

AN EASY SOLUTION TO THE HARD PROBLEM

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INTRODUCTION

The so called ‘hard problem’ of consciousness, how does the apparent phenomenon of consciousness arise from the physical structure of the brain, continues to generate extensive debate and is generally considered one of the most important unresolved issues of philosophy and cognitive science. I believe there is an easy, though somewhat subtle, solution to this problem that has been obscured by fundamental errors in the way it has been approached; that both philosophy and cognitive science have merely been looking in the wrong place. In this paper I present a novel, and I believe convincing, solution to the hard problem that has important implications for philosophy and the sciences.

Let me begin by slightly generalizing Chalmer’s original formulation of the hard problem in the following form; ‘How does consciousness arise from a physical world?’ With this generalization let us proceed.

WHAT DO WE MEAN BY CONSCIOUSNESS?

In beginning to address the hard problem we must first clearly define what we mean when we speak of consciousness. Exactly what is it that seems to arise so mysteriously but self evidently from the physical world? To properly understand this it is important to clearly distinguish consciousness *itself* from the *contents* of consciousness, that is from the myriad individual perceptions, feelings and thoughts that arise within it thereby becoming conscious. Normally consciousness tends to focus on such transitory contents, our attention moving from one to the next as they arise and vanish within the field of consciousness itself. Because consciousness always seems to manifest in terms of some content, a fundamental confusion of consciousness itself with its contents has often led to error.

However, it is quite clear that consciousness is not its particular contents, since even as particular contents arise and vanish, consciousness itself remains. Though the manifestations of its content are myriad, consciousness itself can be only one thing. Consciousness, in the fundamental sense of the hard problem, is something in which individual content may appear, rather than the sequence of content itself. It is this underlying field of consciousness, which persists, as the procession of content flows through it, that is relevant in terms of the hard problem. The individual contents become conscious only by reason of their appearing within this field of consciousness. It is the

analysis of conscious content, the structure and functional relationships of our thoughts, perceptions and emotions to human biological and cognitive structures, that is the proper domain of the so called 'easy problems' of consciousness.

So what is this underlying consciousness that seems independent of any particular transitory content? A useful way to explore this question is to examine the meditative state, in which the goal is to turn the attention inward directly toward this field of consciousness that underlies and contains all content. This should not be misunderstood as anything 'mystical', as we are referring here to a very straightforward and reproducible cognitive process of exploring consciousness from the inside. However it does take some practice to focus consciousness away from content and onto consciousness itself as mind habitually tends to focus on content so as to effectively function within one's environment.

Success in this process is often experienced as a sudden letting go of focus and a centering within consciousness itself in a state of clarity. When this is achieved, the attention is no longer immersed in following the flow of ever-arising content and the flow subsides. Then the nature of the increasingly isolated individual contents clarifies against the background of consciousness itself. The contents tend to be experienced rather as transient ripples in an encompassing medium of consciousness itself. The diverse contents of consciousness are recognized as forms in the medium of consciousness itself. In the deepest states of meditation, nearly all particular content may disappear and then only the field of consciousness itself remains, calm and bright, like the surface of an untroubled pond. It is in this underlying medium that transient ripples may arise and vanish, themselves forms empty of all substance other than the stuff of consciousness itself.

But what is this underlying substance of consciousness that remains as individual contents subside? What is it that cannot be removed without losing consciousness itself? When one experiences it, it is quite clear that all that remains is simply the living reality of the present moment, and the flow of time through this present moment. This seems the only thing that cannot vanish without consciousness also vanishing. Like all organisms we experience our existence entirely within the present moment, this moment that seems to persist as time flows through it, this same present moment in which you read this word. Our fundamental experience of consciousness is clearly the continual direct experience of this present moment, and it is within this consciousness that individual perceptions and thoughts arise, just as the physical events they often mirror seem to arise in this same present moment in an external world.

So it is this direct experience of the present moment that remains that is the essence of what we mean by consciousness itself, as opposed to its contents. It is the presence and source of this underlying field of consciousness that the hard problem seeks to address. For without this underlying consciousness, there can be no consciousness of individual content. Therefore the hard problem is not what causes particular content to arise within consciousness, nor the particulars of the contents themselves, but what is this consciousness in which such content may arise? How does that arise from the physical

world?

THE PHYSICAL REALITY OF THE PRESENT MOMENT

In terms of the hard problem, it is important to determine whether the present moment has an actual physical existence independent of mind, or is merely a construct or artifact of consciousness. It turns out that the present moment does have an actual physical existence, and that this is the direct consequence of a principle that underlies special relativity. I will only summarize the ideas here, but interested readers can find a more detailed treatment in another paper¹.

