
Surrounded By The Sacred
Essays on Pantheism

ANTONY VAN DER MUDE

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Chapter 1

What is Pantheism

People go through each day focused on the things they have to do, the plans for tonight, what has happened that morning or last evening, or just the simple task like going from one place to another.

Then suddenly something pulls us into the here and now. A day so bright it hurts. A wind touching the cheek. A field of clover giving an exquisite perfume. A hot day, full of humidity, the sound of crickets in the air. A baby's cry. A passionate kiss.

Sometimes that something can come from within us, a thought that stops us in our tracks. This can be a new idea, something we have never contemplated before. It can be the recognition of an ultimate truth, like an awareness of our common humanity. This truth can lead us to other truths, like the appreciation of the kaleidoscopic differences within this commonness. This awareness is not just intellectual. It may come on a wave of emotion, like the awareness of an all-pervading feeling of love.

Sometimes that feeling comes to us through the expression of others. The arts can bring us to this realization. A good artist can create a work of art that conveys those feelings to us almost as strongly as the original conception. Great art can allow us to share such an experience. Art can even be the experience itself: a poem, a symphony, a sculpture or a dance. Sometimes it is part of a larger work - a lyrical passage in a novel describing a scene out of the ordinary. If our response is strong enough, scenes from everyday life can bring this art back to us unbidden, and our enjoyment of the world around is magnified by our memories of that art.

The discoveries of science can have great power to put us in touch with the spirit inherent in nature. The contemplation of a general mathematical formula that reveals an underlying unity in seemingly unrelated applications.

The realization that a simple theory can unfold into unexpected depths of complexity. A new way of looking at things that suggests phenomena not observed before. A discovery in biology revealing the intricacies of life. A discovery in physics extending our technological reach.

Humanity and its works can also bring us to this realization: A noble act, a face full of character or wisdom, a movement of grace that brings us up short. We can walk through a piece of great architecture, a building that brings beauty to the mundane or style to the everyday chores of life. Sometimes we can be lost in a crowd, lost but still open to these feelings. We can be transported by a ceremony unfolding in front of us. We can feel the electricity of a crowd at a concert, wrapped in a moment of beauty, aware as much of the response of the people of the performance taking place on stage.

Whatever the source, whether this something comes from without or within, we are stopped by the intensity of it.

The feeling can be quiet, but still profound. Sometimes it can be overpowering, enough to bring us to our knees. It can feel almost magical at times. It can be an acknowledgement of the miracle of existence, or a feeling is almost mystical, seeing the surface yet knowing there are unknown depths beyond. Sometimes it can just be a simple 'yes' to the world.

When these moments come to us, they bring forth a response. The response can take on number of forms.

We can find ourselves immersed in a feeling of immanence - a sense of the rhythm and flux of life. We have a feeling of harmony with our surroundings. We are aware of the cycles of existence. We know ourselves as an essential part of the whole.

We are carried away by a feeling of transcendence - a sense of the grandeur of existence. We see ourselves as being above it all. We watch the cosmic dance from our conscious perspective. We view the universe balanced between the immensely huge and the infinitesimally small.

We can be left with a sense of at-oneness - of being a part of it all. We feel a part of a web of life, each life touching many others, none entirely alone. We can feel a part of a common humanity, or a community that crosses the bounds of species, bringing us closer to the deer that visits our yard than the distant stranger who sells us our food. But we are in some way, a part of something greater than ourselves.

We can be stopped by a sense of timelessness. We feel ourselves being at the still point of existence, past and present emanating out of this moment. It leaves us with a feeling of serenity. Time becomes almost physical, a presence that envelopes us like a warm cloak, or immerses us in the here

and now.

These are deep spiritual responses to existence. They are an essential response that people have to life. This is the feeling of being part of something sacred - a spirit that pervades all of existence.

We realize that we are Pantheists when we are in touch with the sacred and the sacred is all around us. This is transcendence in immanence. This is both at-oneness and timelessness. This is where we transcend the mundane.

The essence of Pantheism is the recognition that there is a deep spiritual response to the world. This is a response to something greater than ourselves. Recognizing it, we know we have come to our spiritual home, and it is everywhere.

Few of us come to this state naturally. As children, we may have a sense of wonder about the world, but it is unconscious. This feeling is sometimes driven out of us by the need for mastery - lessons to learn, facts to memorize, exams to pass. Eventually, we end up just looking at the world as a place to live, a challenge to conquer, an arena in which our struggles are played out.

Those of us who preserve this childlike sense are the lucky ones. They can live from day to day always in touch with the sacred sense of wonder. They never lose the joy that each moment can bring. They stop to smell the flowers as a matter of course. But this often comes at a cost. It is hard to preserve this sense of wonder through all of the demands and worries of adulthood. Sometimes the person who retains this sense of wonder also relinquishes all burdens that responsibility place, cutting off whole parts of the full experience of being human.

But even the most responsible human can reclaim some of this sense of wonder. This is done by making a conscious effort to let the spiritual into their lives, to embrace this part of living at times, even though the demands of parenthood and duty make their claim on their time and effort.

To be conscious of this sense of wonder makes us value it. We see it for something special. It nourishes our soul. It is often an end in itself; a state of being that is so far beyond the mundane that we search it out. And this search takes us on a spiritual journey, to find the source of this wonder, to find the places where this transcendence can be found.

We all begin our spiritual journey from our parent's house. Some of us never leave. We see the world from the windows of that house, play in the back yard, bring our spouse there and, in turn raise our children there, and in that house, when the time comes, our wake will be held there.

Others go forth exploring other faiths, questioning their own, and come back where they started, deepened with the knowledge gained from their

travels, yet satisfied with what they have. The familiarity is a comfort, the ceremonies that they can recite from memory, the sights that they can recall with their eyes closed. They return, with an understanding of why their original home felt so right, feeling in its familiarity a warmth and comfort that nothing else can give them.

Others go, never to return. The religion of their childhood never fit them, it became a coat that was too small and constrictive as they outgrew it. Risking the elements, they open themselves to the world with no protection, like a hermit crab, dashing to another home and hoping, this time, they will fit. After some effort, and a little trying, they find a new home that fits them well, a place of protection, with room to grow.

Those of us who found Pantheism as our spiritual home may have grown up with it as children. We have been raised in a home out in the wilderness, where the mighty woods or the majestic ocean was a backdrop for our lives. Or we may have grown up in the city, with a childhood alive to the wonders around us, even the simple ones like a spider spinning its web on a staircase railing, hoping for a chance at one of the luscious insects that buzzed past us on those sultry summer evenings. Our spiritual journey may have been only to go out into the world to experience more of these joys, to see the world in different places and different guises.

But many others have found Pantheism only by leaving something else behind. Instead of a spirituality based on and encompassing all the world, they started with a spirituality of boundaries. This spirituality is one in which there are the saved and the damned, with a boundary of belonging. This spirituality is one in which there are God-given rules - a boundary of laws to follow, some of which make sense and some of which can feel arbitrary. This spirituality can be divided into days and into seasons, with a boundary separating the holy days from the mundane days, the hours of prayer from the hours of work. They leave this behind to enter into a world in which all is holy. They enter into a life in which the rules arise from the facts of reality, each precept born from necessity and determined by observation. They experience a world where every moment is sacred, where sweeping the floor is as important as meditating on a beautiful painting, where each passing minute is full of miracles.

The spiritual journeys we take have many paths. Some of us follow trails of thought blazed by others who have come before us, having marked their trails in the books, poems, songs and art that they left behind them. Others of us make our own trails. We strike out on our own. Without a guide, we seek out wonder wherever we may find it, building a sense of the holy that is unique and idiosyncratic. Some might even laugh with perplexity at what

we have discovered that we hold sacred, but it is ours, we know it for what it is, and we hold it close.

Some of these paths are easy. They follow the contours of reality, finding the sacred in the awesomeness of nature, the perfect beauty of the flower or a great work of art. These paths are the valleys between the mountains, natural trails through the wilderness.

Others strike out on the harder trails. They can find the sacred in the whirlwind that destroys all before it, the plague that scars those it does not kill, the sight of the person beaten down by the burdens of life. And yet these hard truths show us the sacred too. We fight to seize our realization or not surrender our sense of love, and know that the light of holiness can illuminate even the darkest places.

Some of the paths to Pantheism are more common than others. Some come to Pantheism through nature. The founder of the Sierra Club, John Muir, is a notable example. Witnessing the grandeur of nature fills us with awe, and we are brought to that realization of the spirit in a way that human society cannot. Muir himself likened being out in the wilderness to being in a cathedral of nature. This is a path to Pantheism that is immediate and elemental. It takes us there not through the mind, but through the senses - the touch of bark on tree, the sight of the sun through the forest canopy, the smell of the waves crashing on the shore, the sound of wind blowing across the desert.

Others have come to Pantheism through philosophy and religion, such as Baruch Spinoza, Giordano Bruno or John Toland. These are the ones who named Pantheism. In their contemplation of the nature of God they came to the realization that the concept of a personal God is too limiting and too distant. The idea that God is a separate unit 'over there' does not square with the reality of a spirit that pervades everything, that is omnipresent and ties the whole world together. The Pantheist does not believe in a God who separates the world into the saved and the damned or even elevates mankind above the other parts of existence. God does not look over the universe, an unseen watcher. Instead, God is all that is holy in the universe.

Some come to Pantheism through science. Einstein held many Pantheistic views, and professed to believe in the God of Spinoza. In the quest to understand the world, the passion that we bring to this quest leaves us open to the wonders of nature. The amazing intricacies of existence are in themselves an object of wonder: there is a great beauty to an elegant theory. The excitement that comes from new discoveries made possible by the application of ideas then suggest new experiments, new places to observe, opens us to a contemplation of the universe as a sacred whole.

Some of the best scientists and explorers are driven by this sense of wonder. Where a person is open to wonder, it can lead to discovery. A strong belief in the sacredness of life can lead one on the journey to understanding, to a career as a biologist or physiologist. To be lost in admiration at the awesome vistas that this world holds can turn someone into a geologist, reading the history of our planet in the literal sands of time. Being hypnotized by the stars of the night sky will take us on a journey into the cosmos through astronomy.

Regardless of the path, we come home to Pantheism when we realize that our lives are incomplete unless we recognize the spiritual component of our lives. We come home when we recognize that this sacred is not given to us from above, it is right here around us.

The practice of Pantheism is not mediated by priests. Just as we recognize the sacred is all around us, we know that we do not need anyone to bring it to us. All we need to do is reach out and touch it for ourselves. This is an awesome responsibility. We cannot just stand passively by and let another bring it to us, we must seek out and find the sacred for ourselves. But with this responsibility comes a greater gain. Because when we find the sacred, it is unmediated. We touch the holy with our own fingers, see it with our own eyes, smell it and taste it in all its fullness. We do not need another to tell us what it is. They may lead us to this realization, but it is no substitute for it. The Pantheist can, and must, experience the holy for themselves. Luckily, we need not go far. If you know where to look, the holy is right under your nose. All you have to do is open your senses to it.

We touch the sacred and that keeps the spirit of Pantheism alive. We touch it because of our need for transcendence. The need is universal, but our expression is personal. We touch it because the spirit nourishes us. The religious sense is something that most of us share to some extent or other. Some have a need for the sacred in every day or every moment. Their lives are spent in touch with the sacred. This may be deliberate, by setting aside some time every day for meditation or contemplation. For some this comes naturally. But for these people, life is more than the mundane.

Others neither need this constant presence nor have time for it. Just knowing the sacred is there, even though the moments of contemplation are few and far between may be sufficient. This may happen because this is all that life permits. The demands of living, day to day, month to month, may require a focus on the mundane that permits only passing acquaintance with deeper thoughts and feelings. Others just may have a temperament that does not tolerate more than an occasional taste.

This need can change with the seasons of life. The demands of family

or starting a career may push other concerns out of one's life until a later time. As these demands fall away or grow less, there is more room for things of the spirit. This may also change as our interests change. We may react to the people and places in our lives. A move from a small town into the big city may find us caught up in the excitement and all the goings-on, and we find less time to stop and look around us. We may have only stolen moments then. A quiet winter's night with the snowflakes like diamonds in the light of the moon. A hot summer's day when the buzzing of insects bring a sense of peace. A moment of peace during some ceremony that usually we thoughtlessly rush through, but this time we stop and focus on our breathing.

We are all unique individuals, with individual loves and hates, with individual ways of looking at the world. Therefore, each Pantheist finds themselves in a different cathedral in the same universe. We may be united by the common experiences of humanity, this globe that we all inhabit, the same colors from ultraviolet to infrared, the same tastes of salt and sweet. But the combinations are unique to each person. The left-hander and the right navigate the world in different ways. The tall and the short see a wondrous vista from a different perspective. And each one of us will come up with our own answer to the question - what is the sacred? What nourishes our soul?

What does touching the sacred do for us? Touching the sacred can lead to ethics. In knowing what we value in the world around us, we come to a better appreciation of values in living. We realize that our vision of reality, unfiltered by our preconceived notions, is a more honest way of seeing the world. We witness what actually happens, not what we wish it to be. Therefore a Pantheist ethics is based on reality over ideals. No matter what the rules are, if, in the long run, they lead to bad results, they must be discarded. But, if by seeing the world as it really is, and seeing what works, we can formulate a response to the good and evil in the world that truly makes a difference for the better, then we have a morality that actually makes a difference.

There are common rules in ethics, because we are all human. Humans are social animals. Therefore, we all agree that the good is to live together. We all tend to think like humans, and this is determined by our genetics. But we all have our differences. Therefore, to live an ethical life, we must also be empathetic, to understand how we think alike and how we are different. As humans, we understand there is a commonality, but there is also an individuality, too. A Pantheist ethics must balance the universal human need to the relative perspective of this need.

Touching the sacred can lead to beauty. The arts are full of examples of great art inspired by the beauty of nature. Some great music takes the sounds of nature and echoes it back to us in the sounds of instruments and voices. Poetry uses nature as a metaphor to illustrate the aspects of our lives that we often leave unexplored. It can also be used as a frame around a picture of our lives, a part of the scenery of a moment that brings that instant to life. A great sculpture can illustrate the beauty of the world, either literally, as in some of the great sculptures of Michelangelo, or symbolically, as with some modern sculptures. In choosing an object as a sculpture, we let the particular example stand for all that is beautiful of its kind and therefore all that is holy in its beauty.

The sacred can give us what we need to sustain us in hard times and remind us of what brings the good times. To garden can bring us back to an elemental sense of the world, a recognition of the seasons of life, the times of birth and death that puts our gains and losses into perspective. To experience life as it is around us, we can see that the world is neither inherently good nor evil, but an ebb and flow between the two. Sometimes, we can work to make the world a better place, and through our efforts, the good displaces the bad. Sometimes, we realize that all our best efforts are not enough and we are left with pain. But in experiencing the world as it is, we know that we are never left without hope, for the world will eventually change for the better. Likewise, we do not allow ourselves to be fooled by a temporary perfection. Even in the best of times, we know that sorrows can come our way. But for good or ill, our rewards and punishments, the good and bad that befalls us, are in the here and now. There is no promise in an afterlife that we cannot experience.

Since the Pantheist cannot rely on the revelation of others as superior to our own, how do we arrive at the truth? We see the world in different ways. Our emotions, our personality, determine what is important to us, what we hold dear. This colors our view of the world and makes each person's view of the truth different from other people's.

Some truths we all hold in common. Some basic facts are common to us all. One plus one is two. The sun rises in the east and sets in the west. But beyond that, we cannot completely agree. What is the beginning of life? What constitutes a human and what does not? What is the purpose of life? On some of these notions, we can agree on the broad outlines, but we can differ at the boundaries. Some, like the purpose of life, we may not agree on at all.

Although the world is the same, our experience of it is different. We may come to different truths. We may find that our notions of the truth

nearly overlap. But what we must allow for the right for each of us to differ. To establish this right requires two things. The first is to let go and not demand that everyone else think like us and act like us. We must be tolerant of differences. The second is to be aware of the differences and leave room for each of us to live in peace, following the dictates of our own conscience, without being subjected to beliefs and practices that we find offensive or wrong.

Sometimes this tolerance is not possible. In that case, there will be a struggle between different viewpoints, different beliefs about what is the truth. In that case the ultimate authority is reality itself. If what we claim to be true has any basis in reality, then we can put it to the test, making claims and predictions. If two people differ in a significant manner on some aspect of reality, then the conclusions they draw will be different. This difference will be the basis for determining which viewpoint is correct. We must maintain, as best we can, a spirit of tolerance until the facts are in. But after we know enough to make a decision, intellectual honesty will compel us to decide which idea is better than the other, which is closer to being right, if we truly have enough information.

Even within ourselves, the search for truth goes on. Each conclusion we reach is subject to change or refutation. The way a truth is validated is through experience. It must be put to the test. Even the most beautiful or logical truth, if reality does not validate it, must be discarded. We have to look at reality straight, without the blinders of our preconceptions or favorite theories.

In any case, there are few absolute truths, since humans are not omniscient. We can act as if there are absolute truths, because time-tested truths are correct in most times and most places. But the world is a complex place. So even the most natural and universal precepts can admit to exceptions. This is especially true with the clash of two ideals. It is usually true that there is always a tradeoff between two ideals, and the best we can hope for is a middle ground where both are optimized, even though they are not completely realized.

