VALUESCIENCE

Preface

Thank you for opening this writing and affording me opportunity to share with you an insight by which I and others have dramatically improved our lives.

My 60th birthday looms near. I'm acutely aware of mortality. Already half born the same day as I are dead. Actuaries estimate I've but a quarter of my days ahead.

I feel an intensifying sense of privilege. I've lived longer than many and may yet live more. I've enjoyed what I perceive to have been extraordinary health, wealth, and freedom.

Increasingly grateful for each moment, I've growing determination to further common good. I delight in the thought that readers may discover in this distillation of my experience means to better your and others' lives.

I've found valuescience a tool without parallel for living better. Many near and distant have given me opportunity to learn it. I offer that now to you.

Simple in concept, valuescience is immense in implication. Anyone can practice it and learn to practice it better in every aspect of living. With it we can know and get what we want with results superior to those attainable by any other approach.

You're reading work in process. I publish it now for two reasons. First, I'm asking friends and colleagues to assist me in improving it for broader distribution. Second, I think readers may gain by having access to it in its current form.

I am without pretense to "proving" the case for value-science. Rather, I intend to stimulate assessment and discourse.

I've written quickly and from memory, omitting all but a few specific illustrative examples and references. I plan to include these in revisions and will welcome your suggestions.

More people have contributed to this writing than I am aware. Even those whose names I know are too numerous to list in many more pages than are here. I'm grateful for family, friends, teachers, colleagues, donors and clients who have given life, material, and money that I might write.

I perceive that we attribute too much to individual action, and too little to social. To redress this in some small way, I've omitted my name from title and cover pages.

Writing is a collaboration between author and reader. Whatever I intend, you now determine what is communicated. Thank you for reading, and for considering. I look forward to your comments and questions.

David Schrom
Palo Alto, 2006

Introduction

As you and I go about our days, we ask repeatedly, "What do I want? Shall I get up or sleep more? What shall I eat and drink? What shall I wear? What work shall I do? What shall I purchase? With whom shall I interact? What shall I say? How can I be a good child? Parent? Spouse? Sibling? Friend? Neighbor? Colleague? Citizen? How can I contribute to common good? What habits shall I reinforce and which shall I break? What character traits shall I cultivate? Which shall I seek or encourage in others? For what principles shall I stand at home, at work, in politics, and elsewhere?" Responses to these and countless similar questions reflect ideas about value.

This writing is an exposition of valuescience, scientific methods and principles applied to questions of value. The essential argument on which valuescience is founded is as follows: ideas about value are future-oriented and entail prediction; science is the sole demonstrated method for making predictions better than we can make by chance; thus, science is how we more accurately discern and more fully realize value.

This argument may be unfamiliar to you and inconsistent with things you've long taken for granted. I'm aiming with what follows here to achieve a narrow objective. I want you to be able, if asked in my presence, "What is valuescience?" to respond so that I nod and say, "Yes, that's what I sought to communicate."

I accept that you may continue by saying, "And I think it's nonsense!" My purpose is to stimulate questions rather than to engender belief. I'm writing as someone who prizes learning over knowing, and I'm writing for others with this preference. I enjoy wondering, "How do I know?" and I want to share this joy.

I realize that the issues I raise are philosophically and semantically profound and complex. I do not pretend that they can be dispensed in a few thousand words, or at all. I do think that there are "low-hanging fruits"—readily accessible improvements to our lives—accessible with valuescience. I'm eager to harvest these and to contribute to others' doing so.

A teacher once suggested to me that when I encounter a new thought that I deem incompatible with one I already hold with some certainty, I try on the former much as I might try on a new pair of shoes. She reminded me that new shoes feel almost always less comfortable than old. She also noted that after a breaking-in period, we're able to make an informed choice between new and old, and possibly gain by doing so. And she emphasized that such benefit becomes available only after we set aside what we think we know in order to learn.

Over the past thirty years as I've worked to understand valuescience, reap its rewards, and partner with others in doing so, I've been repeatedly reminded of the advantages of what famous Zen teacher D. T. Suzuki called "beginner's mind." With "beginner's mind" we read and listen initially to understand, rather than to agree or oppose. We question first to clarify rather than to challenge. We search as earnestly for kernels of novel truth as we do for errors.

On the basis of what I've gained and seen others gain by studying valuescience, I feel confident promising that if you make of this writing a case for it as strong as you're able, you, too, will be well rewarded.

Problem

Life is a process. In all but the rarest circumstances we live with the desire and the expectation that we will live more. We recognize that a variety of futures may be open to us. We prefer some over others, and we act towards these.

Repeatedly we discover that we're mistaken in our preferences. I recollect jobs, dates, and other experiences that I anticipated eagerly and wound up stolidly tolerating or abandoning altogether. I also recall exams, competitions, and like events where I failed to achieve goals despite what I felt confident was adequate preparation. You very probably can remember similar disappointments.

Such occurrences are common. Their signal qualities are foregone pleasure and endured discomfort. Though often singly trivial, they're cumulatively substantial. They're most noticeable and entail greatest loss when they reveal large discrepancies between anticipated and actual outcomes in important parts of our lives. Such revelations can be trying, even devastating.

A friend was a passionate peacemaker. He practiced and promoted mediation. Despite awareness of medical science confirming the importance of adequate sleep, he worked hard and played hard eighteen hours a day. Driving down the freeway one sunny September afternoon he fell asleep at the wheel, slammed into a concrete abutment, and was dead at forty. He thought he knew what he wanted. Did he?

In the early 21st century tens of millions of Americans are becoming obese and developing diabetes, high blood pressure, and cardiovascular disease. We think we want lives with little physical work and easy access to sweets and fats. Do we?

Around the world, well-meaning people are conducting "development" projects to improve human well-being. In Bangladesh, a consortium led by UNICEF and funded by the World Bank drilled ten million tube wells to provide "clean" drinking water. More than half the wells contain dangerous levels of arsenic. Tens of millions of Bangladeshis now suffer chronic arsenic poisoning. The World Health Organization calls this "the biggest mass poisoning in history." We thought we knew how to improve Bangladeshis' lives. Did we?

These examples are a tiny sample of a ubiquitous phenomenon. Since birth you and I, and people everywhere have been working to know better what we want. Though we've achieved some success, I've yet to meet anyone who is without desire for further improvement. Even if we're largely content with our individual lives—perhaps especially when we feel this way—we may want to more effectively contribute to common good.

Generally we attempt progress through well-established patterns of thought and action. My friend, the peacemaker, sought to increase the popularity of mediation by working longer hours and sleeping less. At any moment tens of millions of Americans are dieting to lose weight and become healthier. Philanthropists and social welfare workers worldwide are promoting economic development to better the human condition.