Simply stated, special relativity tells us that relative motion through space causes an object's time to appear to slow down according to an equation called the Lorentz transform. It is as if any velocity through space can only occur by stealing some of that object's velocity through time. This is in fact true, precisely because there is a set amount of velocity that must always be shared between temporal and spatial velocities. If one analyzes the mathematics one finds that what is really happening is that **everything in the universe is always traveling at exactly the speed of light through 'spacetime'**²! Yes, every entity in the universe, including each of us as we read these words, is continually traveling through spacetime at the speed of light, no more, no less. This important principle, which I call the STc principle (ST - spacetime, c - the speed of light), is absolute and fundamental and underlies special relativity, which is but one of its consequences.

In addition to underlying special relativity, the STc principle has two important implications that bear directly on the hard problem. First the STc principle provides a firm physical basis for the flow and arrow of time. Since no entity can possibly move in space relative to itself, all of every entity's spacetime speed of light velocity is entirely through time (in its own frame). This absolutely requires that time flows; that there be a continual motion through time. And, since there is a continual motion through time, every entity must always be at only one location in time; that is every entity must always exist in one and only one moment of time. Thus there exists for every entity a privileged present moment of time.

Further, even though their clock times may vary due to relativistic effects, all entities in the universe must share this common present moment¹. That is, there is a common present moment which everything in the universe shares, no matter what its clock time may read³. This is clearly demonstrated by the fact that in the relativistic 'twin paradox', time traveling twins always reunite in the same present moment, even though their clocks may read different clock times. The astonishing and unavoidable conclusion is that there are two distinct types of physical time!

Now this common present moment is the only time location which actually exists in the sense of having ontological energy that allows being or existence. All entities must exist only in the same present moment to be able to interact. This present moment is the only

moment that has reality; it is the only place in which anything actually exists and has reality. In this sense the present moment has an almost magical nature, as it is only in the present moment that reality lives and things happen. The opposing theory, called 'block time', that each moment of past, present and future has an equal reality, is clearly incorrect¹.

The existence of a common present moment in the physical world is an extremely important concept which unfortunately even many physicists seem unable to come to terms with. It suggests a solution to a number of problems in cosmology, and it is also a key to developing our solution to the hard problem.

A BROADER NOTION OF CONSCIOUSNESS

Since the present moment does have an actual physical reality, it is clearly not the product of individual consciousness. Then, since the irreducible content of consciousness itself is simply the direct experience of the flow of time through this physical present moment, is it possible that the very existence of the present moment might in itself be the source of consciousness? That one's very existence within the present moment, the only existence possible, is somehow sufficient for consciousness? I believe we can make a very strong case for this, but first we must explore a broader notion of consciousness, for clearly all organisms, in fact all physical entities, share an existence within this common present moment. Why then are not all physical entities conscious?

I believe one of the main difficulties in understanding consciousness has been an anthropocentric bias that has obscured the fundamental mechanism involved. The hard problem has generally been exclusively framed in terms of human consciousness, and consequently solutions have been sought only within the human brain. I propose we take another look at physical reality to seek a more general mechanism common to all physical entities that might also produce human consciousness in humans.

Instead of something that arises only in the human brain, let us posit a much more general mechanism for consciousness, of which human consciousness is just one rather unique manifestation dependent on human brain structure. If, in fact, the existence of the present moment is the actual source of consciousness, then what mechanism is at work within the present moment that might manifest as a particularly human consciousness in humans?

What happens within the present moment is clearly the continuous flow of clock time through it. It is the flow of clock time that accounts for the existence of process, of causality and change that continually occurs within the present moment. It is the flow of clock time that accounts for the ability of events to occur at all, for things to happen.

This may seem trivial but it has profound consequences. It is obvious that the flow of time is something that all beings and all physical entities in the universe 'experience', each in their own way⁴. We humans experience this process as something we call human consciousness, but all organisms, indeed, all physical entities, can be said to 'experience'

the flow of time in terms of their own particular structures.

There is an important concept here that needs to be clearly grasped as it provides the perspective on physical reality necessary to understand our thesis. It is not just the obvious fact of change, of physical process proceeding in time that is relevant, but rather that all process can be understood as the ‘experiences’ that all entities in the universe have of the events which effect them. It is looking at the flow of process from the point of view of every entity’s ‘experience’ of it as it occurs in the present moment. For clarity, *I will use the neologism ‘xperience’ to refer to the way any entity in the universe is affected by the effects of the events that impinge upon it.*⁶ This is a very general physical mechanism that allows all process in the universe to be considered purely from the point of view of effects on entities.

