds to n, E corresponds to $\aleph_0$, *I* corresponds to $\aleph_1$, and $S < E < I < I_2$. Exponentiation of the vdims obtained by substituting S, E, I, and I_2 for n, $\aleph_0$, $\aleph_1$, and $\aleph_2$ in Table B is shown in Table D.

Table D

Base	**+ Exponent**		
S	$S^S = S$	$S^E = I$	$S^I = I_2$
E	$E^S = E$	$E^E = I$	$E^I = I_2$
I	$I^S = I$	$I^E = I$	$I^I = I_2$
Base	**− Exponent**		
S	$S^{-S} = 1/S$	$S^{-E} = 1/I$	$S^{-I} = 1/I_2$
E	$E^{-S} = 1/E$	$E^{-E} = 1/I$	$E^{-I} = 1/I_2$
I	$I^{-S} = I/I$	$I^{-E} = 1/I$	$I^{-I} = 1/I_2$

1. Concept and Vdim Combinations

The purpose of the calculus of value, as noted previously, is to calculate the value content of situations. Initially, this requires the development of a condensed statement in a form that permits application of this calculus. We do this with combinations of paired concepts. If the *inputs* to an open system are the concepts and their corresponding vdims involved in the combination, then the *output* of the system is the resultant as shown in Figure 1 below.

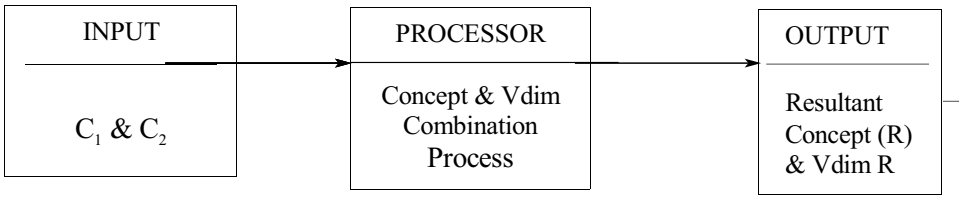

Figure 1. Concept and Vdim Combination Process

Concept and vdim combinations are something like chemical compounds; e.g., two parts of hydrogen and one part of oxygen (h_2o) is water. Hydrogen and oxygen correspond to the two concepts, C_1 and C_2, and water corresponds to the resultant concept R. The concept and vdim combination process, also known as a *valuation*, consists of exponentiation of the vdims of C_1 and C_2 to include determining, (1) whether the combination is compositional or transpositional, and (2) which vdim is the base and which is the exponent. The valuation is compositional when the concepts are compatible, and one concept values the other. It is transpositional when the concepts are incompatible, and one concept disvalues the other. The base vdim is the one that belongs to the concept that names the thing valued or disvalued. The other vdim, of course, is the exponent. Hence, the resultant is a concept in its own right, and it is a composition or a transposition — a whole vdim; e.g., E or a fractional vdim; e.g., 1/S. The basic formula for computing vdim R is:

$$Vdim\ C_1\ ^{\pm}Vdim\ C_2 = vdim\ R$$

Vdim C_2 is "+" when the C_1/C_2 relationship is compositional, and is "–" when it is transpositional.

Examples:

C_1 C_2

R is: caring for a person

C_1 is an analytic concept; vdim = E; ±E is the exponent.

C_2 is a singular concept; vdim = I; I is the base (*person* is the concept that is valued).
R is a composition.
Vdim R = I^E = I (Table D)

C_1 C_2
R is: breaking a promise
C_1 is an analytic concept; vdim E; ±E is the exponent.
C_2 is a synthetic concept; vdim S; S is the base (*promise* is the concept that is disvalued).
R is a transposition.
Vdim R = S^{-E} = 1/I (Table D)

Calculation of the final resultant vdim in complex situations will require application of the vdim R formula two or three times. This is quite in order because a vdim R can be substituted for either vdim C_1 or vdim C_2, and combined with another concept (C_3). In complex situations we compound the basic formula. For example:

Let the compound basic formula $(S^E)^{-E} = R_2$ apply to a certain complex situation.

$(S^E)^{-E} = I^{-E} = 1/I$
R_2 = 1/I (Table D)

2. Variation in Hartman's Calculus of Value

The end of the first paragraph (Introduction) contains information that variations in Hartman's calculus are in order. The principal variance is the meaning set of an analytic concept. As we have seen, conventional set theory identifies three types of sets — finite (n), denumerable infinite ($\aleph_0$), and nondenumerable infinite ($\aleph_1$). In Table C we saw that these sets are the meaning sets (intensions) of the three types of concepts — synthetic, analytic, and singular. On the one hand, Hartman provides convincing justification for assigning $\aleph_0$ as the cardinality of an analytic concept meaning set (Hartman, 112-123, 265-293). On the other hand, this assignment leads to a valuation inconsistent with reality.

The basis of this problem is in the arithmetic of the alephs. In Table B we find that $n^{\aleph 0} = \aleph_1$, and $\aleph_0{}^{\aleph}{}_0 = \aleph_1$. When we substitute vdims in these expressions the results are shown in Table D: S^E = I and E^E = I. This means that if both something of systemic value and something of extrinsic value are valued extrinsically the outcome is a value transition in the first case from systemic value to intrinsic value and in the second case from extrinsic value to intrinsic value. These vdim combinations have various "linguistic proxies," as Dr. Leon Pomeroy calls them. For example:

Vdim combination	Concept Combination
$S^E = I$	*Paper money* — is something of intrinsic value.
$E^E = I$	*A brick house* — is something of intrinsic value.

A *person* also is something of intrinsic value. How do we rectify this obvious lack of isomorphism of the mathematics of vdims with reality? Hartman provides a notion that will lead to a resolution of this problem when he states that denumerable intensional structure rules extrinsic value, and that: *"Although in theory denumerable intensional structures have infinite content, in practice we deal with finite structures"* (Hartman, 194).

If we include the calculus of value in the practice of the formal axiology envelope, and show how a finite set can serve as the meaning set of an analytic concept we will remedy the isomorphism problem. I suggest that only a minuscule of reasoning is needed to see that the calculus of value is part and parcel of the practice of formal axiology.

The meaning set of an analytic concept must include a subset of all the possible properties in the concept intension. These are the properties a referent of the concept must possess to be a member of the class of objects named. A referent also will possess various numbers of additional properties, some of which may be unknown. We will call this type of analytic intension an *elastic finite set.* Its general cardinal number is *k*. Synthetic intension in turn will be known as a *fixed finite set* and retain the general cardinal number *n*. The *n*/*k* relationship is $n < k$. Under these conditions Tables C and D are revised as shown in Tables E and F below.

Table E
Concept, M_c, and Vdim Hierarchy

Type Concept	Type M_c	Vdim	Hierarchy
Synthetic	Fixed finite	Systemic (S)	Least
Analytic	Elastic finite	Extrinsic (E)	Median
Singular	Nondenumer-able infinite	Intrinsic (I)	Greatest

Table F

Base	+ Exponent		
S	$S^S = S$	$S^E = E$	$S^I = I_2$
E	$E^S = E$	$E^E = E$	$E^I = I_2$
I	$I^S = I$	$I^E = I$	$I^I = I_2$

Base	**– Exponent**		
S	$S^{-S} = 1/S$	$S^{-E} = 1/E$	$S^{-I} = 1/I_2$
E	$E^{-S} = 1/E$	$E^{-E} = 1/E$	$E^{-I} = 1/I_2$
I	$I^{-S} = I/I$	$I^{-E} = 1/I$	$I^{-I} = 1/I_2$

Part Two: Justifying Wrongs and Badness

1. Second Order Concept Combinations

We have seen how two prime concepts (C_1 and C_2) can be combined to form a resultant concept R. R may be a composition or a transposition. As a concept in its own right, R may be combined with a third concept (C_3) to form another R (R_2). This is called a second order concept combination as shown in the following diagram.

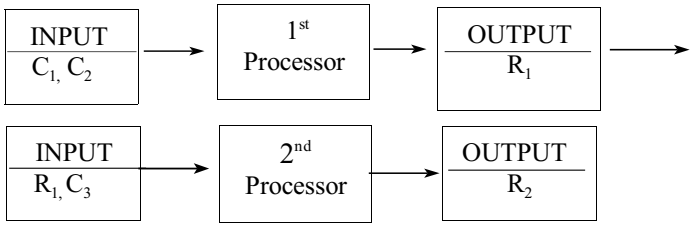

Figure 2. Second Order Concept Combination

Instances of wrongs and badness are first order concept combinations where the resultant R_1 is a transposition. Hence, justifying wrongs and badness involves justifying transpositions. In order to do this we must combine R_1 (the transposition) with another concept as indicated in Figure 2. The following is an example of this type of second order concept combination.

R_x: killing-fish for food

In this example:

C_1: the concept *killing*; an analytic concept; vdim E

C_2: *fish*; an analytic concept; vdim E

R_1: *killing-fish*; a transpositional concept combination; $E^{-E}= 1/E$; vdim R_1 is 1/E.

C_3: *food*; an analytic concept; vdim is E. The referent of this concept is something that possibly justifies or mitigates the transposition. A concept or concept combination that plays this role is called a *relevant consideration*.

R_2: *killing-fish-for-food*; a transpositional combination of two analytic concepts (R_1) combined compositionally with an analytic concept (C_3). R_1 (the transposition) is the valuer concept, and C_3 is the concept valued.

1/E values E; $E^{1/E} = ?$

Is R_2 justified?

Common sense, intuition, and conscience will tell most people that it is. However, under these conditions the judgment is subjective. Can we arrive at this conclusion objectively? Answer: "Yes." Determining when wrongs and badness are justified is a two-phase process as follows:

Phase I: Determine if a relevant consideration exists, and if so, are the initial transposition and relevant consideration compatible or incompatible? If they are not compatible the transposition is not justified.

Phase II: If the transposition and the relevant consideration are compatible, the transposition is justified provided that a secondary unjustified transposition is not induced.

2. Vdims as Roots

The source of a relevant consideration is the set of facts and circumstances surrounding the act or event that comprises the transposition. Generally, a relevant consideration is the reason for the transpositional act or event. If a relevant consideration does not exist, the transposition is unjustified. We employ a mathematical procedure known as *finding a root* to determine the compatibility of the transposition and the relevant consideration.

Operations with roots that are vdims are not included in Hartman's calculus of value. Fortunately, a method for these operations is available. A root is a fractional exponent the numerator of which is 1. In the expression $4^{1/n}$, where n is any number greater than 1, the 1/n is called a root. The expression $4^{1/2}$ (which reads: *the square root of 4* also denoted by the symbol $\sqrt{4}$) asks the question, "What number multiplied by itself equal 4?" The answer is 2. Thus, $27^{1/3}$ (the cube root of 27) and $16^{1/4}$ (the 4^{th} root of 16) are 3 and 2 respectively. We are interested in roots where the members of the expression are vdims such as $E^{1/S}$. This operation is required when the valuer concept of a concept combination is a transposition, as in justifying wrongs and badness.

