

# The Objective Information Process & Virtual Subjective Experiences Hypothesis

*“Reality is the sight within seeing rather than that which is seen.”*

## Introduction

Here I begin a methodical examination of an extremely subtle and profound topic that is fraught with many subtle difficulties. Here I proceed one careful step at a time, elucidating and avoiding common pitfalls, then laying down a coherent foundation and carefully building upon it. It is my hope that this approach will result in some concrete progress that will provide a useful starting point for further explorations of this profound topic.

We first prepare a coherent foundation by reformulating the hypothesis that we are examining to eliminate built in pitfalls, then we consider several more pitfalls that require extreme caution to avoid. Then we acquire some observational data, beginning from subjective experience and making reasonable inferences and avoiding unreasonable assumptions. In this way we reformulate science within the context of the hypothesis. Then finally a mathematical and theoretical model is proposed that enables us to explain the observations within the context of the hypothesis.

## A coherent foundation

### ***A classic definition of the hypothesis***

To rigorously test a hypothesis we must first assume it to be true, then *consistently* explore the implications of this, if it is false then contradictions will be found. When hypotheses are mutually exclusive we cannot use concepts derived from one to formulate and examine the other, each has to be considered in its own terms.

Hence great care needs to be taken with terminology lest habitual and inappropriate ways of thinking slip in and send this enquiry off on an unproductive tangent. Thus I first discuss a classic formulation of the hypotheses, then explain and exclude subtle semantic problems and rename the hypotheses to clarify their true nature and scope.

To approach this topic we need a *containing idea*, a metaphor that we shouldn't interpret literally or simplistically but which gives us a foothold. The metaphor used here is virtual reality. If taken simplistically we imagine an electronic computer running a simulation, but if used subtly we can use it to understand the relationship between quantum information processes and the observables that we apprehend, from which we have inferred the existence of a classical, physical universe.

The ***virtual reality hypothesis*** has been expressed as the idea “*That our reality is a virtual reality that only exists by information processing beyond itself, upon which it depends.*” or “*that the physical world is not an objective reality but a virtual reality.*” which implies that “*There is nothing inside the physical universe that exists of or by itself.*” [1]

In contrast to this is the ***objective reality hypothesis***: “*That our reality is an objective reality that exists in and of itself, and being self-contained needs nothing beyond itself.*” which implies that “*There is nothing outside the physical universe.*” [1]

The *objective reality hypothesis* is here expressed in its own terms, however the *virtual reality hypothesis* is expressed in terms that are dependent upon the *objective reality hypothesis*. This creates many pitfalls that would inevitably lead this enquiry astray and prevent us from rigorously testing the hypothesis. Hence we must clarify terms and rename the hypotheses to avoid the pitfalls.

## **Clarifying Experience and Information**

To coherently conduct this exploration we must put aside all ideas about information processes that derive from the *objective reality hypothesis*. In that hypothesis information processes are assumed to be inanimate. However information is structured discernible difference which inherently requires an experiential process to discern it, thus experience is an integral aspect of all information processes. So we must expand our understanding of information processes to include the role of experience in order to consider how they enable systems to have subjective experiences.

## **Clarifying 'real' and 'reality'**

In philosophical usage the term 'real' means: that which *actually* exists and is not merely seeming, pretended, imagined, fictitious, nominal, or ostensible. Note, this is an intensional definition because it gives the necessary and sufficient conditions for belonging to the set of "that which is real". I.e. it must actually exist and not merely seem to exist. Furthermore the term 'reality' implies the fact of being real or the totality of that which is real.

In the context of the *objective reality hypothesis* it is assumed that there exists something that we can call "the physical universe" and that this constitutes our reality. Hence there is no problem using the terms "the universe" and 'reality' interchangeably when formulating that hypothesis. However it is very problematic when formulating the *virtual reality hypothesis* in which it is assumed that there is no objective universe. Hence saying "*our reality is a virtual reality*" is problematic because it uses the term "*our reality*" in a way that only has meaning within the *objective reality hypothesis*.

I will also soon rename the two hypotheses because they misuse the term 'reality'. The *virtual reality hypothesis* does not claim that 'reality' is virtual, it instead claims that "that which the *objective reality hypothesis* believes to be reality" is virtual. Whilst the *objective reality hypothesis* does not claim that 'reality' is objective, it instead claims that "the physical universe" is objective.

It is important to note that the *virtual reality hypothesis* does NOT deny objective reality, it simply claims that the objective reality is the underlying information process. They are objective in the sense that they actually exist independently of whether or how we look upon them or think about them. Everything else (our experiences and all that is portrayed by those experiences) is a virtual construct that is animated by an underlying information process and is dependent on how we look upon them or think about them.