The essential insight here is that the very nature of the reality of what occurs in the present moment is reducible to xperience. Every event that occurs in the universe is fundamentally only the ‘experiences’ or effects produced on the entities involved. That is what an event is; it is the physical occurrence of effects on entities. Xperience is primary and any notion of event is always developed from xperience. Xperience is the true sense of the reality of ‘happening’ in the present moment. Process itself is simply the time sequence of xperience. Though this may be an entirely new way of looking at the physical world, it is scientifically valid, and more useful than the conventional view of process as a sequence of events, since it incorporates the notion of observer and measurement directly into physical reality.

Both relativity and quantum mechanics insist that the universe is to be considered only in terms of ‘observations’ or ‘measurements’ made by ‘observers’, and that any valid view of the universe can only be patched together and built up from observations always taking the perspective of the observer into consideration. Our notion of all process consisting of xperience is the logical extension of this new scientific perspective. In this view, it is this combined xperience of the myriad entities that participate in all events in the universe that constitutes reality itself. The universe consists entirely of effects on entities, therefore the universe consists entirely of xperience.

Now it is clear that every entity can xperience events only in terms of its own structure or nature, so there can be no intrinsic or absolute notion of an event independent of the structure of the entity that ‘experiences’ it. The nature of an xperience always depends on both the nature of the affect and the nature of the entity affected.

HUMAN AND NON-HUMAN XPERIENCE

I want to make it quite clear that I am not proposing that inanimate entities have anything like a human type consciousness, or that they have some type of mystical non-physical ‘consciousness’. Not at all. The xperience mechanism is a purely physical process that simply describes the ability of every entity to be actually affected by events in the reality of the present moment. And the nature of such xperience will always depend on the

particular structures of the ‘experiencing’ entity. It is always the entity’s own structure that determines what we might call the particular ‘flavor’ of an xperience.

For elementary particles such as an electron, xperience manifests simply as response to interactions or collisions, and in the particulars of changes in quantum state. This is the electron’s xperience of the universe. For more complex physical structures, xperience can be said to manifest as the classical decoherence of quantum processes, again from the perspective of whatever physical entity ‘experiences’ the effects.

When we consider living organisms we encounter the manifestation of this same xperience process in increasingly complex ways, as affective and cognitive structures begin to inform the particular contents of the experience. No quotes here, as *xperience* now becomes the ordinary *experience* of living organisms. The underlying mechanism remains the same, only the affected structures are different, and thus the effects or xperience will differ. In all cases, the specific details of an entity’s or organism’s xperience of the world will be precisely the result of how its particular structure is affected by impinging events, both external and internal.

With humans also, the general xperience mechanism remains the same; that is the particular flavors or ‘qualia’ of the way we experience the world in the present moment depend entirely on our human physical and cognitive structures, and how external and internal events affect them. The fact that our conscious experience occurs at all is simply the fundamental xperience mechanism in action due to the physical reality of time flowing through the present moment experienced in terms of our physical and cognitive structures. This same xperience mechanism is common to every entity in the universe, we just happen to xperience it in our own terms. We assume the experience of consciousness is unique to humans because our human cognitive structures are unique, but in fact the process underlying consciousness is intrinsic to the physical universe itself, and it is only the particular way we experience this process that is unique to us.

Think of a universe made of honey. Every entity in that universe will have some xperience of that honey. For some entities that xperience will be stickiness, for some viscosity, for some a chemical reaction, and for some, like we humans, sweetness. The honey is the same, but every entity ‘experiences’ it according to its own nature. Our notion of consciousness is analogous to this perception of sweetness. We concentrate on the sweetness we experience, rather than its source, the existence of honey. It is quite true that the sweetness *as we experience it* is unique to us. But it is the existence of honey that is its source; and which enables us to experience it each in our own way. Likewise it is the existence of a physical present moment through which time flows that is the source of our honey, our consciousness, a consciousness which we then experience as sweet simply because our physical structure includes taste buds and an olfactory lobe.

Thus the physical mechanism underlying consciousness is simply the existence of a present moment through which time flows bearing the sequence of xperience. This process is the source both of cause and effect and of consciousness itself. Consciousness is simply our involvement with the reality of happening. It is simply our (our relevant

structures) existence in the reality of the present moment. But what accounts for what might be called the incredible ‘realness’ of consciousness. What makes consciousness seem so real, *so conscious*?