Once we identify ourselves as Pantheists, how shall we live? How does that change our lives to live as a Pantheist? One of the most important ways is to be aware of the world around us. We know we are part of this world, not some beings that are somehow different and apart from Gaia. This does not mean we lose sight of humanity, but it does mean that humanity is not the crown of creation.

This has both a positive and negative consequences. It knocks us off our pedestal of superiority. It also puts the power of humanity in context. In

this century we have witnessed the effects of humanity on the climate, the rainforest and the population of different species. But even this condemnation of the ill effects of humanity on the planet can lead to hubris. There have been other major changes in the world's populations of plants and animals over geologic time, some much more profound than what humanity has wrought so far. The appearance of flowering plants. The replacement of the dinosaur by the mammal. The disappearance of whole species and classes, such as the trilobites. For good or ill, we have to view humanity in perspective.

Another way that Pantheism affects how we live is that we can neither consider the universe or humanity as wholly good or wholly evil or even a mixture of the two. To claim this is to confuse a human judgment with reality. Reality is what it is - it is not the interpretation that we give to it. Events may be good or bad, but these judgments are relative to the observer, not inherent in reality. We can be happy or sad when we see somebody act in a certain way, or see the effects of nature upon cities and towns. We can even judge a man as good or evil, depending on the effects of their actions. But we cannot condemn or praise humanity as a whole and we certainly cannot judge the world or the universe. Animals and plants are born and die, eat and are eaten, wage war and nurture one another, and their actions, as a whole, are neither good nor bad - they just are.

To live as a Pantheist is to value both immanence and transcendence equally. Each individual can be one or the other according to their lights. Some of us immerse ourselves in the world; some of us rise above it. At times we may be one, at other times the other. But we can touch the sacred either way. We can surrender to the sacred and become a part of it, or we can view it for a far perspective, seeing life and change ebbing and flowing as we look down on it. There is room for both, and to choose one is not to negate the other.

Even though we are immanent in nature, we still are conscious creatures, capable of willing ourselves to seek out that which is holy, and if it is not found, to create it ourselves. Even though we are subject to the forces that made this world what it is, we can still use those forces to our own ends, making something new by effort of will. Even as part of the world, we can still rise above it through our actions.

But even the most profound act of creation must be seen in perspective. Some of the most profound and original theories in science came about because the time was right. The brilliant scientist may have hastened the discovery, but it would have been discovered sooner or later. This is true for the arts as well as the sciences. A new musical style cannot be completely

original or no one will comprehend it. Instead, it must be incrementally different, each change moving the process of creation into uncharted territory, slowly, so the bulk of humanity can catch up. Therefore, even the most profound act of creativity can be seen as immanent in the sea of humanity, and as part of the matrix of existence.

Humanity as a whole is both immanent and transcendent. To live as a Pantheist is to see that humanity can act consciously, as a force for good or ill, remaking the world. But we also know that, even if we make the fatal mistake and ensure our own destruction, life will go on, because life is an essential part of reality. Life is not some special miracle, apart from inanimate matter. Life is part of the basic properties of this universe. So we cannot take ourselves too seriously. At this stage, we do not know, one way or the other, whether this planet is the only, unique, source of life in the universe. But the very existence of life means that it has happened - life came from non-life - and that it can happen again, given enough time and favorable conditions. We are not unique simply because we have not reason to conclude that we are unique. The evidence is not there. We are transcendent due to our being conscious living beings, but we are immanent because we are not special.

To live as a Pantheist is to be a unique individual in a sea of humanity. Each of us goes on our journey to find the sacred and bring it to our consciousness. We seek out the sacred. We make these moments alive, our time of recognition and response. But we do not let these moments pass. Humanity is made of society. Our greatest strength is that we are more of the sum of our parts. So the social animal seeks to bring this moment to the rest of us, to capture it in word and song and painting and dance, and bring it back and share it so we all may experience this moment. We celebrate these moments of spiritual insight, and help one another to touch the sacred just as we ourselves have touched the sacred.

When we touch the sacred and the sacred is all around us, we are Pantheists. When we touch the sacred, we live our lives with the sacred and the sacred is always present. When we touch the sacred we are part of the web of existence. Our touch reaches back and ahead to all those who have touched the sacred and they feel our touch in their touch. We are the energy, the consciousness the experience of the sacred. We are the carriers of the light, the ones that hold the sacred in our hearts and minds.

Chapter 2

Transcendence Without Personality

In this day and age, most people believe in God. Some believe that there is a God the Creator. Some believe this God watches out for them. God is usually described as being a person, some sort of entity that is separate from Creation. Besides being a person, God is sometimes described as having other characteristics, such as omniscience (all-knowing), omnipresence (present everywhere) or omnibenevolence (perfectly good).

It is reasonable to ask how we know that such a God exists. For many, the question of whether there is a God or not is said to be unanswerable and to be taken on faith. After all, it is claimed, God is outside of Creation, therefore apart from any ability to prove God's existence or not.

This is an unsatisfactory state of affairs. If a belief in God is at all useful, then the presence of God can be seen in the effect of that presence on the observable universe. If there is absolutely no sensory evidence that there is a God, then it does not matter whether God exists or not. If either case, existence or non-existence, would make no difference in what we experience, then the question of the existence of God would be moot.

So there must be something more than faith to indicate the existence of God. Faith may be the source of the belief in God. Faith may make someone prefer one characterization of God over another. Faith, instead of reason, can cause us to choose between alternative explanations of the nature of the universe as we know it. But a faith in an ineffectual God is to have a meaningless belief. God's presence must somehow be made known upon the Universe. This presence, or lack of it, is susceptible to reason, and can be presented as a proof of God's existence.

Some proofs of God are through the direct evidence of the senses. Two of the most common are the existence of miracles, or the direct sense of God's presence. A proof of a miracle would be a strong proof that, on the face of it, would be hard to refute. It is a very difficult proof to make, though. As human knowledge expands, events formerly claimed to be miracles are sometimes found to have a reasonable explanation in the natural forces of the universe, or in a deeper understanding of biology, and the claim then seems to be not as strong. But even given those explanations, there are still reasonable claims of the miraculous that admit to the possibility that God exists.

One of the most obvious is the creation of life itself. The creation of the first single-celled animal can be argued to have required a complexity and subtlety in its preconditions to exclude any natural mechanism as we now understand nature to possess. The continued failure to provide a complete and adequate explanation for the appearance of life on this planet may be proof enough that God exists.

As for the claim of directly experiencing the presence of God, this is certainly open to interpretation. This is not so much a question of physics or biology as it is a question of psychology. There are many sensations that seem to be real but in fact are not. The human mind is a complex organ. In any case, these sensations are usually not reproducible. A person may have experienced the presence of God to a degree sufficient to convince themselves that God exists. But it is virtually impossible to transmit this knowledge to other people, the same way we can express a physical claim, for example, like the claim that water is made of two gases, hydrogen and oxygen.

Proofs of God that use the evidence of the senses are direct, but are usually ambiguous in what they actually prove. One problem is that these proofs are not completely rational. They have a subjective or emotional component that is hard to separate from the person making the claim. This means that those who wish to objectively prove the existence of God have to do so via other means.

Many people have attempted to give a rational proof of the existence of God. Many of these proofs are philosophical in nature, by showing that the universe would be incomplete, implausible or chaotic without a God. They attempt to demonstrate by reason alone that the Universe cannot be the way it is without a God to create or sustain it.

These ontological arguments take a variety of forms. One is St. Anselm's argument, which is the following (to quote from the Stanford Encyclopedia of Philosophy):

Consider that God is a being that which no greater can be conceived.

St. Anselm reasoned that, if such a being does not exist, then there is a greater being, namely a being that which no greater can be conceived and which exists - can be conceived. But this would be absurd: nothing can be greater than a being which no greater can be conceived. So a being than which no greater can be conceived - i.e. God - exists.

Since then, there have been any number of ontological arguments. Descartes had his own version. Leibnitz improved on the previous attempts. Even in the current century, we have philosophers such as Plantinga who have their own version of the ontological argument.

One of the problems of the application of the ontological argument, as well as most other logical proofs of God, is that the concept of God is encrusted with a variety of properties that are not part of the basic ontological argument. God is considered to be a person. But personhood has nothing to do with greatness, which is the defining criterion for Anselm's argument. Personhood is a property imposed on the concept of God because we human are persons and therefore it is our natural prejudice to conceive of something as a person. As for God being a creator, we don't know how the Universe is created, if it was at all. Even here, we think of God creating the universe the way we think of humans making pottery. Creation may not necessarily require personhood.

Even considering the creation of life, if that requires the facility of a God greater than mere existence, this does not imply that God is a person, or even a separate entity. God may be Panentheist - a presence that permeates existence, but is greater than existence. But this does not imply personhood. At best, we can say that God the creator of life is a mystery, just as the creation of life itself is a mystery.

Panentheism is a belief related to Pantheism. Panentheists view God as a being, a presence that among other things pervades the universe. In this view the universe is part of God and God is part of the universe. The Neo-Platonism of the philosopher Plotinus can be considered a form of Panentheism. In this century, Panentheism is a part of the beliefs of Process Theology, the view that God and the universe are not static quantities, but in the process of becoming.

The Panentheistic view of God is seen in Process Theology, where God is viewed not as an omniscient being who is not affected by the universe, but one creator among many, where the effect of creating something is to change those who come in contact with what was created.

Hartshorne, one of the major proponents of process theology, argued that Anselm's view of looking at perfection to prove the existence of God had validity, but that the definition of perfection that he used had problems.

God's perfection could not imply that God is perfect and unchangeable, since that would lead to contradictions in the way God has to deal with an imperfect and changeable world.

But process theology also considers God to be a person. God is considered to be something apart from the universe. God is believed to have the ability to act on the universe and its creatures, along with having the ability to know the ways the universe can progress and change.

This runs the risk of anthropomorphizing God. How much of process theology is truly a statement about the nature of God, and how much of it is the imposition of human attributes upon God? There have certainly been changes in the way that humans look at the universe and God as human understanding has developed and grown. The changes that Process Theology have introduced could be less that God is coming into being, but that humanity may be coming into its own. It could be argued that the qualities of God that lead to a Panentheistic deity are mostly the imposition of human characteristics. When these qualities are removed from the notion of God, God may just be a particular way of looking at the universal characteristics of the universe.

In any case, if there is something in existence that is greater than anything else, it is surely the totality of existence itself. Even if there is a Creator God, this is just viewing God and Creation as parts of a greater whole that then becomes all of existence. This totality can certainly be shown to be that being that which no greater can be conceived. It also has the convenient property of existence already. Therefore Anselm's ontological argument leads us naturally to a Pantheist God.

This argument presents us with a naturalist interpretation of the nature of God. Most humans at various times and places feel themselves in touch with a sense of holiness. It is common for people to feel the presence of God at some time in their lives. There are even some psychologists who have claimed to have found that part of the brain that, when stimulated, cause this feeling to occur. It does appear to be true that, even though this feeling has been attributed to something supernatural, it can have a natural explanation, or at least a natural manifestation. This is as much a matter of semantics as anything else. The supernatural, being a state or sensation common to many people, is in some sense a natural feeling that many of us share. What other things associated with God also have a natural explanation?

One obvious example is that of divine revelation. The direct experience of God has caused people to write down these revelations into books and prophecies that are attributed to a divine presence. Some of these books

are claimed to be the direct words of this presence.

But writing is a uniquely human activity. Yes, there are people who have been in touch with the holy, who have experienced a transcendent presence in their lives. Holy books are an echo of it. But this does not make them a direct product of divinity. These revelations come from being out in the world and being open to the experience of the holy. This fervor is then captured the way humans have always captured their experiences, into words, into stories and songs, tales and explanations. The source of these writings is directly perceived. Yes, the holy books are truly holy - they are sacred. But they are sacred, not by being direct products of a divine presence, but by being the revelation of those who have experienced these sacred moments.

They, like all writings, are human artifacts, with all of the imperfections that attach to human experience. Although being a record of the sacred in our lives, they do not have supernatural properties. They are subject to human error, full of human emotions, for good or ill, and though the inspiration for millions, none of them can claim superiority to any other holy book in the power or authority of their revelation.

We all can learn from holy books. We can use them as guides in our daily lives, can use them to provide guidance and give us purpose in our lives. Some of them speak to us more than do others. This is due to the differences in human psychology that make us more accepting of one book over the other. It is even more the product of the society in which we live. One holy book can have more power to reach us than another depending on the time and place it was written, and even more important, the time and place where the book is read.

The basic revelation of Pantheism is simple - all is God. There is nothing beyond this - no holy book, no discipline, no other revelations. These writings can augment our understanding; they can teach us things and show us things we have not considered. But our own unique revelations are the final arbiter of the sacred.

Besides the fact that holy books are holy because the people who wrote them were in touch with the holy, religious institutions and their dogma are holy only in so far as the people who founded the religions were in touch with the holy. The spiritual sense does not come from institutions. It is the other way around. The founders of religious institutions create an environment for transcendence. The participants of these religions keep these feelings alive and make them their own. The creeds of these religions ensure stability over time and help to keep the purity of the original revelation. The ceremonies and systems of belief retain their potency insofar as they bring forth and

preserve the experience of the sacred in and amongst us.

There have been many such revelations in human history. Some of them are progressive revelations that take humanity another step to further understanding. Others have been the response of exceptional people who have provided new ways to touch the sacred. But all of them are a human response to the holy. Holy books, religious ceremonies and statements of belief are sacred because of the depth of feeling of the creators and the participants. They differ because the environment is different in different parts of the world. They differ because the societies differ that allowed these religions to flourish. Although it can be claimed that there is a basic unity to all religious revelations, the truth is that the religions of the world each have their own unique emphasis on what part of the sacred they choose to focus. The attempt to find a common denominator reduces all religions to a stripped down core, a core that is universal to all human experience. But this basic core may not be very much, just a skeleton without the flesh. Actually the differences of religions should be celebrated - they bring the richness of the experience to life, making the world's religions into a colorful tapestry of ceremony, prayer and song.

Just as believers in a God that is manifest as a separate person express their beliefs in different religions and religious practices, so do those who experience the sacred in the world around us without a belief in a separate transcendent entity experience their own unique revelation. This means that many Pantheists have many different beliefs. Each revelation is unique to the person who experiences it. All those who practice Pantheism do so in vastly different ways.

Among those who do not believe in a personal God, there are many people who, having realized that there is no divine Presence in the world, reject religion altogether and embrace atheism. But this often misses the spiritual component of human experience.

Some atheists have never felt the sacred to begin with. The experience of the numinous is an illusion to them. If this experience can be said to exist at all, they consider it a psychological quirk, a part of the biology of the human brain.

There are others, who admit to the possibility of experiencing the sacred, but this is not as important as other parts of human endeavor. Many of them call themselves humanists, because the reality of the human condition is more important than speculation about the sacred. A humanist considers the focus on humanity as the central point of their worldview. The question of God pales in comparison to the revelation of the nature of the universe brought forth by human understanding. The sacred is not a transcendental

experience as much as it is the product of the deepest passions that mankind has inherent in our being. Since we are humans and we experience the world through human senses, for the humanist, this is the touchstone of reality.

Some people, including some Pantheists themselves, consider Pantheism to be a form of atheism. This is only true if one considers the definition of atheism to be the denial of a personal God.

The Pantheist, beyond just disbelieving in God as a separate person, can take a place on a continuum of beliefs about the nature of God. There are the Pantheists who feel the presence of the sacred in everything they touch and all that they see. There are also Pantheists who are thoroughgoing rationalists, but who prefer to use the notion of God in a poetic sense. This is God as metaphor, a way to describe what they feel about the world by taking an age-old concept and applying it in new ways. Pantheism has had a variety of views about God, different for different people.

Some Pantheists have taken the beliefs of other religions and applied them in their own fashion. One common example is that of philosophical Taoism. Many Pantheists are drawn to the teachings of Taoism because this ancient religion describes a unifying force that is the basis of all existence.

Taoism arises out of the recognition of the world as it is. It sees into the mystery of existence and acknowledges that our words are inadequate to describe the totality of experience. Taoists understand that the deeper your understanding goes, the less adequate are your words to describe it. The more one knows the less one says.

Taoism also recognizes the limits of human power. To act upon the world is not to master the world. The Tao will be what it will be and cannot be tamed. We can certainly act upon the world and change it, but we will never understand the world enough to predict what the ultimate effect of our changes will be.

The Pantheist who embraces Taoism realizes that our ways of thinking of the world, even our separating the world into opposites, heavy and light, soft and hard, dark and light, are illusions that we have imposed upon reality. Reality is more mysterious than that. This may be a way to cope with the world, but to begin to understand the world, we have to leave our preconceptions behind.

For the Pantheist who is a Taoist, the nature of God is the ineffable Tao. It is the core of existence, the nature of the universe before it is split by our senses into the various modes of reality. This view of God is ineffable, incapable of being described. Like the finger pointing at the moon, the words can point to this God, but will never describe God. God is beyond description.

Taoism is only one of the ancient religions that has a Pantheist interpretation. There are any number of adherents of ancient religions who have abstracted the concept of God to the point where the historical notions have been stripped of any references to powers manifested as deities, represented as beings who control the lives of men. These Pantheist interpretations of the Gods treat them as abstract symbols. As these abstractions are stripped of their special characteristics, they become symbols of qualities of the universe as a whole. We proceed then from Gods, to symbols, to Panentheism, where the pure properties that form the world also stand apart from the world, like the Platonic ideals. When they cease to stand apart, when the forms do not exist apart from things, then they become properties of the universe itself, inseparable from the world. Then they become Pantheism.