All of these are paths are well-traveled, long-accepted, and only infrequently subjected to serious challenge. Yet none consistently yields its desired results. Workaholism and sleep deprivation are documented contributors to morbidity and mortality. Each year 100,000 auto crashes, resulting in 71,000 injuries, 1,550 fatalities, and $12.5 billion in economic damage result from driving while sleepy. Peer-reviewed scientific studies show that only a small fraction of dieters lose weight and remain lighter for life. Traditional standards of economic development are so inadequate as measures of well-being that the

UN has proposed a Human Development Index to replace them. One nation, Bhutan, has actually superseded them with an Index of Happiness.

We can view our problem as three-part. First, we often don't know what we want. Second, despite our ignorance, we think we know. Third, even when we admit that we want to know better, the means we use to do so are often insufficient.

How We Think We Know

To begin to understand how we've arrived at our predicament and how we may be able to extract ourselves, let's look at how we think we know. Humans acquire information from two sources: genes and experience.

We are from conception genetically informed to wants and to behaviors for satisfying them. Embryos remove nutrients from mothers' blood and return wastes to it. Newborns take their first breaths, crawl to mother's breast, and nurse. Babies sleep. They cry if cold, hot, hungry, thirsty, tired, or left alone. They shy away from bright lights and loud noises.

As we grow and develop, genes play a continuing role in our evolving wants and our actions to satisfy them. We roll over, crawl, walk, and run. We cooperate and compete, court and mate.

Humans and many other life-forms have evolved means for complementing the information in our genes. We learn. That is, we alter our structure on the basis of experience. By "structure" I mean physical characteristics that include everything from big biceps developed by lifting heavy objects, to neurons connected as a result of speaking Mandarin. Learning as defined here occurs from the moment of conception.

Inquiry about the roles of nature (genes) and nurture (experience) began in prehistory and continues to this day. For our purposes we need not precisely specify the import of each. We need only remember that each plays a role, and that we may sometimes be able to assess, if only crudely, their relative influence.

Organisms persist individually and as species by maintaining a match between internal structure and environmental quality. I use "environment" in its ecological sense: all with which an organism interacts. For humans the environment encompasses other people, other life, and abiotic entities, both natural and artificial.

Genes

We've strong evidence that the environment is changing more rapidly than at any prior time during human tenure, but that our genes are evolving at the same rate that they have for millions of years. Over the most recent several centuries, anthropogenic environmental disruption has accelerated to rates which for some factors (e.g., loss of biodiversity, increase in human population) are orders of magnitude greater than those which had prevailed for millions of years. Yet 98.4% of human genes remain identical to those of our chimpanzee relatives, with whom we last shared a common ancestor about five million years ago.

To the extent that ideas about what we want and how to get it are genetically informed, they reflect little of recent environmental change. As a result, they may poorly equip us for life in the modern world. What was necessary to thrive on the African

savanna millions of years in the past may be of little use in a 21st century metropolis. The consciousness required to wield chimpanzee technology (e.g., sticks to "fish" for subterranean termites) seems pitifully insufficient to safely oversee thousands of powerful synthetic drugs, billions of tons of radioactive waste, and the other consequences of human technologies.

Cognitive scientists confirm this. They're accumulating mounting evidence that humans are genetically informed to a multitude of perceptual and reasoning biases, all of which compromise our capacity to discern what we want. Piattelli-Palmarini has shown that we demand far more compensation for assuming a one-in-a-thousand risk of death than we'll pay to eliminate that risk. Such asymmetry is irrational, yet we stubbornly adhere to it. Tversky and Kahneman have drawn attention to a variety of illusory phenomena, like "hot streaks" attributed to sports figures. Despite overwhelming data disproving these notions, we cling to them. Clearly our genes are imperfect bases for informing wants.

Experience

Perhaps you're thinking along the lines of, "Surely we can offset the shortcomings of genes by learning". Yes, and no.

For much of *homo sapiens*' existence, we've interacted with an environment little altered by us. Learned information was tightly coupled to structures and processes of the natural world. This coupling increased the likelihood that lessons we drew from experience remained faithful representations of the environment.

As humans have become more numerous, spread across Earth, and reshaped even its most remote reaches, we've learned more often from each other. The leverage represented by vicariously experiencing through others operates both to our advantage and to our detriment. We sometimes learn from others' mistakes, and we also sometimes learn them.

In the early 21st century each of us swims in a sea of people and artifact. By expanding the number of media by which we communicate and by developing additional means to acquire, store, retrieve, transmit, and process more information more quickly, we've become largely removed from direct experience of the natural world. A vast and rapidly growing fraction of our experience is now symbolic and virtual.

With reduced access to unaltered nature, we've less feed-back from natural systems to qualify learning. As a result, we're becoming more vulnerable to each other's misinformation.

This vulnerability is amplified by the tempo and timing of our lives. With cars, boats, trains, and planes we physically move tens, even hundreds or thousands of times faster than any but the most recent few generations of our forebears. In activities ranging from television watching to military maneuvers we synchronize action with thousands or millions of others to the minute or even the split-second. Urged to speed and constrained to act in lockstep, our opportunities for solace and reflection beyond the shared assumptions of a global society are rare and diminishing.

World-view

We harbor a subset of information so long taken for granted and so deeply embedded in our thinking as to have become almost invisible to us. This context is sometimes termed a personal cosmology, or more simply, a world-view.

From predisposition and experience each individual stitches together a world-view. Neuroscientists have established that children form rudimentary world-views very early in life. We typically are capable of expressing theories about important aspects of how the world works at age five. While we may refine our world-views throughout our lifetimes, we ordinarily have made them substantially complete by early adulthood.

World-views are both foundations for, and constraints upon other thought and action. Those who think the world may be round sail west to reach the East. Those who think it flat stay near shore for fear of falling off the edge. The difference is less that one view is "right" and the other "wrong" than that one persists for want of challenge and the other is confirmed or refuted by experiment. To evolve an authentic self, rather than travel from womb to grave on a predetermined trajectory, we continuously test and evolve our world-views.

A world-view is a mental model. Like all representations, world-views are different from the thing represented. As Alford Korzybski, father of general semantics theory famously observed, "A map is not the territory."

Because we inform so much with our world-views, their imperfections, especially those near their cores, have immense potential for harm. Such potential is multiplied as more of us adopt a particular world-view, and as we wield more powerful technologies.

In the early 21st century, humans are accelerating a multi-century process by which a world-view underpinning and reinforced by Anglo-American political economy is displacing other viewpoints. That process has proceeded to the point where elements of the Anglo-American world-view are vying for, some argue have achieved global hegemony.

I was born into this world-view and I continue to carry much—almost certainly more than I realize—of it. You, too, probably have made parts of it your own. Even if you were born into a non-Anglo-American culture, your reading English evidences that you've been touched by this way of seeing and attendant ways of being.

