The Virtual Reality Rendering Engine

A chapter excerpted from a work in progress

Active Mysticism Explores:

The Nature of God ~ Ultimate Reality ~ The One

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Say What!

Neither the reality you think you are experiencing now nor virtual realities in general exist 'out there'. This is a point that is difficult but critical to realize and keep clearly in mind because of how we commonly experience our reality and ourselves. The dichotomy between 'in here' (mind-brain) and 'out there' (physical world) is embedded in our language as we speak of our experience of ourselves and of our environment. They (and we) do not exist 'externally' even in the form of something like the "holodeck" of the Star Trek fictional reality or other science fiction creation. We do not move around in any kind of reality or simulation of reality 'out there'. And the key points here are that 'we do not move around' and there is neither an 'out there' nor 'in here' as normally conceived. Whatever realities appear to exist, such as the apparently vast universe that we see with our optical, radio and x-ray telescopes, are virtual realities that we perceive only within our consciousness. They do exist, independent of us, but our perception of and interaction with them is wholly created by our own interpretation of an incoming data stream. There is no 'out there' or 'in here' with regards to our existence in a virtual reality in any sense. Even based on our virtual brains as they appear and are believed to be located in the PMR virtual reality, where our minds are presumed to exist based on PMR thinking, it is known that we cannot distinguish between data streams from 'internal' sources such as dreams and from 'external' sources. Our minds cannot distinguish between some 'reality' supposed to exist at face value and simulated virtual realities because that is all that really exists: simulated virtual realities as an incoming data stream. Our true, base, reality has been previously described [at ShortModel-14-LikeADream-IndrasNet] as our existence in Indra's Net, the only true 'in here'. Reality as we experience it as an external reality is strictly a virtual reality, a simulation, experienced and interpreted within our own consciousness. Maya, or illusion, indeed.

That is all that is required for us to perceive a virtual reality as being 'out there'; an incoming data stream and our ability to properly interpret it. This includes sensations that we perceive as being 'in here', as internal to our virtual bodies which again exist only as simulated sensations. Going in the other direction from the perception of the surrounding universe in our virtual reality into very small dimensions of reality, whether by using a microscope, an electron microscope or some kind of quantum device of modern physics, there is again no 'in

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here'.   Alternatively, by some form of introspection, looking within our own being, our own mind, there is again no "in here" as we perceive ourselves as existing within our virtual reality bodies. Our minds, our true existence, as they actually exist and we can perceive them by introspection exist within Indra's Net. How the apparent 'out there' and 'in here' are generated is the point of this discussion and much of the purpose of Ultimate Reality as it has been developed by The One.

This present chapter is about how and why the data stream into our individual minds, the data stream that we interpret and experience as reality and our perceived selves and our experience and communication with others, is generated. This incoming data stream is our only true 'external' experience as we reside within the place of souls: Indra's Net. There we constitute only a point of perception, a mind or consciousness, with a record of our internal experiences as memories only, to serve as part of our basis for interpreting the incoming data stream. [This is all discussed, at a basic level, in my Short Model of Ultimate Reality, version 2, starting at: ShortModel-1-Introduction]. In this explanation, I will refer to the Virtual Reality Rendering Engine that is a conception of a portion of the operation of The Big Computer (TBC) as explained by Tom Campbell in his trilogy *My Big TOE*. His description of TBC will not be repeated here. This is conceived as a function of part of TBC rather than a specific and separately functioning aspect of Ultimate Reality; a virtual device to create our virtual reality experience. How and why this incoming data stream is generated and related implications is the point of this chapter. Some aspects of our virtual reality experience that point specifically to the nature and functioning of the Virtual Reality Rendering Engine will be pointed out. This chapter explores how the purpose for the existence of virtual reality experiences directs the way that the data streams that create them within our minds are generated. It explores some aspects of the purposeful design of this data stream for generating the virtual reality life experiences that are familiar to our every day existence.

This situation is not so different from our normally assumed situation as we appear to exist here within the virtual reality of PMR. Here we are assumed to have our minds located within our virtual reality brains. Our brains are supposed to somehow generate our minds and a lot of effort has been spent trying to discover how. But no one has ever found the seat of our minds, the little man or woman who hides inside a box somewhere, presumably within our brains, and is

the real us. The locations within our brains for many aspects of our mental functioning have supposedly been determined. Areas where memories are retained, areas where creating memories is enabled, short term versus long term memory functioning have been found. Also areas related to visual functioning, including many details of visual processing. Certainly much more has been discovered than I am aware of. But no one has found the site where the little person that is our mind, the real us, hides or how consciousness itself is created. My current point is that if our minds really do exist within our PMR brains and are the real us, our minds would in actuality be receiving an incoming data stream that it interprets as our selves, our bodies, and all of its sensations and experiences. Somehow it would be taking a stream of data, neural impulses from our sense organs, and converting it into the field of vision we experience as so richly detailed and colored and the field of sound surrounding us that it somehow converts into such a range of natural sounds. It also takes the senses of touch, smell and taste and creates those aspects of our experience that our senses can represent. But it is all created by the proper interpretation of an incoming data stream, fired or not fired neurons, the ones and zeros of digital reality. Ultimately, it does not matter where our mind, our consciousness, is located. Wherever it is or we think it is located, what it perceives is still a digital reality generated from an incoming stream of information, interpreted within our mind to create the experience we think of as our lives, bodies and surroundings.

When we experience different virtual realities, physical matter reality (PMR) (what you are experiencing now), non-physical reality (NPMR), OOBE, the spirit world, shamanic or spiritual vision or whatever, what we are doing is switching or modifying our input channel, our incoming data stream, to a different virtual reality. We do this by making a mental request of some part of Ultimate Reality external to our individual being to produce the required change in the input data stream or it is done for us automatically based on our life path occurrences. We may make this request tacitly or very specifically. By performing a ritual, taking a 'mind altering chemical' or simply making a mental request. Or we may experience trauma in our virtual reality life that results in a sudden change in our perceptions and ability to perceive with the change occurring automatically as it were, based on the experience. Then we must appropriately interpret this incoming data stream to generate our experienced virtual reality.