Pantheism can arise from many sources. There is Pantheism in the practice of Hinduism - where Vishnu, Brahma, Shiva become the symbols for the Universe in its various modes of existence. There is the Pantheism of Hasidim - close to Panentheism, the experience of God as experienced by Baal Shem Tov who found a direct relationship with the Hebrew God in the universe around him. The religion of Islam found this relationship with God in the practices of the Sufis. God does not sit apart as a judge, who decides who goes to heaven or hell, but as a divine presence that we can commune with through ecstatic experiences. Some of the Christian mystics found their way to a vision of God in this fashion. The Christian religion has had those mystics who have experienced God directly, such as Saint Teresa of Avila, who believed God to have inhabited her body.

These people do not reject the traditional modes of worship of God, but transform them into a worship of the sacred through the identification of the sacred in all that we see and know. They can understand the traditional creeds and ceremonies the way the Taoist understands them, as a starting point from which we enter into a direct relationship with the sacred. In every tradition, there are the mystics, who seek to reach beyond the symbols, leaving the stories behind and coming into contact with the Holy unmediated by the traditional practices.

An ancient religion that has been revitalized in modern times is Paganism. Paganism is a religion that is centered on Nature, that finds its sacredness in the cycles of the seasons, in the plants and animals, the earth and water, the air and sky. Pagans worship both God and Goddess. In contrast to the Taoist view that holds that the opposites are an illusion, Paganism views the world in terms of these opposites. There is male and female, dark and light, earth and sky, good and evil, summer and winter. Paganism is organized around the cycles of nature, celebrating the changes

of the seasons.

Many Pantheists incorporate the revelations and practices of Paganism into their religion. Pagans can have a wide variety of beliefs about God. Some take the notion of Gods, Goddesses and spirits literally, and are therefore polytheistic in their beliefs. Other pagans use the terminology and beliefs as metaphor, a way to express the richness of the experience of the sacred, while expressing an essential unity. God and Goddess as metaphor is more in tune with Pantheism. In this view, the opposites are but varying manifestations of an underlying sacredness, just as the light sparkles on the facets of a diamond. But reality itself is the diamond, the ultimate ground of being which transformed the light into the sensations that we experience.

Paganism is a new religion that has taken the practices and beliefs of pre-Christian religions and updated them to the present. They have taken ancient traditions and created, new, modern practices to enable their practitioners to celebrate a union with the holy in their ceremonies. This combination of the new and the old has taken beliefs that were almost forgotten, and reinvigorated them with an energy borne from the yearning in to be in touch with the holy that this age too often lacks. They take the cycles of life, the opposites and the forces that transition between them as a metaphor for the sacred. They search for the sacred unity that lies beyond the plurality of existence. Life and change become more than just the natural progressions of life and transform themselves into a means to reach the sacred depths beyond everyday existence.

Related to Paganism are nature-centered religions. Here, the symbols and forms of God and Goddess give way to something more elemental. God is not the spirit of the wind, God is the wind. This view of God is centered still on Nature, but unmediated by words or practices. To be with God is to be with nature. To journey with God is to walk in the forest, cross the desert, climb the mountain, sail the sea.

This is a religion that is focused on the preservation of the world. They see mankind as turning its back on the powers of nature, trying to usurp this power and claim itself as the supreme power of existence here on earth. They understand that humanity, in its hubris and ignorance, will make its mark on the world, but this mark will fall short of the aims that are intended. Humanity will try to rule nature, but nature will not be so ruled. We can spread civilization over the land, but it cannot take the place of Nature. The oceans, land, deserts, air, and the living creatures that inhabit them have had their place for billions of years and will not be ignored. No matter how we plan and strive, we can never push nature aside. It will always have its say.

The Nature centered religions recognize this and attempt to rescue humanity from its folly. This is religion that recognizes the supreme powers of existence. This is a view of God that is identified with Gaia, the spirit of the world that has created and sustained the force of life on this planet since its inception, a force that encompasses all the changes that life has seen since the world was formed. The Nature centered Pantheists see God in a view of nature that will outlast the changes that mankind has made upon this planet, that heals and renews the world, and preserves it for geological ages to come.

Ultimately, the experience of God and religion is human-based, for humans experience the world through their body and mind, no matter how we try to transcend it. Some Pantheists touch the holy through the powers of logic and reason. The scientist and engineer looks at the world and try to understand it. This understanding leads to an appreciation of the inner workings of the universe.

This is an appreciation of God that is often detail oriented. God is not often seen in a mystical totality, but in the day-to-day struggle of unlocking the secrets of life, in the laboratory, the trial and error of theory formation, the theorem and proof of scientific work. To those who are not accustomed to it, this can seem cold and dispassionate work. But there is often a spirit, an intensity to this work. It drives the researcher on, each observation being a brick in the edifice of understanding, the reward being the day in which the work all falls into place and a new understanding of the Universe is revealed.

Newton said he stood on the shoulders of giants. But these giants could not have seen what they did without the work of all the others who supported them, too. Science is a social construct - a series of individual revelations that build up to a profound understanding of the world around us. This can lead to a sense of power that is sometimes misplaced. But in the best hands, it leads to a reverence of the universe. It is not so much the work of man, but for the Pantheist, it is a dialog. We seek to understand the world, and the God of the universe tells us its secrets in every experiment that seeks to reveal the soul of the universe. This is a ritual with its own language, of experiment and result, of equation and theory, and the revelations it uncovers can be as profound and immediate as that of any other mode of revealing the nature of ultimate reality.

Although many Pantheists do not believe in any final or ultimate revelation, this is especially true of the scientific approach. Not only does the Pantheist scientist not expect any final unified theory, it would be disappointing if an established theory were not, from time to time, be under the

process of modification and revision. Otherwise the field would be stagnant - nothing would be going on. A lack of change in science is a lack of vitality. The theoretical edifice is constantly expanding and growing, some parts being taken down and replaced, others newly added, and the whole time the foundations being shored up.

Eventually, the time comes when the details come together, and the scientist sees the universe in a new light. These insights can be as powerful as any mystical experience, and as beautiful as any work of art. This approach to Pantheism is as passionate as any other form can be. There is a transcendence to the realization that a theory can bring deep and surprising insights into the universe. With the knowledge that we humans are as subject to the laws of nature as any other part of reality makes the feeling of immanence explicit - it shows us the connections between ourselves and the rest of the universe.

But in all of its guises and practices, there is one thing Pantheists have in common - they equate God with the Universe. There is no evidence, the Pantheist would claim, for a creator God separate from the universe. God is all that is sacred in the universe, and the universe is all there is.

This does not negate what is termed supernaturalism, but says that God and nature together make the universe. Supernaturalism, if it exists, is just a way of saying we don't yet understand all that there is to know. Supernaturalism must be subject to the evidence of our senses just like every other experience is. If it were found that something were to be inherently supernatural, then that just means that we may never understand some things. This could be true. But it may be that the mystery of the Universe is just lack of understanding. As we learn more, we become enlightened, and the supernatural becomes known.

But what if the ultimate experience of supernaturalism were true - what if it were found that there is a personal God? What if there is a God who is a Presence in the world, the Creator, the Preserve, the Destroyer? What if we find that this presence is a fact? What would that say about Pantheism?

This may mean that Panentheism, instead of Pantheism, is the preferred way of seeing the Universe. It may also mean that Monotheism or Polytheism is a better way of understanding the Universe, whatever the facts of reality reveal.

But even then, we do not have to reject the view of the Universe as an essential unity, which is the heart of Pantheism. For the rationalist, this further revelation may lead the Pantheist to a new branch of science, a new specialty, where the theobiologist seeks to understand the nature of God as revealed by observation and experimentation. Even with a separate

entity who created the world, St. Anselm's definition, that which no greater can be conceived, may not actually be God. If a Creator exists, it may be necessary to give that creator a new name, or to say that St Anselm was really referring to the Universe in all its totality of which God is only a part.

Although it is not universally true, many Pantheists have no problem referring to God. But the word is a metaphor. Pantheists might at times attribute some characteristics to God that make it sound like God is a person. But to anthropomorphize God is to use a metaphor, not to claim that is an actual characteristic of God. God is the universe personified, not a person itself.

This is not Panentheism - a God greater than the universe. It is a symbol of the sacred in the universe. It is the recognition that there is a spirituality in the universe and that sometimes we humans try to characterize this spirituality in concrete terms.

For those Pantheists who have trouble using the term God, it may be that the term Pantheism itself is outmoded. God is a term that has been with us all through human history. But this term has meant different things as human civilization has grown and changed. Likewise, humans, most of them anyway, have seemed to possess a religious sense, for better or ill. It may be true that in the future, religion will be divorced from the notion of God. We will not need to refer to the sacred in the universe by reference to that concept. The idea of God may have just fallen into disuse.

If that comes to pass, then the idea of Pantheism will become outmoded. One alternative to take its place is the concept of Panspirituality. This would capture the same basic set of notions that inspired Pantheism, just with a different vocabulary. God might then take its place as an anachronism, along with the notions of phlogiston or the aether.

To take this a step further, even the concept of a spiritual sense is troublesome to some people. After all, this seems to imply a dichotomy in the nature of reality, not just a recognition of a human sensibility that is felt when looking at the world in a way that transcends the mundane. Then a term such as Religious Naturalism may be more appropriate. This is a view of religion that has no need for a literal interpretation of either God or the Spirit. They are either not referred to, or if they are, a new vocabulary will arise to take the place of these terms.

Humans sometimes have the urge to throw out all the outmoded concepts from time to time and start again with a clean slate. It simplifies things, no doubt, but in some ways it throws out the baby with the bathwater. There are many aspects to the notions of God and the Spirit that are yet relevant. Besides, human nature tends to be, by and large, conservative.

Religions such as Christianity tried to start with a clean slate, but were not entirely successful. We still have the traditions of Easter and Yule, and the observances of the Saint's days. They have managed to survive centuries of attempts to eradicate them.

This is not all bad. Humans come encumbered by their history, but also enriched by it. Concepts change, but can still be useful. Even the most abstract notions have roots in the human psyche. They stir up feelings, they bring up relationships, they represent well-worn ways of experiencing the world. God and the spirit are still useful ideas. They bring a richness to our mental universe and to our vocabulary. So it is still true, for the foreseeable future, that Pantheism is a valid term to express a particular way of looking at the world.

Chapter 3

Sacredness in Nature

The sight of the stars on a clear moonless night is awesome.

The night is ablaze with light. The major stars group themselves into the age-old constellations. The Milky Way spills itself across the sky, a river of light. Everywhere you look the sky is filled with stars. The feeling of the immensity of space is almost overwhelming.

It is at moments like these we are brought in touch with the reality that the sacred is all around us. This is a sight that has filled human beings with awe from time immemorial. The heavens, with their stars and planets rule the march of the seasons, in perfect clockwork. They have even believed to have control over the affairs of men. This is a sight that is eternal, and constant. We can see it almost any night if we just stop and look.

Besides the immensity of the universe, we see the sacred in the sight of life. The intricacy of a spider web. The sight of deer in the woods. The sound of the wind in the leaves. A trout swimming in a rushing brook. Everywhere is teeming with life, a mystery that fills every nook and cranny.

We are brought in touch with the sacred in contemplating the miracle of life. We see life as different from the rocks, the earth, the sky and sea. It exists in it, but is something different and especially magical. We can't define it but still it is there.

For what is life after all? We see life in a single cell through the microscope. We see life in the sight of a badger running as we approach. We know that life is different from the rocks. But how did life arise? What makes life different from non-life? These are questions we pose. The answers are difficult, the origins obscure. We don't know quite how to define it, even now. Maybe we never will. We do know some details, though. We can say that life shares in common many biochemical processes, the conversion of

oxygen and molecules such as glycogen to carbon dioxide, the replication of DNA in mitosis, the creation of proteins from the encodings of RNA, but the origins of life are still obscure. We know more and more, but life still seems miraculous to us.

We wonder and we look at the world around us as something special, something that cannot be taken for granted. Even the rocks, the clouds and the ocean seem to be sacred if we would just stop and experience them that way.

A walk in the woods contains sacred stories of all types big and small. The path in front of us is shared with all animals who live there, not just us. The birds that fly from tree to tree, with their colorful plumage speak to the beauty of nature. A beetle crossing our path is a tiny miniature of exquisite design. Fields of ferns tell of the abundance of nature. The stream flowing by reminds us that change and impermanence can imperceptibly result in permanent change. Granite rockfalls show that not even the mountains and hills last forever, The clouds in the sky remind us that the water from which life has sprung is still the most basic nourishment of life. The sun proclaims itself as the source of energy from which all other change proceeds. A passing rabbit is our neighbor, entitled to a place on this earth as much as we are.

Life appears from the simplest lichens to the most advanced mammals. It exists all through the earth. But even the inanimate world brings forth sacredness. The view of the Rocky Mountains from the plains brings forth feels of grandeur. The crashing of the open sea is a portal to worlds beyond the seas and under them, a vast place to explore. The immensity of the Earth itself holds many climates and environments, each with its own unique sights and sounds. When we leave our homes in the city we and go out into the wilderness we come alive to the special places of this world that are still untamed.

We are brought in touch with the sacred by recognizing the vastness of this world as seen by a single one of us. Each one of us is tiny compared to a mountain or the expanse of the ocean. There are miles of desert, acres of forest, expanses of ice and snow; enough to over whelm any of us. We see the expanse of the world we live on, our home in this universe, and feel a part of it. The world is sacred because the world is our home.

The world of around us can be comfortable to contemplate, but it also has a terrible grandeur at its most destructive.

The dark clouds of a thunderstorm brooding overhead. The heat of a volcano baking anything that comes too close. The crashing of the waves in a gale overwhelming our largest ships. The destructive winds of a hurricane flattening everything in their path. If we survive the worst that nature

throws at us, we are left with an appreciation of life, both its endurance and its fragility, and a respect for the powers of nature.

Even those who seldom leave the confines of the human world come face to face with the sacred. Nature asserts itself in the most urban of settings.

The city is teeming with life. A shoot peeking up through the concrete shows the resilience life. The beauty of a city garden, the flowers in a window box or a flower border around a city apartment gather the prettiest examples of their kind from around the world. People walking the streets with their dogs and cats show how we have domesticated wild nature. A rat scuttling along the subway tracks, the pigeons looking for scraps to eat, shows how wild nature will take what it can from us, whether we want it or not. The city zoo illustrates the variety of life of this planet. Humanity has created its own ecosystem where wilderness has to find its compromises to be able to fit in.

We see things that are precious to us. The land that we live on is more to us than mere property. The animals we share it with are more than just food and varmits. The plants we eat that give us life, but are special for their beauty, or just by themselves. The whole expanse of wilderness that surrounds us, that served as the cradle of humanity, still preserves and maintains us, and will eventually be our resting place. We know that we cannot exist without it, both the earth and the living things that inhabit it. It is special because it is our home and we are part of it.

We look around at this world and at the sky beyond and see that what is sacred is simply the universe in all its glory. Sacredness came into being with being and will depart with it. The sacred is all of existence, with its stars, and the Earth itself, with its majestic mountains, its endless sea, with the wonder of life, a riot of living things all fighting for a place in this world and learning to go along with the whole panoply of life from the smallest to the largest. The world does not need to justify its existence.

But what is sacredness? It can appear as awe, as wonder, as beauty, as love, as acceptance, as gratitude, as joy, as longing. In some ways it is the whole range of human emotions, only more intense. Sacredness is not just one emotion or a family of emotions; sacredness comes from the degree of response of those emotions. Sacredness comes when those emotions are taken to their ultimate. Sacredness ties the particular to the universal. It is a feeling that turns an object and our response to it an archetype, seeing the universe in one of its parts. Or sacredness can be a feeling of being aware of all of the universe, a pure feeling unmediated by a particular event.

And why say the world is sacred and not use another word - why not religious or spiritual? Pantheism is a religion; the word religious could be

used to describe these feelings. But being religious tends to be associated with churches and temples, creeds and beliefs, holy books and holy men. The things that have been described as sacred here are not religious the way a symbol such as a crucifix or a prayer book would be.

Being religious is often being part of an institution. What is sacred to a Pantheist is part of the natural world. Even if what is sacred is human, it represents humanity as part of nature, not as part of an institution. Religiosity also refers to practice and belief. We will discuss religious practice elsewhere, but what is sacred is sacred regardless of how it fits into our practice. Pantheists may have religious symbols and artifacts and they may be sacred too, but they will never take the place of the sight of the Milky Way or the sound of the waves crashing on a rocky shore.

But can the feeling be described as spiritual? Spirituality may be a way of describing our reaction to the sacred, but the word sacred must be used carefully. Spirituality is a concept that is uncomfortable for some, because it often implies a duality - setting the spiritual in opposition to the material. What has been described as sacred here is nothing but material in essence. The sky, the sea, the forest, living things, they are all parts of this material world. They are not sacred because they have some higher, separate existence. They are sacred because they are part of the universe. Spirituality can be used in a material sense of the conscious force that animates us - our thoughts and feelings - our response to the world around us. We have a spiritual response to the sacred, but that does not make it spiritual itself.

So how does the use of the word sacred here compare the classical meaning of the word sacred? Sacredness originally meant to set apart as holy - for worship and service of god. There are sacred places such as temples, or sacred groves. There are sacred people - called saints or bodhisattvas, or other terms in other religions. There are sacred things - sacrifices and offerings, symbols, incense, books, relics. There are sacred times - holy days, anniversaries, days that mark the season's change.