In conventional arithmetic there is a method of calculating roots. Also, when the root is ½ and a Table of Squares and Square Roots is available you can refer to the table and obtain the answer. Neither the arithmetic method of calculating roots nor a Table of Squares and Square Roosts will work when the expression consists of vdims. However, a universal relationship exists between a whole number exponent and a root that we can use as the basis for a method of resolving problems involving general finite and transfinite roots. This relationship will be demonstrated using specific finite numbers. Then we will

apply the method to vdims. Let us assume that we wish to determine the square root of 25; i.e. 25 raised to the ½ power ($25^{1/2}$).

> Step 1. Let $25^{1/2} = x$ In ordinary language this expression says, " 25 raised to the ½ power is equal to some unknown number *x*." Our objective is to determine *x*.
> Step 2. Switch the positions of 25 and x. Then invert the fraction ½ to the number 2. The original equation then becomes $x^2 = 25$.
> Step 3. If we refer to the Table of Squares we will find that $5^2 = 25$. Therefore, x = 5.

We will call this procedure the *interchange method,* and we will use it in solving problems in value dimension arithmetic. In 1990–1991, I taught a class of Air Force ROTC cadets at Embry Riddle Aeronautical University in the application of formal axiology to military ethics. One of the Air Force faculty members with whom I was associated in the conduct of this class, Captain Robert E. Pannone, showed me how the interchange method would work, and I, of course, adopted it. Today, Robert Pannone is a retired Air Force Lieutenant Colonel working in the space program.

EXAMPLE 1

> Find the E^{th} root of I.
> Let, $I^{1/E} = x$. Then by the interchange method $x^E = I$.
> In this type of problem, instead of the Table of Squares, we refer to the top half of Table F augmented with I_2 as the base (Table G).

Table G
+ Exponentiations of S, E, I. and I_2

$S^S = S$	$S^E = E$	$S^I = I_2$
$E^S = E$	$E^E = E$	$E^I = I_2$
$I^S = I$	$I^E = I$	$I^I = I_2$
$I_2{}^S = I_2$	$I_2{}^E = I_2$	$I_2{}^I = I_2$

Next to the bottom of the middle column we see that $I^E = I$.
Therefore x = I.

EXAMPLE 2

> Find the I^{th} root of E
> Let $E^{1/I} = x$ If $x^I = E$, then, "What is x?"

In Table G we find nothing raised to the I power equal E. We account for this condition and others like it by the expression:

x is indeterminate.

In Example 1 above $I^{1/E}$

x is determinate.

Applying the interchange method to those exponential expressions where S, E, I_1, I_2 . . . are the bases and where 1/S, 1/E, $1/I_1$, $1/I_2$ . . . are the exponents produce the following rules concerning vdim roots.

1. S, E, I, I_2, . . . raised to the $1/S^{th}$ power equal S, E, I, I_2, ...
   $S^{1/S} = S$, $E^{1/S} = E$, $I^{1/S} = I$ . . .
   These expressions are determinate.

2. E, I, I_2,. . . raised to the $1/E^{th}$ power equal S or E, I, I_2, ...
   $E^{1/E} = S$ or E, $I_1{}^{1/E} = I$
   These expressions are determinate.

3. I_2 raised to the 1/I power equal S, E, I, or I_2.
   $I_2{}^{1/I} = S, E, I, I_2$.
   This expression is determinate.

4. $S^{1/E}$, $S^{1/I}$, $E^{1/I}$, $I^{1/I}$, and $I^{1/I2}$ are indeterminate.

The Rules for vdim roots are based on the following assumptions.

(a) The exponents in the exponential expressions are transpositions. These vdim combinations represent the wrongs and badness being examined for possible justification.

(b) The bases in these expressions are single vdims or vdim compositions. They are the relevant considerations.

(c) The transpositions and their respective relevant considerations are compatible when the exponential expressions are determinant; i.e., situations modeled by rules 1 – 3 above.

(d) The transpositions and their respective relevant considerations are incompatible when the exponential expressions are indeterminate; i.e., situations modeled by rule 4.

The following examples are based on these assumptions.

EXAMPLE 1

	R_1-1/E		C_3-E
R_x:	killing-fish	for	food

R_1 is the initial transposition and C_3 is the relevant consideration.
R_2 is the combination of R_1 and C_3.
R_2: $E^{1/E}$ = S or E. This expression is determinate (Rule 2).

Therefore, R_1 and C_3 are compatible, and killing fish for food is justified provided a secondary transposition is not induced. If this occurs, then the initial transposition is not justified.

An example of an induced transposition of this nature is the depletion in recent years of the stocks of fish in the North Atlantic off Cape Cod, Massachusetts. The initial transposition in this case is *the-method-and-rate-of-killing-fish*. The justification for this transposition is the food it provided and the industry it supported. However, in the 1970s over-fishing reached the point where marine life was being eliminated at a rate that exceeded its reproduction. As a consequence in the mid-1990s fish stocks became exhausted. Today, the food from this resource is not available and a segment of the fishing industry has collapsed. The concept combination pertaining to this situation is:

R_3: rate-of-killing-fish-for-food causes depletion-of-fish-population

In this situation rate-of-killing-fish-for-food induces a transposition, depletion-of-fish-population. No acceptable relevant consideration for this condition exists. Hence, the initial transposition is unjustified. However, if the fisherman involved had exercised the principle of conservation of natural resources and maintained the fish population balance in the North Atlantic Ocean, then the induced transposition would not have occurred, and the initial transposition would have continued to be justified.

EXAMPLE 2

R_1-I/I C_3-E
R_x: killing-a-person for food
$R_2 = E^{1/I}$ = ? This expression is indeterminate (Rule 4).

Therefore, R_1 and C_3 are incompatible, and killing a person for food is not justified.

3. Redressing Wrongs and Badness

In the previous section we saw how to deal with one of the paradoxes of the real world; i.e., how to identify when wrongs and badness contribute to the creation of good and, hence, are justified. In this section we will see what should be done when unjustified wrongs or badness have been committed. Redressing wrongs and badness, for example, is the right thing to do when:

- Your action was known to be wrong, bad, or unjust at the time of its execution.

- You took the wrong, bad, or unjust action inadvertently.
- You discover wrongs and badness in a situation for which you have responsibility.

In formal axiology terminology, redressing, making amends for, or correcting wrongs and badness is called *transposing transpositions*. We accomplish this simply by disvaluing the transposition. If the transposition has been committed, then the disvalue must be more than a state of mind. Action must be initiated that is transpositional to the transposition; i.e., obstructs it. Here are some examples:

- Confessing to a lie
- Returning stolen-property
- Admitting and making amends for breaking a promise

Transposing a transposition reverses the transposition. For example; a lie becomes a no lie (1/E becomes the opposite E), stolen property becomes no stolen property, and breaking a promise becomes no broken promise.

Transposing transpositions are instances of at least second order concept combinations. The concept or concept combination that transposes the transposition can be of any vdim regardless of the vdim of the transposition. The only requirement is that the transposing concept or concept combination must conflict or disagree with the transposition. One concept must counteract the other. Otherwise, we would have an instance of what Hartman called the "*perversion of value*." If the concept or concept combination that is combined with the transposition values it rather than disvalues it, then the transposition will be perpetuated, as the following example demonstrates:

C_1-E C_2-S C_3-E C_4-I
R_x: enforcing laws that uphold discrimination (denying the rights-of-a-person)
R_1: C_1 values C_2; $S^E = E$; vdim R_1 is E.
Discrimination is a single word transposition.
R_2: C_3 disvalues C_4; $I^{-E} = 1/I$; vdim R_2 is 1/I.
R_3: R_1 values R_2; $(1/I)^E = 1/I$; vdim R_3 is 1/I.

Conclusion: Enforcing laws that uphold discrimination deepens the discrimination and is ethically wrong. This is a depreciation of value. However, laws against discrimination obstruct it rather than deepen it as shown below.

R_1-E R_2-1/I
R_x: enforcing-laws against discrimination
R_3: R_1 disvalues R_2; $(1/I)^{-E}$; vdim R_3 is I.

In this example, R_1 is the means that the transposition (R_2) is transposed. Discrimination (1/I) becomes no-discrimination (I). There are situations where

more than one means that reject, obstruct, or oppose the transposition are available. In these cases select the means that corrects the cause of the transposition and at the same time is practical.

4. Killing to Save Lives

CASE A (This is an example of justifying a transposition.)
A doctor thinks that he can kill a patient without being caught and use the patient's organs to save 5 other patients.

C_1- E C_2 –I C_3 - I
R_x: killing a person to save five persons
R_1: C_1 disvalues C_2; I^{-E}= 1/I; vdim R_1 is 1/I.
C_3 is the relevant consideration; vdim C_3 is I+I+I+I+I = I.
R_2: R_1 values C_3; $I^{1/I}$ is an indeterminate (Rule 4).

Conclusion: The initial transposition and the relevant consideration are incompatible. Therefore, killing a person for the purpose of saving the lives of five people is unjustified.

CASE B This is an example of transposing a transposition and justifying a transposition. Redressing wrongs and badness and justifying wrongs and badness are involved in a situation when a transposition transposes another transposition. The transposition that is transposed becomes the relevant consideration for possibly justifying the transposition that does the transposing. The latter then is tested for compatibility.

EXAMPLE

R_x.: Killing an aggressor to prevent him from killing five other persons
Premises: The aggressor intends to and is capable of murdering the five people.
The situation and timing are such that killing the aggressor is the only way to prevent him from murdering the five people. Accordingly, let us rephrase the situation statement as follows:

R_1 = 1/I C_3
R_x.: killing a person to prevent the murder of five people

The concept murder is a single word transposition that is an instance of:

$C_{3\,a}$ C_{3b}
R_2: a person with-malice-aforethought killing five persons

$I + I + I + I + I = I$. Therefore, vdim $C_{3b} = I$.
R_2: C_{3a} disvalues C_{3b}; $I^{-1} = 1/I_2$; vdim $R_2 = 1/I_2$.

We now must determine which transposition is transposed, and whether or not the transposition that performs the transposing is justified.

The two transpositions in this example are *killing a person* (1/I) and *murder* ($1/I_2$). According to the composition/transposition indicator, *preventing* the relation between them is transpositional. The killing obstructs the murder. Therefore, the latter is the transposition transposed, and the concept *murder* becomes *no-murder*. The vdim of the concept *no-murder* is the reciprocal of $1/I_2$; i.e., I_2. It serves as the relevant consideration for possibly justifying the killing of a person. Accordingly, the relation between R_1 — the initial transposition — and R_2 — the relevant consideration in terms of a concept combination is:

	R_1		R_2-I_2
R_3:	killing a person	produces	no murder.