THE MYSTERIOUS PRESENT MOMENT

Consider the present moment in which you read this. You, like every entity in the universe, exist only in this moment, and through it clock time flows inexorably. Strangely, it is only the single instant of time passing through the present moment that is somehow given reality, for it is only here in this one instant of all the innumerable past and future instants that defines the actual living existence of you and everything else in the universe. This is because, by the STc principle, here is where everything actually is in time. No matter, how good or bad, it is only here that reality exists.

There is clearly something incredibly mysterious that only this one instant actually exists; that there is a present moment independent of clock time through which clock time flows, that this flow carries a sequence of seemingly connected ‘experiences’ that become real only as they pass through the present moment. Though we may only occasionally stop to consider the reality of the present moment, and no doubt only partially experience its full overwhelming realness, we can be quite sure that it does have an profoundly absolute and unimaginable realness. Consciousness is our participatory xperience in the actual realness of this ubiquitous present moment, and as consciousness increases so does the fullness of our sense of reality, as they are in fact identical.

We sleep and we become ‘unconscious’ if anesthetized. But this in no way contradicts our thesis, rather it illustrates it. It is simply that in these cases some of the structures with which we normally xperience have been temporarily shut down. Our body still ‘experiences’ the surgeons’ knife, the ubiquitous xperience process still operates, it is just that the relevant structure has been modified. In fact we are always only partially conscious of total reality, in that the level of human xperience we normally refer to as consciousness can only be aware of a very few of the myriad events occurring in each instant within the present moment. Consciousness is highly selective, and must be for an organism to focus on the issues most important to its survival. Of the myriad ‘experiences’ of the human body only a few filter up through the structural pyramid to generate resultant xperience at the highest levels of conscious awareness.

Since it is clear that the existence of a present moment is the source of being, of reality, of actuality and of existence itself, it is certainly in no way a stretch that it must also be the source of consciousness as well. Is consciousness any more mysterious than something being real and actual and having being? Certainly consciousness and the reality of being are equally mysterious. In fact they are just two sides of the same coin. Reality consists of xperience, and consciousness is merely xperience as it occurs in humans. Consciousness is simply the direct xperience of the reality of being in human terms. It is the reality of being in the present moment that provides reality to consciousness. This is what makes xperience real. Consciousness is just the direct

participation in the reality of being in human structural terms; it is the human participation in the reality of the present moment.

The existence of a present moment provides the vantage point necessary for the perception of the flow of time, and the flow of time manifests as the flow of xperience that constitutes physical reality. Thus the present moment gives actual reality to 'experiences' as they pass through it, and the realness of consciousness is simply the direct human xperience of the realness of xperience. Human consciousness is simply our presence in the actual realness of the present moment. It is nothing different in essence than the realness of any entity's xperience of its actual presence in the present moment. The difference between any entity's xperience of this realness and human consciousness of this realness is only a matter of how the realness is 'experienced' in terms of specific structures, not any difference in the realness of that xperience. All xperience is equally real.

We are conscious because things are real. We are conscious and things are real only in the present moment. We are not conscious in the past or future because things are not real in the past or future. Consciousness is just the presence of the realness of reality itself, that the 'experiences' we have are actual due to their occurrence in the present moment which defines reality. It is only the present moment that contains living ontological energy. Xperience is the actuality of happening; it is equally real to all entities which xperience it, each in their own way. It is the realness of human xperience by virtue of its manifestation of living ontological energy in the present moment that is called consciousness.

We may liken consciousness to the perfect bright surface of an untroubled pond, the absolutely real and present medium in which the contents of consciousness appear as transient ripples. It is only the occurrence of a ripple in the present moment that gives it an actual reality, and it is our actual xperience of this ripple in this present moment that accounts for the realness of our consciousness. It is what makes consciousness conscious. Like all entities in the universe, our consciousness is the reality of our xperience of the present moment.

In a very mysterious way, there is nothing other than consciousness, as there is nothing that exists outside the present moment, and all existence manifests only as xperience. In terms of immediate xperience, all we know is the content of consciousness, and this consciousness is always identical to xperience of the present moment. Of course we can construct elaborate theories about 'real' beings that inhabit an 'actual' physical world, but there is no escaping that our only knowledge of such things is and can only be as contents of consciousness in the present moment. Other than the contents of consciousness, there is nothing that can be known. Other than consciousness, all else is emptiness and nonbeing, and even that cannot exist other than as a content of consciousness. So truly, all is consciousness. There is nothing that is not. That is all that exists in the sense of the realness of direct experience in the present moment; all else is theory that exists also only as content within consciousness. All that exists is the reality of the present moment.