Without a god, how can something be sacred? The answer is that if the universe itself is holy, then all is sacred. But if the universe is sacred, how can anything be set apart? The answer is that each person decides for themselves what represents sacredness. These sights, sounds and smells, these experiences are unique individual archetypes to remind and represent the fact that for a Pantheist, all is sacred.

So if everything is sacred, then is everything good? No, the universe is neither good nor bad, it is just the universe. As the Taoist says:

"It is man's limitation to know Beauty in contrast to ugliness, Goodness in contrast to evil, Being in contrast to non-being."

The universe is not omnibenevolent. Goodness is not the source of everything. Good and bad are emotions that we as humans impose upon the world. These emotions are not arbitrary - what is good is certainly good and what is bad is certainly bad - but even though the universe incorporates parts that are good and bad to a person does not mean that the universe itself is good or bad. These judgments of good and bad are our reaction to the universe, and guide our response to it.

Our response to the wonders that surround us form a complex of feelings. There is the feeling of awe. We feel in touch with the immensity of nature. We wonder at the detailed craftsmanship of living things and their artifacts. We feel overwhelmed at the myriad forms that we see and experience. We are touched with love and joy. We feel the power that surrounds us. We sometimes feel how delicate certain things can be. We feel the rush of change, or the slow march of time through the ages. And we also seek to understand.

Besides the direct experience of the sacred in nature, the discoveries of science have their own revelation of the sacred. Science begins with the awareness of the world around us, and the desire to understand it. Science looks out at the wonders that we experience and asks the question why. As we increase our understanding, the questions start having answers but these answers lead to even more questions. But the quest for understanding never drives away the wonder. It makes the wonder deeper, fuller, more profound.

Science brings us to the realization of both the simplicity and the complexity of the universe. Without science we can observe and wonder, but with it we observe deeper. We see the stars, but do not know how big the sky is. We see the passage of time, but do not know the count of the years. We see the abundance of life, but do not know how the interconnections.

The knowledge that science brings deepens our wonder. When we look at the world the way it really is, we see the march of time through vast eons of development. We measure the distances to the ends of the universe.

The understanding can bring mastery, but only of a certain type. The mastery that science brings is always on nature's terms. There are no true miracles to science. The mastery seeks to learn the laws of nature, so that we can play by those rules. We can never force our will on nature through science - if our will is nothing but our desires. What we do is to find our place in nature and take our share. If we do this without wisdom, nature will have its response, because we cannot get away forever with taking more than we should. Ultimately, an unwise greed will reap its consequences.

Science itself is a response to the wonders of nature. Science is our commentary on the world around us. In a religion such as Pantheism with no

prophets and no holy book, the discoveries of science serve as our text. But unlike a holy book, it is constantly changing and evolving. The revelations of science do not come easy. They are the result of a lot of hard work by a lot of people, each adding their contribution to make up the big picture. But the effort pays off. Insights are made, understanding deepens, misperceptions are corrected. This is a text that never stops growing and changing

The progress of astronomy has been an unpeeling of a series of layers that surround us. At first, we sought just to measure the earth, leading us to realize that the world was much larger than a man can comfortably walk. Later, we measured the distance to the sun and the moon, along with the planets and their moons. As our accuracy and abilities increased, we measured the distance to the stars. Once we recognized the stars as part of our galaxy, we discovered the existence of other galaxies. This led to the discovery of the Big Bang and the unfolding of the universe.

Here on Earth, science has shown us that the world has been developed through geologic ages. Reading the rocks and fossils deposited in layers led to the construction of the geologic column that marks out the different periods of geologic history. Seeing the vast time frames that were required to lay down the different strata, geologists came to the belief in uniformitarianism, the idea that physical processes that apply now were the same processes throughout the whole history of the Earth. The building up of deposits and the wearing down of them again are the same throughout geologic time, even though the plants and animals found at different levels in the geologic column might have changed.

This belief is in opposition to the belief that there was a special period of creation where never-to-be-repeated events occurred that caused the world to be what it is now. This idea of a miraculous creation came from a too literal interpretation of religious stories, taken as revealed fact, and applied uncritically to explain the history of the world.

But the actual evidence in the strata under our feet does not confirm a special creation. Instead, we find that the world developed over billions of years of time. We witnessed through the story that the rocks of this earth laid down, the massive changes that the continents went through, the building of mountains and the wearing down of them again. We observed by matching fossils from distant parts of the world the fact that the continents broke apart and drifted across thousands of miles at the speed of mere inches a year. Despite the billions of years that passed from the formation of the earth to the present day, the laws of nature describe this development every step of the way.

One of the most important of these laws is the theory of evolution. Evo-

lution describes the development of living creatures from the single original living cell to the present multitude of species. Evolution has been seen through the rocks and fossils strewn around the earth.

We see the great march of evolution in the unfolding of the families of living creatures. The geologic record shows that billions of years elapsed with only unicellular creatures inhabiting this earth. Some of these cells incorporated other single cells as organelles making it possible for more sophisticated organisms in exchange for the security of life inside the cell itself. Later, evolution found a way for cells to group together into organisms and the organisms themselves evolved into new forms: the chordates, fishes, reptiles, mammals and so on.

The basic principles of evolution are simple and universal. Evolution requires two things. The first requirement is descent with modifications, that is, the ability to produce descendants that are not always identical copies, but incorporate changes, usually random changes. The second requirement is called natural selection or survival of the fittest, where the ability to produce descendants is more likely depending on the fitness to survive long enough to successfully reproduce.

Evolution is a general law of nature that is seen in many places, not just biological organisms. Human artifacts, such as buildings and automobiles evolve over time. In these cases, the humans who build these artifacts typically use the previous generation as a starting point and incorporate small or large changes to the older designs. The descendants that best suit the needs of the people who created them are the ones used as the starting point of the next generation.

In the field of computer science, a class of machine learning programs called genetic algorithms is used to develop new solutions to problems posed to these computers. They have been used successfully in a variety of tasks such as financial investments, telecommunications and manufacturing.

One interesting result out of genetic algorithm research is that, although biological evolution is driven by random mutation, randomness is not absolutely necessary for evolution to proceed. It is possible to systematically try different modifications one by one, although the process of evolution in these algorithms proceeds faster in practice if some randomness is allowed.

Richard Dawkins has speculated that evolution also applies to the development of human concepts. The basic unit that evolution works on he termed a "meme". The concept is intuitively appealing, since people communicate ideas from one person to another, the more successful memes being more likely to be repeated. This repetition is certainly with modification - people tend to repeat what they have heard with error and embellishments.

For a Pantheist, evolution is one of the basic ways of looking at life. It is a natural conclusion for a careful study of biology and geology. Evolution was developed by Darwin from observation of the varieties of life on this planet, even before the mechanisms that drive it, such as genetics and the biochemistry of DNA were even developed.

This theory was quickly embraced. In the late nineteenth century, the naturalists embraced the theory of evolution to describe how the world of living things came to be.

One of the great naturalist writers of the nineteenth century, John Burroughs, had this to say about evolution. Although some of his pronouncements, such as the view that humanity is the "full fruition" of evolution, would not be considered as part of modern day evolutionary theory, his basic viewpoint holds still.

"It seems to me that evolution adds greatly to the wonder of life, because it takes it out of the realm of the arbitrary, the exceptional, and links it to the sequence of natural causation. That man should have been brought into existence by the fiat of an omnipotent power is less an occasion for wonder than that he should have worked his way up from the lower non-human forms. That the manward impulse should never have been lost in all the appalling vicissitudes of geologic time, that it should have pushed steadily on, through mollusk and fish and amphibian and reptile, through swimming and creeping and climbing things, and that the forms that conveyed it should have escaped the devouring monsters of the earth, sea, and air till it came to its full estate in a human being, is the wonder of wonders."

"In like manner, evolution raises immensely the value of the biological processes that are everywhere operative about us, by showing us that these processes are the channels through which the creative energy has worked, and is still working. Not in the far-off or in the exceptional does it seek the key to man's origin, but in the sleepless activity of the creative force, which has been pushing onward and upward, from the remotest time, till it has come to full fruition in man."

"It is easy to inject into man's natural history a supernatural element, as nearly all biologists and anthropologists before Darwin's time did, and as many serious people still do. It is too easy, in fact, and the temptation to do so is great. It makes short work of the problem of man's origin, and saves a deal of trouble. But this method is more and more discredited, and the younger biologists and natural philosophers accept the zoological conception of man, which links him with all the lower forms, and proceed to work from that."

Evolution shows that there is a basic interconnection tying all forms

of life together as descendents of the same original life form. This inter-relationship by shared history may also have a deeper and more profound interconnection that is expressed in the Gaia Theory.

The concept of Gaia is based on the idea that the whole world may be a biochemical system that is tuned for preserving life on this planet. The original concept was described by James Lovelock and others such as Lynn Margulis.

Gaia theory can be expressed in a variety of different degrees of interaction between living things and the planetary environment. Two examples have been termed Weak and Strong Gaia. Weak Gaia simply says that life on this earth has some effect on the properties of the planet as a whole, such as the chemical makeup of the atmosphere or the oceans.

Strong Gaia says more than this. The strong principle states that Gaia is, in effect, a living creature. Gaia is a biochemical system that the living creatures on this Earth manipulate to maintain conditions most favorable for life to exist and continue on this planet.

The theory of Weak Gaia is hardly contested. It is well known that living things change the environment around them, leading to a world where the amount of carbon dioxide is minimal, and the amount of oxygen is higher than would be possible from inanimate chemical processes alone. The sheer existence of life on this earth would serve to make these changes.

But the strong Gaia Theory tries to make the claim that the whole ecosystem of living creatures are working together in a fashion that leads to a world that is conducive to life. This hypothesis has been simulated in computer models such as Daisyworld that show that it is possible to have an ecosystem of organisms that trade off complementary abilities to reach an equilibrium that favors most of them. If the system goes out of balance for some reason, it will be self-correcting.

Whether the Strong Gaia hypothesis is true or not is open to question, but it brings forth a number of questions that are of interest to a Pantheist view of the universe.

The first is the observation that even the Weak Gaia theory shows that living worlds are significantly different from dead ones. Lovelock developed his original Gaia hypothesis while working at NASA on this problem. Worlds containing living creatures have the ability to attain chemical make-ups that are significantly different from worlds that are in chemical equilibrium. Therefore, the discovery that there are worlds out in space that are far from chemical equilibrium would indicate that there is life on those worlds. In this solar system, the fact that Venus and Mars are in chemical equilibrium shows that they are probably dead worlds, with little or no chance of

finding life among the rocks and clouds that compose these planets.

This means that as far as we have been able to see, we are alone in the solar system. But the possibility that the Strong Gaia hypothesis is true means that life is multilayered. The very fact of existence of life on one planet may result in the whole planet becoming a living organism.

To understand this, we need to look at the question of what is life. Life itself may be mysterious, but there seems to be some properties of life that makes it different from non-life.

The first property is very technical: life seems to be able to create order out of randomness. This is expressed as a local violation of the Second Law of Thermodynamics. This law states that the amount of disorder in the universe as a whole is always increasing. But life is able to grow in an orderly manner at some times and places.

There are other characteristics of life as we know it. Life is able to metabolize chemicals to suit their purposes, to be able to grow from a seed or egg into an adult, to respond to stimuli from the outside environment, to reproduce, and due to the ability to have reproduction with modification, life is capable of evolving.

Strong Gaia seems to possess these properties. Gaia is able to metabolize at least by virtue of the fact that living creatures are a part of Gaia and these creatures metabolize. Living things take in different chemicals, and with the help of the energy from the sun, go through chemical reactions.

Gaia has also grown and developed. This development has used the power of evolution to enable Gaia to develop into a more complex organism as new species have come into being. Recent studies have quantified the possible mechanisms by which evolution has driven the growth of Gaia.

Darwinian Selection Leads to Gaia, Mark Staley, *J. Theor. Biol.* (2002) 218, 35-46

The ability of Gaia to respond to stimuli is shown in the ability of Gaia to maintain itself as an ecosystem conducive to life for billions of years, where the output of the sun changed. Compared to the ability of a human or any mammal to respond to stimuli, this does not seem like much, but it is equivalent to the ability of single celled bacteria to respond to outside stimuli.

Finally, Gaia has the potential to reproduce, with humans as the seed that carries it through the universe. It is quite likely that humanity will start exploring nearby stars, and with the discovery of hospitable planets, be able to recreate a Gaia on other planets.

None of these properties indicate that Gaia is a complex organism in and of itself, even though the organisms that make it up can be very complex

indeed. Gaia does not inherit the complexity of its parts by virtue of their being parts of Gaia. The complexity of Gaia as a living thing is determined by the interactions that make up Gaia as a living system. All indications are that these interactions are probably on the level of complexity of single cells, without any conscious driving force or anything that remotely corresponds to a nervous system.

A criticism of Strong Gaia is that the claim is teleological, that is, that Gaia is purposeful. This would seem to imply some sort of planning or design inherent in Gaia as an organism. Adherents of Gaia theory have been able to show that the type of self-regulation implied by the theory is possible with the type of ecosystem that living creatures have established on the Earth. No planning is necessary.

Gaia theory is especially attractive to Pantheists because it extends the notion of what life is. Believing that everything is sacred results in the perspective that humanity is a part of something greater. Humanity is not the crown of creation in this viewpoint. We are just part of the progress of evolution. This replaces the hubris that has been part of humanity's religious opinion of our place in the universe with a necessary and long overdue humility.

Gaia takes this viewpoint a step further by seeing every living thing as being a part of a living body. Each different type of life has its part to play. We are all in this together. Pantheists, due to their outlook, have always had an especial interest in ecology and environmentalism. Gaia personalizes this viewpoint.

But it is important to remember that Gaia theory, even though appealing, is a scientific theory and therefore capable of refutation. Science is not dogma - theories can be wrong, and are often wrong. Even the best theories are incomplete and are eventually superseded as our understanding becomes greater. A spirituality that incorporates scientific knowledge is always an ever-expanding religion. There never is a final answer. Our contemplation and interaction with the sacred is a journey of discovery, not a destination.

Chapter 4

Pantheist Ceremony

The cathedral of Saint John the Divine is one of the sacred spaces in New York City. It is an Episcopalian cathedral, devoted to the services of that denomination. An event of special interest to Pantheists is the annual Winter Solstice concert, put on by their composer-in-residence Paul Winter. It is a celebration of the turning of the seasons, the time when the shorter days finally turn back the darkness. It marks the start of winter.

The stage is arranged amongst the pews in the center of the cathedral. The lighting is centered on the musicians, leaving the enormous space itself dark. The columns fade into blankness way above the audience. When the music plays, the instruments, saxophone, woodwinds, violins and cellos, piano and guitars fill the space echoing into the darkness. The space itself becomes part of the music, echoing the sounds back as its own answer and giving a rumble to the bass sounds that serve as a foundation to the higher registers as solid as the stone of the cathedral itself.

The solstice celebration itself starts in darkness, with music representing the coming of winter, of the time of darkness and cold. The music begins dark and quiet, but grows in intensity like the winter storms. A sculpture of a tree filled with gongs and chimes out of the worlds musical traditions, adds its sounds to the background of the howling winter wind. Paul's saxophone and the cathedral organ are heard next, introducing the Sun Gong, an enormous tam-tam gong that is lifted high up into the air. As the gong marks the return of the sun, the music becomes ecstatic and joyous, joining the sound of the gong and the return of the light.

The concert continues with other musical offerings. A piece of music incorporates the cries of the wolf answered by the sounds of the musical instruments. Whale songs are weaved into the improvisations of the mu-

sicians. The music tries to capture the sights and feelings of the natural world in sound, bringing out the sounds of the sacred in the world around us, getting us in touch with the sacred in the everyday world, with another sense than sight.

Although there are special events in the Cathedral of Saint John the Divine the service most Sundays of the year is a traditional Christian service, as seen in any Christian mainline church. This is part of the social aspect of all of the world's great religions. On any given weekend, Friday, Saturday and Sunday, members of any number of religions gather together in their churches, temples and mosques to worship together. The leaders of the congregations call their people together, and through readings, songs, prayers and sermons, bring their people into a spiritual community of shared religious experience.

There is something soothing about a church service. The music and liturgy combine, quieting the spirit and bringing us to a contemplative state. It makes it easier for us to reach out and touch the sacred.

A person does not even have to believe in the tenets of the particular religion to feel the spiritual in the ceremony. The words and music, the sound of the chants and singing, the smell of incense, the light of candles, even the robes of the participants and the decorations will heighten the experience.

Humans are social beings. The presence of others who are absorbed in the ceremony deepens the response to everyone. If the participants are distracted, then it will go the other way and the sacred spirit is lost. But just like any other member of a religion, the Pantheist can gain a lot by participating in Pantheist ceremonies with others who share their beliefs and wish to celebrate them as members of a group.

Pantheism has not been an organized religion during most of its history. There have been attempts here and there to organize, but they have not lasted. Mostly, though, Pantheism has been solitary in its practices. A religion without a unique founder, with no sacred text or ceremonies, which comes out of a direct contact with the sacred, is bound to be solitary. We come to Pantheism individually, and often, as individuals we stay.