R_3: R_1 values R_3; $I_2^{1/I}$ is a determinate (Rule 3).

Conclusion: The initial transposition and the relevant consideration are compatible. Hence, when killing a person is the only way to prevent him from murdering one or more persons, the killing is justified provided a secondary transposition is not induced.

5. Concluding Remarks

When compared to the arithmetic of numbers, vdim arithmetic is a blunt instrument, but it is sufficiently precise for use in axiological psychometrics, as the Hartman Value Profile demonstrates. Also, when we broaden the scope of vdim arithmetic application to include justifying transpositions and transposing transpositions, we find the efficacy of this simple mathematical system quite satisfactory. In view of the importance of knowing how to determine when wrongs and badness are justified and how to redress unjustified wrongs and badness, we ought to find ways of making the teaching of vdim arithmetic as common as the teaching of addition, subtraction, multiplication, and division of numbers.

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KILLING TO PREVENT MURDERS AND SAVE LIVES

Mark A. Moore

MARK A. MOORE received a B.A. degree in Science and Philosophy from Florida Atlantic University in 1966. He received a Ph.D. in Philosophy with an emphasis on Value Theory and Logic from the University of Tennessee, Knoxville in 1973, where he studied with Robert S. Hartman. He wrote his doctoral dissertation on Hartman's work, *The Structure of Value*. From 1973 to 1979, Moore was a tenured Professor of Philosophy at Salisbury State University in Maryland. In 1980, he left academia and developed quantitative models for the financial markets in New York and Connecticut. He retired in 1994, and he and his wife, Inge Svensson, moved to Savannah, Georgia, where they now live.

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Abstract

In *The Structure of Value*, Robert Hartman attempted to define the entire landscape of value. Central to this landscape is the division of all values into three types: Intrinsic, Extrinsic, and Systemic value. In addition, Hartman developed a value calculus whose intent is to calculate diverse value combinations, thereby demonstrating which combinations are better and worse. Moore's opinion is that the calculus developed by Hartman is inadequate. Hartman's calculus relies on transfinite and finite cardinal numbers, and Moore's belief is that this mechanism is inadequate. Moore has attempted to redefine Hartman's calculus in a finite rather than a transfinite way. In this paper, he takes two value or ethical questions and subjects them to his finite calculus. These two questions are: 1) Is it justifiable to murder someone in order to prevent the murder of five persons? 2) Is it justifiable for a doctor to kill someone in order to harvest organs to be used by five other person to save their lives? The paper is an analysis of these value questions, and the results from his calculus show that the answer to both questions is negative.

Introduction

It is often recognized in philosophy and religion seminars, along with casual conversations over dinner, that there are certain fundamental rights and wrongs.

The value of human life is one of these cherished principles. Few persons would argue that involuntary taking a life is good. Quickly the conversation can turn to the issue of taking a life in order to protect life. Concretely, the situation is this: if a person knows that a murderer is on the way to take one or more lives, would it be morally acceptable to take the murderer's life in order to protect an innocent life? Many would agree that this is acceptable, but philosophers seek to justify an opinion with a principle that supports or rejects it. There is a remarkable debate about the issue of taking a life in order to protect another life. Jesus in the Garden of Gethsemane seems to reject taking life, even in the defense of oneself or others. Others argue for the opposite view.

Robert S. Hartman, in his major work, *The Structure of Value: Foundations of Scientific Axiology,* (Hartman, 1967) presented a challenging set of philosophical and mathematical principles that attempt to form the basis of a calculus of value. If Hartman was successful, then surely his calculus should shed great light upon, and indeed calculate, a justified conclusion to our query. I wrote about Hartman's calculus and its overall success in my "A Quantum Wave Model of Value theory," published in *Formal Axiology and Its Critics* (Moore, 1995). There I presented my critique of Hartman's calculus and found it lacking in enough specific logical detail to answer many relevant value questions. In an attempt to help save Hartman's calculus project, I offered an alternative calculus, based on Hartman's first principle of value, but offering a simpler calculation methodology that I believe is more successful than Hartman's cardinal number approach. My approach was to bring to axiology the fundamental vector calculation utilized in quantum wave mechanics and to apply this vector methodology to making value decisions. It did not say that value decisions are somehow quantum activities; it merely examined the potential of one quantum based vector calculation to rescue Hartman's first value principles and to generate a definitive and reasonable value decision-making process.

To summarize briefly, Hartman recognized three types of value: Intrinsic Value, Extrinsic Value, and Systemic Value. These three in turn are represented by three corresponding logical types of concepts. These concepts are logically or formally distinct in that each is defined by a distinct formal signature. Systemic Value is defined by concepts whose intensions or meanings are finite. Extrinsic Value is defined by concepts whose intensions are (denumerable) infinite. Intrinsic Value is defined by concepts whose intensions are non-denumerable infinite. In this way, Hartman accomplished his fundamental task of giving definition and distinction to the three fundamental value types, while and at the same time offering set-theoretical rules of how these different cardinal numbers can be utilized in calculations to solve basic value questions. Put differently, Hartman's objective was twofold: First, he wanted to differentiate logically between the three fundamental types of value. Second, Hartman created a matrix calculation describing how these values can be combined and ordinally arranged.

In my paper in *Formal Axiology and Its Critics*, I provided a critique of Hartman's calculus and also presented an alternative calculus. I suggested that the logical difference between the fundamental value types can be achieved by utilizing different finite dimensions. Lower and higher finite dimensional spaces could solve the problem of logical differentiation. While recalling this, I will not attempt to provide a detailed account. Rather, I suggested a simple two-dimensional spatial model for value calculations. Simply put, I assumed a linear assignment of value types based on the numbers 1, 2, and 3 for systemic, extrinsic, and intrinsic value respectively. Utilizing the fundamental vector calculation of quantum states, I then proceeded to calculate value types and value combinations as n-ordered valued relations. I believe that if we can successfully agree on a value description of a problematic situation, then a calculation should be forthcoming that would decide the issue. In this paper, I will put my value calculus, based on Hartman's fundamental principles, to the test to see if I can arrive at a conclusion regarding the question of killing would-be murderers whose action seems imminent.

1. Vector Calculations

A vector calculation need not be more complex than calculating the hypotenuse of a right triangle. However, for present purposes, I will adopt the method utilized in quantum mechanics. Why? In quantum theory, a correction term is added to the standard vector calculation that accounts for quantum interference. This is an essential part of quantum physics. I choose this method because it is relevant to value interference. While this aspect of value theory is not relevant to the limit version of value calculations I employ here, it is a part of the larger value landscape. The formula for it is:

$$a^2+b^2 = [\, c^2+2\times a\times b\times \cos(\text{theta})] \; *[\text{sign}\,(a) * \text{sign}(b)]$$

I will set up the calculation by adopting a unit circle. I do this by adding the assigned values of 1, 2, and 3, which yields a total of 6. I then divide each unit by 6 and derive the following fractions: .16, .33, and .50. With these fractions I am now able to begin value calculations. I also note that in the process of squaring the basic values some of these values may be negative. In this case, the sign of the value follows the squaring. For example, if the basic value is -.33 the square will also be negative. Also, when taking the square root of the right hand portion of the formula, this number may also be negative. In this case, the square root of the absolute value is taken and then the negative sign applied to the resulting square root.

Value calculations for Hartman are methods of combining different value types. For example, "the respect of love for a fellow human" involves an intrinsic valuation of an intrinsic value. The key concepts are "value" and "valuation." We

can also extrinsically value an intrinsic value or an extrinsic value. We do this when we value persons as employees or when we value any functional object. We can also systemically value a person, as when we treat persons merely as members of a race or an organization, such as "a citizen of a nation." Hartman developed a method of symbolizing the relations between values and valuations. Utilizing the Hartman protocol for the three examples above, these complex value relations can be displayed as follows:

I^I: Intrinsic valuation of an intrinsic value;
I^E: Extrinsic valuation of an intrinsic value; and
I^S: Systemic valuation of an intrinsic value.

In addition to the above "compositions" of value, disvaluations or "transpositions" of a value can be represented by subscripts. Disvaluing persons in three ways can be displayed as follows:

I_I: Intrinsic disvaluation of an intrinsic value;
I_E: Extrinsic disvaluation of an intrinsic value; and
I_S: Systemic disvaluation of an intrinsic value.

Transpositions will be displayed as negative numbers. When transpositions are themselves transposed the resulting value will be positive. The final vector value will be a product of the signs of the A and B part of the formula. The final vector will be multiplied by this sign. Simply put, (+1*+1) = +1; (+1*-1) = -1; and (-1*-1)= +1.

In all, there are eighteen such combinations of values and valuations. There are three basic values, and each of these may be valued or disvalued in three different ways. The total range is listed below, along with the vector values for each. For Hartman, each combination is expressed as an exponent or a fraction. The methodology employed here is simply that of vector calculation. So, while adopting the Hartman way of expressing value relations, I depart greatly in how to calculate the value of the relation itself. Also, take note that disvaluations have the same vector values as their positive valuation counterparts, but the positive signs are replaced with negative signs. Each combination below is of one value and one valuation. As we shall see, there are multi-dimensional combinations also, and we must be careful to compare vectors within the same dimensional sets.

I^I	*Intrinsic valuation of an intrinsic value*	*.9239*
E^I	*Intrinsic valuation of an extrinsic value*	*.7965*
I^E	*Extrinsic valuation of an intrinsic value*	*.7353*
S^I	*Intrinsic valuation of a systemic value*	*.6542*
E^E	*Extrinsic valuation of an extrinsic value*	*.6097*

I^S	*Systemic valuation of an intrinsic value*	*.5695*
S^E	*Extrinsic valuation of a systemic value*	*.4790*
E^S	*Systemic valuation of an extrinsic value*	*.4249*
S^S	*Systemic valuation of a systemic value*	*.2957*
S_S	*Systemic disvaluation of a systemic value*	*-.2957*
E_S	*Systemic disvaluation of an extrinsic value*	*-.4249*
S_E	*Extrinsic disvaluation of a systemic value*	*-.4790*
I_S	*Systemic disvaluation of an intrinsic value*	*-.5695*
E_E	*Extrinsic disvaluation of an extrinsic value*	*-.6097*
S_I	*Intrinsic disvaluation of a systemic value*	*-.6542*
I_E	*Extrinsic disvaluation of an intrinsic value*	*-.7353*
E_I	*Intrinsic disvaluation of an extrinsic value*	*-.7965*
I_I	*Intrinsic disvaluation of an intrinsic value*	*-.9239*

The sign for a disvaluation is negative because our formula requires that the entire vector be multiplied by the sign of the valuation. Since disvaluation is negative the sign of the disvaluation vector will likewise be negative. Each of these value combinations may be in turn valued or disvalued once more, thereby creating a three dimensional combination. This process can be continued to an alarming degree of complication. Complex structures like the following four dimensional patterns are not only allowable but are actually quite common in daily life: *4: $(((I^I)^E)_S)$*

With each formula and vector, the number of the value dimension involved in the calculation will be indicated. In this way we will be able to better compare vector lengths. The above formula is for the systemic disvaluation, of an extrinsic valuation, of an intrinsic valuation, of an intrinsic value. What would such a complex situation be? This formula could represent a loving family *2: (I^I)*, making a positive impact on a community *3: $((I^I)^E)$*, which in turn is racially disvalued *4: $(((I^I)^E)_S)$*.