It is as if consciousness opens the void of non-being and provides a place for existence, reality, being and actuality to occur. If one wishes to posit the existence of an external physical world, within which conscious beings exist as entities, then we restate this as only the present moment exists, and it is the existence of this present moment that opens the world to provide a vantage point in which existence, reality, being and actuality can occur. If we accept this, then consciousness becomes simply our participation in the present moment's reality by virtue of our actual existence within it. In actuality consciousness and the present moment are inseparable.

All xperience has the same absolute realness that makes consciousness conscious. What we call human consciousness is simply the way an entity with our particular structures participates in this realness when certain of those structures are functional. The present moment provides the reality and actuality to the phenomenon of xperience, our human structures provide only the particular flavors of how this xperience manifests for us.

If we accept the existence of anything at all, we must accept the reality of consciousness. Consciousness is the reality of the universe as we xperience it. The hard problem is not so much how does physical reality produce consciousness, but how does the actual reality humans xperience as consciousness arise at all?

Though perhaps subtle, the solution to the hard problem turns out to be easy. Consciousness is simply the ubiquitous xperience of the realness of the present moment in terms of specific human structures. Human consciousness is not aphysical, it is the fundamental process of the physical universe as interpreted by human physical and cognitive structures. The present moment is the reality of the pool of consciousness, identically the same for all entities in the universe, it is only the way the ripples in the pool are 'experienced' that is different for each.

The details of the forms and contents of human consciousness and how they arise from human physical and cognitive structures are complex and only beginning to be understood. These constitute the 'easy problems', which must be addressed by biology and cognitive science. In contrast, consciousness itself, the field in which these forms appear as a living experience, is irreducible. It is due entirely to our existence in a present moment that gives reality to all the xperience it contains. The reality of the present moment is precisely the xperience that it contains. This reality is the pool of consciousness, and consciousness is this reality as manifested to humans.

The great difficulty in understanding consciousness has been that we cannot step outside it to view it clearly; we must inevitably view everything from within consciousness itself. Likewise we find it difficult to comprehend the mystery of the present moment, because our very existence is only within its reality. It is impossible to step outside and experience it objectively. It is all rather like an eye trying to see itself. No wonder it has been so difficult to discover our easy solution to the hard problem!

As Whitehead said, "Familiar things happen, and mankind does not bother about them. It requires a very unusual mind to undertake the analysis of the obvious."⁷

BROADER IMPLICATIONS

Our easy solution to the hard problem has many interesting implications. I hope to address these in detail in subsequent papers, but will briefly mention some here.

It is also worth noting that our solution has much in common with certain ancient philosophical traditions, most notably perhaps that of Zen Buddhism⁵, and to recall that it is also consistent with modern physics and cosmology, and is a direct consequence of the purely physical STc principle which, as we have seen, underlies relativity.

Cosmology

Our simple solution to the hard problem provides a new paradigm for how we view not only consciousness, but the physical world as well. A number of the implications for physics and cosmology can be found in a previous paper¹. However, it is worth noting here that each xperience is functionally equivalent to an 'observation' or 'measurement' by an entity of an event, and that this has a number of implications for quantum theory and relativity, in which the notion of an 'observer' is essential, and their possible synthesis.

Perhaps the most profound cosmological implication is that our consciousness, the most fundamental aspect of our existence, is in fact identical to the most fundamental process of physical reality, namely the continual flow of time through the present moment at the speed of light! Consciousness is in its essence an actual physical aspect of the universe in which all entities and beings partake according to their natures and the reality of their being in the present moment. **Consciousness itself is the direct experience of the fundamental physical process of the universe!**

The Boundaries of Consciousness

Since every physical entity shares in this common mechanism of xperience, we must ask how are the boundaries of any particular consciousness to be drawn? If every cell of the human body has its own form of xperience, how is it that we consider only the consciousness of the human being as a totality? Obviously the boundaries of consciousness that we choose to define are purely functional and cannot be intrinsic. Consciousness in the sense of xperience need not necessarily be associated with the physical boundaries of a particular organism. By recognizing this we become free to define the boundaries of xperience or consciousness in whatever ways are useful.

For example we clearly see a collective intelligence at work in many social organisms, such as termites and honeybees. Now it makes perfect sense to draw the boundaries around the colony as a whole, so that we can validly speak of the intelligence and

collective consciousness of any group we choose to define. We can now better appreciate the collective intelligence of the colony as we explore how it solves the problems of functioning within its environment.

Again it must be understood this implies nothing mystical or non-physical. Each instance of such experience consciousness must be described on a purely scientific basis. It is merely that we are now free to make functional definitions that enable us to explore the actual behaviors of whatever entity or group of entities we choose to consider and thus to determine if they are meaningful and useful. This methodology is entirely consistent with the notion of emergent behavior; the appearance of behavior in complex aggregates which cannot be simply predicted from the behaviors of their parts.