Hence both hypotheses propose an objective reality, however they differ in what they claim to be real. Thus it would be more accurate to rename them:

*virtual reality hypothesis* → "**objective information process & virtual subjective experiences hypothesis**"

*objective reality hypothesis* → "**objective physical universe hypothesis**".

So from now on I will refer to these as the OIPVSE hypothesis and the OPU hypothesis. Granted, OIPVSE is bit of a mouthful but that is a small price to pay for the vastly increased semantic accuracy. If it is too much of a mouthful then perhaps OIP or VSE could be used instead, but each expresses only half of the hypothesis and leaves the other half implicit.

A significant contrast between the two hypotheses is that the OIPVSE hypothesis proposes that reality cannot be experienced yet it underlies all experiences, whilst the OPU hypothesis proposes that reality is that which is portrayed by our experiences yet experience itself goes unquestioned and remains inexplicable.

Note: I don't use a name such as the virtual universe hypothesis because the whole concept of a 'universe' is problematic within the OIPVSE hypothesis for reasons that will be discussed next and in more detail in a few pages.

## ***Clarifying 'world' and 'universe'***

In the context of the OPU hypothesis the terms 'world' and 'universe' refer to something that is believed to objectively exist and in which we are objectively located. Hence the use of such terms in the formulation of that hypothesis is not problematic. However when used to formulate the OIPVSE hypothesis they can lead us to slip into OPU ways of thinking.

Hence in the formulation of the OIPVSE hypothesis these terms must be avoided. Later these terms are discussed in the context of the OIPVSE hypothesis however they are then understood in an entirely different light. They are seen to be artefacts of our attempts to explain how things appear when certain false assumptions are made about our subjective experiences – in other words they are myths. This is discussed later.

A significant contrast between the two hypotheses is that the OPU hypothesis considers subjective experience to be invalid whilst the idea of an objective universe is its cornerstone. Meanwhile the OIPVSE hypothesis considers the idea of an objective universe to be invalid whilst subjective experience is its cornerstone. They are each diametrically opposed.

## ***Defining the hypothesis***

Because of these various issues I shall define the OIPVSE hypothesis as the idea that:

**Our subjective experiences and all that is portrayed by them are virtual in the sense that they are dependent upon an underlying objective animate information process.**

In this formulation there is no reliance on OPU beliefs about what is real, or OPU concepts such as world or universe or inanimate information processes. With this definition of the hypothesis we have a coherent foundation from which to begin the enquiry, without inbuilt pitfalls that may later lead us astray. From this beginning, if we proceed very carefully we can make concrete progress.

## **Extreme caution is required**

### ***Naïve realism***

Naïve realism is a cognitive habit operating in each moment of awareness that leads us to assume that the phenomenal content of our subjective experiences are in fact objective external objects. Thus when we see a chair in front of us we simply assume that this is because there is a chair in front of us. We do not question the quantum nature of observables, the operation of our sensory and neurological sub-systems, the subconscious pre-processing of stimuli, the perceptual forms that arise in the conscious mind, nor the conceptual categories that we habitually associate with those forms.

This type of realism is called naïve because it is an unconsidered and merely assumed epistemological position. In rare instances it is a consciously held philosophical belief, then it is called direct realism, however this has been disproven in several ways (e.g. by philosophy, cognitive science and quantum mechanics) and is therefore rarely espoused any more. However naïve realism remains endemic because it goes unquestioned and unchallenged in all but a few minds and discourses.

Naïve realism is biologically useful because an animal's perceptions of food, danger, mates, etc can be interpreted with sufficient accuracy and quickly responded to, thus this habit is deeply engrained in our minds. However when exploring subtle issues of epistemology, philosophy, metaphysics, physics, etc it can be a significant obstacle to clear, sceptical, rational thought about certain topics.

Throughout history and throughout each of our lives there has been an unconscious accumulation of habits and beliefs arising from unquestioned assumptions about the contents of subjective awareness. Thus the mind conforms to a self-reproducing closed loop of hidden assumptions, which keeps most cultural discourses unwittingly bound within a naïve realist framework. In this way the influence of naïve realism permeates our perceptions, beliefs, languages, cultural discourses, philosophies and scientific theories. It takes great courage, effort, persistence, clarity, subtlety and caution to coherently and consistently think outside of that closed loop.

For a more detailed discussion of naïve realism see [here](#).

### ***Testing mutually exclusive hypotheses***

For a hypothesis to be put to the test one must first assume it to be true, then consistently explore the ramifications, being careful to not corrupt that exploration by inadvertently mixing in concepts from other mutually exclusive hypotheses. If a hypothesis is incoherent or invalid then consistent exploration will eventually result in self-contradictions or contradictions with our experiences. It is important to note that it may contradict mutually exclusive hypotheses without itself failing.

The OIPVSE and OPU hypotheses are mutually exclusive and the OPU hypothesis has become so engrained in our culture and our minds as to seem self-evident. However the OPU hypothesis has little compelling evidence in its favour and much evidence weighing against it.