The Virtual Reality Rendering Engine

How and why the incoming data stream is generated is the subject of this chapter.

A rendering engine in PMR, our virtual reality as humans, is the term for the functional part of a computer program, referred to as an engine where an input is converted to an output of a particular form. This rendering engine takes the technical results of a CADD (computer aided drafting and design) program that is a drawing in electronic form generated within a computer, probably existing in a data base, and renders it to appear 'real' and three dimensional as a picture on a computer screen or printed sheet. The term rendering traces back to the concept of a 'rendering' in architecture as a drawing depicting on 2 dimensional paper a structure described in a set of plans in two dimensions, so that it appears to have 3 dimensions, at least to some degree. The quality of the result depends upon the skill of the person doing the rendering so that the picture looks like the building will appear when completed. This makes the plans more accessible for those who are not experienced in converting a set of 2 dimensional plans into an internal visualization and understanding of what the building will look like so that all concerned have a common understanding of its appearance. Thus I have selected the term Virtual Reality Rendering Engine as representing an appropriate concept for this discussion.

How Does it Work?

While we do not and possibly cannot as 'humans' know the technical details of the functions of this rendering engine, we can know significant aspects of its operation. The details of the projection of Reality into the future based on past history, recorded one increment of the Ultimate Reality clock cycle at a time, have been described in detail by Tom Campbell in *My Big TOE* to which I refer you, and will not be repeated here. This is combined with the free will choices of intelligent beings combined with the probabilities of physical aspects of the virtual reality. This advancing future as integrated from probabilities and free will choices in The Big Computer, TBC, must be converted or rendered into some form of information that can be presented to our individual consciousness to provide us with the appropriate virtual experience that constitutes our individual experience from our individual and personalized perspective. This individualized incoming data stream is generated based on a rule set enabled in TBC. The rule set is a description of what can happen in PMR reality and what we can ex-

perience as human beings, if everything proceeds in the intended manner. The starting point of individualization includes things like where you are standing versus where the person next to you is standing, or perhaps sitting. The individualization continues on to greater depths.

This incoming data stream can be even more personalized for you as an individual as perhaps a member of a specific group and even as including or excluding specific input unique to either yourself or the group. As indicated above, this incoming data stream can be intended to cover or create a wide variety of experiences. That is one reason that human beings, supposedly experiencing the same occurrences and reality, can experience widely differing internal perceptions of supposedly the same thing, making for such notoriously bad eye witnesses. This results from both the individualization of the input data streams and the even more highly individualized internal interpretation that each individual consciousness applies to the incoming data. Because of differing past histories and personal development, each individual experiences reality in an individualized, even unique way. As you pass others walking down the street or interact with others in some other way, they may or may not be experiencing the reality you think you see out there based on their own special interpretation. This interpretation can be an internal psychopathology or through a consciousness modified by pain or by medication or street drugs. Other classes of special interpretations might include a person socialized in a nominally primitive society and now experiencing an urban setting or as a shaman interpreting a modern city based on spirit world rules. Or this special interpretation might be just the difference in world view of a Democrat versus that of a Republican, to consider just a few possibilities. Ultimately, this interpretation is further individualized by the uniqueness of each being within Indra's Net due to their unique history of past virtual reality experiences.

Then there are other differences such as the difference in perceptions and experience based on gender or age. If you have paid attention, this changing aspect of perception should be available to you to see in your own life. A woman may experience something as threatening that a man may not. An elderly driver is more likely to experience a traffic stream as being excessively fast or dangerous that a younger driver takes for granted as normal. Or consider the difference in interpretation of reality and its perception between a normal, law abiding person and one regularly engaged in criminal activity. They might differently view the

same local environment as dangerous or as full of opportunities for gain because of the presence of each other. Or consider the perceptual differences between one who thinks they are in charge of their reality and future (and with money in their pocket) versus that of someone who thinks their life is ordered by the decisions of others, perhaps perceiving themselves as a perpetual victim, and with no money in their pocket and no home to go to at night. Perhaps this gives you some idea of the differences and complexities of interpreting the 'reality' that you think is 'out there' depending upon who you are and what your circumstances in this virtual reality life are.

Another possible cause for a difference in perception is a life involving membership in some specific group or perhaps a cult. Whether you believe what is described in the books written by Carlos Castaneda, Ph. D. regarding his experiences with hallucinogenic drugs and describing the world view and activities of the Toltec Naguals or not, that a group of beings might deliberately incarnate or reincarnate into a continuing, multi generational group like this is entirely possible. If you have read these books, you may have noted that several references are made to the appearance of certain people to the Nagual Don Juan Matus for whom he has been waiting, destined to be members of his group. You do after all select the life you agree to live. Religious cults have been prominent in recent decades with extreme beliefs and resulting ends from mass murder/suicide (as in Jonestown) to terrorist attack (Aum Shinrikyo) to disastrous government intervention (Branch Davidians). And there are historical records of many more from the past, frequently based on their expectation of "the end of the world". And many religious groups, Christians, Jews, Moslems and Buddhists among them, interpret reality based upon the return of their founders as a savior in some way. Yet another major difference in perception and world view is represented by terrorist groups in recent decades, characterized by their extreme willingness and specific goal to control other beings, even to the point of killing some to coerce others. Since we choose the life we live, each member of such a group has to have deliberately chosen the possibility of experiencing such a life, whether as a one time experience or as a being committed to such control of other beings in repeated virtual lifetimes. A major aspect of all such groups is the control of the free will choices of the members by the leaders. To choose such a life, you must be prepared to participate in a life dedicated to perpetuating or experiencing the 'dark side' of Absolute Free Will. [Short Model: The