Since we are not ourselves co-conscious with such groups, it may be difficult for us to understand or appreciate the extent of the possible conscious groupings operative in the universe, many of which may be unknown to us, but we cannot say that they do not exist. We must simply attempt to look for and understand any such consciousnesses from their apparent behaviors.

Likewise, we are certainly not able to fathom what might be the consciousness of the universe as a whole, but this in itself is no reason to deny the possibility that there might be something there that remains unknown to us. It certainly makes sense to at least consider the existence of a sort of consciousness of the universe itself consisting of the totality of all experiences occurring within the present moment. That is every entity and organism in the universe, including ourselves, might be considered to be a 'sense organ' of the universe, and that through all these combined 'experiences' that the universe might be said to be aware of itself. Of course whether there is any sense of higher-level organization of this combined experience that somehow emerges as some sort of god-like consciousness is another question. Since it is difficult to understand how a human consciousness might be aware of such an intelligence if it did exist, it is difficult to rule it out.

We are certainly becoming increasingly aware of how the very structure of the universe itself mysteriously facilitates the rise of intelligent life forms like ourselves. So perhaps we should not preclude the possibility of some intelligent direction to it all merely because we cannot conceive of an explanatory mechanism. Certainly if we wish to speak of God at all, the best definition would be the collective consciousness of the universe as a whole. Whether there is any overarching intelligent direction or will to this process is a question that has not yet been answered, at least to my satisfaction.

The 'Real' World

It is clear we cannot say we see the world as it 'really' is. We know ours is only one of a multitude of ways of 'experiencing' the world. It is not even clear that the world can even be said to 'be' any particular way independent of an observer, since its reality is entirely its effects upon observers. We perceive only a very limited range of electromagnetic and

audio frequencies, time and space scales, and levels of complexity. We attempt to gain a broader understanding by extending the range of our senses, and our success in doing so has been one of the great triumphs of experimental science. Likewise, our unique ability to communicate our observations through writing exponentially extends the limits of our individual experiences. Nevertheless we remain intrinsically limited by the design of our brains as to the kind of worldviews we are able to mentally construct and comprehend.

We might however assume that we view both ourselves and an external world in terms of a worldview that enables us to function in the real physical world, even though our only knowledge of this world we believe we live in is a cognitive model produced by our brain, as is our concept of brain itself. There is clearly a consistency and predictability in our experience that appears to follow logico-mathematical rules, even when they are not always apparent.

It is reasonable to conclude then that our notion of these rules must be a working approximation of some set of laws that govern the processes of nature itself. That is the universe operates algorithmically, according to some set of 'natural laws' that have an actual physical existence. And that the logical and mathematical principles we incorporate in our worldviews are functional models of these laws, accurate enough to enable us to survive. This I think is the only reasonable explanation for 'the unreasonable effectiveness of mathematics', that nature itself incorporates laws of which our logic and mathematics are a reasonable approximation of form since they both are grounded in the same physical world. Thus we may assume that even though the qualia of our experience of the world are forever private, that the logico-mathematical forms must in fact bear a structural correspondence to the actual physically real algorithmic laws by which the universe operates.

For anything to happen at all in the physical world, it must happen according to some set of fundamental algorithms operating on some elementary constituents. As we strive to construct a more accurate cognitive model of the physical world, we seek to model some underlying reality that we can never see directly because its reality lies in its being viewed not just by us but by all entities and organisms within it. The true picture of an actual physical world can only be pieced together from the combined 'experiences' of all entities in it which continually act as 'observers' making 'measurements' in the sense of having 'experiences'.

What then can we say about the universe? That it is a construct built up from the totality of all the 'observations' of all its constituent entities acting as observers. It cannot be said to have any physical existence independent of observation because every physical event consists entirely of observations, in the sense of 'experiences'. The universe itself is always known only as it is known to an observer, and inevitably known entirely in terms of that observer's structure, which likewise can be known only in terms of experience as well. The best that we can hope for is to develop a picture which is internally consistent and has increasing explanatory utility, is better able to account for the observations we make from within the perspective of the world view in which we live.

That our scientific worldview does increasingly enable us to function more effectively in the world of our worldview lends credence to the idea that there is a strong structural similarity between the algorithmic laws of nature and our logico-mathematical models. While our experience of the world in terms of qualia must always be at least somewhat private, these logico-mathematical forms seem public, in that they must somehow mirror the laws and algorithms by which the universe actually functions.