Such Pantheist celebrations as there are, are often nature centered. Like the Solstice Concert, they can take place at the turning of the seasons, marking the wheel of the sun on its yearly journey. These celebrations have been part of religion from time immemorial - celebrations of Solstice and Equinox, and the mid-periods between them. No matter the source of our beliefs, the ceremonies ground us in the changes of the year, the cycles that make up a lifetime, the times to plant and harvest, the times to hunker down

in the darkness and the times to enjoy the richness of life.

Other ceremonies are performed just to bring us back to that sense of the sacred that nourishes us. A simple walk in the woods. Wonder at the night sky. A cleansing bath. A bonfire. Some of these are observed alone, but for others we congregate, celebrating with words and music, or meditation and silence.

Meditation is a fundamental part of many major religions. It calms the mind, turning our focus inward to the quietness that resides at the base of experience, to the place we are usually too busy to acknowledge. It is as if life is the rushing stream carrying us downwards past the rocks and rapids, but meditation makes us aware of the quiet pools, of even the eternal rocks themselves.

Meditation has many therapeutic powers. It soothes our worries, stills the busyness inside us, dispels our anxieties. But meditation is more than that. In bringing us back to quietness, in stilling the mind, it refreshes us, and opens us to new experiences. Time stands still during meditation. We are, at least for a while, in touch with the eternal.

Some ceremonies take place in groups. The community chants or sings, or listens to a choir. The words express the essential beliefs, the music makes them more memorable than a dry recitation. When our basic beliefs are expressed in a memorable hymn, they can come back to us almost unbidden when we need them the most. Memories of our favorite religious music will strengthen and sanctify us.

Some popular music can take on a religious feel for someone who has been touched deeply by that song. The lyrics may speak to one's deepest feelings, or the music can bring forth emotions such as awe and reverence that are mostly associated with the sacred. This music can arise spontaneously, at times and places of deepest emotion. The sight of something that is suffused with the sacredness of the universe can bring forth this sacred music. And in religious ceremonies, the same music can bring back those special experiences.

Some ceremonies can bring forth other feelings. Chants in a religious service allow the participant to submerge their individual being into the community, bringing forth a deep feeling of togetherness. This can, for the moment, banish the loneliness and isolation that seems to be with us too often in this modern world. The chants can be hypnotic, bringing the listeners into a trance, or can pump them up with excitement. This enhances the feeling of belonging, especially if the chant is about some commonly shared belief.

Drums play a similar as chanting. The rhythms carry one away , rising

up through the body, a physical presence. Even better is to participate - a circle of drummers each adding to or answering the beat, weaving a pattern of sound.

A fundamental part of traditional religious ceremonies are the recitation of creeds. This is a source of discomfort for the untraditional, but a distinction must be made between creed and dogma. The recitation of a creed is a bonding ritual, a recitation of the values that the community shares. When kept to generalities they can accommodate a wide range of values but still bond the group together with the essentials. When a creed becomes a statement of doctrine, a way of dividing them from us, then it loses its magic and acts as a form of oppression. Creeds can act as a bond, but they only work when they do not bind too tightly.

The time of the ceremony can be as important as the content. Ceremonies have always observed the turning of the wheel of life through the year, the changes of the seasons and the changes they bring to everyday life. But ceremonies also commemorate the anniversary of special people and events in a religion. This is especially important in a religion that was started by a holy founder or some inspirational event, but even in a religion such as Pantheism with no holy prophets and no creation story, important anniversaries can still be times to remember people and events that mark a specific Pantheist belief or sensibility. Scientific Pantheists often commemorate the birthday of Charles Darwin or the Publication of the Origin of Species as a turning point in man's attempt to understand nature and the wild profusion of life of this planet. Important events in the progress of mankind to a more peaceful, developed state can also be commemorated, such as Earth Day, the anniversary of the formation of the United Nations or the signing of the International Declaration of Human Rights. These are sacred events that symbolize mankind's taking another step forward to a true enlightened civilization.

Besides celebrating the turning of the wheel of the year, it is also important to commemorate the stages of life. The community welcomes the arrival of newborns into their midst, and collectively notes the achievement of different stages of growth from infant to child to adolescent to adult. For many religions the most popular of these ceremonies is the marriage or union ceremony, when the community gathers to witness and support the formation and bonding of a new family or intimate grouping, no matter what its type, as long as it is brought forth in a spirit of love and commitment. Various milestones beyond that can be commemorated through a person's life, up to the final commemoration of a person's life when it is as last over. Other commemorations celebrate the life of the community, such as moving into

a new sacred space, the elevation of leaders and volunteers in the work of the community, and the achievement of levels of commitment of the children and adults in the community.

A part of many ceremonies is the inclusion of readings, either from holy books of the religion, or from other inspirational sources. Even those who worship alone, though, can be inspired by the thoughts of others. Each of us sees the world in a different way.

Pantheists can take inspiration from the traditions of other religions, even those that profess a belief in a personal God. God is a divine presence that looks down upon creation. No matter how the theist expresses their idea of God, God must interact with the world, and therefore imbues all of creation with the sacred. That sense of the sacredness of the universe itself is a source of inspiration to the Pantheist.

Hinduism, with its long and diverse religious traditions has many beliefs that are Pantheistic. The gods of the Hindu pantheon take many forms, depending on the worshiper. As the Baghavat Gita says:

”I am the inner self, present in all the elements. I am the beginning, the middle and the end of all beings.”

”Among the golden beings I am Vishnu. Among the shining ones, I am the dazzling sun. Among the gaseous elements I am Marichi. And among the stars I am the moon.”

”Of the Vedas, I am the Sama Veda. Among the Gods, I am Vasavah. Among the senses, I am the mind. Among the manifested forms, I am the active consciousness.”

”Among the sanguine Beings I am Lord Shiva. Among the vital spirits and the demons I am Kubera - lord of wealth. Of the crawling beings I am fire and of the mountains I am mount Meru.”

”Oh Partha, know me as the Lord of the Luminous Mind, the chief among the priests. Among the military know me as a great division. Among the lakes I am the ocean.”

”Among the great sages I am sage Bhrigu. Among the utterances of the throat I am the monosyllable AUM. Among the rituals I am the ritual of chanting. Among the pitched things I am the Himalayas.”

”Among all the trees I am the Asvaththa tree. Among the Devarishis I am sage Narada. Of the Gandharvas I am Chitraradha. And among the Siddhas I am sage Kapila.”

”Among the horses I am Uchachihsravah. Among the elephants I am Airavat. Among men I am the King.”

So God appears to different observers differently in the guise of whatever is divine, according to that observer.

In other religions, it is harder to find a distinctly Pantheistic approach to faith. Buddhism tends not to be as concerned with the question of deity as with the question of how to live in this world: consequently, Pantheistic influences in Buddhism such as those found in Zen Buddhism, are more the result of external influence, in this case the melding of Taoism and Buddhism.

Christianity is another religion where Pantheism is peripheral, if it exists at all. Actually, the Christian tradition has always been on guard against the heresy of Pantheism. Giordano Bruno was burned at the stake for his advocacy of Pantheism. In the last century Teilhard de Jardin was censured by the Catholic Church for a kind of Pantheistic theology that saw the process of evolution leading to a final Omega point which is the endpoint of evolution, Humankind will become part of this evolution as the noosphere a kind of global consciousness.

Pantheistic ideas were heresies for Christianity. But despite these objections, there is much in the Judeo-Christian tradition that sounds Panentheistic, if not Pantheist.

The New Testament does not talk much about the sacredness of the world, but it does make clear that each individual is considered sacred. For example we have the following passages:

1 Corinthians 3:16 "Don't you know that you yourselves are God's temple and that God's Spirit lives in you?"

Luke 17:20-21 "Once, having been asked by the Pharisees when the kingdom of God would come, Jesus replied, 'The kingdom of God does not come with careful observation, nor will people say, 'Here it is', or 'There it is', because the kingdom of God is within you. '"

Romans 1:19-20 "... since what may be known about God is plain to them, because God has made it plain to them. For since the creation of the world God's invisible qualities - his eternal power and divine nature - have been clearly seen, being understood from what has been made, so that men are without excuse."

This Panentheism has naturally led to a Unitarian interpretation of Christian doctrine. Ralph Waldo Emerson and other Unitarians used these passages to show that Jesus was no more sacred than the rest of us, that we all partake of the holy. This fitted in well with their Transcendentalism, which expanded the sacred to encompass the whole universe, a much more Pantheistic philosophy.

As to the whole universe, the Judeo-Christian view was that mankind was set apart, as a kind of overlord. But this does not excuse humanity from any obligation. On the contrary, it requires a special responsibility

that humanity protect and preserve the world and all its living creates. As it says in Jeremiah 12:4

"How long will the land lie parched and the grass in every field be withered? Because those who live in it are wicked, the animals and the birds have perished. Moreover the people are saying, 'He will not see what happens to us'."

But despite the heresy of Pantheism, the most devout of Christianity knew that the universe, being the creation of their God, must partake of the sacredness that their God represents. Sometimes this sacredness was presented in a crypto-Pantheist manner, like St Francis of Assisi, who in the Canticle of the Sun proclaimed that all creation praise God's sacredness:

"Most high, all powerful, all good Lord! All praise is yours, all glory, all honor and all blessing. To you alone, Most High, do they belong. No mortal lips are worthy to pronounce your name."

"Be praised, my Lord, through all your creatures, especially my lord Brother Sun, who brings the day; and you give light through him. And he is beautiful and radiant in all his splendor! Of you, Most High, he bears the likeness."

"Be praised, my Lord, through Sister Moon and the stars; in the heavens you have made them, precious and beautiful."

"Be praised, my Lord, through Brothers Wind and Air, and clouds and storms, and all the weather, through which you give your creatures sustenance."

"Be praised, my Lord, through Sister Water, she is very useful, and humble, and precious and pure. "

"Be praised, my Lord, through Brother Fire, through whom you brighten the night. He is beautiful and cheerful, and powerful and strong."

"Be praised, my Lord, through our Sister Mother Earth, who feeds us and rules us, and produces various fruits with colored flowers and herbs. "

"Be praised, my Lord, through those who forgive for love of you; through those who endure sickness and trial. Happy are those who endure in peace, for by you, Most High, they will be crowned. "

"Be praised, my Lord, through our Sister Bodily Death, from whose embrace no living person can escape. Woe to those who die in mortal sin! Happy those she finds doing your most holy will. The second death can do no harm to them. "

"Praise and bless my Lord, and give thanks, and serve him with great humility. "

Although this canticle is canonically Christian, by being focused on all aspects of the universe, it glorifies the universe as much as it does God.

In Islam, the Sufi comes closest to Pantheism:

"Only god exists; he is in all things, and all things are in Him."

"I searched for God and found only myself. I searched for myself and found only God."

"In relation to existence, He (God) is the very essence of existing things. Thus in a certain sense, relative beings are elevated in themselves, since in truth they are none other than He who bears the name" - Abu Said al-Kharraz.

Rumi is the most famous of the Sufi poets. Here is one of his poems that gives a Pantheistic interpretation of Christianity.

Spring is Christ

Everyone has eaten and fallen asleep. The house is empty. We walk out to the garden to let the apple meet the peach, to carry messages between rose and jasmine. Spring is Christ raising martyred plants from their shrouds. Their mouths open in gratitude, wanting to be kissed. The glow of the rose and the tulip means a lamp is inside. A leaf trembles. I tremble in the wind-beauty like silk from Turkestan. The censer fans into flame. This wind is the Holy Spirit. The trees are Mary. Watch how husband and wife play subtle games with their hands. Cloudy pearls from Aden are thrown across the lovers, as is the marriage custom. The scent of Joseph's shirt comes to Jacob. A red carnelian of Yemeni laughter is heard by Muhammad in Mecca. We talk about this and that. There's no rest except on these branching moments.

In Hasidic Judaism, the concept of God becomes a transcendent presence that is more than a mere person. This is a form of Panentheism. Although he left no written works, the founder of Hasidim, Ba'al Shem-Tov, or Besht, has been considered by those who were inspired by him to express this sensibility:

"The ideal of man is to be a revelation himself, clearly to recognize himself as a manifestation of God."

In all of the Abrahamic religions, the concept of God cannot just stand apart from his creation. There must be some of the sacred in creation, not just in the humans who inhabit this world but in the world around us. To the extent that these religions recognize the sacred in the world, it is a source of inspiration to the Pantheist.

But this brings us back to the creation of an authentic kind of Pantheistic religious experience. Imagine a service in a Pantheist space. It would most likely be located in a natural setting, such as park, a forest or field. The building would be designed in a way that brought the outside in, as a backdrop to the service. Sunlight and moonlight would illuminate the ser-

vice. Paintings of natural scenes would decorate the walls. The space could even have rocks, trees or water as part of the decoration of the space.

The music that starts the service would draw its inspiration from nature. Like the music of Paul Winter, it might incorporate the sounds of nature. Instead of music, the sounds of nature would fill the space. Cries of the wolf, the songs of the whales, birdcalls and insects, or just the sighing of the wind through the trees would be the call to worship.

The service could begin with a chant which, like the Canticle of the Sun, would invite the world to be a part of the ceremony. The participants would give blessings on the earth and ask for blessings in return.

If some of the great Pantheist poems were to be set to music, they could be sung as hymns, or sung by a choir. Accompanied by drum and flute, violin, guitar or cymbals, the songs would celebrate the seasons of the year, the beauty of the earth, the recognition of the sacred in humanity.

Readings from all of the world's sacred traditions would be intoned or spoken responsively by the participants. Pantheist poems and writings, both ancient and modern would form the liturgy.

There would be time for meditation. This would be a time for silent reflection, prayer for those who pray, a time to turn inward. The meditation could be in silence, or with quiet nature sounds or meditative music. Sometimes it could be a walking meditation, or standing and holding hands.

The service could include dance. The participants could watch a troupe perform, or they might take part themselves. The dance could be symbolic of nature, set to music, or something as simple as a circle of joined hands, as the participants sing a song or chant.

If the service has a leader, there could be a talk or sermon. Since all is sacred, there is no limit to the topics to be addressed. Good versus evil, the universe and our place in it, science and mysticism, joy and sorrow, beauty and ugliness, the past and the future, the seasons of the year, the seasons of the human lifespan. The talk could be a starting point for the participants to respond. The talk could be a call to action, or the start of a debate. It could be an invitation and an opportunity for others to share their life's stories, or to say what is sacred for them.

There is no fixed day that Pantheists should meet, so the meeting times can be set by each community. Some communities might meet weekly at the same time. Others would meet based on the phases of the moon or the motion of the sun. Some groups could have weekly meetings, with special feasts at solstice or equinox, full or new moon, depending on the mood of the group. Special meetings for weddings and funerals, child namings or the coming of age of the youth would be celebrated by the community.

The word religion means re ligere - to bind together. There are many Pantheists who worship alone, who have no need of others. Their faith can be found in solitude, in meditation, in being in nature. But for many of us, to be religious is to share the feelings of sacredness with others. We celebrate the wonder of life, the cycles of the year, special milestones. Since each of us sees the world differently we bring our different perspectives to the ceremony and take new perspectives from the contributions of others. And in the process we are all enriched.

Chapter 5

From Lao Tsu to Fallingwater

John Muir was the founder of the Sierra Club. His love of nature was imbued with a Pantheist sensibility. His essays in the Harper's Monthly reached a wide audience and kept alive a reverence for the wild in the minds of those back in the urban areas of the country. In his writings he expressed a sacredness that is tied to nature.

"When we contemplate the whole globe as one great dewdrop, striped and dotted with continents and islands, flying through space with other stars all singing and shining together as one, the whole universe appears as an infinite storm of beauty." - Travels in Alaska by John Muir, 1915, chapter 1, page 5.

"Come to the woods, for here is rest. There is no repose like that of the green deep woods. Here grow the wallflower and the violet. The squirrel will come and sit upon your knee, the logcock will wake you in the morning. Sleep in forgetfulness of all ill. Of all the upness accessible to mortals, there is no upness comparable to the mountains."

"All Nature's wildness tells the same story: the shocks and outbursts of earthquakes, volcanoes, geysers, roaring, thundering waves and floods, the silent uproot of sap in plants, storms of every sort, each and all, are the orderly, beauty-making love-beats of Nature's heart."

"How infinitely superior to our physical senses are those of the mind! The spiritual eye sees not only rivers of water but of air. It sees the crystals of the rock in rapid sympathetic motion, giving enthusiastic obedience to the sun's rays, then sinking back to rest in the night. The whole world is in motion to the center. So also sounds. We hear only woodpeckers and

squirrels and the rush of turbulent streams. But imagination gives us the sweet music of tiniest insect wings, enables us to hear, all around the world, the vibration of every needle, the waving of every bole and branch, the sound of stars in circulation like particles in the blood. The Sierra canyons are full of avalanche debris - we hear them boom again, and we read the past sounds from present conditions. Again we hear the earthquake rock-falls. Imagination is usually regarded as a synonym for the unreal. Yet is true imagination healthful and real, no more likely to mislead than the coarse senses. Indeed, the power of imagination makes us infinite." - *The Mountain Trail and Its Message* (1911)

"One day as I was resting in the shade Mr. Muir overtook me on the trail and began to chat in that friendly way in which he delights to talk with everyone he meets. I said to him: 'Mr. Muir, someone told me you did not approve of the word 'hike.' Is that so?' His blue eyes flashed, and with his Scotch accent he replied: 'I don't like either the word or the thing. People ought to saunter in the mountains - not hike!'"