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Nature of Free Will - Page 7 and Short Model: The Arising of Good and Evil - Page 8]

The rule set governing the generation of this present virtual reality that we are experiencing includes the description of the physics of PMR, how the virtual 'hardware' of physical reality works. That does not mean that the rule set matches the rule set being developed over time and by experimentation by PMR scientists. There are discrepancies, as PMR science does not consider that this is a virtual reality and that the hardware rules of science are not the only governing rules. The rule set in effect also defines the general nature of being human. How the virtual reality experiences normally look, smell, taste, feel and sound with specific modifications for each individual based on the specific virtual body capabilities and limitations allocated to and accepted by us in our individual roles in this virtual reality lifetime. This will include specific effects of modifications or limitations of our individual virtual reality bodies related to limitations on our individual eyesight, hearing, sensing organs of taste and smell and touch. It also includes modifications or limitations that are considered to be neurological or psychologically or trauma based. All of these variations, disabilities, problems or perhaps strengths are related to our virtual reality lives in this one 'incarnation' and not a part of our 'real' being in Indra's Net. Our strength and stature and any specific bodily limitation or capability is also included in this customization of the incoming data stream. And as has been mentioned before, there can be glitches, deliberate or accidental, in the data stream presented. As an example discussed elsewhere, while virtual human perception is almost universally based upon 'seeing' as if out of our virtual body eyes, there are a very few who have experienced themselves and the rest of this virtual reality from a position outside of their own virtual body. They literally see themselves from a position outside of their bodies, including perhaps a view of the back of their own heads.

The free will intent of our consciousness initiates what appears as action within the input data stream that generates our virtual reality experience. This free will intent, besides advancing the progress of our virtual lives, may have consequences that modify the incoming data stream according to the rule-set defining the specific nature of the virtual reality. There can be alterations ad hoc to the output of the Virtual Reality Rendering Engine as when we survive an 'accident' by a 'miracle'. It is not that uncommon for human beings to survive occurrences that by all normal expectations should have killed them and during which the

normal laws of physics appear to have been turned off or modified to permit this survival. Anomalies need not be the result of disasters only. Many exceptions to the normal reality rule set are discussed elsewhere such as pre experiencing some part of the future in a conscious experience outside of the normal stream of 'reality' and time. It is also possible to have modifications made in our programmed characteristics and limitations and the direction of our virtual reality lives, such as the healing of disease, by virtue of a personal request, prayer or communication during meditation or even just under the stress of a momentary emergency situation. I have experienced both anomalies that were apparently intended to teach me something and anomalies resulting in modification to the path of my life. Florinda Donner-Grau, an associate of Carlos Castaneda, wrote the book, ***The Witch's Dream***, including descriptions of the experiences of persons that modified the path of their lives during the stress of an overwhelming experience, referred to as 'turning the wheel of fate'.   Anything is possible with authorization. And glitches do occur, either deliberately for our edification or as simply failures in normal processing. It's a strange world out there where 'anything' can happen. Look up synchronicity if you are not familiar with the concept.

The point must be clearly understood that the output of the Virtual Reality Rendering Engine is not what we 'see out there' or 'feel inside', it is a simulation of what we 'see out there' and 'feel inside'. While there is really an 'out there', a part of Ultimate Reality beyond the confines of our own mind or consciousness, it is not the virtual reality that we are experiencing as 'out there'. The true 'out there', beyond our own beings resident in Indra's Net, cannot be experienced directly. First, there is all the rest of Indra's Net, comprising the points of existence of all other individuated conscious beings and the infrastructure of the Reality Wide Web that permits communication with them and everything else. Then there is all the other infrastructure of Ultimate Reality, the parts that generate the data streams for virtual realities and produce the advancing of 'time' into the future. Finally there are all the parts of Ultimate Reality somehow devoted to The One for its own purposes and existence. In sum, there is all the rest of The One besides that portion constituting your individuated being but this is all within the Mind of The One, as are you; not really a true outside.

Simulating a Virtual Reality in PMR

Perhaps it might clarify the situation to describe things as if our bodies as we experience them were 'real' and discuss the requirements for a perfect simulation of a virtual reality with computers and hardware here in PMR. While it also might confuse things even more, let's carefully try this approach. What would be required in terms of generating a virtual reality experience that would be indistinguishable from what is 'real'? Technology has reached the point where video screens can be produced that, viewed as a window and at a reasonable distance from our eyes, cannot be distinguished from actually looking out of a window. We would have to have a visual screen that would fit over our eyeballs like a contact lens that would generate video displays focused on our retinas that were not distinguishable from 'reality'. We would have to have a 'body suit' that fitted perfectly over our bodies, molded to every detail of our anatomy and capable of generating all the sensory input that our bodies normally experience. This would include the input of all sensory systems, touch, taste, smell and hearing, vision already being covered by the contact lens video screens. We would also have to simulate the effects of gravity operating on the mass of our bodies, giving us the sense of weight. If we could create such a virtual reality suit, it should be impossible to distinguish between the simulation of a virtual reality generated by using it and the 'real' thing. Of course you would have the experience of getting all geared up in the suit and video screen contact lenses to make it clear that it was a simulation. But where would we be able to tell the difference in perception as long as the quality of the simulation is equal to that of what we think of as ordinary physical reality?

There has actually been work done towards these ends as prostheses for the deaf and even the blind. Cochlear implants are in use by nearly 100,000 persons world wide. They do not produce normal sound at this stage in their development, but they are reported to produce a useful simulation of sound. Vision producing implants are not at this stage of development as yet. The next stage beyond these approaches toward a perfect simulation would be to generate the nerve impulses that would produce the simulation and feed them directly into our brains. This stage would take us to the equivalent of what actually does happen in the simulation of a virtual reality.