Using this calculus, we may now turn our attention to the first question at hand: killing would-be murderers whose action seems imminent.

2. Calculus of Death

Let us assume that death is a breakdown in our biological process broadly defined, and that people value their own lives intrinsically. The value of such a person is: *3: $((I^I)^I)$*. The value for a living, functioning person is: *4: $(((I^I)^I)^E)$*. Death, then is: *5: $((((I^I)^I)^E)_E)$*. The subscript "E" represents the biological breakdown or decay involved in death. The vector value for death, any death, is: *5: -2.03*. Death is both a loss of value and a natural process that comes to all; so, while death, any death, is a loss of value, the circumstances surrounding death

matter greatly. Not all deaths are the same. In general, as the complexity of value situations grow, so grows the vector length.

Murder, however, is more than death. It is an intended death inflicted by another person that the victim does not seek nor wish. To understand murder, then, we must add to our vector of death a proper understanding of the wishes of the intended victim. To our vector for death we must add the intrinsic devaluation of the victims wishes. The vector for murder is: $5\text{: } (((I^I)^I)^E)_I)$. The vector length for murder is *5: -2.19*. When we compare the vector for death by natural causes and death by murder we see that both are 5 dimensional vectors but that murder is a higher negative value than natural death (5:-2.03 and 5:-2.19).

3. Preventing Murder

There are three basic ways that we could try to prevent a wrong action such as murder. First, we may try to reason the person away from committing the wrong. Second, we may interdict or physically restrain a person. And third, we may kill the person. Each of these procedures can be analyzed as an axiological vector. Let us examine each.

1) *Reasoning*: Often this is referred to as "engagement." It is a process where we examine the reasons for an intended action and why these reasons may be unworthy or unjustifiable. We hope that if the intended action is well-understood by the actor, then a bad result can be avoided. In this case we seek to prevent murder by reasoning with the would-be murderer; we attempt to use reason to devalue the act of murder. The axiological symbol for "engagement" is: $6\text{: } (((I^I)^I)^E)_I)_S)$ and the vector length is *6: 2.03*.

2) *Interdiction*: Often interdiction or physical restraint is used to prevent crime. To calculate this, we must modify our formula above to show the use of an E value to prevent the murder. The axiological symbol for "interdiction" is: $6\text{: } (((I^I)^I)^E)_I)_E)$, and the vector length is *6: 1.86*. Both engagement and interdiction are positive values that prevent a crime. However, engagement has a slightly longer vector length, and this tells us that engagement is a better option than interdiction. Both, however, are acceptable alternatives.

3) Finally we must consider the possibility that both engagement and interdiction are not applicable, and the only option remaining is *killing a would-be murderer* whose action seems imminent. Here the above formula must be modified in a rather simple way. This action requires us, at a minimum, to extrinsically value the death of the murderer. Unlike engagement and interdiction where we disvalue the intent of the murderer to kill and through interdiction we disvalue the freedom of the murderer to act, here we must go much further and actively cause the death of the person who would be a murderer. Engagement and interdiction are acts that can be started and stopped. They allow for change and redemption. In engagement and interdiction I can still believe in the intrinsic

value of the murderer, but if I murder the murderer I believe that his life should not continue. Death is final and cannot be undone. Death does not allow for reconsideration. In effect, we extrinsically value the death of the person who is the murderer. The axiological symbol for killing the murderer is: *6: $(((I^I)^I)^E)_E)^E$)* and the vector length is *6: -1.70*. The result is negative, but is it justifiable? The act is committed to prevent murder. Murder is a 5 dimensional event that has a negative vector value of 5*: -2.19*. Preventing murder is a 6 dimensional function that also has a lower negative vector value (*6: -1.70*). So, we may conclude that killing the would-be murder is justifiable, though it is not a "good" or positive thing to do. When compared to the alternatives of engagement and interdiction, it is the least good act. Killing to prevent murder is justifiable but it is also clear that engagement and interdiction are more preferable alternatives if they are available.

4. Does size matter?

Normally, axiologists would prefer to speak about the relative value of actions and events. However, a calculus of value ought to be able to measure the repetition or iteration of events and actions. For example, does it matter if one murders two persons rather than only one person? In asking this question, we must be quite careful to distinguish the moral or axiological landscape of a type of act from the value of the act to its victim, in this case the murdered. For the person not murdered, the value is immense, but does murdering one less person make the murderer less immoral? For example, if Hitler was responsible for one less person dying in a concentration camp, does this make Hitler a better man? Certainly, it would not. However, from the point of view of the one additional survivor, the gain in value is profound. And if one of these survivors happens to be Victor Frankl, who was a camp survivor, the gain in value for the world is immense. Yet, none of these considerations seems to have much effect on the moral condemnation of Hitler.

So, how do we manage the iteration of moral and immoral acts? I propose that we increase axiological value of good and bad acts by the cosine of the vector for each iteration. In our present example of murdering the murders, this would go as follows: For each person's life that is saved by murdering the murderer we would decrease the axiological ill for the act of murdering the murderer by the cosine of the vector. Recall that the vector for murdering the murderer is *6: -1.70*. Consider the following table:

Murdering to save 1 person:	*= -1.70*
Murdering to save 2 persons:	*-1.70 - cosine (-1.70) = -1.57*
Murdering to save 3 persons:	*-1.57 - cosine (-1.57) = -1.57*
Murdering to save 4 persons:	*-1.57 - cosine (-1.57) = -1.57*
Murdering to save 5 persons:	*-1.57 - cosine (-1.57) = -1.57*

We can readily see that iteration of a good or a bad act rapidly diminishes in axiological value. You must go to more than 5 decimal places to notice the difference. What iteration does not do is to change the moral landscape. If it is wrong to murder to save another person, then is it still wrong to murder to save 5 persons. It is less wrong when 5 persons are saved, but the axiological landscape is not altered in any significant fashion. Each additional iteration makes a smaller and smaller percentage difference. The same would be true for an increase of the number of persons murdered by a murderer. Is murdering 2 persons worse than murdering 1? Yes, it is worse but not by the same amount. As we approach a third or forth person murdered the axiological difference rapidly approaches zero. Each iteration is a difference but the axiological degree of the difference is small. So, size matters but not in a linear degree. Murdering when done to save other lives is justifiable but only marginally so.

5. Murder to Harvest Organs

We can now turn this calculus on a different question, the axiological calculus of a doctor who murders a patient in order to provide organs for transplant to aid his patients who are suffering and perhaps dying for lack of available organs.

We have seen that the axiological vector for murder is 5*: -2.19*. However, here we have a very significant positive outcome of the murder: a person's life is improved by the harvesting of organs. To calculate this vector we must add an additional new dimension which will measure the change in value from murder to include the utility gained by the patient. This utility is the value of extrinsic value and is the vector length of *.33*. The resulting vector is 6*: -1.86*. The vector for murder is softened by the utility of the victim's organs. This vector would be considerably altered if the murder was committed merely in order to sell the organs for transplant. But here we will assume that the doctor is proceeding out of a sense of altruism for the patients. We can now turn our attention of the number of person who could be aided by the transplant of organs. As with the murderer, we will assume that 5 persons would have their lives improved by the murder of one person and the harvesting of this victim's organs. We will again use our cosine procedure to calculate this.

Murdering to harvest organs to aid 1 person: = -1.86
Murdering to harvest organs to aid 2 persons: -1.86 - cosine (-1.86) = -1.57
Murdering to harvest organs to aid 3 persons: -1.57 - cosine (-1.57) = -1.57
Murdering to harvest organs to aid 4 persons: -1.57 - cosine (-1.57) = -1.57
Murdering to harvest organs to aid 5 persons: -1.57 - cosine (-1.57) = -1.57

As with murdering the murder to save one life or five lives, the percentage improvement with each iteration rapidly diminishes. Size does matter

but not in a linear fashion. There is no possibility for a doctor to help a sufficiently large number of patients to turn a bad act, a murder, into a good act of helping his patients.

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KILLING ONE TO SAVE FIVE:
A TEST OF TWO HARTMAN–STYLE VALUE CALCULUSES

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TED RICHARDS received a B.S. with honors in Physics and a B.A. with honors and departmental distinction in Philosophy from Southern Methodist University in 1991, an M.A. in Philosophy from Boston University in 1994, an M.A. in History and Philosophy of Science from the University of Pittsburgh in 1997, and a Ph.D. in Philosophy from Boston University in 2006. His dissertation was a philosophical analysis of Isaac Newton's arguments against Cartesian motion as presented in the unpublished manuscript known as *De Gravitatione et æquipondio fluidorum*. He became interested in the work of Robert S. Hartman first as a case study for the question of what can and cannot be considered science, and then as an example of a casualty of the professionalization of philosophy of science that occurred in the 1950s.

Currently, Ted is a Lecturer in the Philosophy Department at the University of Tennessee, where he teaches introductory courses on the human condition, metaphysics and epistemology, formal logic, and occasionally upper-level undergraduate courses on early-modern philosophy and environmental ethics.

Abstract

In his presentation of formal axiology, Robert S. Hartman left a conceptual hole: he never supplied a complete value calculus. Both Frank G. Forrest and Mark A. Moore have attempted to rectify this deficiency, each offering a value calculus radically different from the other. This paper reviews the lacuna left by Hartman, details criteria that we might wish a value calculus to meet, then reviews and comments on the two calculuses of Forrest and Moore, and their analyses of two scenarios in which one is killed to save five.

Introduction

The consideration of hypothetical situations as a means to test statements of value, and the theories that produce them, is a venerable tradition in philosophy. This tradition can be traced back at least as far as Plato, who uses them with relish. One of the best known is his use of the myth of the Ring of Gyges to illustrate the distinction between just acts and acts of personal benefit (Plato, 1953, *Republic*, Book II, 359b-360c); but perhaps a better example is Socrates' torture of Laches and his definition of the virtue courage by means of considering single soldiers, then infantrymen versus cavalrymen, then soldiers in large armies versus soldiers in small armies, then soldiers in large armies facing small armies and *vice versa* (Plato, 1953, *Laches*, 190d-193d). It is in these contexts, where a

value statement is tested by different but competing situations, that most often bears the best insight to the suppositions of the underlying theory.