"Do you know the origin of that word 'saunter'? It's a beautiful word. Away back in the Middle Ages people used to go on pilgrimages to the Holy Land, and when people in the villages through which they passed asked where they were going, they would reply, "A la sainte terre," 'To the Holy Land.' And so they became known as sainte-terre-ers or saunterers. Now these mountains are our Holy Land, and we ought to saunter through them reverently, not 'hike' through them."

"John Muir lived up to his doctrine. He was usually the last man to reach camp. He never hurried. He stopped to get acquainted with individual trees along the way. He would hail people passing by and make them get down on hands and knees if necessary to see the beauty of some little bed of almost microscopic flowers. Usually he appeared at camp with some new flowers in his hat and a little piece of fir bough in his buttonhole."

"The clearest way into the universe is through a forest wilderness. "

"Storms of every sort, torrents, earthquakes, cataclysms... however mysterious and lawless at first sight they seem, are only harmonious notes in the song of creation, varied expressions of God's love. "

"Bears are made of the same dust as we, and breathe the same winds and drink the same waters... And whether he at last goes to our stinky heave or no, he has terrestrial immortality. To him life unstinted, unplanned is above the accidents of time, and his years, markless and boundless, equal eternity. "

People turn to the arts for many reasons. In the arts we find a depiction of beauty, an expression of the way things should be instead of the way things

are. This brings us out of ourselves and helps us come back in touch with our higher nature. Sometimes, though, the arts portray a darker picture. They help us explore that darkness in most of us.

The arts have some of mankind's highest creations. Memorable art has endured through generations, as long as the mightiest buildings, keeping alive the hopes, desires and aspirations of a culture up to the present, long after that culture and its people have passed away. But art speaks best to its own times, using as its base material the daily experiences of the culture, bringing nourishment to the spirit of those who toil and struggle through their days, helping to renew their souls for the struggles ahead.

The arts feed the spirit in many ways. The poet, the musician, the painter each with a different medium, touches us in incomparable ways. Different senses are involved. Some artists touch us through the rational part of our minds, other our feelings. Sometimes our response is pure sensation. Sometimes we are exalted by our experience. Other times we are driven to see the darkness of life. There is an intensity to the best of art, an intensity that we crave and brings us back to it again and again. Paradoxically, even serenity has intensity in its purity. But art takes us out of everyday living into a world of new experience. It brings us a spiritual renewal.

The successful artist is able to bring the treasures of insight back and share them with the rest of us. The sacred can be found in many different ways; sometimes it is hidden to all but the most discerning eye. The arts broaden our horizons and in doing so they nourish the soul.

Artistry is both secular and sacred, both common and profound. We read thrillers for entertainment, we read poetry to experience the deeper emotions and to look at the world in new ways. Art touches our emotions in new ways, or enhances our deepest feelings. This is especially true for spirituality. A great artist can bring us in touch with the sacred. We can see the world in new ways. We can experience the ordinary in transcendence.

Art has been created in all of the classic religions of the world. The sacred dance, the sacred sculpture, the transcendental music has been part of the sacred traditions of the world.

There are great Pantheist arts. Many of these come from artists that have gone beyond the limits of their own religions to express the sacred in the world around them unmediated by the dogmas and beliefs of their religion. At times and places there have been authentic Pantheist artists, who have celebrated their contact with the sacred through their creations.

These are the artists that have found the sacred directly in the world around them. They have shown us the way to experience the sacred even in the most mundane, have taught us to stop and look, to see the deeper

meaning in the everyday.

Even those artists who have created in a tradition of theology have found the sacred directly in the world, regardless of their belief in a creature or a source of the sacred. Sometimes, instead of starting from God and seeing the handiwork of a divinity in nature, great religious art sometimes starts with the world around us as a source of praise for a creator. At this moment they are in touch with the sacred that surrounds them. .

Those who search for spiritual renewal can find it in the works of artists who have a Pantheist bent. But ascribing Pantheism to a person can be problematic. They may well be deist, Panentheist, atheist or agnostic. But they have a spirituality about them that can be described as Pantheist. This can come forth without denying the essential beliefs of the artist. Art is an interaction between artist and viewer. We can experience art from a different perspective, taking from it something that deepens our beliefs, even though they are not the beliefs of the artist.

Pantheists often turn to the work of artists inspired by nature. There is a wide variety of this work, both East and West. Some of the most serene and profound is the Zen Haiku poetry of poets such as Basho:

While moon sets atop the trees, leaves cling to rain.

Lightning - heron-cry stabs darkness

Violets - how precious on a mountain path.

Taoism also has this sense of the sacredness of nature. Although Taoist poetry can celebrate serenity, it also recognizes that nature has its powerful and strong side, too. Here is a poem from a modern-day Taoist, Deng Ming-Tao from his book of meditations, 365 Tao:

349 Water

Drops. Water cleanses, Gathers in the earth. Tender. Invasive. Subtle. Emerges a shining river. When small, it is weak. When great, it tumbles mountains, Rendering great cliffs Sand.

In another poem, Deng Ming-Dao uses the images of nature to reflect on how the affairs of the world affect the soul. In this poem, daily cares are compared to red dust:

279 Stillness Wind stirs the bamboo, But once the wind passes, The bamboo is silent. Geese land in the chill pond, But once the geese fly away, There are no reflections. In the same way, Once the red dust passes, The mind is still.

The poets of Western civilization have often been Pantheist in their imaginings. Many of the Romantic poets of the nineteenth century had Pantheist leanings. They wrote, though, in a Victorian era where it was difficult to make an explicitly Pantheist statement without incurring the disapproval of

the religious establishment. In English poetry of this era, it was not uncommon to have poems that expressed some religious view or made reference to the spirituality of life, but these expressions usually were made in a fashion that was couched in terms of the prevailing Christian religion of that society. Thanks to Paul Harrison for pointing out the Wordsworth section

One of the clearest expressions of a Pantheist sentiment was expressed in Wordsworth's poem 'Composed a Few Miles Above Tintern Abbey'

And I have felt a presence that disturbs me with the joy Of elevated thoughts; a sense sublime Of something far more deeply interfused, Whose dwelling is the light of setting suns, And the round ocean and the living air, And the blue sky, and in the mind of man: A motion and a spirit, that impels All thinking things, all objects of thought, And rolls through all things.

The English Romantics were not the only ones to espouse Pantheism. Here is an example from Walt Whitman's Leaves of Grass:

Gods

Lover divine and perfect Comrade Waiting content, invisible yet, but certain, Be thou my God. Thou, thou, the Ideal Man, Fair, able, beautiful, content, and loving, Complete in body and dilate in spirit, Be thou my God. O Death, (for Life has served its turn,) Opener and usher to the heavenly mansion, Be thou my God. Aught, aught of mightiest, best I see, conceive, or know, (To break the stagnant tie - thee, thee to free, O soul,) Be thou my God. All great ideas, the races' aspirations, All heroisms, deeds of rapt enthusiasts, Be ye my Gods. Or Time and Space, Or shape of Earth divine and wondrous, Or some fair shape I viewing, worship, Or lustrous orb of sun or star by night, Be ye my Gods.

Modern poetry has examples of poetry with Pantheist content, either implicit or explicit. For example, Mary Oliver's poetry has an appreciation of the beauties and depth of nature that a Pantheist would respond to.

Daisies

It is possible, I suppose that sometime we will learn everything there is to learn: what the world is, for example, and what it means. I think this as I am crossing from one field to another, in summer, and the mockingbird is mocking me, as one who either knows enough already or knows enough to be perfectly content not knowing. Song being born of quest he knows this: he must turn silent were he suddenly assaulted with answers. Instead oh hear his wild, caustic, tender warbling ceaselessly unanswered. At my feet the white-petalled daisies display the small suns of their center piece, their - if you don't mind my saying so - their hearts. Of course I could be wrong, perhaps their hearts are pale and narrow and hidden in the roots. What do

I know? But this: it is heaven itself to take what is given, to see what is plain; what the sun lights up willingly; for example - I think this as I reach down, not to pick but merely to touch - the suitability of the field for the daisies, and the daisies of the field.

Another example comes from the Unitarian Universalist minister, Barbara Pescan. This appears as a reading in the Unitarian Universalist hymnbook:

For the beauty of the earth, this spinning blue green ball, yes! Gaia, mother of everything we walk gently across your back to come together again in this place to remember how we can live to remember who we are to create how we will be. Gaia, our home, the lap in which we live - welcome us.

Turning from poetry to music, we find cases of individual musicians whose compositions showed a Pantheist influence. But it is in the nature of music to give only a symbolic representation of thoughts and feelings. Although music can be an inspiration to many Pantheists, it is difficult to make the claim that a piece of music is Pantheist in style. The intent behind music without words, barring any explicit statement from the composer, is in the mind of the listener. Music, as a universal language, is notoriously inexact.

But Pantheism recognizes that the sacred is all around us, in nature as well as in any higher, more abstract expressions. There are a number of musicians, who have written compositions that have taken their inspiration from nature, and can be considered Pantheistic.

One of the most famous examples is Beethoven's 6th Symphony, *The Pastoral*. Each of its movements is inspired by a scene in nature, such as a *Scene by the Brook* or a *Thunderstorm*.

Beethoven was very much the nature lover. He was once heard to utter 'I love a tree more than a man'. One of his letters shows an almost Pantheistic sensibility: "How glad I am to be able to roam in wood and thicket, among the trees and flowers and rocks. No one can love the country as I do ... my bad hearing does not trouble me here. In the country, every tree seems to speak to me, saying 'Holy, Holy!'. In the woods, there is enchantment which expresses all things." But, although Beethoven was influenced by the Pantheism of Goethe, he never explicitly renounced his association with Catholicism.

These musical representations speak to the sacredness of nature by evoking the natural world in the spiritual realm of pure music. Other pieces in classical music try to evoke the sounds of nature. Vivaldi's *The Four Seasons* and Smetana's *Moldau* are two of the most famous examples. Vivaldi included sonnets to be read along with the music, with descriptions of the

natural scenes the music presents. The Moldau is a tone poem representing the course of the river it is named after, from the two small springs through the woods and meadows, past the city of Prague and majestically ending at the Elbe.

In contemporary music, natural sounds have been added to the musical evocations of nature, as the evolving technology of recording has allowed these sounds to be added in the studio. Paul Beaver and Bernie Krause were pioneers in using natural sounds in their music album "In a Wild Sanctuary". They were also pioneers in the use of electronic music. Their classic album Gandharva combines the sounds of saxophone, flute and Moog synthesizer recorded along with a cathedral organ. Bernie Krause has gone on to be an acknowledged expert in the collection and preservation of sounds from nature.

Paul Winter uses music to bring us in touch with the sacredness around us in ways few artists can do. Using natural spaces as part of the soundscape, the whole world becomes part of the music. In some songs Winter incorporates the sounds of the humpback whale and the wolf. He answers their calls with his saxophone as the other instruments accompany him, giving a human answer to the cries of nature. We experience the reality that humanity is not alone, it is part of a natural world we interact with and communicate with in many ways.

Besides the music inspired by nature, there is music that is sacred in its most abstract sense. Some of this music has a formal quality that is simply perfection in sound. Some of Bach's music is at this level of perfection. Other music is more emotional. It brings forth a feeling of sacredness. Often intended to be a praise of God, it can also be a meditation on the perfection of the world. It can bring us in touch with a formal beauty that transcends the imperfections of daily life. It brings the type of beauty that is often found only in mathematics to the realization of the senses. This elegance has a simplicity that transcends time and space.

Music has always been a part of religious expression, bringing forth a sense of the sacred in the abstract experience of tone and timbre, melody and rhythm. This is not tied to any one religious tradition except by custom and tradition. The Religious Theme of Aaron Copland's Appalachian Spring, for example, can bring a feeling of transcendence to any listener, regardless of what religion they espouse.

Other times the composition can be pure emotion: the musical representation of a feeling, a synesthesia of emotion and sound. It has been remarked that classical music can do this for the higher emotions, but popular music such as rock music does the same for the meaner emotions. In many

ways this is true. Those who conclude, then that classical music is somehow greater are mistaken. It is possible to enjoy a variety of music from both styles, an appreciation that spans the whole range of human experience.

Rock music has given us a variety of songs with a Pantheist feel. The group Renaissance's "Carpet of the Sun" talks about the beauty of nature. John Denver's "Rocky Mountain High" is about the Rocky Mountains as a sacred space. Marvin Gaye's "Mercy Mercy Me" was a precursor to the environmental movement. Rush's "High Water" talks about evolution and the essential relationship between water and life on Earth. The Grateful Dead's "Weather Report Suite" talks of humanity's relationship to the earth and the cycles of life. Led Zeppelin's "Stairway to Heaven" uses Pagan and Pantheist imagery in its portrayal of spirituality.

Painting and the visual arts also have the problem that music does of the uncertainty of ascribing Pantheist beliefs to an artist just by the content of their work. But there are many works that present an image of the sacred in their portrayal of the world around us.

With their Taoist attitudes, Chinese art has been a source of this portrayal of the spiritual side of nature. Kuo Hsi's 1072 hanging scroll entitled Early Spring evokes the wildness of nature, the massive mountains, the streams and pools of water. In the spirit of the Southern Sung period, Tai Chin's Returning Late from a Spring Outing gives a sense of peace serenity and quietude to the observer, with its hills, trees and buildings surrounding by the evening mist.

Simple paintings of bamboo and apricot blossoms invite to look at nature in a deeper way. They also have a symbolic language inviting us to be like the bamboo, standing straight and tall, but being flexible enough to know when to bend when the winds are too strong.

Pantheist feelings also come through in the works of Georgia O'Keefe. She once said: "When I stand alone with the earth and sky, a feeling of something in me going off in every direction into the unknown of infinity means more to me than anything any organized religion gives me." Her flower paintings focus on the lushness of nature, the exuberant colors and intricate details in a single blossom. Her paintings of a pelvis bone or an antelope skull superimposed against a southwestern sky evoke an austere grandeur.

In photography, Ansel Adams presented Nature in an idealized form. His photographs of Yosemite inspired many and reminded those who viewed his pictures of the great beauty that is all around us. He used his photographs as a way of approaching the spiritual essence of the world. As he said "We are now sufficiently advanced to consider resources other than materialistic,

but they are tenuous, intangible, and vulnerable to misapplication. They are, in fact, the symbols of spiritual life - a vast impersonal pantheism - transcending the confused myths and prescriptions that are presumed to clarify ethical and moral conduct."

The nature photography and sculpture of Andrew Goldsworthy incorporates the sense of time and change in the work of art itself. The sculptures and designs are ephemeral, using natural elements in striking designs. His art approaches the natural world through both the beauty of the object and the sense of its changeability. "At its most successful, my 'touch' looks into the heart of nature; most days I don't even get close. These things are all a part of a transient process that I cannot understand unless my touch is also transient - only in this way can the cycle remain unbroken and the process be complete."

At its best architecture combines the natural environment with human technology in a way that enhances both. Frank Lloyd Wright is one of those architects. He famously said, "I believe in God, only I spell it Nature". He drew upon nature in his designs "Nature is my manifestation of God. I go to nature every day for inspiration in the day's work." No better example of the integration of architecture with nature can be found than his famous Fallingwater. The combination of local sandstone and concrete sited over a waterfall leaves the occupants no choice but to experience the natural beauty all around them.

Dance is another of the arts where the religious implications are in the mind of the beholder. Martha Graham's *Canticle for Innocent Comedians* has been described as Pantheistic by art critics such as Anna Kisselgoff who wrote that "the inspiration came from the love of nature of St. Francis of Assisi. Yet, the inspiration could just as well be the creation myth of the five elements in ancient Chinese philosophy. Miss Graham's pantheist stage poem is dealing with eternal verities here. A suite of dances couched in the language of a secular morality play.

But of the arts, the written world has been the most unambiguous proponent of Pantheism, especially, those essayists who choose nature as their inspiration.

Goethe, in his poetry and essays showed himself to be a Pantheist by nature. As a great writer, he was an inspiration to many of the people who have been mentioned before, such as Wordsworth and Beethoven.

Here is what Goethe wrote in his essay *Nature*:

"Nature! We are surrounded and embraced by her - powerless to leave her and powerless to enter her more deeply. Unasked and without warning she sweeps us away in the round of her dance and dances on until we fall

exhausted from her arms.”

”She brings forth ever new forms: what is there, never was; what was, never will return. All is new, and yet forever old.”

”We live within her, and are strangers to her. She speaks perpetually with us, and does not betray her secret. We work on her constantly, and yet have no power over her.”

”All her effort seems bent toward individuality, and she cares nothing for individuals. She builds always, destroys always, and her workshop is beyond our reach.”

”She lives in countless children, and the mother - where is she? She is the sole artist, creating extreme contrast out of the simplest material, the greatest perfection seemingly without effort, the most definite clarity always veiled with a touch of softness. Each of her works has its own being, each of hoe phenomenon its separate idea, and yet all create a single whole.”

”She plays out a drama: we know not whether she herself sees it, and yet she plays it for us, we who stand in the corner.”

”There is everlasting life, growth, movement in her and yet she does not stir from her place. She transforms herself constantly and there is never a moment’s pause in her. She has no name for respite, and she has set her curse upon inactivity. She is firm. Her tread is measured, her exceptions rare, her laws immutable.”

Later, in the nineteenth century, John Muir and John Burroughs were the most famous of the Pantheist writers. Like John Muir, who began this chapter, John Burroughs was also a naturalist, nature writer, famous for his essays and books.

Some of John Burroughs aphorisms:

”I go to nature to be soothed and healed, and to have my senses put in order.”