What actually happens is that the functioning of the hypothetical lenses and body suit, or prosthetic implant, is accomplished by the generation of the appropriate

incoming information stream that our consciousness matches against its internally stored history, our memory, and interprets as the virtual reality 'out there' and our actions within it. The incoming data stream through our 'virtual' nervous system has to be interpreted properly by our 'virtual' brains, actually by our real minds in Indra's Net, in order to generate the normal perceptions of a physical body in a physical reality. If the data stream is not interpreted properly, either through the intervention of 'virtual' chemical agents that modify 'virtual' consciousness or of 'virtual' neurological problems that do the same, then we experience an abnormal version of reality. [My apologies for all of the awkward insertions of 'virtual' in the above sentences. This is done to bring to your attention just how difficult it is to avoid slipping into speaking and thinking as if this is not a virtual reality. I will omit 'virtual' in the following except as necessary, but remember always that we are in fact talking about virtual aspects of virtual reality.] Improper interpretation of the incoming data stream can result from the deliberate ingestion of 'psychedelic' drugs, simple alcohol or drug intoxication or disease and physical damage to our virtual neurological systems.

If all you really ever have is the incoming data stream to be properly interpreted, then it is not difficult to see that it is simpler to generate an appropriate data stream to simulate an environment than to actually have that external environment and all the hardware to experience ourselves within it. Even the PMR video industry is approaching the point where it is not possible to tell that a given scene appearing on a video display is not real. Computer generated dinosaurs are routinely inserted into movie scenes and interact with humans. You can usually find some technical problem with the content that reveals it as a simulation if you are sufficiently observant and knowledgeable technically. However, remember that one of the aims of this book has been to point out the glitches that are common to ordinary human lives. If you examined and evaluated your own life experience as critically as you do to evaluate the believability of a computer enhanced movie, you would likely find that your life is also subject to the common anomalies described elsewhere in this book. We are normally conditioned to ignore these anomalies or to disbelieve what we experienced. We are also socially conditioned to not draw attention to ourselves as being deviant from the norm.

Some Details of Rendering a Virtual Reality

To make another start in looking at the generation of a virtual reality, consider the old question, if a tree falls in the forest and there is no one there to hear it, does it make a sound as it falls? The answer should be, if there is in fact no conscious observer, no – and furthermore, without a conscious observer, the tree never actually falls. We have to keep in mind constantly that we are a 'mind', a consciousness, rather than a body with a brain somehow generating a mind by means not yet known to anyone on Earth, that is, in PMR. We must keep this in mind if we wish to continually increase our understanding of how PMR and NPMR work. We are neither mobile nor possessing the senses that we consider our PRM bodies to have: sight, smell, hearing, taste, touch. So really there is no forest out there and no tree in it to fall nor sounds to be made or experienced. There are only the incoming data streams into the minds of those beings experiencing the existence of that forest and that tree. And if no one is experiencing or has experienced that particular tree in their consciousness, then it exists only in probability and whether it has fallen or not is only a probability. And if you have knowledge of quantum physics, relate this for example to the probability of an electron being at a specific location within an atom. Just as for the tree that is not and has not been observed, the specific state of this electron and its physical location is indeterminate, a matter of probability only.

This, or any, virtual reality exists to produce interactive experience between its participating conscious entities, not for any reason intrinsic to the virtual reality in itself. Your experience is the purpose of the simulation.   The apparent physical awareness of each individual consciousness experiencing the virtual reality influences which specific states become actualized within the simulation. This is an interactive virtual reality and there is constant feedback available if you are prepared to observe it and make use of it. The input of the participants provides a constant 'feed forward' into the creation of the future of PMR. Overlaid on the potential (probabilistic) physical landscape of PMR are the probabilities of the free will choices, the actions of conscious, sentient beings that 'inhabit' the virtual physical system. These probabilities interact and change each other in an interactive, dynamic process. Your experience and choices influence the probabilities of the virtual reality. So time passes and the future is generated out of the probabilities of the past and the choices of conscious beings. We have a simulation of physical reality based on the virtual physical reality overlaid with the

probabilities resulting from the perceptions and thus of the free will choices, the actions of the inhabitants of the virtual reality. Chaotic as it seems at times, the virtual reality of PMR applies a degree of control and uniformity over the possible range of experience in order to enhance communication. But to repeat, none of this is 'out there' in a 'holodeck' or even a 'mathematical model'. While there is a mathematical model, the projection into the future of the probabilities of reality, one delta t increment at a time, this is not in a form that we can directly experience or 'see'. The generation of our individual experience requires the operations of the Virtual Reality Rendering Engine to take this more 'technical' or bare bones probability reality and 'flesh it out' into the full range of virtual sensations that we see, hear, feel, smell, and otherwise experience as reality. But again, these details of the 'physical' perceptions of this virtual reality are not the goal and purpose of the simulation. They are in essence like the stage setting and props of a PMR play. Rather the goal and purpose of the virtual reality simulation is the communication and free will interaction between conscious beings that is the basis for the development of each beings quality of consciousness.

The input to the mind of each inhabitant of the virtual reality is what must be calculated and then used to generate our individual and collective virtual reality experience. Everything else is not of any use to us directly as individuals, consisting of the more technical aspects of reality as it is projected incrementally ahead probabilistically and then integrated step by step. There is no model or simulation "out there" that we mentally wander through. There are only the individual inputs to our individual minds/beings that are individually generated and tailored to provide us with the virtual experience of physical reality and the interactions with other conscious beings that we experience within it. To create the virtual reality, all the virtual physical reality probabilities necessary are calculated. But the actual input to the minds of a PMR inhabitant need only be based on the part of that virtual reality that they can experience. So if no one is there to see or hear the tree fall, only the probability that the tree exists and that it should fall at this instant of time is necessary. The simulated physical existence of the tree, its characteristics and physical state, need only be calculated if a sentient being comes in contact with it. So the tree makes no sound if it falls (in probability) and there is no one 'there' to know of its existence or to 'hear' its potential fall. Computational economics dictate that if a particular region has

never been visited by conscious beings, then it need not be populated in detail since the simulation has no other purpose than to provide interactive experience to each of its participating sentient entities as required. It is enough to determine that there is a certain type of forest present and it is not necessary to detail all the population of trees or other flora or the population of low sentient fauna. Once there are conscious beings active there, then the population of trees, where there have been sentient beings to notice, becomes fixed. But the trees out of sight just off the traveled path need not be detailed and exist only in potential, as a probability. And even visited areas need only have the probabilities of the now know contents future calculated in probability until such time as there is once again a conscious observer present to note any changes. Computational economics are always maintained as part of the resource economies of The One.