The Consciousness of Animals

If our solution to the hard problem is correct, then we must assume that any organism capable of functioning in the world must also have its own world view incorporating an effective logical structure that enables it to function in the world. For any organism to function in the world it must be capable of abstract intelligent thought sufficient to account for its behavior. All such organisms must be conscious in the sense that they experience themselves in the world, just as humans do, though certainly in terms of different 'qualia'. They are conscious simply because they participate in the actual reality of existence in the present moment. How this consciousness manifests to them must then be determined through analysis of their relevant structures.

The propensity for humans to doubt the consciousness of other living organisms is amusing and says more about the deficiencies of human consciousness than that of animals. Due to the vast number of variables of structure, both inherited and developed, as well as the myriad fluctuations of impinging experience, there are inevitably vast variations in the transitory contents of consciousness even for a single being, even more between beings of different species. Certainly the intensity, richness and sharpness of our own consciousnesses vary significantly even from moment to moment.

All reasonably advanced living organisms must have at least a functional consciousness in the sense of a realness of awareness of self-state and environment. This is absolutely required for evolutionary survival. Certainly human consciousness is unique in some ways, but on the other hand it is quite reasonable to suppose that the consciousnesses of many active animals may be much more intense and precisely focused than that of humans.

Think of the intensity of consciousness of both predator and prey in the life and death chases in which they engage, or the intensity of consciousness of the eagle whose sharpness of vision is an order of magnitude greater than a human's, or even the lowly fly whose reaction time is much superior to that of a human. Relative to the speed of a fly's perception of time, our consciousness must seem so slow as to be barely there! Certainly the fly's much superior time resolution results in an enhanced consciousness relative to ours in that respect. How much every one of us life forms misses relative to some other. If consciousness is the richness of content, how much superior to ours the olfactory consciousness of the wolf!

Seeing into the True Nature of Things

Of the many philosophical traditions, Zen in particular clearly recognizes the difficulties inherent in seeing the world as it actually is. Buddhism in general posits that we live in a world of illusion, clearly echoing our notion that the world must always be known through the filters of our own structure. The actual effect of all the levels of complexity of these structures through which we see the world is hard to exaggerate, as is the impossibility of a 'true' view of some ultimate reality beyond and independent of experience. After all, reality consists entirely of experience.

Understanding this, Zen says that the best we can do is to clearly recognize the veils of illusion as illusion. That this is seeing into the true nature of things. By directly experiencing the reality of illusion as illusion, as mental forms empty of any substance other than the realness of ontological energy, we achieve a more profound understanding of reality and its underlying workings. In doing so Zen anticipates the necessity of the observer in any description of reality. But Zen goes one step further by understanding that the observer is also an illusion, that consciousness antecedent to the dualism of self and not-self is the primary reality of experience.

The Self

One of the greatest errors in approaching the hard problem has been equating consciousness with 'self'-consciousness. This is equivalent to saying that consciousness exists, but it is not really consciousness unless it is (or can be) focused on itself. Therefore consciousness is not consciousness unless qualified. Clearly 'X is not X' is the most basic of logical fallacies! There is no recursion requirement for consciousness. Consciousness is simply the realness of awareness.

The notion of 'self' is subject to two interpretations; the concept of the self as a physical being, and that of the mind's I, or focuser of consciousness. We will comment briefly on both.

The direct conscious experience of the flow of time in the present moment is antecedent to any concept of self or not-self. Originally there is no subject or object, but just the flow of experience itself. It is only as organisms develop that logical notions such as identifiable things with properties and relations to other things emerge. The self is just one such thing among other things, though clearly a thing with very unique properties. But even after such concepts arise, experience itself always arises prior to such distinction, and only then is subject to categorization. The concept of a 'self' is a content of consciousness, it is not something that 'has' consciousness.

All experience, whether later categorized as internal or external, is in essence the same. Every content of consciousness occurs not within our brains or in an external world, it just occurs. We may think we see a real external physical world, or we may think we see only a retinal sky, but in fact what is seen is antecedent to both. Our notions of an internal

worldview and an external physical world are two sides of an imaginary mirror.

To translate Hui Neng⁵,

‘There is no Bodhi tree,
There is no mirror bright.
There is only brightness,
And even the dust is dustless.’

That is, there is no ‘real’ body, or any ‘real’ thing; there is no ‘self’ that has consciousness; there is only consciousness itself, and within consciousness everything is perfectly what it is, even though illusion.