Most individuals holding the Anglo-American world-view share certain ideas about value, about science, and about their relationship. We consider moral values different in kind from other value. We apply science to learn about how the world works, and to manipulate it to realize certain kinds of value. But we consider ethical questions beyond the domain of science.

These ideas are central to our world-views and to our lives. If they're flawed, we're at dire risk. When we misperceive value, we're living illusion—forfeiting available satisfaction and enduring unnecessary deprivation and pain. If science is a way to shed such illusion and we fail to use it, we're prolonging our difficulties needlessly. If we leverage our illusions with scientific know-how we're multiplying our losses. A more efficacious prescription for human undoing than irrevocable misinformation guiding increasing power is hard to imagine.

Knowing Better

Information ill-matched to the environment, whether genetic or experiential, is illusion. To adapt we shed illusion.

Recently researchers have made substantial progress in illuminating genetic mandates, predispositions, and possibilities, and in qualifying the lessons of experience. Only a few years ago microbiologists completed a map of the human genome. Sociobiologists are providing insight into the evolution and adaptivity of cooperation and competition, sexual fidelity and promiscuity, and many other behaviors. Social psychologists have developed and published guidelines for avoiding common pitfalls in reason, for resisting undue influence of others, and for seeing through false claims of advertisers and demagogues. Robert Cialdini's book, *Influence*, is an example.

A growing number of people are engaged in practices aimed specifically at developing greater awareness of self and surroundings, and at becoming better able to assimilate and act on these insights. Buddhism, with its emphasis upon contemplation, is becoming more popular worldwide. Its practitioners are playing prominent roles in prompting widespread reconsideration of costs and benefits of alternative strategies in endeavors ranging from conflict resolution to health care.

Though still far from definitive answers in many realms, we now more clearly than ever before are able to characterize individual and common "nature" and "nurture." With this knowledge we're gaining ability to sift through ideas about what we want, and to evolve our understanding and behavior in matters ranging from food and sex, to child-rearing and business management so that we and those with whom we interact are more often satisfied.

Despite the importance of core ideas about value, science, and their relationship, few of us give them much thought. Recall, if you're able, how you acquired your views about these topics, and the last time you substantially altered or even carefully reconsidered them.

Valuescience rests on a radically different approach to these topics. I do not claim that this approach is "right." Rather I invite you to test for yourself whether you can use it to live better.

Value

You and I underpin and explain our lives—how we eat, sleep, dress, relax, travel, vote, earn, save, spend, parent, govern, reproduce, love, worship, and more—with ideas about value. Through action based upon, and justified with these, each of us affects personal well-being, social relations, and environmental quality. As humans become more numerous and wield more powerful technologies, we and our surroundings increasingly mirror our ideas about value.

Today many draw a distinction between commercial and ethical values and practice nearly diametrical approaches in these realms. In commerce we aim to give only what is necessary and to take as much as is available. In ethics we strive to give as much as we're able and take sparingly.

By dichotomizing value we incur substantial costs. The worlds of commerce and ethics overlap. We care about those with whom we work, from whom we buy, and to whom we sell. We choose partners in these activities in part on the basis of what we

perceive to be their ethics. By adopting opposing ideas about value and conflicting rules of conduct pertaining to value in commerce and in ethics we guarantee cognitive dissonance and discomfort. We purchase for the lowest price and then feel nagging doubts about how we've affected those who've served us and the environment we share.

Furthermore, as we subsume more and more social relations (e.g., child care, elder care, food preparation) into the commercial exchange economy, we give ethics and concern for others ever shorter shrift. We also displace other types of interaction, including gift and barter, which for most of human tenure have been extensive and important means to maintain the fabric of society. In the process we become increasingly alienated.

By the language with which we talk about value we reflect and reinforce the dichotomy between commerce and ethics. We commonly use the singular "value" to describe most kinds of value, and the plural "values" to describe moral and ethical value. This usage has a near inverse in use of "goods" and "good" to mean economic goods and moral good respectively.

I've yet to find other English words in which the plural has a meaning so distinct from the singular, let alone a pair in which the plural of one is synonymous with the singular of the other, and vice versa. These semantic anomalies are non-trivial. As discussed above, their impacts on thought, perception, and action, are profound, pervasive, and pernicious.

Many today recognize something amiss in the realm of value. Reformers typically propose narrow remedies or advocate a predetermined and inclusive set of prescribed values. Campaigns for honesty in politics and for socially responsible investing are examples of the former. Exhortations to one or another creed or moral code typify the latter. While we may achieve limited gains by these approaches, we require something more universal and adaptable if each of us is to successfully respond to a full range of current and emerging questions of value.

How might we define value to capture the many things that people mean by that word in the contexts of both commerce and ethics? I propose that we redefine value to mean, "what people want." (As I noted previously and discuss at length below, what people want is demonstrably different from what people think we want.) With the definition offered here I encompass possible wants as diverse as a fair price on a contemplated purchase, personal integrity, and world peace.

Some balk at redefining words, arguing that those who do so make communication more difficult. All who use language evolve it to reflect changing understandings and shifting priorities about what to communicate. Value is derived from a Latin word for strength. The root of the Latin word is traceable to an earlier Indo-European proto-language, where it had a similar meaning. Value and its antecedents have been used for millennia to denote strength, and for centuries to denote strength of preference. By the definition proposed here I reinforce this long-standing and fundamental meaning.

For more than a century philosophers and social scientists have demonstrated connections among language, thought, perception, action, and social structure. By redefining value, we may contribute to a more integrated understanding of a pivotal concept in human thought, and lay a foundation for collateral change in myriad aspects of life.

Ideas About Value v. Value

People commonly assume that we know what we want, and we act as if we do. Yet we've abundant evidence that we often know poorly what we want. We eat for sustenance and pleasure and reap degenerative disease and pain. We marry for love and divorce with rancor. We adopt a death penalty for murderers and execute innocents. Mistaking ignorance for knowledge we act boldly and with unexpected and sometimes tragic effect.

We've arrived at these straits by imagining that we might choose our values by inventing ideas about them. In this we erred.

Ideas about value are distinct from value. They are no more value itself than a restaurant menu is the meals that can be ordered from it. We cannot eat the menu.

Value—what we want—entails interactions between person and environment. It is dependent upon properties of the physical universe, including our own anatomy and physiology, our surroundings (i.e., other people, other life, natural and artificial abiotic entities), and laws of nature. These are largely beyond our power to determine.

Value is ours to discover, rather than to decide. To decide means "to end uncertainty." To pretend that we can decide the value of something—a piece of cheesecake, a beautiful sunset, or anything else—is to mistake map for territory. It's akin to claiming that we can conjure up the gravitational constant or *pi*, or that we can decide when the next full moon, high tide, or earthquake will occur. Like all of these, value is a material phenomena. We influence the material world. We do not control it.