It was in this tradition of hypothetical situations that Rem Edwards asked Frank Forrest and Mark Moore to consider, by means of their formal axiological calculuses, the following two scenarios:

> (A) A doctor kills a patient without being caught and use the patients organs to save five other patients.
>
> (B) A person kills an aggressor to prevent him from killing five other persons.

The hope was that the exercise of examining these two scenarios would not only exhibit how the two calculuses operate, but also illuminate the underlying philosophical assumptions behind the mathematics. These two situations were proposed by Rem Edwards, and are particularly apt to test Hartman-style value calculuses. As will be discussed below, central to Hartman's axiology is the dependence of value upon natural properties, as expressed in the axiom of formal axiology. At a very basic level, both of these scenarios describe the killing of one person to save the lives of five people. In this way, the natural properties of each scenario are alike; and yet to our moral intuition, which is tied quite directly to our sense of value and valuation in these cases, the two scenarios are dramatically different. The hope is that a complete formal axiology, which includes a value calculus, will be able to distinguish axiologically between these two scenarios, or to provide a convincing explanation why there is no axiological difference.

As is apparent from even the most casual perusal of the previous two papers by Forrest and Moore which consider these two scenarios, the particulars of their respective calculuses are very different. Looking at them more carefully, which is the purpose of the current paper, shows that this difference is more than just surface, that each calculus is based on radically variant assumptions about how best to move forward with Hartman's axiological project. But while they are radically different in philosophical approach and mathematical details, they share a surprising shortcoming — one, it must be concluded, that poses significant challenges for any Hartman-style value calculus that might be proposed.

Before we examine the two calculuses proposed by Forrest and Moore, it will be useful to review briefly the lacuna in Hartman's axiology which they are intended to fill.

1. The Problem of a Value Calculus in Hartman's Axiology

For a theory of value that claims to be a solution to G. E. Moore's naturalistic fallacy, as Hartman's does, the pair of scenarios offered by Edwards are well

conceived. As you'll recall, in 1903 Moore argued that it is impossible to *define* the value of an object (or, presumably, an action) by means of its natural properties. (Properly speaking, the conclusion that such a definition is possible is the naturalistic fallacy.) In 1942, Moore made matters worse when he argued that value must *depend upon* those natural properties, even if it can't be defined in terms of them. Taken together, these two conclusions form Moore's Value Paradox and are taken by modern philosophers to entail that non-subjective accounts of value are impossible. Moore's *Value* Paradox should not be confused with Moore's Paradox, which concerns the intelligibility of statements of non-belief and was used to great effect by Wittgenstein. See (Sorrensen, 2006, §5.3.)

The conceptual foundation of Hartman's axiology is a solution to this (seeming) paradox. Hartman defines the value of an object (or action) as the measure of the object's fulfillment of the intension of its concept. This is Hartman's Axiom of Formal Axiology (AFA) (Hartman, 1967, 103). The AFA solves Moore's Value Paradox. Under this definition, the value of an object is not reducible to any set of natural properties (a particular chair is not good because it has certain properties, but because its properties satisfy a certain concept) and yet that value depends upon the objects properties (if a particular object has no properties, then it cannot fulfill the intension of any concept, and thus can have no value). By resolving Moore's Value Paradox, the AFA avoids the necessity of a subjective account of value, paving the way for a science of value.

It is upon the AFA that Hartman built his science of formal axiology. I say built because the science of formal axiology no more follows from the AFA than a house naturally arises from its concrete and steel basement. In both cases the foundation is necessary, but the edifices are additions, affixed to their supports. In the case of formal axiology, the addition affixed to the AFA was Hartman's installation of three types of values: systemic, extrinsic, and intrinsic. Hartman distinguished these three types by the cardinality of the intensional set, *i.e.*, the concept of a systemic object consist of a set of a finite number of predicates (or *n* predicates), while concepts of extrinsic and intrinsic objects have denumerably infinite ($\aleph_0$) and nondenumerably infinite ($\aleph_1$) number of predicates, respectively. Thus, in an essential way, that there are only three types of objects that can be valued arises for Hartman out of the formal structures of set theory, specifically the cardinality of sets. This is because, under certain axiomatizations of mathematics, there are only three different cardinalities of sets: finite, denumerably infinite, and nondenumerably infinite. See (Faticoni 2006, Ch. 5, sec. 3) for a review of these various axiomatizations and their relation to each other. The identification of only three values, however, does not follow from the AFA itself.

For Hartman, this zoology of three types of value objects did not arise solely from formal considerations. He also believed that this zoology described, accurately and completely, the totality of valued objects as experienced by human beings. This was essential for his formal axiology to be a science,

because, as he defined it, science is a formal system that is isomorphic with a portion of the human phenomenal field, *e.g.*, as in (Hartman, 1962). So all that can be valued, according to Hartman, were ideas (systemic objects), physical things (extrinsic objects), and human beings (intrinsic objects) and nothing else.

In the discussion above, I have already confuted two ideas that will be useful to separate: the ideas of an object that is valued and the process of valuing an object, or valuation. Hartman, to his credit, does not appear to have ever confused these two notions, nor does any of his arguments rest on any equivocation of the two, even though he never explicitly distinguishes between them. As mentioned above, he identifies three values, or valuations — systemic, extrinsic, and intrinsic — and three categories of valued objects — systemic, extrinsic, and intrinsic. The symmetry between the objects valued and the valuations suggests a natural connection — ideas have systemic value, physical things have extrinsic value, and individuals have intrinsic value. The symmetry also implies that it would be a category mistake to make a cross valuation, for example, to value an individual systemically. That such cross valuations are a category mistake is not just suggested by the symmetry, however, but follows arguments by Hartman himself. See, *e.g.*, Hartman's claim that the transpositions of the logical and axiological frameworks "produce badness in human relations" in (Hartman, 1991, 19-20).

In the *Structure of Value*, however, specifically in "The Empirical Import of Formal Axiology" (the last chapter of the book) where he turns explicitly to the connection of the formal system of axiology to the phenomena of value, Hartman acknowledges that such cross valuations can and do occur in the general human practice of valuation. Stated another way, Hartman explicitly acknowledges that human beings value all three types of objects in all three ways. For example, a particular idea can be valuated systemically, extrinsically, and intrinsically. Since such valuations occur in human experience, they must be accounted for by formal axiology, if formal axiology is to be a science. Thus, if we are to count all the types of valuations experiencable by human beings, there will be nine total, corresponding to three types of valued objects, each type of which can be valuated in three different ways. For ease of use, Hartman introduced the following notation: the type of object being valued is a capital letter, and the method of valuation is represented by superscript, *e.g.*, S^E represents a systemic object valued extrinsically (such as, the value of a treatise on axiology) and I^S represents an intrinsic object valued systemically (such as the value of a devoted scientist).

These nine valuations, however, do not completely describe the totality of valuations experienced. Hartman noted that there are instances of disvaluations, situations in which the process of judging an object denigrates or disrespects the object under consideration — in essence, disvaluation "indicates badness" (Hartman, 1969, 268). As with positive valuations, disvaluations can occur along the same three axes of systemic, extrinsic, and intrinsic, and as all

three types of objects can be disvalued in three different ways, there are nine different disvaluations. Consistent with the superscript notation of positive valuations, Hartman noted disvaluations by means of subscripts, *e.g.*, I_S represents an intrinsic object disvalued systemically (such as, the disvalue of a madman) and S_E represents a systemic object disvalued extrinsically (such as, the disvalue of a bribed judge). Taken together the nine positive valuations and the nine disvaluation yield eighteen possible, as Hartman termed them, "secondary value combinations" (Hartman, 1969, 272). Axiologically, Hartman referred to positive valuations as *compositions* and disvaluations as *transpositions*. See (Hartman, 1991, 268) for the discussion of these terms that is most relevant to the current paper.)

Hartman further argued, or perhaps stated is more accurate because no justification is supplied in the *Structure of Value*, that these eighteen secondary value combinations can be ranked in a "hierarchy of value". This hierarchy runs as follows (in descending order): I^I, E^I, S^I, I^E, I^S, E^E, S^E, E^S, S^S, S_S, E_S, S_E, E_E, I_S, I_E, S_I, E_I, I_I. (Hartman, 1969, 272) As is readily apparent, it is this hierarchy that is the basis of the Hartman Value Profile (HVP).

According to Hartman, the ranking represented in this hierarchy is not haphazard, nor based upon conceptual, moral, or ethical reasoning alone. Rather, Hartman states that the hierarchy is based in the sound foundation of mathematics. More specifically, Hartman argues that the hierarchy is,

> based on the fact that, since value is defined as the fulfillment of [the intension of a concept], the more of a[n intension] there is to be fulfilled the higher the value. A systemic value fulfills a[n intension] of at most *n* elements, an extrinsic value of at most $\aleph_0$ elements, and an intrinsic value one of $\aleph_1$ elements. (Hartman, 1969, 267)

And since the "value dimensions…represent *numbers of properties*," (Hartman, 1967, 267, emphasis original) there are numerical values and arithmetical operations that underlie this axiological ranking. This argument by Hartman is important for our current purposes for two reasons. First, Hartman is quite clear that the hierarchy can be determined by means of a *value calculus*. Second, Hartman is equally clear as to the conceptual role that calculus will play in a full-fledged formal axiology: the calculus will begin with the numerical values given by the AFA and, by means of arithmetical operations, will produce the hierarchical rankings of the secondary value combinations of the HVP.

Unfortunately, Hartman does not supply us with a full value calculus in the *Structure of Value*, though he does supply a brief sketch of one (more on this below). Hartman himself was quite aware of this lacuna in *The Structure of Value*, stating in a response to a critical review of *Structure* that "[t]he complete presentation of the calculus is reserved for another book, *The Measurement of Value*" (Hartman, 1962, 415). [To waylay any historical confusion, (Hartman,

1962) is a response to a critical review of *The Structure of Value*, written by Hector Castaneda and published in 1961 in the journal, *Philosophy of Science*. Castaneda officially reviews (Hartman, 1959), the Spanish language treatise which became (Hartman, 1967).] Doubly unfortunately, it appears that Hartman was unable to begin composing *The Measurement of Value*, for no drafts of it, or of attempts at the complete calculus, are extant.

It is into this breach that both Forrest and Moore have bravely stepped; each has attempted to construct a calculus that would begin with numerical valuations consistent with the AFA and that can produce a ranking of the secondary value combinations. But before we look at these attempts in detail, we should note one further requirement a Hartman-style value calculus must meet. Just after his discussion of the secondary value combinations, Hartman notes that this process of value combinations can be iterated, that is, that there are higher level value combinations, tertiary, quaternary, etc., each built on an earlier order. To borrow an amusing example from Hartman of this phenomena, there can be an individual who dislikes his uniform as an army private. This dislike is the secondary value combination E_S, because it is the disvaluing of a perfectly good piece of clothing. That individual's girlfriend may like his uniform, $(E_S)^I$; her father may in turn dislike her for liking it, $((E_S)^I)_I$; and his commanding officer may like the whole situation in the name of the army and the soldier's love, $(((E_S)^I)_I)^S$ (Hartman, 1967, 279-280). This final valuation is a quinary value combination, as a count of the value dimensions shows. For our current purposes of determining what a value calculus must be able handle, the important things to note are that this iteration of valuation can go on (theoretically) to the *n*-th degree and that valuations and disvaluations must be able to occur in any order.