”Nature teaches more than she preaches. There are no sermons in stones. It is easier to get a spark out of a stone than a moral.”

”If I were to name the three most precious resources of life, I should say books, friends and nature; and the greatest of these, at least the most constant and always at hand, is nature.”

”One of the hardest lessons we have to learn in this life and one that many persons never learn, is to see the divine, the celestial, the pure, in the common, the near at hand - to see that heaven lies about us here in this world.”

”Joy in the universe, and keen curiosity about it all - that has been my religion.”

Here is an extended excerpt from *The Snow-Walkers* from the collection of essays "In The Catskills" (1910)

"He who marvels at the beauty of the world in summer will find equal cause for wonder and admiration in winter. It is true the pomp and the pageantry are swept away, but the essential elements remain, - the day and the night, the mountain and the valley, the elemental play and succession and the perpetual presence of the infinite sky. In winter the stars seem to have rekindled their fires, the moon achieves a fuller triumph, and the heavens wear a look of a more exalted simplicity. Summer is more wooing and seductive, more versatile and human, appeals to the affections and the sentiments, and fosters inquiry and the art impulse. Winter is of a more heroic cast, and addresses the intellect. The severe studies and disciplines come easier in winter. One imposes larger tasks upon himself, and is less tolerant of his own weaknesses."

"The tendinous part of the mind, so to speak, is more developed in winter; the fleshy, in summer. I should say winter had given the bone and sinew to Literature, summer the tissues and blood."

"The simplicity of winter has a deep moral. The return of nature, after such a career of splendor and prodigality, to habits so simple and austere, is not lost either upon the head or the heart. It is the philosopher coming back from the banquet and the wine to a cup of water and a crust of bread."

"And then this beautiful masquerade of the elements, - the novel disguises our nearest friends put on! Here is another rain and another dew, water that will not flow, nor spill, nor receive the taint of an unclean vessel. And if we see truly, the same old beneficence and willingness to serve lurk beneath all."

"Look up at the miracle of the falling snow, - the air a dizzy maze of whirling, eddying flakes, noiselessly transforming the world, the exquisite crystals dropping in ditch and gutter, and disguising in the same suit of spotless livery all objects upon which they fall. How novel and fine the first drifts! The old, dilapidated fence is suddenly set off with the most fantastic ruffles, scalloped and fluted after an unheard-of fashion! Looking down a long line of decrepit stone wall, in the trimming of which the wind had fairly run riot, I saw, as for the first time, what a severe yet master artist old Winter is. Ah, a severe artist! How stern the woods look, dark and cold and as rigid against the horizon as iron!"

"All life and action upon the snow have an added emphasis and significance. Every expression is underscored. Summer has few finer pictures than this winter one of the farmer foddering his cattle from a stack upon the clean snow, -the movement, the sharply defined figures, the great green flakes of

hay, the long file of patient cows, the advance just arriving and pressing eagerly for the choicest morsels, and the bounty and providence it suggests. Or the chopper in the woods, - the prostrate tree, the white new chips scattered about, his easy triumph over the cold, his coat hanging to a limb, and the clear, sharp ring of his axe. The woods are rigid and tense, keyed up by the frost, and resound like a stringed instrument. Or the road-breakers, sallying forth with oxen and sleds in the still, white world, the day after the storm, to restore the lost track and demolish the beleaguering drifts."

"All sounds are sharper in winter; the air transmits better. At night I hear more distinctly the steady roar of the North Mountain. In summer it is a sort of complacent purr, as the breezes stroke down its sides; but in winter always the same low, sullen growl."

John Burroughs was even more explicit than most in his Pantheism. He called his beliefs "Scientific Pantheism".

"The word 'God' has so long stood for the conception of a being who sits apart from Nature, who shapes and rules it as its maker and governor. It is part of the conception of a dual and plural universe, God and Nature. This offends my sense of the oneness of creation. It seems to me that there is no other adequate solution of the total problem of life and Nature than what is called 'pantheism', which identifies mind and matter, finite and Infinite, and sees in all these diverse manifestations one absolute being. As Emerson truly says, pantheism does not belittle God, it magnifies him. God becomes the one and only ultimate fact that fills the universe and from which we can no more be estranged than we can be estranged from gravitation."

As can be seen from this quote, the transcendentalism of Emerson was an inspiration to these nineteenth century naturalists. As Emerson says in his essay Nature:

"Standing on the bare ground, my head bathed by the blythe air, and uplifted into infinite space, - all mean egotism vanishes. I am become a transparent eye-ball; I am nothing; I see all; the currents of the Universal Being circulate through me; I am part or particle of God."

"The production of a work of art throws a light upon the mystery of humanity. A work of art is an abstract or epitome of the world. It is the result or expression of nature in miniature."

"Idealism sees the world in God. It beholds the whole circle of persons and things, of actions and events, of country and religion, not as painfully accumulated, atom after atom, act after act, in an aged creeping Past, but as one vast picture, which God paints on the instant eternity, for the contemplation of the soul."

In the twentieth century, Loren Eiseley carried on the tradition of the

naturalist essays. His essays are poetic in their descriptions of nature and the process of evolution in the creation of living things on this earth. One of his most quoted stories is based on an essay where he talks about walking on a beach littered with starfish. He sees a young boy who is stopping to pick up a starfish "and standing, to heave it back into the sea"

"I asked the youth the purpose of the effort. 'The tide has washed the starfish onto the beach and they cannot return to the sea by themselves' the youth replied. 'When the sun rises they will die, unless I throw them back to the sea'. As the youth explained, I surveyed the vast expanse of beach, stretching in both directions beyond my sight. Starfish littered the shore in numbers beyond calculation. The hopelessness of the youth's plan became clear to me and I countered, 'But there are more starfish on this beach than you can ever save before the sun is up. Surely you cannot expect to make a difference.' The youth paused briefly to consider my words, bent to pick up a starfish and threw it as far as possible. Turning to me he simply said. 'I made a difference to that one.'"

We end with one of the best science writers of the latter twentieth century, Carl Sagan. Although not professing a particular religion, his writings can be easily embraced by Pantheists as an expression of how science instead of dispelling spirituality, actually makes the Pantheist form of spirituality deeper.

"Science is not only compatible with spirituality; it is a profound source of spirituality. "

"When we recognize our place in an immensity of light years and in the passage of ages, when we grasp the intricacy, beauty, and subtlety of life, then that soaring feeling, that sense of elation and humility combined, is surely spiritual"

- Carl Sagan (from Carl Sagan, "Does Truth Matter? Science, Pseudoscience, and Civilization." *Skeptical Inquirer*, 20:6. 1996. p. 29.)

"A religion old or new, that stressed the magnificence of the universe as revealed by modern science, might be able to draw forth reserves of reverence and awe hardly tapped by the conventional faiths. Sooner or later, such a religion will emerge. " *Pale Blue Dot*

Chapter 6

Absolute Principles and Relative Ethics

One of the most famous scientists with Pantheist leanings was the naturalist Ernst Haeckel. A proponent of Darwin's theory of evolution since the age of 26, he was an active scientist in his own right, identifying thousands of new species. His speculations on evolution led to discoveries on the origin of man. He also coined a number of terms in common use in biology today, such as the words ecology and phylum.

One of his ideas is the concept the 'ontology recapitulates phylogeny', the idea that the development of an organism recapitulates its evolutionary history. This theory has been discredited in its strongest form, in the sense that a mammal embryo does not go through earlier fish and reptile phases. The claim still has merit, though, in the observation that structures appear in the developing embryo later, if they appeared later in evolutionary history.

Haeckel's religious viewpoint, known as Monism, was essentially Pantheistic. As a determinist, he did not believe in free will as such, and since he did not believe in a spiritual realm apart from the physical one he did not believe in a life after death. By 1906 he organized the Monistic Alliance that had thousands of members, mostly in Germany.

Haeckel's strong association with evolution colored his viewpoints on morality. He divided humanity into races with differing levels of development, analogous to how evolution has divided living things into species. His morality was centered on the species with "the struggle for existence and natural selection". Therefore, the individual was not important in themselves, but only in how they carried humanity forward. This led to a belief in racial hygiene, a form of social Darwinism that advocates government

action to remove people considered to be racially inferior.

His pronouncement "politics is applied biology" and his ideas on racial hygiene were taken to heart by the Nazis, who used his ideas for their program of eugenics that led to the extermination of millions of people who they considered to be inferior. The Nazis were not the only proponents of eugenics. There were state and provincial governments in North America with programs of forced sterilization. Because the Nazis went beyond this, the universal revulsion to this practice has marginalized the eugenics movement to the fringes of politics and medicine by the latter half of the twentieth century.

What went wrong? The application of science since the Enlightenment has led to many advances, from engineering to medicine that has made life better for every person on earth. But the misuse of scientific ideas contributed to an orgy of evil seldom seen in human history.

There are a number of lessons to be learned from this experience. First, a rational logical scientific approach to morality can go astray without check and balances that prevent these conclusions to be taken to their logical extremes. Second, we must guard against the use of coercion based on a misplaced hubris that we can consciously manipulate the human race. Third, we must preserve a sense of the sacredness of all, a basic principle of Pantheism. This sense of the sacred underlies the whole concept of religion, not just Pantheism, and should form a basis of morality. And finally, we must be on guard against going astray on moral teachings. All major religions have made mistakes when it comes to applying their religious teachings, and Pantheists are no exception to this.

The question is, what type of morality is consistent with Pantheism? To form an ethics that is more than superficial, it is necessary to know what we value as good. To a Pantheist, all the world is sacred, so this determination must be in the context of the world at large.

This does not mean that, because the universe is sacred, the universe is all good. Sacredness and goodness are different. Consider the person you most admire. This person may have done things that are worthy of the highest respect. But this does not mean that they are without flaws. No person is that perfect. It is the same when it comes to reverence for the universe. The universe may be great, may be awesome, may have many good things in it, but it is not perfectly good.

In fact, the spirit that makes us value something, even to the point of reverence, gives us the desire to make that which we value better. So for those who truly revere the universe will honestly recognize those things that fall short of goodness and will strive to make them better.

That leads us to a deep ecology. Deep ecology recognizes the sacredness of the whole biosphere. Every form of life is part of a whole set of values that transcend a single form of life.

An ethics based on a deep ecology recognizes that life as a whole is a value that must be preserved. Human life cannot take precedence over the preservation of life in the whole ecosphere. If we as humans were to survive in a world in which nonhuman life is devalued, would lead to a barren world. This would be self-defeating. We would live, but not for long. The world around us would be destroyed, and we ourselves would not long survive this destruction. Therefore we must preserve the diversity of life, to preserve the future of our own species as a part of this whole network of living creatures.

Therefore a Pantheist view of ethics must preserve the ecosystem. We are only one part of that which is good. We cannot preserve ourselves without preserving everything that lives. Our destruction of the ecosphere will result in our destruction of what makes our own preservation possible.

Although reverence for the universe can be a starting point for a Pantheist ethics, it can only take us so far. A complete ethics includes the preservation of nature. We are all a part of life on earth. But we must look at the human condition while still keeping the whole biosphere as sacred. This is the balance we must preserve.

For ethics to be effective, we must focus on human nature. We are social beings - this defines ethics in our daily life. The basic questions of right and wrong arise mostly in our interactions between our fellow human beings. This is where the great moral questions are asked and answered. Although the big picture gives context to the effect of our actions on the world around us, our day-to-day activities, mostly involve us in society. If we can develop an ethics of human nature, we can extend it to our place in the world. But we must start with our fellow man.

An effective ethics must be based on workable principles. We must establish an idea of right and wrong that helps us to guide us in making the decisions that lead us to taking actions that make for a better world for all living things, to a set of principles that preserve all life, not destroy it just to preserve us.

Many people believe in absolute moral systems. What does this mean? Moral absolutes are principles of right and wrong that apply everywhere under every condition. They are like laws of nature. The law of gravity, for instance is an absolute law. Everything feels the effects of gravity, no matter where it is, when it is or what it is.

In contrast to a morality based on moral absolutes, there are advocates of moral relativism. This is a morality that recognizes that goodness is relative

to the conditions that are relevant to the situation at hand. A relative morality is often thought to be a philosophy that recognizes no absolute rules, it only recognizes the choice between alternatives whose results may differ in different situations, and that no choice is always right.

Moral reasoning is often represented as a choice between an absolute set of moral rules or a decision to choose a relative morality that applies to the situation at hand. Perhaps there is a middle way. A truly effective morality may be one in which absolute rules always are in effect, but their application are relative to the person who applies them.

This relative viewpoint has shown itself to be effective in other attempts to function in the world at large. Physics and astronomy started with an absolute view of the world as the center of the universe, but this gave way to a more inclusive viewpoint - that we are in a world that is subject to physical laws that apply everywhere, but our experience of the world is relative to all the other parts, and those part are equally subject to these laws.

Galileo was one of the first scientists who showed that the universe is not centered in our absolute view of reality. His observations gave support to the Copernican view that the Earth was not the center of the Solar System. Newton extended this by showing that the laws of nature are universal, but their application is relative our relationship to all the other parts of the universe that we inhabit. Einstein showed that even our basic measurements reduce to a simple absolute of the speed of light, but each calculation must take into account our observations not as absolute coordinates, but as measurements relative to the movements of all the other things we see.

The concept of relativity is a useful metaphor for morality. A true morality must give up the notion of a fixed basis on which to apply an absolute set of principles, and take into account the relative nature of right and wrong. We are all subject to a simple set of absolutes but they are applied relatively. Although absolute values seem to apply in a simple initial analysis, a deeper analysis shows that a relative morality leads to a more accurate analysis. This means that moral absolutes are only the first step - eventually, they must be applied in a subjective manner, that accounts for the relationship between the relative needs of the interacting parties.

The first part of a true moral relativity is the recognition that empathy is key. We each have a measure of what is good for ourselves. We must also recognize that other humans - and other creatures - have their own standards of measurement. Each is absolute to themselves, but each comes in conflict with one another. To identify any absolute principles, then, requires the capacity for empathy. This gives us the ability to see the agents that make up the universe we see and the recognition that each entity's sense of goodness

has a unique perspective based on their own sense of what is right or wrong for them.

The capacity for empathy leads to the recognition of the Golden Rule as the primary absolute principle in morality. The Golden rule has both its positive and negative formulations, and both are equally important. We should behave towards others in the same way that we would like to be treated, but we must also refrain from acting in a way that we would not like if it were done to us. In both its formulations, this fundamental moral commandment is the basis of the ethical teachings of many of the world's major religions.

But the implication of the Golden Rule as a fundamental basis is that almost all ethical systems, including the religions of Christianity and Islam are relativistic in their essential nature. It is impossible to apply the Golden Rule without a consideration of what is best for another person or thing. Therefore, each person's actions are relative to this determination.

The relative basis of moral action, like the relative application of physical laws has not been the starting point of intellectual thought on the subject. Most moralities began with absolute laws as a starting point. But these absolute laws show their limitations when humanity has developed beyond a primitive society existing with a limited horizon. An example of this comes up in the Christian religion, where Christ is challenged about picking grains of wheat on the Sabbath day. His response is that the law is made for humanity, not that humanity is made for the law. Christ is explicitly acknowledging that, even though the moral laws appear to be absolute, they are relative to the needs of each individual.

Does this mean that everything goes, as is usually understood when moral relativism is discussed? Absolutely not. There still are standards of what is good and bad for each individual that must be taken into consideration when applying the Golden Rule. The absolute measure of moral relativism is how close one gets to applying the rule for the betterment of the individuals involved. Genocide is not a moral choice for any human being. It is as far away from each person's sense of good as the Sun is as distant from each person on the earth. When observations are made over great distances, relative differences disappear and absolutism seems to apply.

Relative choices are a matter of perspective and must take into account the individual differences of each person. These individual differences, beyond the basics of food, clothing health and happiness can be difficult to determine sometimes. This means that the application of the Golden Rule is guided by empathy and an understanding of what is in each individual's best interests. To use the terms of science, we operate with our own frame of

reference, but the metric we use to measure our relationships in that frame is absolute.

The Golden Rule is not limited to the interactions of individual to individual. This basic moral rule applies between groups, such as one society to another, and also applies in the interactions between individuals and their governments. Each separate entity has a standard of what is good or bad for that entity, be they a single person, a community, a country, a species or an ecosystem. The standards at one level cannot be reduced to the standards of the unit that makes them up, since some qualities are emergent at the higher level. A Pantheist approach to morality must keep the perspective of the big picture even when applying the moral rule to a single individual.

As far as is known though, humans are the only consciously moral agents on this planet. That means that, even though we must act, according to the Golden Rule, in the best interests of societies, humanity, other species and even Gaia, there is no expectation of a conscious reciprocity. For all we know, if Gaia is functioning at its best, this does not necessarily mean the best for humanity. But we are still obligated to act in the best interests of the other party anyway. There is an old Taoist saying that the Taoist master does good to a good person but also does good to an evil person. Thereby the good is increased. This also applies to the indifferent person.

In a morality based on empathy, the nature of evil is the absence of empathy. This comes from the dehumanizing of other people. A person who does not grant similar needs and desires to other people will not treat them in a moral manner. If they turn away from human suffering, or worse, subject others to suffering that they themselves would not want to be subjected to are acting in support of evil. It is hard to find an evil act that does not involve some sort of dehumanization.