Without claiming any certain knowledge of value itself, we can see that if it entails particular elements, it excludes others. For example, we are constrained in valuing a long and healthy life, junk food, and smoking. Regardless of what we might think we want with respect to these, only certain combinations are available.

The evolutionary process, by which organisms reproduce with variability, and those variants reproduce differentially, is about conforming structure to environmental quality—map to territory. In the case of humans, this includes matching ideas about value to actual value. When we attempt the opposite we undertake an impossible task.

I noted earlier that we inform some ideas about value, including desires for fundamental satisfactions like food and sleep, with our genes, and others, ranging from *in utero* exposure to nutrients and toxins to today's words from our favorite bloggers, with experience. Whatever their source, ideas about value may be poor representations of value.

When we study other organisms to ascertain what they want, we see how they, like we, are informed to discern and to realize want, and that their information, like ours, may be sometimes insufficient to this task. Like us, they think they want things other than what they actually want because, like us, they fail to accurately foresee consequences.

Take the rat that wants cheese, and dies with the snap of a trap. Did the rat want cheese attached to a death trap? How was it like a human who wanted gustatory pleasure and a long and healthy life but who failed to see the coronary artery disease attached to cheesecake?

Please note that I'm not saying that either living or eating is a more real "value." I'm illustrating impossible combinations of values to show how we may lose one or another thing we think we value by failing to see consequences, and how in the absence of

accurate prediction we may collect a congeries of ideas about value that, unbeknownst to us, are mutually exclusive.

Persistence in habitual patterns of thinking and acting about value is the rule. To escape the cycle of misperceived value informing maladaptive action yielding foregone satisfaction and unnecessary pain, we break this rule. Whenever we admit in retrospect that we were mistaken about what we wanted despite conviction that we knew, we've opportunity to see and to acknowledge that we relied upon flawed ways of knowing value. We can make such experiences impetus to critically analyze our methods for discerning value.

Science

Behind the question, "What do I want?" lies a query about method: "How do I know?" Value is dynamic, changing with us and the environment. To bring ideas about value into greater congruence with value itself we require a reliable method for their ongoing evolution. I propose that science is this method. When I make this statement, I'm defining science as behavior by which we discover pattern and improve prediction.

I suggested earlier that by defining "value" and "values," and "good" and "goods" in a manner so different from the way that we customarily distinguish the meanings of singular and plural English nouns, and from the way that we treat synonyms, we reveal peculiarities in our thinking. Here I submit that with customary use of "science" we expose similar anomalies.

Today most English speakers appropriate "science" without modifier to refer to the scientific establishment, to a body of scientifically gathered information, and to applications of that information. Meanwhile we reduce "science" to the adjective "scientific" and couple it to the noun "method" to denote the most essential feature of science—behaviors by which we improve prediction. We require only one word of two syllables to describe derivative aspects of science, but we need two words and six syllables to communicate core meaning.

Consequences of de-emphasizing method and bringing other aspects of science to the fore are many, great, and adverse. People around the world feel excluded from the community of scientists and think of scientific practice as something beyond us. In lieu of science we employ a plethora of worthless methods to make predictions, and lessen our ability to discern and realize value.

Imagine that humans somehow lose the content of the sciences, lose the applications of that content, and dissolve the scientific establishment. If we retain the scientific method, we can recover all of these. Now imagine that we lose the method and retain content, applications, and establishment. Without the method these will eventually disappear and remain lost.

One critically important outcome of using "science" to mean "scientific method" and requiring that other things currently represented by "science" be communicated differently (e.g., "applied science," "scientific establishment," "body of science") may be to reconceptualize scientific literacy to mean facility in using methods which yield successful prediction. With such rethinking we'll parallel the evolution of the meaning of literacy itself, which once denoted familiarity with selected writings and later came to mean the ability to read. Just as we now deem knowledge about a handful of literary

works less important than capacity to decode text and draw meaning from it, so may we someday acknowledge mastery of part of the corpus of science to be less important than facility at observing phenomena in general and drawing meaning (e.g., prediction) from them.

To know whether we're practicing science we measure the degree to which our predictions are better than can be attained by chance. Sometimes we can measure readily (e.g., How likely were lottery winnings or losses a result of chance?). At others (e.g., How likely was our quick recovery from illness a result of chance?), measurement may be more difficult, perhaps impossible, and we're without clear ability to ascertain how well we're practicing. Between these extremes lie a large number of situations where most of us can measurably improve our practice of science, as demonstrated by the accuracy of our predictions. These include much of everyday life - sleeping, eating, parenting, and more.

Many shrink from this task. They assert that complexity of humans and of our interactions with our surroundings poses insurmountable obstacles to knowing to what degree we're practicing science. While this may be accurate in part, it is short of completely true. We've abundant opportunities to become more proficient life scientists (e.g. ecologists, biologists) and social scientists (e.g. psychologists, anthropologists). By evolving our practices in these realms we can put more of our lives on sounder footing.

The life and social sciences are relatively young. Their youth reflects how recently humans have learned to observe and measure the phenomena we study when we practice them. It also reflects resistance to bringing within the domain of scientific inquiry questions that advocates of other ways of knowing have wanted to reserve to themselves.

Progress in these sciences has been rapid, if measured by the predictions they enable. In the early 21st century we've substantial bodies of ecology, biology, anthropology, economics, political science, psychology, and sociology on which to found successful prediction. While there remain large areas of disagreement and dogma, we can anticipate that with additional inquiry, broader interdisciplinary partnership, and continuing technological advance, questions now deemed intractable will yield.

Many think frontiers of science lie solely at the cutting edge of established disciplines. I perceive bounds upon the scope of scientific inquiry to be equally important. There also we can achieve advances with great potential to improve the human condition. The history of science offers numerous examples of questions previously held outside the domain of science that are now within it. The relative motion of the Earth, its age, the origins of life, the source of biodiversity, and how we think and feel are but a few. Ideas about value may soon follow.

Valuescience

Ideas about value—about what we want—are future oriented. Whether we be thinking about sitting down directly or retiring comfortably some decades hence, only in the future can we fulfill want. Every idea about value rests upon prediction that good will come if one or another thing occurs or is avoided.

To the extent that we predict successfully, we discern value with results better than we can achieve by chance. Knowing that the chair is behind and will support us or that our

savings rate and investment portfolio will prove sufficient are essential to realizing wants to sit or retire comfortably.

Again, please remember that I'm not claiming that sitting or retiring are "real" values. I'm only observing that we're better able to discern the extent to which they are if we can accurately predict how to attain, and consequences of attaining them.