Visiting the Alm Uncle to Learn About Fractals

The generation of virtual realities, including PMR, as described by *My Big TOE*, appears to be based on the multiple levels inherent to fractal mathematics. This conclusion is supported by the observation that so many 'real', 'physical' landscapes and other environments can be approximated by fractal mathematics as a sort of idealized version of the typical, messier 'reality' that we are used to in PMR. The simulation would probably be better if all the complexities and interactions, the actual number of interacting fractal levels involved, could be included in our attempts to simulate real PMR landscapes. Our seemingly physical but actually virtual reality is generated based on probabilities at many levels. Probabilities of the structure, the rocks, soil, atmosphere and all predict the path into the future. Whether we have earthquakes, volcanoes, storms, climate extremes, growth of vegetation or fires is all based on the probabilities of the physical system being simulated in a given specific state. In a reality based on fractals, the various levels and scales of fractal development relate directly to the varying levels of detail required to compute any portion of a given virtual reality. Not attempting to be complete, only illustrative, there are fractal levels corresponding to inter stellar space and other galaxies, to our galaxy, to our solar system, to our planet/moon system, to our planet, to the depths of the planet, to the planetary surface, to the sky and oceans (climate and weather), to the mountains, to the rocks, to the soil, to the vegetation, to the micro fauna and so forth.

And all of these fractal levels interact. To a person standing on the earth, perhaps on a mountain to provide perspective, only those levels of a fractal described reality need be calculated and entered into the input provided to that particular being as they can be aware of with their normal human senses. Computational economies again.   In fact, the use of fractal mathematics in the generation of a virtual reality is a major part of the computational economies of that generation.

Postulate Peter herding his goats in an Alpine pasture while accompanied by his friend Heidi who is visiting her grandfather who lives on the alm, a meadow on the Alp. So everything they can sense must be described to the appropriate fractal level by the data streaming into Peter and Heidi's consciousness that generates their virtual experience. This must include the grass they stand on, how it feels to their bare feet, the ground topography with occasional rock penetrating through the surface vegetation, the sky overhead, the breeze blowing by, the scent of the vegetation, their herd of goats, etc. This required computation also includes their bodies and the sensations from within their bodies, how long until lunch, etc. The underlying ground, underlying the vegetation is not visible except if there is a thin spot or someone digs a hole, but it is felt under their feet. Shape of the ground comes from the topography level but doesn't have to be calculated to position every grain of sand, just to get the contours right. Rocks noted only if they protrude through the surface vegetation. Looking out across the valley to the adjacent mountain, only the general shapes are necessary. Any shrubbery on this adjacent mountain need only be calculated to the level that the eyesight of the observers can see it from the distance. If there is another goat herder there on the other mountain with a herd, things must be calculated in appropriate detail that their local observations are fully detailed, just as for Peter and Heidi. However, this detail is only available locally to local observers, not to Peter and Heidi on the adjacent mountain. And none of this is 'out there'. It is only calculated and included as part of the input stream of information coming into Heidi and Peter's consciousness where they actually reside as occupants of Indra's Net, not necessarily near each other in any sense despite their proximity as they play in the mountain meadow.

If Heidi borrows her grandfather's telescope, improving her ability to see clearly at a distance, then the calculation requirements change. The levels that she can see through the telescope must now be calculated, but only for the moving field

of view visible in the telescopes line of sight and only while she is actually look-
ing through it. This is an important point: devices that make the perception
range of an observer greater require a corresponding increase in the require-
ments, the fractal levels, of what must be calculated as input to that being. But
only if the device is actually being used and to the degree that it actually is capa-
ble of showing things. The required calculations are not increased to calculate
the detail that the device might show, if in use, because of its mere presence.
Only the detail level that is observable if the device is in use and capable of al-
lowing these details to be observed must be made. If the device is not being ac-
tively used to augment the observers' senses, then it is merely another object to
be observed, its appearance and weight and feel in your hand. It is just another
surface appearance to be simulated in your observational field of sight, touch,
etc. And what appears to be 'out there' is only an input into your mind, pre-
pared to be interpreted as what you see, feel, smell, hear and taste: a virtual re-
ality. And this includes the sensations arising from a virtual body that is also not
out there, outside of your mind and containing your brain and therefore your
mind. It's all done with smoke and mirrors as the saying goes.

The use of virtual reality devices like a telescope to extend the possible range of
observation of a virtual observer is an important concept that is the point of this
part of the description of the Virtual Reality Rendering Engine. This illustrates
an important concept in the operation of the Virtual Reality Rendering Engine
and of The Big Computer in general. In fact, I consider this as eventually leading
to a direct indication of the presence of the Virtual Reality Rendering Engine
versus the alternative view that real bodies with real minds somehow and some-
where internal to them are using real eyes and their other real sense organs to
observe their real, physical surroundings. Things that can be calculated in detail
are only calculated in detail if they are required for the observation of a con-
scious being. Computational power and data storage capacity are only used by
The One through TBC when necessary. If some aspect of a virtual reality can
remain in potential, only the probability data is required because that aspect of
the virtual reality is not under conscious observation, then that is how it will be
left: not detailed. Only the probability information from which the completely
rendered description could be unambiguously derived is calculated for future
supply to an observer's consciousness. Ultimate Reality, being real and finite, is
conservative of assets, even though there is the appearance of a nearly infinite

supply. There is the consciousness of The One behind and informing everything and The One does not operate on the basis of brute force in the calculation of any virtual reality nor any other aspect of reality, despite any such expectation based on the first Evolutionary Principle. Permitting and exploring every possibility of free will choice by conscious beings is not the same as using brute force methods in routine calculations.