The OPU hypothesis has been assumed to be true throughout history and it has been tested by philosophy and science. These tests have highlighted numerous self-contradictions and contradictions with our experiences, most notably through the examination of naïve realism, the hard problem of consciousness, psi-phenomena, big bang theory, relativity theory and quantum theory. In particular it fails to provide any explanation or any path towards an explanation for central aspects of our experiences, such as subjective experience and consciousness. It fails with these in particular because it is fundamentally based upon naïve realist assumptions that completely overlook the role of subjective experience and consciousness in our apprehension of phenomena.

If the OPU hypothesis was being evaluated rationally it would have been considered disproven and rejected long ago, however due to the unconscious and endemic nature of naïve realism it remains as an entrenched belief system and a ruling dogma. Because of its inconsistencies and weak explanatory power, alternatives must be considered even if, due to our habitual way of thinking, these initially seem unthinkable.

Note, when testing the OIPVSE hypothesis it may contradict inferences from the OPU hypothesis that have become so habitual that we conflate them with our experiences, hence it may at times seem to contradict our experiences when in fact it is simply contradicting the OPU hypothesis. For instance, our habitual (naïve realist) tendency to believe that we are directly experiencing external physical objects when in fact we are having subjective impressions that portray something that can be interpreted as external objects. Hence we must be careful to distinguish between our actual experiences and our habitual inferences based upon unconscious assumptions.

Eventually, if a hypothesis survives the testing it will come to explain aspects of the mutually exclusive hypothesis in its own terms, but this can only happen much later when the hypothesis is developed sufficiently to be able to do so. To attempt this prematurely is to risk mixing hypotheses and thereby corrupting the test and inadvertently going off on an unproductive tangent.

### ***Consistency***

To adequately test the OIPVSE hypothesis we must assume that it is true and ***consistently*** follow through the implications. To coherently do this we must consistently assume that there exists an underlying information process that animates our stream of experiences and that which is portrayed by those experiences. Any slips into an OPU mode of thinking, no matter how subtle, will corrupt

the test and send us off on an unproductive tangent.

Firstly, we must put aside all ideas either explicitly or implicitly associated with the OPU hypothesis because they are inconsistent with the OIPVSE hypothesis. This is easier said than done because our culture (language, philosophy, science, etc) and our individual minds are permeated with unconscious and conscious beliefs associated with the OPU hypothesis. There do exist cultural elements that are not associated with the OPU hypothesis however, due to the endemic nature of naïve realism, these are rare and obscure; mostly coming from Eastern and mystic philosophy, which are based upon direct subjective experience and not on subjective experience that has been assumed to be objective due to naïve realism.

Our minds are deeply habituated to thinking in terms of phenomena as existing *within* the universe and thinking of the universe as objectively existing *out there* independent of our experiences. Thus all thinking and speaking about “the universe” or about dimensions, objects and events within the universe is a feature of the OPU hypothesis. We must be careful when eventually approaching these topics to not slip into habitual ways of thinking about them.

Even when explicitly trying to comprehend our situation as something that is a virtual construct animated by an underlying information process it is easy to slip into old habits and thereby inadvertently introduce elements of OPU thinking, which leads us to explicitly or implicitly locate aspects of the underlying information process within the virtual construct that is animated by the information process. This leads to logical inconsistencies, such as, a computer cannot animate itself into virtual manifestation. To properly examine the OIPVSE hypothesis we must be very careful to maintain consistency and avoid any such slips.

### ***There is no objective virtual world***

The title of this section may seem an obvious statement, however there is a subtlety that is often overlooked that can create confusion. It is not the case that there is a single virtual world or virtual universe, within which virtual systems manifest. That is a subtle form of OPU thinking, which is often exacerbated by our experiences with VR games that we can collectively observe via images projected onto a computer screen.

We must keep in mind that a virtual world is a construct of appearances from *subjective* perspectives that are emergent from the underlying information process. There is no 'screen' that all virtual systems experience; each virtual system has its own private 'screen'. The appearances arise within a subjective stream of experiences, hence each virtual system has its own private, subjective world-experience.

As multiple virtual systems observe their subjective world-experiences they may make naïve realist assumptions and communicate these, thereby coming to infer a common context that they call “the world” or “the universe”. Hence saying things like “*the information process animates the virtual world or the virtual universe*” is a subtle form of OPU thinking. The virtual world or virtual universe is a collective agreement, it is a public imaginative construct based on assumptions about private subjective experiences that are communicated between virtual systems. i.e. it is a myth that is used to explain the situation as it is apprehended through the cognitive lens of naïve realism.

If we forget this and slip into thinking of “the virtual world” or “the virtual universe” as something that is independent of the virtual system's subjective experiences and communications then we have introduced a subtle form of OPU thinking, which can send us off on an unproductive tangent.