To recap, Hartman's formal axiology is missing a value calculus, and a value calculus is necessary for formal axiology to be considered a science. Though Hartman did not leave us with a complete value calculus, he left us enough to be able enumerate conditions that any Hartman-style value calculus must meet. These are:

(C1) Numerical: The calculus must give a means for assigning numerical values to S, E, and I.

(C2) Arithmetic: The calculus must specify one or more arithmetic operation(s) by which numerical values for the secondary value combinations can be obtained from the numerical values of S, E, and I.

(C3) Iteratable: The arithmetic operation(s) should be universally iteratable, that is, numerical values for tertiary and higher order value combinations should be calculable by repeated use of the

same operation(s) used to produce the secondary value combinations.

These are the minimal requirements for a Hartman-style value calculus. It is possible, perhaps even desirable, to hypothesize other criteria, in order to make the calculus more Hartman-esque. For example, nothing in criteria (C1) - (C3) conceptually connects the calculus with the AFA. The natural place to demand such a connection would be in the method for assigning numerical values, which suggests:

(C1a) Conceptual Foundation: The means for assigning numerical values to S, E, and I should be conceptually connected to the AFA.

In addition, there is nothing requiring the calculus to produce a ranking of the secondary value combinations, so we might demand:

(C2a) 'Save the HVP': The calculus must produce a unique ranking of the eighteen secondary value combinations.

Prima facie, (C2a) appears to be a more crucial property for a Hartman-esque value calculus than (C1a). Not only is a unique ranking of the secondary value combinations required for the HVP to be an effective psychometric tool, the litany of validation studies of the HVP gives evidence to the 'fact' that the HVP describes a portion of the phenomena of value. Thus, axiology must have a formal system that satisfies (C2a) to be a science under Hartman's definition. In addition, satisfaction of (C2a) will ensure the avoidance of results such as God and a brick having the same value. For this worry, see (Edwards, 2007). (C1a), however, is equally important because, taken in conjunction with (C2a), it would ensure that there was a conceptual connection between the HVP and the AFA by means of the value calculus. Please note, these two additional requirements are not necessitated by the original three criteria, so both (C1a) and (C2a) are required if such a conceptual grounding of the HVP is desired.

Indubitably, there are many other requirements that can be posited for a value calculus, but these will be enough for our current purposes. With these criteria in place, we are now in a good position to examine the calculuses proposed by Forrest and Moore and to assess how successful they may or may not fill the value calculus lacuna left by Hartman.

2. The Value Calculuses: Details and Shortcomings

As is apparent from even the most rudimentary glance at the two preceding papers, the value calculuses proposed by Forrest and Moore are very different:

different in notation, in numerical valuations used, and in arithmetical operations utilized. What I want to do in this section is to review briefly the two calculuses, and specifically, to indicate their initial assumptions and motivations (as I understand them) and detail how they operate. I'll then discuss some of the shortcomings of each.

An apology to the authors of these calculuses before we begin: each author has his own well-developed vocabulary that goes with their particular calculus. For example, Forrest refers to the "vdims" to indicate the numerical value of a combination, while Moore refers to the "dimension of the vector" as an indication of the order of the combination. I feel the need to drop much of this idiosyncratic vocabulary, instead I'll use the terminology introduced by Hartman, so that the discussions of the two calculuses will mesh better with the above discussion, and so that they can be compared with each other more readily.

A. Forrest's Valuemetircs

Of the two calculuses, Frank Forrest's valuemetrics is the closest to the short sketch given by Hartman in *The Structure of Value* (Hartman, 1967, 272). Though Forrest does not call his calculus "valuemetrics" in the paper above in this issue, the calculus he deploys is a development of the calculus he presented in (Forrest, 1994), and for easy of use, I have adopted that title for the discussion below.

For the numerical value of S, E, and I, Forrest follows Hartman's suggestion of using the theoretical maximum cardinality of the respective intensional sets, *i.e.*, *n* (finite cardinality) for systemic, $\aleph_0$ (denumerably infinite) for extrinsic, and $\aleph_1$ (nondenumerably infinite) for intrinsic. Forrest moves away from Hartman slightly, using another finite value, *k*, as the numerical value for E, where $n < k$. This he justifies by Hartman's instance that human valuators (the only valuators that need be considered formal axiology) can only consider a finite number of predicates (and accordingly properties) when valuating a physical object. Thus, Forrest establishes the following numerical value map for the three value types:

Systemic	n	finite
Extrinsic	k (with $n < k$)	finite
Intrinsic	$\aleph_1$	nondenumerably infinite

For the arithmetic operation of value combinations, Forrest again follows Hartman's sketch and uses simple exponentiation, with compositions (positive valuations) having positive exponentiation and transpositions (disvaluations) having negative exponentiation. Accordingly, the calculation of an I^S composition would be $\aleph_1^n = \aleph_1$ and an I_S transposition would be $\aleph_1^{-n} = 1/\aleph_1$

since negative exponentiation typically indicates the reciprocal. Arithmetically, exponentiation is indefinitely iteratable; for example, $((2^2)^2)^2 = ((4)^2)^2 = 16^2 = 256$, and we could, of course, square 256 yielding 65,536, and so on.

So, *prima facie*, valuemetrics meets the minimum standard set above for a Hartman-esque value calculus: Forrest gives us a method for assigning numerical values to S, E, and I (satisfying the numerical criteria), exponentiation is an arithmetical operation that yields numerical values for all eighteen of the secondary value combinations (satisfying the arithmetical criteria), and exponentiation is indefinitely iteratable, thus it can produce numerical values for all the higher order value combinations (itreratability criteria). Valuemetrics even satisfies (C1a), because the numerical values of S, E, and I are the cardinalities of the intensional sets referenced in the AFA. Thus, there is a very strong conceptual connection between the numerical values of S, E, and I and the AFA.

Unfortunately, valuemetrics does not produce a unique ranking of the eighteen secondary value combinations, as has been known for some time; see, *e.g.*, (Moore, 1995). This is evident by an examination of Forrest's Table F (page 168 above in this issue). As you will note, there are only four calculated values for the nine combinations. This means that there must be overlap in the calculated values of the compositions. Specifically, there are three separate compositions (E^S, S^E, and E^E) that have a calculated value of "E", two (I^S and I^E) that have a calculated value of "I", and three (S^I, E^I, and I^I) that have a calculated value of "I_2." This means that the value calculus *does not* produce a unique ranking of the secondary value combinations, as the compositions that overlap must be ranked at the same level. Thus, valuemetrics does not satisfy (C2a). Therefore, it does not give a calculative basis for the HVP, and it is vulnerable to complaints like those concerning bricks, persons, and God so eloquently posed in (Edwards, 2007).

To see why this failure to satisfy (C2a) occurs, we need to delve into the (somewhat) arcane field of transfinite cardinal arithmetic. (I apologize for this brief diversion, both to the math-phobics and those literate in set theory, but this junket into this esoteric branch of mathematics will be used in later comments as well.) Transfinite cardinalities do not behave as finite numerical values do under the standard arithmetical operators. To show this, consider the set of counting numbers, {1, 2, 3, …}. The number of members of this set is infinite, because there is an infinite number of counting numbers. We represent this number, *i.e.*, the cardinality of the set of the counting numbers, as $\aleph_0$. Now, if we add 1 to $\aleph_0$ we get $\aleph_0$, because 1 added to infinity is still infinity. In fact, if we add any finite number, *m*, to $\aleph_0$ and we get $\aleph_0$. Similarly, $\aleph_0 + \aleph_0 = \aleph_0$. From which, it is obvious that $2 \bullet \aleph_0 = \aleph_0$. Already, we can see that transfinite cardinalities do not behave like our regular everyday finite numbers.

Forrest, however uses exponentiation, not addition. Skipping the details, which can be found in any number of texts on transfinite cardinality, such as (Faticoni 2006), exponentiation of transfinite cardinalities also does not behave

as regular finite numbers. Thus, we get Table B (page 163 above in this issue) that describes the strange operation of exponentiation in transfinite cardinalities, where, for example, $n^{\aleph 0} = \aleph_0^{\aleph 0} = \aleph_1^{\aleph 0} = \aleph_1$. It is this behavior that leads to the failure of valuemetrics to satisfy (C2a), since Forrest's assignment of the values S, E, I and I_2 (which is presumably meant to correspond to a cardinal value of $\aleph_2$) are based on the behavior of transfinite cardinal values under exponentiation.

In illustrating how valuemetrics fails to meet criteria (C2a), I have focused on the compositions, *i.e.*, the positive valuations, labeled "+ Exponents" in Table F. Deeper problems, however, occur when we consider the way valuemetrics calculates disvaluations. As noted in Table F, disvaluations are to be calculated just as positive valuations except, instead of positive exponentiation, negative exponentiation is used. Thus, we have a compounding of the error that occurred with the positive valuations, that is we see a failure of valuemetrics to satisfy (C2a). This is not too worrisome, since positive valuations already generated this failure. The further problem occurs when we consider what the operation of negative exponentiation means in the context of transfinite cardinalities. As stated by Forrest, the negative sign on the exponent indicates the reciprocal value. In everyday finite arithmetic, this means creating a new value by dividing 1 by the original value, *e.g.*, since $2^2 = 4$, $2^{-2} = ¼$. Unfortunately, *division can not be defined in transfinite arithmetic*. That such is the case can be seen by means of a relatively simple *reductio ad absurdum* proof: Assume that the operation of division by transfinite cardinalities is possible. If so, then for any transfinite cardinal, $\aleph$, it must be the case that,

(eq. 1) $$\aleph \bullet 1/\aleph = 1.$$

As we have already seen,

$$2 \bullet \aleph = \aleph.$$

Multiplying both sides by $1/\aleph$ gives,

$$2 \bullet \aleph \bullet 1/\aleph = \aleph \bullet 1/\aleph.$$

From eq. 1, we get,

$$2 \bullet 1 = 1,$$

or,

$$2 = 1,$$

which is blatantly impossible. Accordingly, our initial assumption must be wrong. Therefore, it is impossible to define division for transfinite cardinalities. *QED*.