A brute force calculation is a calculation based on simply calculating every aspect in complete detail. As a simple example, consider a very large number of items in a group of data sets that must be manipulated mathematically upon every matching element of every data set. Assume for example that these operations include numerical summation of some items from some data sets and multiplication by at least the corresponding elements from one data set. A brute force calculation means that every potential calculation is made in complete detail, even though the results will be and can easily be predicted to be zero. Look at this situation from the perspective of an aware, intelligent, consciousness, which certainly would notice that not all elements in all the data sets are significant or exist and that many will inevitably have effective values of zero. Where elements do not exist and have actual or effective values of zero and we have a multiplication operation in the chain of calculations, why perform the chain of calculations if the data set containing the multiplication element does not contain that particular data item or it is zero? The result of that chain of computations will obviously be zero so why waste time in 'brute force' calculation of all the details just to find out that the result is in fact zero as predicted. This is an indication of how The One operates, informing its activities with consciousness and intelligence instead of proceeding blindly and by brute force, simply doing everything the hard way and in complete detail when clearly much effort will be fruitless. The One does not wish to 'waste It's time' any more than you as a typical human being wish to waste time performing mindless and meaningless tasks when they can be avoided by taking thought.

Rendering a Quantum Reality

As a more significant point to be understood about the operation of the Virtual Reality Rendering Engine, we now consider quantum mechanics, the part of the scientific discipline of physics that deals with the description of our virtual reality at the very smallest scale. Here we can demonstrate the existence, as stated

above, of a direct indication of the Virtual Reality Rendering Engine, operating as described above, being the basis of our virtual reality experiences. For the physicist in a laboratory performing 'quantum experiments', the same principle applies as for Heidi with her grandfather's telescope. These experiments can involve local observations that we will call quantum observations for simplicity, known as "non-local quantum effects" and "quantum entanglement" between sub atomic particles. There was a class of experiments described in the book, *Godel, Escher, Bach* by Douglas Hofstadter that I found very confusing as to how the observations made could result. I found it difficult to even see the illustrations of the results because I understood what a contradiction or anomaly was being described. I found it hard to 'wrap my mind around' the results. I didn't feel too bad about not understanding however as these were classed as quantum anomalies that the physicists were not able to explain either. That is the reason that they were described in the book, to show the anomalous nature of the results, indicative of how results change dependent on the presence of a conscious observer. A search on the Internet for quantum anomalies will find descriptions of many such experimental results exhibiting anomalies between observed conditions with a quantum level observation and without a quantum level observation, effectively with and without a conscious observer.

I finally realized that these results were the natural outcome of a fractal based calculation procedure employed by the Virtual Reality Rendering Engine as described above, used to generate the input to our minds in Indra's Net that places us into the PMR virtual reality in which we participate. If we consider a physicist in a laboratory instead of Heidi and Peter on the mountain, I will generalize consideration to an experiment in which a beam of sub atomic particles passes through a beam splitter into two circuits following two different paths before rejoining. In one path, the circuit contains a device capable of generating "quantum" effects. The other path contains no such device. The beam of sub atomic particles through one path with no quantum device shows one result. The other path results in quantum effects that appear anomalous in comparison. This is analogous to what happens when Heidi looks at the adjacent mountain and sees only the general shape of the topography and a jumble of vegetation and then looks again at the same area through her grandfather's telescope. Now she sees details, limited to the field of view of the telescope, that show the detailed shapes and vegetation improved to whatever degree the optical properties of the

telescope permit. The physicist observing without the assistance of a quantum level device observes one result in one branch of the experimental apparatus. In the other branch of the apparatus, the device capable of quantum level observations produces a different result, based on the presence of a conscious observer now capable of observing at this lower fractal level by use of the quantum level capable device present. This class of experiments, exhibiting an observer effect, has been cited as demonstrating how the presence of a conscious observer modifies the course of events. You get a different result if a conscious observer is involved than if one is not.

I am stating that the presence of a conscious observer and a situation, perhaps a device, capable of demonstrating quantum level phenomena makes a difference as to whether details of that fractal level, the quantum effects associated with observing that level, are calculated and made part of the input stream that makes up the conscious observations of the observer. It is in this way that an observer alters the results, not by somehow altering reality by their mere presence. Without that device or observational circumstance, the quantum effect or level is not calculated and is not observed. It has only potential existence described by various probabilities of being observed in some specific state. These calculations are not then necessary or provided to the input to the observer just as the effects of looking through a telescope are only calculated if you are in fact doing so. The same holds true if the device, telescope or whatever, produces a photographic record. Keep in mind that this photographic record does not exist except in probability until someone actually looks at it and it becomes a part of their input data stream. In fact it never exists as a thing in itself, only as part of the input data stream into the mind of a being participating in the PMR virtual reality. Thus quantum anomalies are explained as part of the normal means of operation of the Virtual Reality Rendering Engine. Clearly, that quantum anomalies in general can be so readily explained as resulting from a normal function of the Virtual Reality Rendering Engine, in my opinion, points directly to the existence of a Virtual Reality Rendering Engine, obeying computational economy requirements of The One as described.

