

Structure and essence: The keys to integrating spirituality and science

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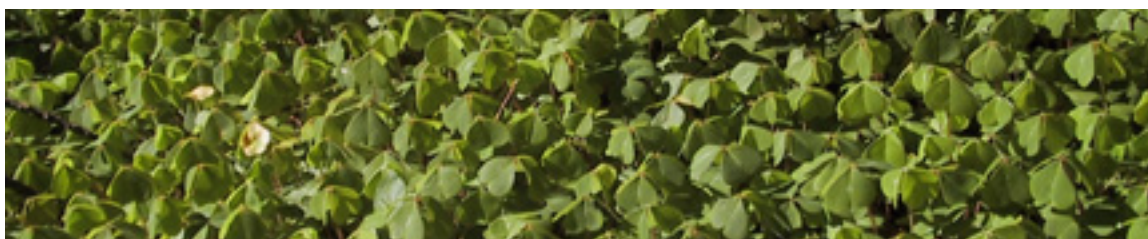


Dolphin playing with a leaf.

Our technical capabilities are increasing at an enormous and unprecedented rate. In contrast our spirituality and values are developing much more slowly. This has created a perilous time and often empty culture. We need a broadly accepted spirituality that gives purpose and meaning beyond the necessities of daily existence. Our scientific understanding has undermined many conventional approaches to spirituality at the very time we most need to strengthen these capacities. The source of the difficulty may hold the key to the solution.

Science is widely accepted because it works. It looks at the world as it is searching for the simplest possible description. Discovery of simple descriptive laws has led to enormous power to control the phenomena the laws describe feeding our technical prowess. It was only possible to do this by divorcing science from feeling and values so one could see what is and not what one wants to see,

1 Science deals only with structure



The content of the hard sciences is formulated in mathematical laws. In mathematics everything is built up structurally starting with the empty set or nothing at all. For example the number 1 is defined as the set containing the empty set. It is a set with one element.

Mathematics and contemporary hard science deal only with structure (or how complex entities are built from simpler ones) and never with essence or the ultimate nature of a thing. This forces all assumptions to be made explicit. But doing so removes any connec-

tion with meaning or value from the content of science. Of course individual scientists and scientific institutions have values that influence what they do. It is the content of hard science that is value free.

Ultimate (as opposed to contingent) value exists only in conscious experience. We value things only insofar as we see them impacting our own or others' experience. The connection between physical structure and conscious experience is the key to connecting our scientific understanding to values and spirituality. Following the lead of science we look for the simplest possible description consistent with what we know to be true. This leads to two assumptions,

2 Physical structure is consciousness



Our first assumption is based on the recognition that conscious states are mirrored by physical structures in the brain and body. Transformations of consciousness appear to be transformations of physical structure. The evidence for this while far from conclusive is growing rapidly. We are able to measure the functioning brain in ever greater detail and to compare what we observe with reports of internal state.

Another motivation for our first assumption is the continuous spectrum of conscious experience. There are no boundaries where

human consciousness begins and ends. Consciousness grows as an embryo develops into a baby and adult. Consciousness fades as an adult mind slowly disappears from Alzheimer's disease. It is the development or degeneration of the physical brain that embodies these changes in consciousness,

The simplest assumption is not that consciousness arises from physical structure. That creates an unnecessary duality. We assume the *essence and totality* of the existence of a physical structure *is* conscious experience. Space-time does not exist in space-time. It exists in consciousness. All matter is soul stuff. The dust we come from and return to is a simpler form of consciousness reflected in its simpler structure. Many spiritual traditions see consciousness as universal. Equating the existence of physical structure to consciousness is more novel.

3 Consciousness is finite



The second assumption is that all conscious experience and thus physical structure has a logical or mathematical finite structure. There may be no limit to conscious experience but no single conscious gestalt is infinite. Direct immediate experience is always specific and finite. It is logical in the sense that what we experience is either something or not something. Of course language can be ambiguous or inadequate to express what we experience but the experience itself is always a definite thing and not some other thing.

It is always finite. It may appear to be continuous as in a visual image but this is an illusion constructed from discrete visual receptors in the eye. The brain and nervous system filters out the patterns of these receptors since the aim is to provide the brain with information about the external world. Einstein near the end of his life came to suspect that all physical structure was finite or 'digital'[2]. This assumption about consciousness and physical structure is subject to scientific investigation.