This inability of division to be defined for transfinite cardinalities indicates a significant failure of valuemetrics as a value calculus. This inability means that valuemetrics does not supply an arithmetic operation by which numerical values can be obtained for second order disvaluations, contrary to what is portrayed in Table B. Specifically, of the nine disvaluations, one (S^{-S}) will be $1/n$, three (E^{-S}, S^{-E}, and E^{-E}) will be $1/k$, and five (I^{-S}, I^{-E}, S^{-I}, E^{-I}, and I^{-I}) *will be*

undefined. In other words, valuemetrics fails to satisfy criteria (C2) above. Additionally, since there is no arithmetic operation specified for all the transpositions, valuemetrics also fails to satisfy criteria (C3). Thus, valuemetrics fails to satisfy two of the three minimum criteria necessary given for a Hartman-style value calculus. Forrest cites (Lin and Lin, 1985, Ch. 6) in support of the values reported in Table B. I have examined (Lin and Lin, 1985), and nowhere do they define division for transfinites, nor does anything posited in the text contradict the impossibility proof given above.

This undefinability problem in transfinite cardinalities might go farther, jeopardizing the composition calculations as well. I have not been able to determine if cardinalities raised to a cardinal power are defined. It is easily shown that $n^{\aleph 0} = \aleph_1$, for any finite number n, but I have been unable to determine what $\aleph_0^{\aleph 0}$ equals, or if $\aleph_a^{\aleph b}$ has a defined value for any a and b. This is particularly worrisome since the canonical method of defining higher order transfinite cardinalities goes as a power of 2, *i.e.*, $\aleph_1 = 2^{\aleph 0}$, $\aleph_2 = 2^{\aleph 1}$, $\aleph_3 = 2^{\aleph 2}$, $\aleph_4 = 2^{\aleph 3}$, etc. See, for example, (Faticoni, 2006, 195), (Lin and Lin, 1985). Since I lack of a proof to the contrary, however, I am willing to extend Forrest the benefit of the doubt.

Forrest should not shoulder full blame for this failure of valuemetrics. That transpositions can be 'calculated' as reciprocals of transfinite cardinalities originates with Hartman. Interestingly, in note 40 on page 274 of *The Structure of Value*, Hartman appears both to acknowledge and to gloss over the difficulty pointed out above: "the inverse of the transfinite has clear axiological meaning (1/E, 1/I), although the arithmetical meaning is undefined" (Hartman, 1967, 358). In all honesty, I don't know how to understand this passage. On the one hand, Hartman is acknowledging that the inverse of transfinite cardinalities has no arithmetical meaning, and therefore they cannot be used, or result from, a value calculus that is composed of arithmetic operations. Thus, Hartman appears to be denying the possibility of a value calculus. On the other hand, Hartman appears to dismiss this failure of arithmetic, since the inverses have "axiological meaning." This makes no sense to me, since, if 1/E and 1/I have only axiological meaning, they can never be included in a value calculus. And yet, Hartman, a page before, claims that the ranking of the eighteen secondary value combinations can be calculated by means of an arithmetical calculus. It is possible that Hartman had a particular arithmetic in mind, one that he meant to develop in *The Measurement of Value*. Lacking such an arithmetic, however, or any other means by which to calculate numerical values for disvaulations, valuemetrics appears to be untenable as a value calculus.

Before we turn our attention to the calculus proposed by Moore, it should be noted that even though the calculus proposed by Forrest follows the sketch supplied by Hartman, valuemetrics differs from this sketch in two important aspects. First, where Hartman assigns a numerical value of $\aleph_0$ for extrinsic objects, Forrest assigns a finite numerical value k. As mentioned above, Forrest

explains this variance by Hartman's claim that Human valuators can only consider a finite number of properties when considering any extrinsic object. The result of this difference is exhibited in the difference between Table D (which depicts Hartman's schema) and Table F (Forrest's schema). In particular, where under Hartman's scheme there are four combinations that have a calculates value of "I," under Forrest's that number is reduced to two combinations. Since there is only four possible calculated secondary values, the trade off is an increase of the number of combinations with a calculated "E" value — one under Hartman's scheme, while Forrest's produces three. (The symmetrical change in the disvaluations, *i.e.*, the "- Exponents," is disregarded given the impossibility of defining division for transfinite cardinalities discussed above.)

Second, and more significant, is the introduction of the idea of a justified (or unjustified) disvaluation. Hartman is quite clear that disvaluations, indicated axiologically as transpositions of values, always represent badness. Forrest introduces the idea that some transpositions can be justified, *i.e.*, that some bad acts are justifiable. For example, he considers the situation of killing fish for food. 'Killing fish' is an extrinsic disvaluation of an extrinsic object, or a second order E^{-E} transposition, which has a value of $E^{-E} = 1/E$. This would be the axiological value of killing a fish for no other reason than killing it. But if we kill a fish for food, this adds the additional consideration of gaining sustenance, transmuting the second order transposition into a third order composition, specifically $E^{1/E}$. The question then becomes: $E^{1/E} = ?$ The general form of this question, $X^{1/Y} = ?$, does not have a specific answer. But a method of roots, as describe in Forrest's paper above, will give solution to some of these equations. Some, however, will have no solution. For those situations that have solutions, Forrest claims that the badness is justified. In our "killing fish for food" example, $E^{1/E}$ has two possible solutions, S or E. Thus, killing fish for food while bad in a strict axiological sense, is justified. But the axiological equation for killing a person for food, $E^{1/I} = ?$, has no solution and so is both bad *and* unjustifiable. This additional conceptual apparatus of justifiability, and the possible partial redemption of bad acts implied by justifiability, is well beyond anything suggested by Hartman in *The Structure of Value*, and is an intriguing and promising addition to formal axiology.

B. Moore's Quantum Wave Model of Value Theory

From the paper given above, and his earlier "A Quantum Wave Model of Value Theory," it is very difficult to determine exactly what Mark Moore's value calculus is. The challenge is to separate the rhetorical chaff which Moore surrounds the kernel of his calculus. So in what follows I will refrain from commenting upon the proper use of unit circles, quantum mechanics, wave interference, vector calculus, or trigonometry. Instead, I will focus on the model of value theory proposed by Moore. Because this model consists of a method for

assigning numerical values for S, E, and I, and for calculating combinations of these values by arithmetic operations, this model comprises a value calculus. Thus, for our current purposes, the additional befogging and magniloquent conceptual embellishment can be sidestepped. Once by these trappings, a very interesting value calculus emerges. To aid in avoiding these trappings, I will refer to the calculus as the Moore Value Calculus, or MVC.

In an attempt to avoid technical problems facing valuemetrics, as well as evade some philosophical problems infinities proposed by Rem Edwards (Edwards, 1973; Dicken and Edwards, 2001, 139 and 146-149), Moore eschews the use of transfinite cardinalities in his value calculus. Instead he assigns finite numerical values 0.16, 0.33, and 0.50 to S, E, and I, respectively. In this way, MVC satisfies the Numerical Criteria (C1).

MVC also has an iteratable arithmetic method for calculating value combinations. To see this requires some mathematical unpacking. (What follows is informed by a series of private communications with Mark Moore. My sincere thanks to him for his patient responses to my numerous queries.)

Moore gives the following formula for value calculations:

(eq. 2)

$$a^2+b^2 = [\, c^2+2\times a\times b\times \cos(\text{theta})] \; *[\text{sign}\,(a) * \text{sign}(b)],$$

where the signum function is defined as: sign(x) = -1 if $x < 0$, +1 if $x > 0$, and 0 if $x = 0$.

As a useful arithmetic operation for value combinations, this formula is unwieldy, and it is not obvious that it can do the trick of combining two values. To see this, let us look at the combination process more carefully. As described by Hartman, any value combination, no matter the order and no matter whether it is a composition or transposition, are always of two known values. Following this, it is necessary that the arithmetic operation used to calculate combinations must act like a function that takes two arguments. In other words, the arithmetic operation must calculate a particular numerical value from two known values. Note that Forrest's calculus did exactly this, since the operation of exponentiation takes two values, a and b, and produces a third value c, by means of the equation, $a^b = c$. To put this in function notation, we are looking for an arithmetic operation of the form, $c(a,b)$.

Eq. 2 can be rearranged so that it begins to look more like the form needed. If we solve eq. 2 for c, we get,

eq. 3
$$c = \sqrt{\frac{a^2 + b^2}{sign\,(a)\cdot sign\,(b)} - 2ab\,\cos(\,\theta)}$$

.

In this form, it is clear that (eq. 3) will not suffice for an equation for value combinations since c is a function of three variables, a, b, and θ. Moore, however, defines θ as,

(eq. 4) $$c = \left(\sqrt{(.33)^2 + (.50)^2 + \frac{2 \cdot (.33)^2 \cdot (.50)}{\sqrt{(.33)^2 + (.50)^2}}} \right) \cdot sign(.33) \cdot sign(.50)$$

Combining eqs. 3 and 4, and pulling the signum functions outside the radical, yields,

(eq. 5) $$\theta = \frac{a}{\sqrt{a^2 + b^2}}$$

We now have an equation of the form, $c(a,b)$ that can be used to calculate value combinations.

The process, once we have eq. 5, is straight forward. To calculate a value composition, the numerical value of the base is entered for a, the numerical value for the superscript is entered for b, and the resulting numerical value for the combination is then given by c. For example, the calculation for the secondary value combination E^I is given by:

$a = 0.33$
b = 0.50

$$c = \left(\sqrt{(.33)^2 + (.50)^2 + \frac{2 \cdot (.33)^2 \cdot (.50)}{\sqrt{(.33)^2 + (.50)^2}}} \right) \cdot sign(.33) \cdot sign(.50)$$

= (0.7353) • (+1) • (+1)
= 0.7353.

In contrast, in cases of disvaluations, the subscript value will carry a negation (an alternative notation by Hartman). For example, the calculation for the transposition E_I is given by:

$a = 0.33$
b = - 0.50

$$c = \left(\sqrt{(.33)^2 + (-.50)^2 + \frac{2 \cdot (.33)^2 \cdot (-.50)}{\sqrt{(.33)^2 + (-.50)^2}}} \right) \cdot sign(.33) \cdot sign(-.50)$$

= (0.7353) • (+1) • (- 1)
= - 0.7353.

Accordingly, by eq. 5 we can calculate numerical values for every combination of S, E, and I, and thus, MVC satisfies (C2).

Eq. 5 is also indefinitely iteratable. For example, $(E^I)^I$ can be calculated by using the calculated value of E^I, 0.7353, for *a* and the value assigned to I, 0.50, for *b*, yielding *c* = 1.827. In this manner, any value combination of any order can be calculated by repetitive application of eq. 5. Thus, MVC satisfies (C3).