Science as we define it here is the sole demonstrated means for making predictions more accurate than those we can make by random guessing. Because ideas about value are predictions, science is the unique method by which humans more successfully discern and more fully realize value. Claims to the contrary are without basis in reproducible experience.

Valuescience - science applied to shed light on questions of value (e.g., "What do I want?") is something that people already practice, often by other names (e.g., imagination, creativity, intuition, reflection, observation, introspection, reason, openness, analysis, skepticism, common sense, good sense, wisdom), and can learn to practice better. It is something we can make conscious and thereby make more prevalent.

Why a New Word?

Valuescience is a new word. The absence of another English word to describe science applied to questions of value reflects and contributes to sustaining long-standing and widespread beliefs that these questions lie outside the domain of science and that humans necessarily rely upon other methods for knowing value. By introducing the word "valuescience," we facilitate communication of a novel, broadly useful concept.

You may be asking, "Why do we need a new word?" or "Why use the word 'valuescience'?" As people more consciously practice valuescience we're making a social revolution. Social revolutions typically entail a linguistic component. To make a valuescience revolution we foment evolution of language.

With valuescience we also succinctly emphasize key components of current and historical definitions of science and value. We reinforce ideas of science as method yielding knowledge confirmed through successful prediction and the concept of value as strength of preference for outcome in any realm. With these connotations we return both words to meanings nearer those English speakers gave them for centuries and nearer those given their Latin and Indo-European antecedents by speakers of those tongues. We also bring their meanings nearer those of contemporary related words. With all of these actions we protect and restore integrity of language and thought.

By introducing the term "valuescience" we also draw attention to a nexus between referents of the words "science" and "value." That link, prediction, is critically important for humans to apprehend.

The word "valuescience" is not such an oddity. In recent decades a number of words similar to it have entered the lexicon. Bioscience and geoscience are examples. Like valuescience, they are integrative sciences drawing people and disciplines together to address a named domain.

To better understand the potential benefits of the word "valuescience," imagine that humans around the world already use it or their native tongue equivalent to describe how we arrive at our ideas about what we want and how to get it. What do you think people will find more or less readily expressible? How do you imagine you and others will think

and act differently? What do you predict will be the results - immediate and more distant - for you and for others? If you want to create this future, speak, write, and practice valuescience.

Summary

With valuescience, we bring a method, science, that has proven singularly effective in many other realms to bear on a central concern, value, historically held beyond its reach. Look at your own life. Where do you consistently predict poorly? In what situations do you repeatedly miss the mark. Perhaps you think you "know how to lose weight," even though you've lost ten pounds ten times and now weigh ten pounds more than you did at the outset. You may have resolved to get sufficient sleep and still be relying on coffee to wake up. Or maybe you think you know how to be loving in conversation with a spouse, despite repeatedly blaming.

I return repeatedly to the examples of eating, sleeping, and relating to others for two reasons. First, they are so large a part of our lives. At any moment, they together account for the activities of more than half of all humans. Second, though so prevalent and so seemingly simple, they are challenging for many of us. I've yet to meet someone who is without desire to improve one or more of them.

Valuescience is means to see patterns of failed prediction and to alter them. We uncover hidden assumptions, look at what we've looked at many times and see something for the first time, break unwanted habit and replace it with action that yields desired results.

Impediments to Valuescience

Impediments to valuescience are many and interrelated. Machiavelli admonished, "No man has so difficult a task as he who advocates a new idea." Valuescience is a very new idea. Our self-concepts and social order depend upon its negation. We, the entities judging its merits, are strongly biased against it. Moreover, we're largely unaware of our biases. Those around us, similarly invested and biased, have tremendous ability to rein us in if we stray from consensus views.

Attachment

Early in life many, perhaps most of us learned notions contrary to valuescience. We now take for granted that humans freely choose what we value, that we can identify immutable values, and that we can know value absolutely.

Having made these ideas part of our world-views and based our lives upon them, we are identified with, even attached to them. They are essential elements of what we think of as ourselves. We take threats to them as threats to us. To some their loss seems almost as fearsome as death.

In actuality, loss of sense of self is very different from death. Though death is final, we can survive destruction of our identity. Dissolution can even be prerequisite to rebirth. A caterpillar must dissolve into formless mush to metamorphose into a butterfly.

Still the prospect of cutting loose from ideological anchors is for most of us terrifying. We're reluctant, or entirely refuse to question fundamental ideas. Sometimes we resist unconsciously. Often we bury resistance under many strata of explanation and justification, most or all reinforced in countless ways each day by those around us.

Valuescience is a concept of a genre difficult to assess and assimilate. It is a direct, complete, and unequivocal contradiction of fundamental ideas long, widely, and firmly embraced. Seeing cherished convictions about meaning, purpose, and self simultaneously and thoroughly at risk, we commonly begin boldly with categorical denial, "That's wrong!"

While we may be healthily skeptical, we may also pathologically deny. Each of us walks a fine line between openness and refusal to consider. If we err in one direction we indulge nonsense. If we err in the other we forego learning.

Self-deception

You and I want to think that we're quick to see and adopt a better way, adept at distinguishing worthwhile information from worthless, and swift to apply it. We've evidence, however, that we may be less these ways than we imagine. People around the world cling to habitual ways of thinking and acting. Millions claim that we want long and healthy lives, yet persist in sedentary lifestyles and unhealthful eating, despite increased morbidity and mortality associated with these.

When we overrate our insightfulness and discriminatory prowess, we're part of a larger pattern. Well over half the individuals in many cohorts, including some widely considered to be exceptionally intelligent (e.g., Harvard faculty), describe themselves as above the median. Nearly thirty years ago experimental psychologists established that people are grossly overconfident in our answers to a broad range of questions. In repeated trials, they showed that individuals were willing to bet money, sometimes accepting staggeringly unfavorable odds, on wrong answers. They also found that although people with knowledge and expertise were more likely to answer questions correctly, the more experimental subjects knew, the less likely they were to acknowledge ignorance.

Such results are sobering reminders that even as we imagine ourselves to be judging well a radically different idea, we may indeed be assessing it poorly. Assume for a moment that valuescience is a "better way" that will someday be widely recognized as such. How will you know?

Imagine that you are alive in the time of Galileo. You and those around you have since birth been taught that Earth occupies a fixed position, and that all else moves about it. What do you think when Galileo suggests that Earth moves? Are you incredulous? Dismissive? Defensive? Curious? Where do you stand in the sequence of contemporaries who come to appreciate his views? Near the beginning? Middle? End? Or do you, like most, carry to the grave rejection of his thesis?

The price of such rejection may have been small. Galileo's proposition had little direct impact on everyday life.

A few centuries later, however, another new idea had much more immediate and practical effect. In the mid-1800's people commonly believed that microscopic organisms were generated spontaneously and more or less continuously from nonliving matter. This

belief was based upon and consistent with others that had been prevalent for at least two thousand years.