4 A wider sense of self



One might object to identifying conscious experience with physical structure by arguing that spirituality transcends space and time. Spirituality takes us outside of ourselves to a deeper and wider sense of identity. It sees our oneness with our fellow humans, with all sentient creatures and with the creative process itself. Identifying conscious experience with physical structure is not in conflict with this ancient wisdom. On the contrary it deepens our understanding of these spiritual realities.

For it shows how artificial our sense of self is. It is created for practical reasons as a baby learns the difference between self (that which responds directly to one's wishes and can hurt) and not self (everything else). It is not the result of some unique soul each of us is infused with. We create our sense of identity and we can expand it as widely as we choose. We are the universe becoming conscious of itself. As we begin to feel that this is true we literally become who we truly are.

Have you ever become so taken by a book that the experience described was more real than your everyday life? Sandburg's Lincoln had that effect for me. The people the poet described lived again in the writing and live over and over in the reading. Our consciousness is not individual and unique but universal and all encompassing. For it to exist at all it must be specific but the boundaries that make it specific are not limits on our experience put pathways to unbounded consciousness. Each movement in time leads to the next. Each experience leads to other places other people and ultimately the creative evolution of the universe.

5 Consciousness is irreducible



One might object that identifying conscious experience with physical structure does not explain consciousness. Our scientific understanding cannot begin to explain the experience of the color blue. The essential nature of conscious experience is not subject to explanation. We can analyze the structure of experience but never its essence. We are not trying to explain the inexplicable or reduce consciousness to something else. We are only looking for the simplest possible *description* of the reality we experience.

6 Levels of structure and consciousness



The descriptions of science are widely accepted because of their utility. Our assumptions have the potential for similar practical results. The psychologist, Carl Jung, had an intuition that number was the archetypal mediator between the physical world and the higher world[1, par 778][3]. Mathematics can help us understand spiritual truths that have previously been only intuitions.

Central to the evolution of consciousness is the development of ever more subtle and complex levels of self reflection. This has culminated in the human mind aware of its own mortality and able to develop science and mathematics. We can understand aspects of these structures in mathematical hierarchies of iteration or self reflection. Our assumptions establish a structural equivalence between consciousness and these mathematical hierarchies.

An implication of Gödel's famous proof of the incompleteness of mathematics is the absence of any single finite formulation that can capture the potentially unlimited levels of ever more powerful forms of self reflection that can exist in a mathematical system. The only way to explore all these possibilities is through a divergent process that follows an ever increasing number of paths as biological evolution has done in creating the human mathematical mind.

7 Unbounded creativity



Gödel's result and our assumptions imply that there is no limit to evolutionary creativity provided evolutionary diversity expands without limit. Of course the universe itself may be finite but we are very far from knowing this. Every boundary we have found historically has eventually disappeared. This may be true forever. If the universe is potentially infinite then whatever is will always be the merest hint of a shadow of what can be. God is a never ending creative process not a destination and we are the eyes of God with the power to create the world.

We are at a critical point in the evolution of consciousness. Evolution has become conscious of itself and is developing the tools to take conscious control of its own future development. This is an inevitable transition but it is a dangerous time. Without an understanding of the structure of creativity we will almost certainly follow a path of bounded rather than unbounded creativity or worse.

Our assumptions establish a basis for the required understanding of the structure of creativity. They allow us to quantify the trade offs between diversity and concentration of resources that are so central to the structure of creative evolution whether it be biological, economic or spiritual.

8 Toward an objective spirituality



God is not a completed being but an ever expanding process of evolving consciousness. We, as the highest form of consciousness on this planet, are the eyes of God with the power to create the world through conscious control of future evolution. We cannot make decisions about this based on religious or spiritual feeling alone. History teaches us how badly our feelings and instincts can lead us astray without objective tests. Science has shown what miraculous progress is possible with the guiding star of objectivity.

Equating the existence of physical structure with conscious experience is the starting point of an objective spirituality. It establishes a framework for reconnecting scientific understanding to values by connecting structure to essence.

It implies that we are and always will be the merest hint of a shadow of what will be. Precisely because there is no ultimate or final goal but only an ever expanding horizon we must always value the experience of the moment for that is all that will ever exist.

References

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- [3] Marie-Louise von Franz. *Number and Time*. Northwestern University Press, 1974. 9

9 Author

Paul Budnik was an Acting Assistant Professor at UCLA before completing his PhD in computer science from the University of Illinois. Since then he has been a computer consultant. He has been passionately pursuing a series of related ideas on consciousness, evolution, physics and mathematics since he was an undergraduate. He is writing a book that more fully explores these topics. A partial preliminary release of this book is available at www.mtnmath.com/willbe.html.