### ***Abstraction and Reality***

How can something as abstract as an information process be truly real? Within a naïve realist paradigm 'abstract' means 'unreal' because it can never be portrayed by the content of an experience no matter how augmented that experience may be (e.g. by microscopes or telescopes or particle

accelerators etc). Due to naïve realism we are in the habit of thinking that only the things portrayed by our experiences can be real and that everything else is abstract and unreal.

However, when we step away from naïve realism and seriously consider the role of experience we realise that if experience is fundamental and not just an anomaly then that which is most real must underlie our ability to experience. Furthermore, "that which underlies our ability to experience" cannot be "that which is portrayed by our experiences". Thus that which can be observed is unreal and that which is real would seem 'abstract' because it can never be observed. Metaphorically speaking, reality is the sight within seeing rather than that which is seen.

## **Collecting observational data**

Now that the foundations of the hypothesis have been prepared and some of the most vital cautions have been elucidated it is time to begin the enquiry proper by acquiring some observations and making some reasonable inference, whilst avoiding making any unreasonable assumptions based on naïve realism or habitual OPU thinking.

This is done whilst keeping in mind that we are exploring the OIPVSE hypothesis, hence we cannot begin by talking about physical objects and events in an external objective world, so the only place to begin is with direct subjective experience. Fortunately this is sufficient.

Once this basic observational data has been acquired we will then explore a model, both mathematical and theoretical, that can explain the observational data.

Due to the non-reliance on concepts that are usually understood in an OPU manner some of this will seem difficult to follow, hence occasional notes in {brackets} are added to assist in its comprehension. However be careful not to think in these terms because these are not part of the enquiry proper. The bracketed asides can later be understood in terms of OIPVSE hypothesis however that only becomes possible after the point at which they are mentioned, hence the brackets and the caution.

### ***Subjective experience***

The only thing that is self-evident to me is that I experience. Everything else that I can know is inferred from these experiences. I cannot yet say that "I exist" or in what manner I may exist because I have no idea what 'I' am. All I know is that I experience. From these experiences I will infer what I can and later I will be able to comment on what I am and whether or in what manner I exist.

### ***Singular experience***

I can observe that my experiences seem singular, i.e. there is only one stream of experiences and not several. There are many fine grained features and types of phenomena {e.g. sights, sounds, sensations, thoughts, emotions, etc} however they are all apprehended within a single field of awareness.

### ***Non-random experience***

I can observe that my experiences are not random. There is structure and coherence to the experiences. They portray forms that have structure in each moment of awareness and as the experiences are followed by more experiences there is structure to how the forms change.

### ***Experience from a perspective***

I can maintain a constant state {e.g. posture or orientation} and observe changes amongst the forms

that are portrayed by my experiences {e.g. looking straight ahead at traffic on a road}. However I can also alter my state and observe changes that affect all the forms that are portrayed by my experiences. Some changes of perspective can cause all the forms to vanish {e.g. closing my eyes or blocking my ears} or to move to one side {e.g. turning my head} or to become attenuated {e.g. moving away from a noise source} and so on.

From this I can infer that my experiences arise from a particular perspective that can change. Hence some changes in my experiences are due to changes in my perspective.

### ***Self and not-self***

Some experiences arise from that which modifies my perspective {e.g. sensations within the body, thoughts within the mind}. When I alter my perspective this action is accompanied by experiences {e.g. the sensation of closing my eyes, or dizziness from turning around many times}.

From these I can infer that my perspective is situated in something {e.g. a body/mind} that has both self experiences of its own state {e.g. the subtle sensations within the body or thoughts within the mind} and experiences that are not directly related to itself {e.g. sensory impressions of objects} but which also change my state, i.e. the state of apprehending and my reactions to those apprehensions. Hence these experiences imply that there are systems that are self and not-self.

The term 'system' is used here as a very general referent, however it will be refined as this enquiry progresses.

### ***Interactivity of experience***

So far the only interactive aspect of my experiences have been in relation to my self as I alter my state to shift perspective {e.g. turning my head}. However I can also alter my state such that I can cause changes in my observable form that cause changes in the observable form of other systems {e.g. moving my finger to draw a line in the sand and seeing the resulting line, or moving my hand to shift pebbles around and observing the changing patterns}.

### ***Form and behaviour of self***

As I experience phenomena and interact with systems I can observe myself {e.g. by watching parts of myself or observing myself in a mirror as I interact with things} and infer from this the basic form and behaviour of myself, i.e. my changing state and resulting changes in observable form as I interact with systems {e.g. what an arm looks like and what reaching looks like}.