Louis Pasteur conducted a series of simple, elegant experiments with which he gave support to a contrary view that for billions of years, life on Earth has arisen from other life. He applied his findings to formulate the germ theory of disease—the idea that particular species of microbes cause specific diseases and are transmitted among individuals in a population.

In Pasteur's era as in present times, infectious diseases inflicted a huge toll in pain and disability. They were also the most common cause of death.

Imagine again that you can travel into the past. Now you're among those hearing for the first time of Pasteur's experiments and the germ theory. How do you respond?

Even though adoption of the germ theory was and remains literally a matter of life and death, many resisted it. Leading physicians found it horrifying to think that they'd inadvertently spread disease among their patients. Clerics clung to claims that disease was God's punishment.

Today, despite a hundred and fifty years of evidence confirming the germ theory, some people continue to argue against it. Others heed it halfheartedly. By such failure to learn we increase risks of illness and death for self and others.

I mention with mixed feelings these historical examples. On the one hand, I'm apprehensive lest readers think that I'm making more of valuescience than is warranted. On the other I perceive that valuescience may prove as important and as difficult to accept as any prior leap in understanding of which I'm cognizant.

Hobbled with unconscious assumptions, I worked around the edges of the idea of valuescience for decades before I articulated the relationship that justifies its existence as word, idea, and practice: value entails prediction; science is how we predict; science is how we know value. Since then I've repeatedly stumbled on my own habitual patterns of thought and watched others stumble on theirs as I've labored to more fully understand its implications, more fully apply it and reap its rewards, and contribute to others' doing these things.

Social Pressure

Complicating our situation is the fact that we're part of a larger society whose members join in maintaining shared views. Embedded as we are in an increasingly homogeneous global culture, we're pulled strongly, unceasingly, and from many directions towards conformity. Corporate, political, and religious leaders build their brands with torrents of advertising, propaganda, and preaching, and use their considerable power to reward compliance and punish deviance.

All of us understand that in many cases those who go along get ahead. We're accustomed to bending and blending, and to influencing others to do so. When matters at issue are of great import to many, conformity is all but ensured by the weight of social pressure brought to bear upon dissenters.

In early and continuing lessons from parents, family, neighbors, friends, and others, we can see reflected a social order in which people reward and punish to support and suppress each other's valuescience practices. Almost all of us are trained to hold some beliefs beyond challenge. In doing so, we abandon skepticism essential to science. Such

skepticism, by which I mean simply keeping information open to question, is a necessary outgrowth of understanding that ideas and what we represent with them are different, and that we may benefit by lessening that difference.

We are similarly trained to observe trivial phenomena while ignoring important, draw conclusions unwarranted by evidence, and imagine that knowing consists of being able to articulate an idea, rather than of acting on it. We learn to avidly follow the fortunes of sports teams while ignoring those of endangered species. We're taught to be swayed by demagogues and advertisers to belief and action with insufficient basis. We're encouraged to think we "know how to lose weight" even as we continue to carry pounds we say we want to lose. In all of these ways we're induced, and we induce others to incompetence as valuescientists.

Humans interfere with each other's valuescience practices in part to sustain authority. Most of us think that we benefit by some kinds of authority. As citizens we support governmental authority to make and enforce laws. As parents we want authority to limit children's behavior. As members of hierarchical organizations we want order and coordination that we perceive to flow from obedience to, and exercise of authority.

Those who wield and enforce authority justify it in terms of common good. To the extent that these justifications lack scientific basis, exercise of authority is oppressive. Valuescience is a means to expose abusive authority. Those who wield and support such authority resist it.

Slaveholders justified their authority over slaves in terms of specious arguments about Negro inferiority and the importance of slavery to common good. Abolitionists debunked such claims with valuescience-based analysis, though they did not label it such.

We also interfere with each other's valuescience practices to compete more successfully, and to impede others' doing so. Yet in the early 21st century, growing connections among us and increasing reliance upon dangerous and powerful technologies make all of us more vulnerable to each. Impeding another's access to accurate understanding about value carries growing risk of personal loss. This risk may already in some respects be more than great enough to outweigh any potential competitive gain.

Multi-drug resistant tuberculosis is illustrative. Tuberculosis is now largely a disease of the poor and uneducated, yet it is highly contagious. People who discontinue medication prior to completing a full course of treatment exert selective pressure towards drug resistant TB.

We may reap short-term gain by declining to expend public or private funds to ameliorate poverty. However, when the poor contract TB, begin treatment, and out of ignorance fail to finish it, their impact on the rest of us may prove no less devastating than the biological warfare program of a sworn enemy.

We may feel that we're somehow immune or resistant to social pressure, that we're privileged, educated, sophisticated, and enlightened enough to stand apart. We may even be harsh and outspoken critics of much in the status quo. Yet all of us were once naive children lacking capacity to critically appraise complex ideas, and all of us interface with an increasingly homogeneous global society. All define ourselves in terms of it by some combination of participation and rejection. All feel the influence of other humans seeking to affirm and support their choices by making ours similar.

The perils of "groupthink" and the madness of crowds are well-documented. Researchers have repeatedly shown that people like you and me, confronted with

sufficient peer pressure, will agree to things that are demonstrably false, unfair, brutal, even lethal. Efforts to label participants in genocide somehow aberrant have proven unsuccessful. Ordinary people surrounded by other ordinary people go collectively insane in obvious and subtle ways.

By enforcement of, and adherence to social norms we maintain unity at the expense of learning. When your or my, "That's wrong!" is followed by, "Nobody believes that!" learning is doubly difficult.

Conversion of a sound idea from heresy to common wisdom can be a protracted, adversarial, even violent process. Three and a half centuries elapsed between the time when Pope Urban VIII threatened Galileo with burning at the stake for suggesting that Earth moved and the day that Pope John Paul II formally acknowledged the possibility that Galileo's views might be accurate.

Often in enforcing the familiar we claim as victims the very people who by advocacy of its overthrow lead in making the new available to all. Though the theory of biological evolution is used to prevent and treat disease, fight crime, grow food, protect biodiversity, and maintain environmental qualities from which all of us benefit, its proponents have for a hundred and fifty years been incessantly and vituperatively assailed by those who seek to defend nonscientific explanations for life.

Given our and fellow humans' investments in current core beliefs, and given the usual fate of those who suggest that these beliefs may be mistaken, who can be surprised that valuescience, which entails wholesale abandonment of these beliefs, remains little known as idea and word, and rarely conscious and consistent as practice? Who can wonder that those who encounter it—perhaps you, yourself—may be disinclined to honestly consider it, even as you may protest that you've weighed it carefully and found it wanting?