Now we will expand consideration into another even more general aspect of the representation of reality related to physics. Again this is based on how the Virtual Reality Rendering Engine appears to operate in conjunction with or as part of TBC in projecting reality into the future, delta T by delta T, as I have been

describing. In a 'good enough for getting on with' reality, it is unlikely that the rule set design upon which this virtual reality is based goes on forever down into smaller and smaller scale features. After all, for the vast majority of historical and pre historical times that humans have been around to make observations of this virtual reality, only superficial observations could be made, limited to the raw capabilities of human senses. And for the vast majority of human activities throughout all times, only the observations possible with the raw human senses are relevant to the fundamental purpose of the existence of the virtual reality of PMR: the generation of interactive experiences between conscious, participating beings. Therefore the rule set will end somewhere or in fact must end somewhere in terms of direct observation and even indirect observation. And the fundamental end point is information. The ones and zeros represented by the 'reality cells' of Ultimate Reality. And the findings of modern physics seem to be illustrating this aspect of reality.

As physics has developed in modern times and we have been able to look deeper and deeper below the surface appearance of things into their detailed internal design, we have progressed into deeper and deeper descriptions and understandings of reality. In ancient Greece, the concept of atoms was developed long before they could be observed in any way. An atom was considered to be the indivisible and fundamental thing from which the reality we saw around us was built. An idea logically surmised rather than observed. In fact, not observable at that time, and for centuries beyond, with methods of observation limited to raw human capabilities. Then it was figured out that there were such things as electrons, protons and neutrons within the classical Greek atom and the Bohr atom replaced the concept of the Greek atom which had been fundamental and indivisible. The Bohr atom is the atom you were taught about in school, at least at one time, with electrons orbiting about a nucleus of protons and neutrons and it was no longer fundamental. By the end of the Second World War, it was certainly no longer indivisible. But that was far from the end of the line in chasing the actual fundamental particles upon which our virtual reality rule set seems to be built from the viewpoint of modern PMR physics. Quantum physics came along with the realization that photons and electrons did strange things and so did the other fundamental particles when you looked closely enough. And this strangeness was emphasized by the physicists doing these studies when they

named new characteristics discovered for these new fundamental particles as "strange", and having "charm". Humor among the physicists.

A major aspect of this way of understanding reality was the observation that every time we looked at a particle, if it were small enough, it hid from us. It was a lot smaller than the space that had to be allocated to it and it might in fact be in many more places than just one within this space. And while the probability that a particle might be in a particular place might be calculated, when you looked at one of these probable locations, you actually made it appear somewhere specific, but not necessarily where you looked. And these places actually overlapped with the potential locations of other particles. What I conclude is that it is more a matter of fundamental particles being informational place holders rather than things: i.e. they are information, not things. Why simulate a bulk property when defining the information that states the properties is what is really needed to define a virtual reality. Especially if the virtual reality simulation is not going to be required to support a given level of specific 'physical' description (information) unless special circumstances are present to enable a 'physical' observation at this level by virtue of some device capable of extending the reach of consciousness to the quantum level. After all, the activities of fundamental particles, though they may be considered as fundamental by PMR physics, are not fundamental to the calculation of the future of PMR nor to the true purpose of this calculation. That is based on future probabilities of that 'physical' future expressed in humanly observable fractal levels and the conscious activities of PMR virtual inhabitants.

An observational device must be more than simply present; it must be in use with its results being observed by a conscious observer. You don't have to count and account for every grain of sand on the beach when what all conscious observers present are doing is grubbing in the sand where the waves break for edible crustaceans or soaking up some rays while checking out the opposite sex cavorting in skimpy clothing or none. Since the simulation is not 'out there' but rather in the incoming data stream that is interpreted as the representation of something 'out there', the representation never has to get this deep until there is a device present, and in use, suitable for generating and observing quantum level phenomena which then is represented as input in the data streams sent to the conscious observers present and making use of the quantum device. So when we somehow look deeply into the 'fundamental particles' of the virtual reality,

which 'virtual humans' are not normally equipped to do, we find an information place holder in the form of a volumetric probability density that stands for the 'particle' that will appear (somewhere within that volume) only when required to do so by the fact of our observation. An information place holder for a virtual particle in a virtual reality for observation by virtual human beings as interpreted by the actual beings in Indra's Net who are temporarily assuming the identities and characteristics of virtual human beings.

It seems that the above method of generating our virtual reality experience is the reason we have so many and various attempts in current PMR physics to explain the continuing appearance of anomalies as observations are extended further into both the great and small aspects of our PMR reality. Through most of human existence, these observations were not possible to be made or even thought about. There is no reason to think about the resulting anomalies or that the PMR rule set should be designed to avoid anomalies that might develop, but not for billions of years into the future. And as discussed above, the rule set and Virtual Reality Rendering Engine operation were not created for the purpose of generating a particular, consistent and easily understood PMR physics. That purpose was the creation of interactive experiences between conscious beings for the purpose of the development of their quality, the lowering of the entropy of their beings and intercommunication.

It is only recently that the question arises of dark matter and energy as we can now make observations that allow us to see a need for these concepts as attempts to explain anomalies within the description of how modern science thinks things work. The same goes for string theory and membrane theory and much more that I am not aware of. If human PMR history had not taken the particular dominant direction that it did, leading to the humanist revolution, followed by the industrial revolution and followed by the scientific revolution, the Virtual Reality Rendering Engine would not now have to be making calculations to put these deeper fractal levels into its calculations to generate the input data streams being fed to the minds of human PMR participants. And even now, the number of human beings for whom these calculations must be provided in their input data stream is very small, limited to some physicists, astronomers and other advanced researchers. In fact, for the generation of other virtual realities equivalent to our own version of PMR, the Virtual Reality Rendering Engine is only calculating these levels if events have occurred leading to the existence of devices capable of

revealing these lower level details. These lower fractal levels do not have to be included in the data stream that generates reality in the minds of participants in those particular versions of PMR. In fact, those lower fractal levels may not even exist until they are required by the input data stream of a conscious observer in a situation capable of observing them.