This feature of the MVC has nothing to do with the iteration Moore discusses when he considers "Does size matter?" (pp. 183-184 above in this issue). Here, Moore is considering "the iteration of moral or immoral acts." (p. 183 above) This ability to deal with the repetition of moral acts, however, is different from the iteration criteria of (C3), which requires that the value calculus produce numerical values for iterations of value combinations. To capture mathematically the repetition of acts, Moore suggests increasing or decreasing, depending on the sign of the act, the original value by its cosine (calculated in radians). For example, repeating an act with the value +2 would yield value for the two acts of 2 + cos(2) = 2.42. It is interesting to note that, because the mathematical iteration of $y=\cos(x)$ converges on an asymptote for any starting value of *x*, Moore's proposal ultimately means that size does not matter — that, for example, murdering 4 people is no better nor no worse than murdering 2,000,000. See Moore's calculation result on p. 183 above. It is puzzling that Moore would suggest this method for dealing with repeated acts, since he complained about this same feature of Forrest's valuemetrics (Moore, 1995, 172).

Furthermore, eq. 5 generates a unique value for each of the eighteen second order value combinations (see table in Moore above). Thus, unlike valuemetrics, MVC satisfies (C2a). It is perhaps too strong to say that MVC "Saves the HVP," however, since the order of the ranking is not exactly the same as that given by Hartman, but the fact that it supplies a unique ranking gives it an advantage over valuemetrics [as has been argued in (Edwards, 2007)].

Unfortunately, when we consider (C1a), this ascendancy of MVC over valuemetrics is short lived. Whereas valuemetrics has a specific conceptual link to the AFA, with the numerical values being the cardinality of the relative intensional sets, MVC has no such conceptual link. To be more specific, Moore arbitrarily chooses three finite magnitudes, 1, 2, and 3, normalizes these values by dividing them all by 6 (*i.e.*, 1+2+3) to get the values .16, .33, and .50 for S, E, and I, respectively. There is no connection of these numerical values to any facet of the AFA. There isn't even an attempt to make a connection. The lack of such a connection raises the worry of whether MVC has any descriptive or explanatory warrant. To put the point another way, MVC can give no answer to: Why these numerical values? Why not 1, 10, 100? Or 2, 4, 8? The only answer available to Moore is that he has given a mathematical model, one which may or may not by an accurate description of the axiological foundations, but one that produces eighteen unique secondary values, and values for all higher order combinations.

This is, of course, the problem with all models, whether they be meteorological, financial, or cosmological — since they lack any connection to vetted, certain foundations, their accuracy is not ascertainable. So while producing value combinations is an improvement over Forrest's valuemetrics, the lack of a foundational link to the AFA means that MVC cannot be the conceptual bridge that supports the HVP.

In summary, both Forrest's valuemetrics and Moore's MVC have favorable features, but neither does everything required of a satisfactory Hartman-style value calculus. Forrest's calculus stays faithful to Hartman's sketch, utilizing transfinite cardinalities for the numerical representation of the three values and guaranteeing a tight conceptual tie to the AFA. But, due to the oddities of transfinite arithmetic, it cannot give numerical values at all for value transpositions, nor can it give a unique numerical values for secondary value compositions. In contrast, MVC can successfully generate unique numerical values for value combinations of all ranks, but there is no conceptual connection to the AFA. In this respect, valuemetrics and MVC represent a tradeoff — valuemetrics has a strong conceptual tie to the AFA, but cannot get all the value combinations we want, MVC can calculate those value combinations, but has sacrificed the conceptual link to the AFA in doing so. I don't think that this is a necessary tradeoff, that successful value calculations and conceptual founding are mutually exclusive. Clearly, however, significant and daunting work lies ahead on either calculus for it to fill the lacuna left by Hartman.

3. Killing One to Save Five

The comments of the previous section about the various strengths and shortcomings of valuemetrics and MVC have been made by examining the operation of each calculus in isolation. A startling feature of these calculuses becomes apparent, however, when they are applied to the same value situations. At the risk of spoiling the surprise, this feature is that the calculus is doing much less work than might be believed. In fact, with both of these calculuses, *the majority of the axiological reasoning is made before the calculus comes into play*. Accordingly, the main axiological results can be determined without recourse to the calculus. Thus, the calculuses as they are currently formulated appear to do little axiological work. If this characterization is correct, then they cannot be integral parts of a formal science of axiology, they can be at most thin mathematical veneers on previous axiological judgments.

To see this, lets look more closely at Forrest's and Moore's treatments of the two scenarios of killing one to save five. Recall that these two scenarios are:

> (A) A doctor kills a patient without being caught and use the patients organs to save five other patients.
>
> (B) A person kills an aggressor to prevent him from killing five other persons.

To begin with, lets look at the analyses of each author separately.

Forrest begins his analysis of (A) by noting that "killing a person" is described axiologically as the extrinsic disvaluation of an intrinsic, that is, by I_E. Saving five people is a valuing of those people, so killing one of one to save five is $(I+I+I+I+I)^{(\ I}{}_{E)}$. Employing transfinite arithmetic, we know that I+I+I+I+I = I, and that $I_E = 1/I$. Substituting, we then get, $I^{1/I}$. Using the method of roots, we see that $I^{1/I}$ = ? has no solution, that is, $I^{1/I}$ is indeterminate. Thus, Forrest concludes that the killing of one person to harvest his or her organs in order to save five others is good, since the end valuation is a composition, but it is unjustified. For his analysis of scenario (B), Forrest begins with the murder of five people, the intrinsic disvaluation of five intrinsic objects, or $(I+I+I+I+I)_I$. Since I+I+I+I+I = I, the value of the murder of five people is simply I_I, or $1/I_2$. The prevention of the murder of five is tranpositional, thus such prevention has a value of I_2. If such a prevention requires the killing of a person, I_E, then the prevention of the murder is valued by such, yielding $I_2{}^{I}{}_{E}$, or $I_2{}^{1/I}$. $I_2{}^{1/I}$ is determinate. Thus, the killing of an aggressor to prevent him form killing of five others is a good action, again because the last combination, $I_2{}^{1/I}$ is a composition, and it is justified. Hence, under Forrest's analysis both (A) and (B) are good actions, but (B) is justified while (A) is not, implying that (B) is a better action than (A).

When Moore analyzes scenario (A), he begins by evaluating the murder of a person, in contrast to the natural death of a person, as the quinary value combination, $I^{IIE}{}_{I}$. Passing this through eq. 5 above yields the numerical value -2.19. Murdering to harvest organs adds the extrinsic value of the harvest to the description, making it $I^{IIE\ E}{}_{I}$ = -1.86. Since this action saves five people, not just one, this must pass through the repetition algorithm, $y = \cos(x)$ five time, giving an end numerical value of -1.57. Because this numerical value is negative, the action is bad. In contrast, Moore describes the act of killing a murder to prevent a murder as $I^{IIE}{}_{E}{}^{I}$ = -1.70. And since five people are saved by the murder of the murderer, the repetition algorithm is again employed, yielding an end value of -1.57. Thus, by Moore's analysis the action in both (A) and (B) is bad, and, interestingly, is identically bad.

Please note, in both of these treatments of the two scenarios, before the value calculus can be engaged, an axiological description of the scenario must be constructed. In fact, if you look back over the descriptions of the analyses given above, the operations of the value calculus are suppressed, and yet the axiological reasoning is clear to see. It is because the reasoning, the determination of the axiological worth to be assigned to each scenario, occurs in the process of constructing the axiological description, and not at the level of the calculus. It is the description that is doing all the work. To make these points clear, both that the axiological description is separate from the calculus and that the work is done at the level of the description, we can cross apply the calculuses to the descriptions. In other words, below I will use Forrest's axiological description with Moore's calculus and *vice versa*.

First, let's apply Forrest's value calculus to Moore's axiological descriptions. For scenario (A), Moore ultimately gives the value description $I^{IIE\ E}_{\ \ I}$. Through a process of substitutions (with some extrapolation on the transfinite arithmetic and assuming division can be defined), we get,

$I^{IIE\ E}_{\ \ I}$ $= (I_2)^{IE\ E}_{\ \ I}$ (since $I^I = I_2$),
$= (I_3)^{E\ E}_{\ \ I}$ (since $I_2{}^I = I_3$),
$= (I_3)^{E}_{\ I}$ (since $I_3{}^E = I_3$),
$= (1/I_4)^{E}$ (since $I_3{}^{-I} = 1/I_4$),
$= 1/I_4$ (since $(1/I_4)^E = 1/I_4$).

Similarly, Moore describes scenario (B) with $I^{IIE\ I}_{\ \ E}$. Following the same method for solving, we have,

$I^{IIE\ I}_{\ \ E}$ $= (I_2)^{IE\ I}_{\ \ E}$ (since $I^I = I_2$),
$= (I_3)^{E\ I}_{\ \ E}$ (since $I_2{}^I = I_3$),
$= (I_3)_{E}{}^{I}$ (since $I_3{}^E = I_3$),
$= (1/I_3)^{I}$ (since $I_3{}^{-E} = 1/I_3$),
$= 1/I_4$ (since $(1/I_3)^I = 1/I_4$).

Thus, under Moore's descriptions with Forrest's calculus, we have the result that both (A) and (B) are bad, since they both are transpositions, and they are identically bad, *i.e.*, 1/ I_4. This, if you will recall, was the axiological result of Moore's analysis.

Let's do the converse; Forrest's axiological descriptions with Moore's calculus. For scenario (A), Forrest ultimately gives the value description $I^{(I_E)}$. In Moore's calculus, I_E = -.7964. We can now use this value in eq. 5 to get a numerical value for $I^{(I_E)}$. From the description, I is the base, or a = .50, and I_E is the valuator, or b = -.7964. But we must change the sign of b, since a negative indicates a transpositional combination, and we need to calculate a compositional combination. So, with a = .50 and b = .7964, eq. 5 yields c = 1.144. This is the value for killing one to save one. Running this value through the repetition algorithm five time, yields an end value of 0.5710 for killing a person to harvest his organs to save five others. For scenario (B), Forrest describes the murder of an individual as I_E, which in Moore's calculus has a value of -.7964. Forrest then considers the murder of five people, which by Moore's repetition algorithm, is -1.571. Forrest then describes the prevention of the murder as a transposition, which in Moore's calculus means the changing of the sign, *i.e.*, 1.571. In conclusion, the killing of a person values 'no-murder'. In Moore's calculus, this means that in eq. 5, a = 1.571 and b = .7964 (to insure a composition), which yields c = .9330. Thus, we have the result that under Forrest's description with Moore's calculus, both actions in scenario (A) and (B) are good, but, by means of the higher numerical value, (B) is better. As you will recall, this is the axiological result of Forrest's analysis.

By this exercise, I've shown that, in both Forrest's and Moore's analyses, the axiological descriptions of scenarios can be separated from the value calculus. And in both cases, the large scale axiological determinations that matter

is such moral situations, *i.e.*, which action is better to take, the results follow the axiological descriptions and not value calculuses. This implies that all the axiological work is done in the describing process, and that the calculuses are little more than mathematical window dressing. Whether this is as it should be, or if it is important that a Hartman-style value calculus add something that cannot be expressed in an axiological description alone, I will leave to wiser heads.

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