Going Forward

In valuescience lies the seed of a social order where to a greater degree than currently individuals see self and surroundings accurately, "author" our own lives, and strike a more advantageous balance between competition and cooperation. Evidence for this assertion can be found in the organization and behavior of physicists in their professional capacities.

Physicists worldwide manage without an authority imposing upon them. They are careful in their claims because they are accountable to each other for reproducible results. They compete to discover and they share their discoveries. They hew to a common standard: successful prediction.

In 1818, a young French physicist, Augustin-Jean Fresnel submitted an entry to a competition sponsored by the French Académie des Sciences. Fresnel proposed a then heretical concept: the wave theory of light. One judge, the renowned mathematician Poisson, derided Fresnel's idea, and showed that it led to a "ridiculous" consequence: the shadow of a circular disk with a bright spot at its center! Another judge tested Poisson's prediction. To much surprise, the spot was there. Fresnel won the competition. The spot bears Poisson's name.

Practice of physics can be a model for practice of valuescience. We can dispense with the various authorities who claim to know value better than we can discern it from

experience. We can become more cautious in our assertions about what we want and how to get it, aware that we often lack sufficient information to make these with accuracy better than we can achieve by chance. We can re-examine conflicting ideas and replace with them with shared ideas based on successful prediction, or with admissions of ignorance. As we achieve greater concord about what we want and how to get it, we can cooperate more effectively to more accurately discern and to more fully realize value.

Some contend that physics is by its nature more amenable to scientific practice than is value. To make this claim is to substitute habit for analysis. Much in physics, especially at the frontiers of cosmology and subatomic phenomena, pushes the limits of scientific method.

Advances like relativity and quantum theory required revolutions in thinking. Though many struggled to defend the old and mightily resisted the new, eventually by their collective commitment to science *qua* method physicists carried their venture forward. They've used physics to formulate a vastly more inclusive, detailed, and coherent model of matter, energy, space, and time. We can use valuescience to extend, refine, and integrate ideas about value and good.

We appear to be a long way from such a state of affairs. Many insist that means other than science are required to answer the question, "What do I want?"

The relative few who admit that science and value can be connected through prediction often imagine personal valuescience proficiency to be greater than it is, asserting, "Valuescience is how I live my life." Even individuals most committed to valuescience typically draw a line in the spectrum of wants and say that we can use science to more accurately identify those on one side of the line, but we must abandon it to choose those on the other side.

Frequently the matters we hold beyond the domain of valuescience are ideas for which we lack sufficient evidence to draw a scientifically valid conclusion. Rather than admit to ignorance, however, we pretend to be able to decide what we've been unable to discern. In this we're like players of lotteries and other games of chance who imagine foreknowledge of random outcomes. We're living illusion.

Science-based Religion

The attempts of various professional scientists to accommodate their or others' religious beliefs are examples. The late highly respected evolutionary biologist Stephen J. Gould asserted that science and religion were "non-overlapping magisteria" each of which was suitable for addressing certain questions. Gould has ample company among professional scientists, many of whom refuse to accept that personal religious beliefs deserve scientific skepticism. In 1916 and again in 1996 forty percent of professional scientists believed in a god. Only when the survey was limited to members of the National Academy of Sciences were a strong majority of respondents atheist or agnostic.

Religion is one of the most common and enduring alternatives to valuescience. Because people use religion to justify behaviors (e.g., procreation beyond what is necessary to maintain a stable population, violence to others, and environmental despoilation) that merit concern of humans everywhere I want to address it briefly here.

We've decoupled religion from nature and harnessed it to dogma and authority. In modern times we learn about religion from books and believers, rather than from

observation of the non-human natural world. Leaders of the most visible and widely embraced of modern religions, Christianity, Islam, and Judaism, commonly interpret their teachings to command that certain beliefs be held beyond question.

Few draw adherents' attention to a fundamental purpose of religion from earliest times, so perfectly captured by the word's etymology. The prefix "re-" means "again." The root "-lig-" is from Latin ligere, which means "to tie, bind, or connect." Religion is about reconnecting our individual selves to other people, other life, the Earth, and the cosmos.

With science we've revealed our connections to these more intimately and fully than by any other means. We've discovered that with each breath we inhale atoms of oxygen breathed by every human who ever lived to adulthood, that all life relies upon the same handful of molecules to inform its unfolding, that energy from sunlight flowing through the biosphere sustains us, that we are constituted and minute-by-minute reconstituted of earth, sky, and water, that our sun is an ordinary star in an ordinary galaxy among others numerous beyond comprehension. With these and myriad other findings we're able to imbue religion with scientific understanding and employ science to further religious aspiration. We can strip away trappings that give no support to essence and reinforce our practice of religion qua reconnection.

An Idea Whose Time Has Come

Despite immense cultural bias against valuescience, pioneering natural and social scientists are demonstrating and promulgating it, currently for the most part by other names, in fields ranging from sociobiology to behavioral economics. We can draw on this growing body of work to support a valuescience approach.

Still, the task of motivating self and others to more assiduous valuescience practice remains daunting. Even those with greatest expertise in personal and social change have limited comprehension of these processes. We remain short of well-defined methods for effecting a valuescience revolution that are comparable in robustness to those, for example, that we use to confer immunity to infectious disease, or to instill literacy, or to effect a host of other transformations.

Victor Hugo said, "Nothing is more powerful than an idea whose time has come." How do we identify such an idea?

When the experience of enough of a group's members becomes sufficiently difficult as a result of reliance upon particular information, the stage is set for new ideas to be considered. If any becomes widely recognized as basis for more successful adaptation, its time has come.

Humans are paying an escalating cost for failure to resolve pressing concerns. As a result of population growth, each of us on average can lay claim to a smaller share of Earth's bounty. Because of ongoing violence and coercion, all of us live more in fear of each other and less freely. In no prior era have so many existed minutes away from annihilation at our fellow humans' hands. As we degrade the environment, we endure more noise, more toxicity and more hazards of more kinds, and we work harder to find and extract resources. Finally, as we hold onto and promulgate illusions, we guarantee that we will continue to misperceive value and by our own hands destroy it.

Though we may be reluctant to admit the extent of our losses, we have incontrovertible evidence that more of us today than ever before lack the requisites for a decent life. Moreover, despite our nearly universal expressed desire to reduce the numbers of sick and impoverished humans, we continue to add to them. This continuing retreat from a primary goal of human endeavor is growing incentive to reexamine roots of our thinking, and to alter them.

Paradigm Shift

Three qualities, integrated, radical, and scientific, together define a paradigm shift now underway. With this shift we're replacing piecemeal, superficial, belief-based pseudo-solutions with broad, deep, inquiry-based evolution. Valuescience lies at the heart of the paradigm I'm describing. With this writing I'm wagering that it is an idea whose time has come.