### ***Others like me***

Based on my observations of myself I can apprehend systems within my stream of experiences that have a very similar form to me. My observations of their behaviour, which is very similar to my own, leads me to infer that these systems correspond to *others* like me. I cannot experience their experiences so I cannot know for sure that they too experience things from their perspectives, however it is reasonable to assume that they do. As I interact with them it becomes increasingly clear that they experience me in a reciprocal manner to how I experience them. It is due to the fact that we can experience each other and react to these experiences that we are able to interact.

I can now come to know others like me, communicating and cooperating with them thus the pace of discovery and innovation increases because of our ability to work as teams, have discourses and generally function as collective systems that have far greater capacity than any individual.

### ***Private subjective experience***

From my interactions with others like me I can infer that they have experiences that are not

apparent to me and that I have experiences that are not apparent to them. Hence my experiences are private and subjective, and so too are theirs.

### ***Others unlike me***

Based on my observations of myself and others like me as we interact I can infer the general principles of “interaction between systems via reciprocal experience”. These general principles can then be applied to systems that are unlike me, which leads me to infer that systems unlike me also interact via reciprocal experience {e.g. animals, plants and systems in general}.

The greater the difference from me in their form and behaviour, the greater the difference from me in their experiences and interactions. However given that I and other systems like me interact by experiencing each other it is reasonable to infer that all systems interact via reciprocal experience in some manner. There is no reason to propose an entirely different mechanism for interaction and even if we tried it is not at all clear what that mechanism could be.

{Traditionally it has been proposed that there exist inanimate systems that obey laws, but there has never been any explanation of how these laws are enforced and how inanimate systems could obey them. It is a pseudo explanation that doesn't really explain how systems interact. It is like watching a football game and assuming that the players are inanimate and governed by the rules of the game, simply because one can infer the rules of the game by studying the behaviour of the players. To explain how systems interact in a functional sense we need to suppose that the systems have some perspective via which they process information, hence in some sense they experience and thereby interact.}

However the qualitative nature of the experiences of systems is not necessarily like my own {e.g. a pebble doesn't experience complex sensations and have cognitive impressions about them, although in a very primitive way it does experience a force when kicked, otherwise it could not change its state and thereby react to the incident force. It doesn't move because a law says it should, it moves because a shock wave or pulse of energy propagates through its molecular bonds}.

### ***Structure of experience***

By modifying our state we can interact with other systems and thereby explore the structure and behaviour of the network of interacting systems that we apprehend through our experiences {e.g. grouping pebbles to deduce the principles of algebra such as  $1+1=2$  or the principles of set theory, or encoding and decoding symbols by writing and reading them, or dismantling and assembling systems to deduce the principles of system theory such as sub-system / super-system relations and various mechanical properties of systems, and so on}.

For instance, by dissecting systems like ourselves we can discover that we are not single monolithic systems, instead we are each composed of many interacting sub-systems, which are themselves composed of many interacting sub-systems, and so on. Furthermore, by interacting amongst ourselves we become integrated into social groups, which themselves interact amongst each other and form into larger groups-of-groups, and so on. Thus we become a part of larger super-systems that have greater capacities and emergent properties, many of which are mutually beneficial to us however some emergent properties are very problematic.

### ***Augmented perspectives***

Now we have had many experiences of changing our state and perspective; of interacting with systems; de-constructing and constructing systems and of increasing understanding of the structure and behaviour of systems. From this we can learn to interact with some systems in ways that augment our perspective on other systems {e.g. engineering configurations of lenses and looking through a microscope or telescope at something, or constructing various devices that allow us to



observe aspects of the form and behaviour of atoms or galaxies}. Thus we can explore deeper into the structure of our experiences, discovering relativity theory, quantum theory and so on.

In some cases the augmented perspectives allow us to interact with systems in new ways {e.g. moving atoms with a scanning tunnelling microscope}. Other forms of engineering also allow us to change state and exert influence in new ways {e.g. flying through the air in an aircraft, or firing projectiles at a target}.

### ***Primary observations***

I started from direct subjective experience and made reasonable inferences from my experiences whilst avoiding making any naïve realist assumptions. I can now reasonably know that I am a system that can experience other systems and be experienced by other systems. I am not alone, there are many systems very similar to myself and there are also a wide variety of other types of systems, all of which have certain common features:

- A system has a singular, private, subjective stream of experiences and an observable form. Very simple systems have very simple experiential processes and observable forms, whilst very complex systems have very complex experiential processes (e.g. human consciousness) and observable forms (e.g. human bodies).
- Systems are composed of interacting sub-systems and they interact to form into super-systems. In this way simple systems integrate to form more complex systems. As systems increase in complexity so too does the complexity of their experiential processes and observable forms.
- What a system experiences influences how it experiences and how it experiences influences what it experiences. I.e. systems experience the observable forms of systems from their perspective. The perspective and observable form of a system depends on its state. When a system experiences, there are state changes, both the state of apprehending and the resulting changes of state that constitute a reaction to that which is apprehended.
- Systems interact via reciprocal experience; i.e. the observable form of one system is apprehended by the experiential process of another system, thus causing that system to change its state, which is its reaction. This change of a system's state changes the observable form of that system, which is then apprehended by the experiential process of some other system, and so on. I.e. what a system experiences changes how it appears to other systems, which changes what other systems experience, thus changes propagate between systems. In this way networks of system interactions form.
- There are no inanimate systems because such systems could not interact and thereby could not participate in the network of interacting systems.
- There is a structure and coherence to the network of interacting systems that can be understood by careful observation and deductions leading to knowledge such as mathematics, linguistics, information theory, system theory, quantum theory, etc.
- Systems can be dismantled or reverse-engineered as well as constructed or engineered. This can augment the capacities of some systems, such as ourselves, thereby extending the scope of our observations and interactions.

### ***Complex experiential processes***

I can now also shed some light on whether or the manner in which it could be said that “I exist”. The I that I experience myself to be is not truly singular. Each system at its own level appears to be a single system however it is composed of many levels of sub-systems within sub-systems, down to the most primitive and basic of systems. Each complex system has a complex observable form and

a complex experiential process. Just as complex observable forms seem to be singular, so too complex experiential processes seem to be singular.

Hence, whilst my stream of experiences seems to me to be singular it is actually emergent from the integration of the experiential processes of all the levels of sub-systems within sub-systems that comprise me. That is why affecting my sub-systems {e.g. by consuming a drug or undergoing brain surgery or shifting unconscious beliefs} also affects my stream of experiences. My complex high-level stream of experiences is an emergent multi-level confluence ultimately woven out of the lowest-level experiential processes. Thus at a high-level my consciousness is uniquely human, however at the lowest-level it is made of the same experiential processes that animate all systems.

Furthermore, by the same mechanism of emergence, the social systems that we form into harness and integrate our experiential processes into the emergent experiential process of a collective super-system, such as a family, tribe, organisation, corporation, nation, etc.

As we become more tightly integrated the collective experiential process becomes more integrated and singular, eventually experiencing itself as a single system, with its own perspective, goals and agendas. That is why social systems, in some sense, take on a life of their own and often act in ways that suit themselves whilst neglecting the interests of the individuals, even though they first arose to provide mutual benefit to individuals. For example, social systems such as totalitarian and fascist states or corporatist oligarchies or more subtle forms that learn to disguise their nature but are equally problematic.

These emergent higher level forms of consciousness are woven out of our human consciousness but they themselves are not human. Just as our consciousness is woven out of cellular consciousness but we are not cells.

It is the nature of our individual consciousness and our interactions, both inter-personally and en masse, that determines the nature of the emergent collective consciousness and its behaviour, both towards its perceived world and its perceived body, within which we are analogous to its cells. If we have a low quality of consciousness and we interact poorly we integrate into social systems that destroy the environment, fight amongst each other, and exploit, deceive and oppress us. If we have a high quality of consciousness and we interact well we integrate into social systems that protect the environment, care for each other, and support, inform and uplift us.

### ***No need for unquestioned assumptions***

We can observe, infer and come to know all of this without the need to introduce concepts such as matter, inanimate systems or an objective physical universe, which arise from naïve realist assumptions. Indeed many of the above observations would be impossible if we began by making naïve realist assumptions. We would be stuck thinking about inanimate objects in a physical universe and many of the experiences in our lives would be incomprehensible. Indeed 'experience' itself and all of its implications would be incomprehensible.

Quite likely some of you are struggling to take seriously some of the above observations because they clash so strongly with the engrained naïve realist habits that we all have permeating our minds, however these observations follow on from reasonable inferences from direct subjective experience, without any unwarranted assumptions. Hence within a rigorous examination of the OIPVSE hypothesis they should be taken seriously and put to the test, rather than dismissed.

Some aspects of the above observations are explicable in terms of the OPU hypothesis however when its implications are examined this leads to numerous 'paradoxes' or self-contradictions and contradictions with our experiences, i.e. via the examination of naïve realism, the hard problem of consciousness, psi-phenomena, big bang theory, relativity theory and quantum theory.

Furthermore, core aspects of the above observations remain utterly inexplicable within the OPU hypothesis, such as how supposedly inanimate systems can interact, subjective experience, human

consciousness and the emergent behaviour of social systems and complex systems in general.

### ***A simplification involving space and time***

A major simplification is that in the context of the OIPVSE hypothesis there is no need to try to explain an objective 'fabric' of space and 'arrow' of time, with all of the problems and paradoxes that this creates.

For instance, how can space and time be objective when they behave in the manner described by relativity where different observers experience them differently? Or how can space and time be objective when position and time are complementary variables with momentum and energy in quantum mechanics, thus causing phenomena to be de-localised in relation to space and time? Furthermore, how come there is a direction to time when all the dynamical relations are reversible? Another thing that will later become clear is: why are all these dynamical relations reversible?