The Mind’s I, Freedom and the Will

One of the most interesting phenomena of consciousness is that of the mind’s I, that there appears to be a focus to consciousness and an agent or watcher within consciousness that continually directs its attention from one content to another. And that this mysterious agent appears to have what feels like at least some freedom in directing the focus of consciousness, and continually deciding what to do next.

How do we account for the fact that there always seem to be many contents of consciousness of which one gains stronger focus, that it somehow seems more conscious than the other contents? And what is it that seems able to direct that focus? Whatever it is, it is certainly not the general concept of self we explored above, it almost seems to be another much more personal ‘I’ that might be the ‘real’ self.

What this mind’s I actually is, and whether it has what is called free will or not requires a more detailed analysis than we have space for here, but the answer depends on from what perspective the question is asked.

SUMMARY

- Consciousness itself is not its contents, but that in which conscious content can arise.
- When the usual content of consciousness subsides, what remains is the awareness of the present moment through which clock time flows. This is the fundamental experience of consciousness itself.
- This present moment has an actual physical reality required by the STc principle that underlies special relativity. It is the locus of actual physical reality, common to all entities, in which the living ontological energy of the universe exists. The universe has existence only in this common present

moment.

- The flow of clock time through the present moment manifests as process, the sequence of effects on entities. This is how entities experience the world.
- We use experience in quotes to refer to this general phenomenon as it operates at all levels of structural organization. It is a purely physical phenomenon and must not be misunderstood as aphysical, mystical or metaphysical. It includes experience of both external and internal effects.
- The reality of the physical universe consists of sequences of 'experiences'. Experience is how reality manifests. Every experience is equally and absolutely 'real' in that it participates in the absolute reality of the present moment. In this sense experience is all that exists.
- The notion of experience is a generalization of that of an 'observation' or a 'measurement' to every entity in the universe. Any notion of the reality of the universe must be built up from the combined experience of entities.
- An entity is defined by its structure. This structure can be simple, as an elementary particle, or complex and multi-leveled, as with a human being.
- All entities in the universe participate in the realness of the present moment via experience in terms of their particular structures. Since experience is effects upon a particular entity, every entity can experience impinging affects, both internal and external, only in terms of its own structures. Thus all reality is filtered through the structure of the 'experiencing' entity.
- Human consciousness is simply this same experience mechanism as it is filtered through specifically human structures. Thus experience in general is a kind of proto-consciousness, it is the same 'stuff' of which human consciousness manifests.
- Human consciousness seems conscious, simply because it is the direct participation in the reality of the present moment in which experience has actuality. Human structures provide the details of its content, the reality of the existence of the present moment gives content the reality of consciousness.
- Though every possible structural subdivision of the human organism participates in the reality of experience, only that which propagates up the 'experiential' pyramid to the top for special consideration by the human organism as a whole is normally referred to as human consciousness.
- Thus the reality of the existence of the present moment provides the reality of consciousness, just as it provides the reality to all experience. It is what makes conscious content conscious.
- Existence is experience. All structures experience the realness of the present moment in their own way by virtue of their existence within it. Experience in terms of human cognitive structure is called consciousness.
- The easy solution to the hard problem is that human consciousness is the participation in the physical reality of the present moment by particular cognitive structures. The structures, and the impinging external and internal events, provide the detail and form of conscious *content*, but the reality of the present moment provides the reality that makes this content conscious. Consciousness is the human experience of the reality of the present moment.
- The experience of all entities that exist in the present moment is equally real.

NOTES:

1. A more detailed treatment of the physical and cosmological implications can be found in 'Spacetime and Consciousness' at <http://EdgarLOWen.com/stc.html> .
2. This effect applies only to spatial velocity *relative to an observer*. Since we cannot have any motion in space relative to ourselves, all of our own spacetime speed of light velocity is always through time, thus we measure time slowing only for other objects moving relative to us. Each of us ourselves continually moves through time at the speed of light!
3. There are practical problems in confirming the existence of a common present moment over physical distance, but the effect is always confirmed when relativistic clocks return to the same location. Such clocks always share the common present moment, no matter what different clock times they may read. So there is no reason to believe there is not a universal present moment. We can assume it, even though it may not be directly measurable at physical distance due to relativistic effects and the finite speed of light.
4. There are some possible exceptions. Photons, which have all of their spacetime light speed velocity through space, have no velocity through time, and in this sense may not experience the world.
5. Suzuki, Daisetz. *Zen Buddhism*. Doubleday, 1956.
6. In 'Spacetime and Consciousness' (see Note 1. above) I used the term 'big C' to refer to what here I call xperience in quotes. It is essentially the same idea.
7. Whitehead, Alfred North. *Science and the Modern World*.