I see evidence for this in the growing number of people who are advocating and undertaking interdisciplinary collaboration both within the sciences and across the boundaries of science. I see it in those who are enlarging ecological analysis to incorporate assessment of human consciousness and ways to alter it. I see it in the attendant emerging global discourse about how humans can become more adept at cooperating to match the information by which we live to the environment in which we live. I see it in the mounting pressures for evidence-based medicine, science-based natural resource policy, and application of science to countless other aspects of life previously held beyond its purview.

Paradigm shifts are more than just the stuff of intellectual discussions. They're wrenching experiences. What "everybody knows" becomes what "nobody believes." What was built on the old crumbles while the possibilities of the new have only begun to be explored and realized.

Moving from the paradigm of god-king through that of divine right of kings to that of figurehead kings to that of no kings has been a multi-millennial process. Replacing creation as described by the Biblical text of Genesis with creation through universal evolution as described by cosmology, geology, and biology is a process still underway after centuries.

Such shifts take their toll on individuals and societies. As one after another of us struggles and fails to defend flawed belief, we feel exhausted, empty, and afraid. Together we produce convulsions in the body social as rationalizations and justifications for relationships with each other and with the rest of our surroundings melt away.

Paradigm shifts are last resorts, but they can be good medicine. The theory of relativity was proposed only after repeated failed attempts to reconcile the long-accepted postulate of absolute space with a growing body of observations that contradicted it. Out of relativity has come all of modern physics, and with it an immensely deeper understanding of the universe and our place in it.

So what? Why care about ideas? Why dwell on openness, resistance, social pressure, and paradigm shifts?

Processes of individual and social change are cybernetic. Idea and action augment and attenuate each other. Though ideas are of little import without action, humans depend

upon ideas to lay a basis for what we do, and to reinforce it with explanation and justification.

Valuescience evolves by praxis—theory informed by practice informed by theory. By writing and reading about valuescience you and I drive individual and social evolution. To reap valuescience's rewards, however, we live it. In this writing I aim both to elucidate the idea of valuescience and to inspire and inform readers to realize its benefits in practice.

Consilience

Valuescience is a step towards what biologist E. O. Wilson terms consilience, the integration of knowledge. For thousands of years advocates of science have carved out an ever larger domain. One question after another about the origin and nature of cosmos, Earth, life, and humankind has been subjected to scientific exploration.

Value is a glaring exception. We can bring value within the domain of science and effect consilience between it and ideas we've formed by applying science to other phenomena.

By becoming, and guiding others in becoming more conscious of valuescience practice and by fostering discourse and understanding about how prediction is a nexus between science and value, we may reunite age-old investigations into the nature of truth and of good so that the former can be more fully enlisted in furtherance of the latter.

Social Contract

In the process we will establish a framework for hammering out a global human social contract. That contract will be the product of addressing the human condition at its roots in an integrated, and scientific way. It will necessarily respond to fundamental questions of value. How many humans shall we be? Who shall live? For how long? Who shall reproduce? For what duration shall we aim to sustain humans? Who shall do what work? Who shall reap what rewards? By what pathways and in what quantity shall we alter cycles and flows of matterenergy through and within the biosphere? How shall we acquire, test, and share information? How shall we evolve our contract to reflect coevolution of people and planet?

This is a monumental task. It will require substantial changes in thought and action by billions of people. With valuescience we empower each person to participate more fully in moving towards harmony within, with others, and with the rest of our surrounds. In the process we vastly increase resource available to move beyond illusion into a future where aspirations to a decent life for all are finally fulfilled.

Readers who imagine that I propose to outline the terms of such a contract, or that I think its terms can be evolved in any but a broadly participatory and ongoing way are mistaken. I view valuescience as a unifying, liberating, and leveling methodology by which humans can more fully tap our collective intelligences and more fully reap their benefits.

Some may claim that the task is too large, and that we are destined to muddle along in conflict fueled by erroneous ideas held with conviction. I perceive such naysaying to be

projection more attributable to apprehension about personal change than to inherent impossibility.

Honing Valuescience Practice

The path from here to there may prove long and arduous. As I write, six and a half billion humans live from values generated to varying degrees by flawed methods. We've a host of ideas about what we want that are inconsistent with the structure and operation of the known universe as elaborated in the body of the modern scientific world-view—a set of predictions more accurate and extensive than have ever before been available.

At the same time, we retain a measure of freedom. We have increasingly powerful and reliable means to learn and to communicate. Earth, though battered, is resilient.

We can work on many fronts to become more proficient valuescientists. I mention in closing a few things that I've found critical to evolving my own practice.

We create space. Not physical space. Not outer space. Mental space. So long as we fill our minds with familiar thoughts we've no room for anything new. By quieting the seemingly ceaseless stream of habitual consciousness we can make room for insight. We can become more aware.

To gain space we stop doing something. We filled yesterday, we're filling today, and we'll fill tomorrow with more of the same unless we act to change.

Someone said, "Don't just do something. Stand there." Most people aim for a balance between action and reflection. In the modern world, how many of us are at risk of too much reflection? To find space for reflection, we stop something else.

We cultivate clarity. Clarity is not accessible through the same distorted and dirty lenses and filters with which we've habitually viewed. Clarity requires that we set these aside, that we shut out countless exhortations to more, faster, bigger, and cultivate awareness of aspects of self and world long ignored.

Researchers have made a compelling case that most of us are sleep-deprived and sorely compromised as a result. Rather than redouble our customary efforts to see clearly by study, thought, and action, we might better truncate them and sleep.

The vast majority of adults require seven to nine hours sleep each night for optimal function. Since only the most sleep-deprived of us fall asleep the instant we go to bed, and since most of us awaken at least once during the night, getting this amount of sleep entails being in bed for even longer. Who do you know who does this? Just because few do it makes it no less necessary to achieve clarity.

We find partners. Surrounded by people who reinforce popular adherence to flawed ways of knowing value, we have limited ability to practice valuescience. We lack the checks on our practices that others, less attached to our follies and less affected by our blind spots, can provide. Science is a social enterprise and valuescience is science. We work best with colleagues determined to plumb the depths of our and their ignorance, uncompromising critics who will challenge us to substantiate ideas about value with evidence that the predictions they entail are sound.

We benefit from courage, vision, strength, acumen, patience, and a host of other qualities as well. These we can cultivate with our practices. The entire body of science has been accumulated by mortal humans, each lacking some virtues and burdened by vices. We need not be perfect to practice. Rather, by practice we become more perfect.

Many of us realize that we are part of vast rivers of humanity, life, and matter-energy flowing through time. We draw inspiration, meaning, and purpose from the prospect that we may flow somehow towards good. Valuescience is means to make that prospect more real.