These apparent paradoxes are artefacts of the contradictions within the OPU hypothesis and they simply vanish with this re-formulation of the problem because we only need to consider the appearances within subjective experiential processes and there is no objective space or time to be considered. We will see later when we develop the mathematical model, that space will be seen in an entirely new light and so will time.

We will see that space is neither a “physical thing in a physical universe” nor a “virtual thing in a virtual universe” nor is it a 'nothing'. Rather it is more like a “data structure” that takes part in the computations of the underlying information process and which *structurally* orients virtual systems in relation to each other and thereby facilitates their interactions. We only come to infer space because of the coherent structure of that which is portrayed by our experiences.

Likewise, time is neither a “physical thing in a physical universe” nor is it a “virtual thing in a virtual universe” nor is it a 'nothing'. Rather it has two aspects, one is more like a “data structure” that takes part in the computations of the underlying information process and which *processually* orients virtual systems in relation to each other and thereby facilitates their interactions. The second and deeper aspect is the iterative activity of the underlying information process, which manifests as changes in the state of virtual systems, their experiences and that which is portrayed by their experiences. We only come to infer time because of the coherent changes that we experience.

However this is getting ahead of ourselves and will be dealt with in more detail later.

This shift from an objective space and time to subjective experiences from which we may infer space and time makes it much easier to understand how different observers can experience space and time differently in relativity theory, as well as how phenomena can be de-localised in relation to space and time in quantum mechanics.

### ***Occam's Razor***

Occam's razor is a principle of theoretical parsimony or economy, where "*Entities should not be multiplied unnecessarily.*" or "*We are to admit no more causes of natural things than such as are both true and sufficient to explain their appearances.*" or more simply "*When you have two competing theories that make exactly the same predictions, the simpler one is the better.*"

There is a common misunderstanding that the OPU hypothesis is the simplest and therefore Occam's razor should exclude hypotheses such as the OIPVSE hypothesis. However upon examination we see that Occam's razor cuts the other way.

The OPU hypothesis proposes the existence of an objective physical universe, along with forces, fields, space-time and myriads of independently existing particles with their various properties. As well as universal laws that all of the above must 'obey', without any explanation of how this might occur. Then there is the proposed substance 'matter' which is alleged to be that in which the

particle's properties inhere and which is fundamental to the existence of the physical universe.

For us to be aware of these things we need consciousness, which is proposed to be a miraculous phenomenon arising from the interactions of the inanimate systems that comprise our brains and gives us animate capabilities that are not only unexplained but are totally inexplicable within that hypothesis. Given this vast multiplicity of proposed phenomena there are still numerous paradoxes, such as the findings of relativity theory and quantum theory, which contradict the OPU hypothesis.

Compare this to the OIPVSE hypothesis where we see in the next section that there is a single underlying animating process that gives rise to both the ability to experience and everything that is experienced. The principles of relativity theory and quantum theory arise naturally from this process and there are no paradoxes. Furthermore an understanding of naïve realism explains the origins and compelling nature of the OPU hypothesis as a persistent illusion. Thus Occam's razor should cut out the OPU hypothesis.

## Mathematical and theoretical model

In this section I will illustrate how it is possible to explain all of the primary observations above in a self-consistent manner without any naïve realist assumptions or paradoxes.

Obviously this won't be a complete formulation. The OPU hypothesis along with the “standard model” of modern physics wasn't completed in a single attempt and neither will the OIPVSE hypothesis. However I will attempt to make a good start and lay down some useful foundations.

The above enquiry serves as the theoretical groundwork; clearing away OPU misconceptions and preparing the mind to better approach the OIPVSE mathematical / theoretical model.

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This section is a work in progress. Most of it has already been elucidated elsewhere and will gradually be assimilated into this document. For now I will provide links to and brief descriptions of that other work for those who wish to look ahead.

The core of the model is described in the document: **System Science of Virtual Reality: Towards the unification of empirical and subjective science** <http://anandavala.info/SystemSimulation.pdf>

The core of the mathematical model (SMN) is clearly defined and described there, however the terminology needs to be rectified in minor ways to bring it in line with this enquiry.

From the preface:

The book is primarily about systems and simulation in a very general sense. The primary theme is linear algebraic simulation, which is an approach that models and animates a target system using systems of linear equations, which are expressed as matrices and vectors (or their logical equivalents such as graphs or networks).

The fundamental principles of simulation and their correspondence to linear algebraic methods are examined. An initial system modelling methodology is described, which is then gradually refined into a more advanced form. This refinement process naturally results in the derivation of the core mathematical foundations of quantum mechanics, thereby situating quantum mechanics within a computational / system theoretic context. By following this process the reader may develop a deeper understanding of both general system modelling and quantum mechanics.