The same situation applies to other branches of science of the modern human PMR reality. Modern science applied to other fields such as chemistry, medicine and neurology has also created the necessity of displaying ever deeper fractal levels to show the levels of virtual reality revealed by such devices as CAT or MRI scanners and neural activity reading devices. These devices are capable of revealing activities of the virtual human brain that did not have to be calculated, or in fact even exist before devices were available to show them. There have been articles published indicating that changes can occur in brains based on moral development. This appears to be the result of feedback as more and deeper observations are made, resulting in the need to show deeper fractal levels than were previously known or observable.

I believe that we are very much in the same situation as in the time of pre Newtonian celestial mechanics when the celestial spheres had to have more and more levels added to attempt to model the increasingly complex observed planetary motions. Assumption of a new paradigm, Newtonian physics, resulted in an explanation for these otherwise not readily explicable anomalies with a simpler version of physics, more closely describing how things really appeared to work. Perhaps the cosmology of The One and the operation of the Virtual Reality Rendering Engine provide the simple and straightforward explanation here and now for the current anomalies observed by modern physics.

Consequences of the Rendering Engine in our Lives

This says all that I can see as necessary to say about the Virtual Reality Rendering Engine. Just keep in mind that this is how what you observe as reality is generated and many strange experiences can be explained. But what useful information does this provide for living our 'lives', the real purpose for this virtual reality? In a sense we are in ways much like a person sitting in a chair in front of a video display with a game controller in our hands and playing something not unlike a video game. But this is not a very useful approach to dealing with our virtual lives if we take the approaches common to video game players. A video

game player can always hit the reset button after being killed, crashing, etc., perhaps even restarting at the point before they made that last fatal mistake. For us in PMR, like a video game player, we do not die, we merely pop out of this virtual reality back into our other, NPMR level virtual reality. But this game is over and we go back to our NPMR life and wait until we begin another virtual PMR session as a new person. We can't reset and immediately try that choice again. A video game player can also find 'cheats' by which they can bypass difficulties. Our virtual reality lives do not have reset buttons or cheats however and taking unnecessary risks, acting rashly or trying to cheat your way through are not productive ways to live them.

In general, taking the attitude that it is not real and only a game is not helpful. Nor however is taking the attitude that this is all there is. This leads to attitudes such as the one with the most toys wins or perhaps the holiest or most righteous wins by going to heaven and everyone else looses by going to hell. Behaving in some manner based on a belief in absolutes when there are none is not helpful when mastery of the experience is the goal. Realizing that a virtual reality simulator provides an accelerated experience devoted to self development and learning gives us a possible approach to understanding both our subjective and objective experience: participate actively. This appears to be the most productive approach for understanding our lives. Consideration of the consequences of the processes of the Virtual Reality Rendering Engine may provide the most productive approach for understanding and advancing modern science as well. A being developed beyond the very basics should be able to eventually understand the true nature of Ultimate Reality if only in poetic or intuitive terms. Realize that the principles stated for the basis of Ultimate Reality [see this and the following pages for these Principles: Short Model of Reality: Driving Principle - Page 4] apply to this virtual reality, as to all of Ultimate Reality. Realize that there are valuable advances that can be made by properly working through the life problems that you accepted and in fact, largely set up, in this particular experience with this virtual reality.

In current terms, 'It ain't all about you!' Each being you encounter in this virtual reality life is at the center of its own little micro cosmos with its own problems to solve and its own experiences to live through and learn from. There is no realistic basis for you to place yourself above the success or failure of a fellow participant. But being sufficiently 'enlightened' to realize that this is a virtual

reality with at least one more virtual reality 'behind' it and ultimately with existence in Indra's Net behind it all should permit passage through this apparently physical virtual reality with minimal internal pain and anxiety. You can't fail and won't be punished. You won't fail because you don't become some kind of 'saint' in this virtual reality life, but at the same time, you cannot gain anything by climbing on the backs of others in hopes of raising yourself! Neither can you gain by passively permitting others to stand on your back. You must actively participate and confront the problems that have been included for your solution. Virtual reality that it is, this is as real as it gets. The Principles stated for the development and operation of Ultimate Reality should tell you that. The fact that your experiences are virtual, generated for you specifically to represent your present virtual reality situation and experiences, should tell you that. With nothing 'out there' or 'in here', only yourself in Indra's Net, there can be nothing more real or better devised for participating in the goals of The One.

Notes on the above presentation:

This is a chapter of an as yet uncompleted book on the Nature of Ultimate Reality ~ The One. The introductory material for this book is presented on the Internet web site: www.active-mysticism.com. **Many other aspects of Ultimate Reality ~ The One are described in additional chapters in preparation for inclusion in this book. Their titles are or will be posted on this site on the Table of Contents page when completed. This list will be subject to change until publication.**

While this chapter is considered to be complete and as accurate as it can be made to be by a participant in PMR, it is subject to change without notice for stylistic or grammatical reasons or for more complete understanding. Critical comments, error corrections and questions are invited. Please make them through the physics discussion forum on the My Big TOE web site. **The material is complex and contrary to conventional thinking and I would be pleased to improve its readability and understandability where the need is pointed out. I refer you to My Big TOE by Tom Campbell as the basic reference for information on the cosmology and general nature of Ultimate Reality ~ The One. I am personally responsible for all errors in this document and my web site as they are mine alone.**

My planned book consists of supplemental information or other detailed information that it has come to my attention to provide to expand understanding of Ultimate Reality ~ The One from my perspective that differs from that of Tom Campbell. Our training and life experience/lessons have been different, resulting in a different focus in our thinking, but I believe I can say we agree fundamentally on the Nature of Ultimate Reality ~ The One and our attempt to accurately expand the knowledge base on this subject. I cannot adequately express my appreciation for all the understanding that I have gained from My Big TOE and other contributions from Tom Campbell. At present, specifically for his keeping my inadequate and obsolete knowledge of modern physics from causing confusion and error.

Ted Vollers, your brother in spirit.