The process of simulation intrinsically implies the concept of a virtual reality in which the observer is both emergent from and embedded within the information process. It also highlights the ramifications of naïve realism.

The subject of consciousness, in particular subjective experience, is discussed from the perspective of the systems paradigm, which leads to a compelling resolution of the hard

problem of consciousness. Finally an attempt is made to derive the general form of the dynamical equations of individual consciousness.

To see some of the implications this model has on our understanding of consciousness see: <http://www.anandavala.info/What-is-Consciousness.pdf>

There are other fragments of the mathematical model although these need more explanatory material to make it clearer exactly what they are doing and why. The terminology also needs to be rectified to bring it in line with this enquiry.

**Finite Discrete Closed Information Systems** <http://anandavala.info/TASTMOTNOR/Finite%20Discrete%20Closed%20Information%20Systems.html>

This document details a *group theoretic* analysis of SMN and produces some interesting results regarding the overall structure of our universe based on purely computational arguments. It indicates that the Planck scale constitutes a *dynamical group* that lies at the heart of the *simulation* of our empirical context, and that it naturally gives rise to quantum and relativistic phenomena. It also suggests that the universe is spatially flat and finite in extent with finite discrete gravitational potential energy being the limiting factor, and also that there is a universal inertial reference frame (however it is not a physical ether, instead it is a computational construct operating within the simulator).

**The Cyclic Computational Model** <http://anandavala.info/TASTMOTNOR/Cyclic%20Computation.html>

In brief, the raw data within the SMN model is complex, i.e. of the form  $z = e^{i\theta}$ . This data can be visualised as a unit vector centred on the origin of a two dimensional complex space called the Argand plane, with an angle of rotation  $\theta$ . When the simulation algorithm iterates, the complex values are multiplied by other complex values, which rotates the vector by some amount. Hence the raw data when iterated implements myriads of cyclic processes.

The cyclic processes implement a computational regime that relies on cyclic rather than binary processes, with a phase eccentricity giving rise to the emanation of cycles within cycles which are finally terminated by *quantisation entropy* (i.e. when the variations are too small for the perceptual process to register, hence there are no more variations). From within the simulated universe these cycles are the waves of resonant energy states that permeate the quantum vacuum. It also mathematically derives aspects of the Planck scale of our physical universe based upon purely computational arguments, and it makes explicit the relationship between transcendent information (flowing within the simulator) and empirical energy (flowing between virtual systems), between transcendent iteration (the activity of the simulator) and empirical dynamics (the activity of virtual systems) as well as perceptual resolution and the type of world that is experienced.

**Finite Discrete Notation** <http://anandavala.info/TASTMOTNOR/Finite%20Discrete%20Information.html>

A mathematical notation that explicitly represents all information in finite discrete form. Thus all data has an explicit complexity and resolution, which gives it a smallest possible value and a largest possible value. This notation is used throughout the above analyses.

**Temporal Notation** <http://anandavala.info/TASTMOTNOR/Temporal%20Notation.html>

A mathematical notation that explicitly models multiple nested temporal contexts. For example, if there are virtual worlds containing simulators that create nested virtual worlds and so on, thus producing worlds within worlds. This notation helps to track the progression of time in each nested context in relation to the supervening contexts. It is used in the cyclic computational model, where there are cycles within cycles.

There will also be a discussion of quantum complementary variables  $\Delta x/\Delta p$  and  $\Delta t/\Delta e$  in relation to

the subjective nature of space and time.

As well as the quantum erasure experiments and the Stern / Gerlach experiment that compellingly highlight the manner in which we are dealing with subjective experiences and not observing objective phenomena.

This leads to conclusions such as:

“We have no satisfactory reason for ascribing objective existence to physical quantities as distinguished from the numbers obtained when we make the measurements which we correlate with them. There is no real reason for supposing that a particle has at every moment a definite, but unknown, position which may be revealed by a measurement of the right kind, or a definite momentum which can be revealed by a different measurement. On the contrary, we get into a maze of contradiction as soon as we inject into quantum mechanics such concepts as carried over from the language and philosophy of our ancestors. . . It would be more exact if we spoke of ‘making measurements’ of this, that, or the other type instead of saying that we measure this, that, or the other ‘physical quantity’.” (E. C. Kemble, *The Fundamental Principles of Quantum Mechanics*. Mc- Graw Hill (reprinted by Dover), 1937)

In the reformulation of those pieces of work I will also discuss various theoretical implications along the way, whilst keeping the OIPVSE hypothesis and the above primary observations in mind.

I will also bring in and explain other phenomena along the way and at the end, such as other apparent paradoxes of the OPU hypothesis and how these are resolved by the OIPVSE hypothesis.

## **References**

[1] The physical world as a virtual reality <http://brianwhitworth.com/BW-VRT1.pdf>