When evil is allowed to be visited upon things that are not human, it comes out of a kind of alienation to the world at large. The wanton destruction of habitat, the imposition of human development in the disregard of the effect on other living species comes out of this sense of alienation. This alienation refuses to recognize that we are part of this world and that we cannot impose our will on the world at large without consequences.

Justice and equity do operate in the world at large, in response to our actions, both good and bad. But the justice that comes out is imperfect, almost random. The evil that we do may not return to us to cause us to suffer in turn because of our evildoing. The world is a complex place, and is not a machine tuned to delivering justice where it is deserved. Instead, the evil in the world may make the local environment less good, less peaceful and not touch the real cause of the suffering. The effect is to lessen the

good for everyone nearby, so that each individual action is not reciprocated in equal measure. The good we do in the world sometimes seems lost in a tide of suffering we can do little about. Justice by itself is imperfect. That is why human society has established the rule of law, with the notion of crime and punishment, to complete what nature cannot do alone. Even this is imperfect at best. It is unfortunate, but it can, and does happen that sometimes someone can get away with murder.

Even if there were equity, though, it is impossible to reach perfection of goodness. The nature of good and evil is that it is not a simple one-dimensional measure of pleasure and pain. There are many dimensions that have to be balanced, one against the other. Consider the competing qualities of freedom and justice for instance. In a world of perfect justice, each person's actions would have to be measured and judged, to make sure that balance and equity were always the effect of every action. But then there would be no freedom. Consequently, a purely libertarian world would be a world where inequality and injustice would have to go unanswered, or else this pure freedom would be compromised. But this is not a zero-sum game. The loss of one is not exactly balanced by a gain in the other. At best we can have a large degree of justice and freedom at the same time, but we cannot reach an ideal state where both qualities are maximized. There is a point that is reached where both virtues are at a high level, balanced one against the other, but a further gain in one leads to a greater loss in the other.

This means that a basic virtue of a Pantheist morality is the recognition of moderation in all things. We can strive in ourselves for health, happiness, satisfaction, contentment and all the other virtues, but we must understand that the point comes where we must be satisfied with enough. We cannot have them all in their greatest degree. This again relates back to a relative morality. To use a metaphor from physics, it is possible to move faster and faster in an attempt to reach the absolute speed of light, but this has consequences that in the end make this ultimate attainment impossible. This impossibility applies to moral action too. We must strive to strike a balance in our actions, with ourselves and the world around us.

A relative approach to human action also applies to our understanding of free will. The question of free will is always stated as an absolute quality that we as humans have. There are those who claim that we have no free will because our actions are determined by our biological makeup and by the history of our previous actions, and these actions determines what we are going to do in a certain time and place. This classic view of free will is misplaced. For one thing, it forgets that even though our actions are

determined by our basic biology, all the way down to the firing of our neurons and the effects of the laws of nature on our bodies and minds, we are still very very complicated beings. It will probably always be impossible to predict the particular actions a person will take in a given situation without some sort of simulation of the events and the players involved. At best, we would be constructing a virtual world and watching what would happen, thus transferring the free will choice of the actors into an observation of the free will choice of the simulated actors. A claim that we have no free will because the world is deterministic is a red herring.

A better way of considering the notion of free will is to consider it a relative quality, not an absolute one. Human beings and other living things have free will relative to an observer. Assume the existence of an omniscient God. This God, observing what goes on between humans on this world and knowing everything would consider humans to have no free will at all. This is the essence of the Calvinist argument of election, where every person is already bound for heaven or hell by an omniscient God who already knows the outcome.

But switching the observer from God to another human being, we must conclude that the other person has free will because we cannot predict the outcome for any number of moral choices that the observed person will make. Even if we know enough about that person's general makeup to be able to make general statements about how they will act, in many, many cases they will surprise us. This is what free will is all about. It is a relative judgment between the observer and the observed, and involves the complexity of the decision making process of the observed and the sophistication of the analysis that the observer can apply.

This applies in any number of relationships between observer and observed, leading to a wide gradation in degrees of free will. Free will is not an all or nothing proposition. A human being observing a dog can claim that the dog has no free will, because the animal's reactions are limited and predictable. But in a dog pack, one dog can and does react to another dog as if they have free will, even if they cannot consciously recognize this concept. Members of dog packs will react to the actions of others in the pack as if they are autonomous actors, making choices that affect the situations of others in the pack.

This viewpoint of free will has implications for our application of justice in human society. Conservative and liberals have disagreements in their considerations of culpability of the actions of lawbreakers. Some people believe that the law should be structured as if each person is completely free in their actions and should take the consequences without regard to any

extenuating circumstances. Others believe that societies and situations can excuse the bad behavior of those who have been placed in disadvantageous situations. Neither absolute position is right. Therefore it is neither right to demand a blind retribution for lawbreaking or transgressions, nor can these be excused by circumstances. We all have a certain degree of free will, an assumption underlying the administration of justice in effect in any given society. We are probably better off instead working for a restorative and rehabilitative justice, where the effects of evildoing are mitigated and their future occurrence prevented rather than a retributive justice that demands a balance of action and consequence that denies the essentially relative nature of justice.

Underlying this analysis is the question of how to determine what is the good. If acting in a moral manner is to act in accordance with what is good, then there must be some notion of what the good is. Actually there are a number of ways of defining morality. A classic way of defining morality is through a deontological ethics. This defines ethics in terms of a set of moral rules that are right in and of themselves. Most religions that claim that their moral rules are God-given fall into this class. Kant was also a proponent of a deontological ethics. His moral system was based on a categorical imperative, an absolute moral requirement that is an end in itself. In contrast to this type of morality is utilitarianism, which defines what is good in terms of the outcome of certain actions. This is part of a general notion of consequentialism, meaning that the consequences of the action are a measure of its morality.

For a Pantheist, it is hard to define a workable deontological framework, since there is little to base it on. It is preferable to use a consequentialist morality instead. Even if a Pantheist were to attempt a deontological framework, it would most likely hide a consequentialist morality in the sense that any categories cannot be given a priori, by some universal spirit, but would have to be defined by their consequences.

The question of what is the good is fundamental to morality, but is very hard to define. There actually may be no final answer possible - there may not be a formal definition of what the good is.

This is not surprising. What is good is constantly changing as human society changes and develops. For example, there have been great strides made in the ability to detect and cure disease, and to keep people healthy. It has led to a significant increase in the average lifespan, and in the quality of health during each lifetime.

This has led to a change in how health is considered a part of what is good. Our increase in knowledge makes us more aware now how our actions

affect the health of the people around us. We now judge the morality of people, governments and businesses in the light of how they pollute the environment, leading to adverse health affects. Although cleanliness has always been considered a virtue, in the past it was not considered in terms of its effects on the overall health of the society.

Some determinations of what is good have changed in terms of the increase in possibilities available to the average person. Education has typically considered to be a good thing, but until recently something like universal literacy has not been considered a realistic goal. The standards that define what is good and what is unacceptable have been set higher.

Human nature has changed little, so the basic characteristics of what is good or bad have not changed much. But even so, there are some new characteristics that have been added to the definition of the good. In the past, when all human interaction was people talking with one another supplemented by the occasional letter, the ability to communicate with one another was not considered part of the definition of what was good. Nowadays, the ability to interact with others both near and far is a part of our basic quality of life. Any modern sense of what is good should have this as a component.

So a hard and fast definition of the good is hard to come by. Morality is a basic part of many religions and yet these religions hardly ever give a definition of what is good, even though they lay down any number of moral laws and commandments. In some sense, morality is often defined by right behavior, a morality determined by actions, not goals. In most of these cases, the religious prescriptions are used as a way to make a judgment of good and bad, as if this judgment were self-evident.

The situation is similar to the state of biology. The biological sciences deal with aspects of living things, but most fields of biology do not worry about what life is. Even in the borderline areas such as virology, good science can be done without having to answer the question of whether a virus is living or not. It is possible to have a definition of what a virus is without having to answer this basic question.

The definition of life is in some sense fundamental to biology as a whole. But any attempt to define life will meet with exceptions. Yet biologists are still able to have a science. In the same sense, it is possible to have a science of morality without having to pin down exactly what the good is.

Partly, this is because it is not as important to have an absolute definition of the good as it is to have a relative definition. If we can consider situations in which most dimensions of the good are held constant and only one or two parameters change in response to a change in behavior, then we can make

meaningful moral comparisons. This is another way in which a relative morality is more realistic than an absolute one.

These comparisons can have their difficulties. One important factor comes from the self-evident observation that moral actions have both short and long-term consequences. This means that certain moral actions can have differing consequences in different time frames. Certain actions seem like bad ideas turn out to be morally superior and vice versa. That people make incorrect moral choices because of this does not mean it is not self-evident, but it does mean it is complex. That we can discuss and compare long and short term consequences means that we do have a formal method of comparison, but just like the definition of life, we can focus on aspects of the problem by considering the relative differences of our choices.

One conclusion that can be drawn from these considerations is that ethics is an empirical subject, not an axiomatic one. It is impossible to build an effective morality starting from a basis of preexisting laws and reasoning about these laws to draw conclusion that claim to have a universal applicability. There will always be exceptions to any situation that will invalidate any attempt to make a general rule. The 'what if' cases will go on and on forever.

Any attempt to create such an axiomatic approach is doomed to failure in any case, because morality deals with the behavior of conscious creatures: humans. Sciences such as physics and chemistry are not hampered by the fact that their subjects are not trying to change the rules as they go on. A falling object is not conscious of the law of gravity, and not actively trying to repeal it. But a human being is very conscious of the laws against murder, even to the point where they can come up with creative ways to circumvent them. When is a 'living death' really murder? Is it possible to commit a murder that is undetectable? A fundamental property of logic is that it is incomplete when the objects of reasoning are aware of the reasoning that is being applied to them. This self-awareness leads to changes in behavior based on a conscious knowledge of our own actions. This self-referential ability leads to an infinite regress in the logical argument that sometimes cannot be closed, and leads to logical paradoxes.

This brings into question the whole approach of traditional religions to morality. But the creation and application of an empirical morality comes naturally to a Pantheist. There is no divine rule-giver - no set of rules that must be followed, no rational basis for our morality except the direct observation of the effects of our choices on ourselves, the people around us and the world at large.

Traditional religion used to be the arbiter of how this world came to be,

how humans arose and how the world works. In its holy books were the answers for questions about the mountains and rivers, the stars in the sky, the reason for disease, the different kinds of plants and animals. Nowadays, when these holy books contradict our scientific theories, the science prevails. We do not turn to religion to answer questions of how to build a bridge, refine precious metals or cure disease.

But we have not yet progressed as far when it comes to morality. Many people seem to turn to lists of commandments and absolute pronouncements to determine how to act in a way that is moral and right. These same authorities determine the corrections or punishments for failures to follow a righteous path. If something goes wrong, these holy books are where people turn to find out how to fix things.

Even many people who are not religiously observant rely on a set of axiomatic principles and reason their way to moral judgments based on these principles, regardless of the evidence for or against a particular course of action. This makes it hard to make changes and improve things for the better when things don't work out. Too often, if things go bad, the reason is usually given in terms of failure to follow these absolute principles rather than the correctness or applicability of the principles themselves.

One contemporary example is the question of the morality of abortion. Both sides argue about the moral evil or the acceptability of abortion. Yet the banning or permission of abortion itself affects how many abortions are carried out and their effect on those involved. Because of the fact that people are aware of the laws involved and the way abortion is viewed, their actions change in response to the laws themselves. This leads to unintended consequences in either direction by either side of the debate.

Instead of arguing the morality of abortion, and passing or repealing laws concerning it, there would be a more satisfactory outcome for both sides if they were to look at what works and adjust their social norms and behavior in a way that minimizes the use of the procedure. It is generally true that there is less abortion in societies where it is available, even though this may seem paradoxical. It is also true that the abortion rate goes down where there are alternatives and where there is less poverty. Making logical, axiomatic arguments either way about the issue do little to change the situation. Looking at what works, does.

This makes morality an applied science, dependent upon psychology, sociology and related fields like economics for the basic insights necessary to derive the best course of action. From the theoretical principles verified by observational results we can develop a working ethics.

As discussed before, there may be no final definition of good and bad to

base ethics upon. This is not bad, since the attempt to determine such a definition brings us back to an axiomatic approach, which has no provable validity anyway. Instead, a working ethics is based on relative changes. Any action we take leads to some sort of change. And this change, more often than not, leads to either a better or worse state of existence for those affected by the action. Of course the result is not necessarily immediate. Some changes lead to short-term results; others take longer for their outcome to be determined.

There are many cases, though, where the results are equivocal. Almost all actions are a balance between good and bad outcomes. Then the competing results must be balanced against each other to determine whether the action is mostly good or mostly bad, or somewhere in the middle. This makes a practical ethics very complicated - much more complicated than simple subjects such as physics, chemistry and biology.

It could be argued that a practical, relational ethics like this leads to less certainty than an axiomatic approach. But like any science, it is self-correcting. An axiomatic approach is by its very nature incomplete, and inevitably ends up being absolutely wrong when the chain of reasoning goes so far it becomes just empty rationalizations. Without an experimental validation of the chain of reasoning, an axiomatic morality is blind - it is incapable of finding its errors. But when it comes to the experimental validation it is subject to the same complexities as a primarily empirical ethics. Better to embrace the complexity at the start and continue from there. This makes the whole enterprise grounded in reality.

It is important to note that an empirical ethics will probably result in a set of conclusions that will be largely statistical in nature. That is to say, a workable ethics is composed of statements to the effect of 'in a large percentage of cases, experience has shown that the given action has a mostly negative (or positive) outcome'. Of course, the degree of certainty attached to a statement can range from a fifty-fifty chance all the way up to near certainty, as in the case of genocide, for instance. But any attempt to claim an absolute judgment for any action is subject to the possible exception.

This adds layers of complexity to the administration of justice. A justice that is swift and sure will be led astray. Swiftmess will lead to an inadequate analysis of the complexities involved, and a sure justice is an illusion. This gives further weight to a restorative justice rather than a retributive justice. Even in the case where there are penalties and sanctions, they must be tendered with an eye to correction not revengeful punishment.

We will end with two issues whose morality has been sometimes debated by Pantheists. These are the issues of war and pacifism, and the morality

of a vegetarian diet. In some ways the two issues are related, in that both of them are concerned with acts of violence, one against our fellow man and the other against other living things.

Since Pantheists believe that all is sacred, this would naturally lead many to advocate pacifism instead of war. But sacred does not necessarily entail goodness. Therefore this is not a sufficient basis to argue that Pantheism leads to pacifism.

Instead, the Pantheist who advocates pacifism takes the intermediate step of arguing that Pantheism, in its sense that all is sacred, implies that to live in accordance with Pantheism is to live in harmony with all around us. Therefore, regardless of the inherent goodness or badness of those around us, we should strive to live in a way that maximizes the good. This means that we should resolve our differences without strife.

But the empirical approach to morality does not argue the rightness or wrongness of war - instead it asks about its effectiveness. Seen this way, war can be looked at as a way of dealing with disease in the social fabric. This is the equivalent of the use of surgery to cure disease in the body. This viewpoint makes the argument that diplomacy is the first course to take for resolving differences, but when the other party refuses to respond, and the situation becomes intolerable if left untreated, then war may be an option. This would provide a justification to the notion of a just war.

To continue the analogy further, surgery is an act of violence on the body. It cuts away healthy tissue to reach the disease, or forcibly realigns the body into a healthier state. War itself inevitably entails collateral damage and the imposition of force on the populace. But used judiciously, it can be a healthier alternative for resolving disputes when peaceful methods fail.

But war, like surgery, is a crude tool. Even when surgery is applied nowadays, it is done in a more sophisticated manner than the surgery of a century before. There is less amputation, and smaller incisions. Microsurgery is more common. War is changing in the same way. Wars do not last for generations and it is less likely that a Genghis Khan or a Shaka Zulu will prevail. Used judiciously, war can be applied in an intelligent manner to minimize the costs that it entails.

It may ultimately be possible for there to be a world in which both surgery and war are a thing of the past. Other treatments may be possible that could provide a better alternative in almost every case. But it is likely that for the foreseeable future, war may be the only alternative to social problems that are otherwise unendurable. But the recourse to war must be made carefully, with sufficient justification for its effectiveness, and only after other alternatives are tried.

On the issue of vegetarianism, Pantheists can be contentious in their differences. This is because it is possible for a person to live a vegetarian life, so the desire to hold everything as sacred and live in harmony would naturally lead to vegetarianism. Even though we are naturally meat-eaters and well as plant eaters, we, as human beings are aware of the suffering that we cause and are capable of turning away from this practice to a strictly meatless diet. Therefore, the meat-eating Pantheist has more of the burden of justifying their dietary habits.

The typical response that the meat-eating Pantheist makes is that living in harmony does not necessarily mean that we take a live-and-let-live attitude to other things. After all, evolution has created both carnivores and herbivores in the animal kingdom. Only plants and certain families of unicellular life do not eat other things - even the vegetarian takes life.

For the meat-eating Pantheist, living in harmony entails living in harmony with our nature as being omnivores. This means that it is acceptable to kill other animals to eat, but this should be done with the recognition that another life is lost. This is made explicit in the traditions that both Native Americans and the kosher dietary laws have in the process of killing. This is a view where harmony does not forbid killing, but views it as part of the greater harmony of life on this planet.

In this case there is no right or wrong here. One cannot make an absolute case either for or against a strict vegetarianism. But the arguments made both pro and con can be passionately held by people who consider this a fundamental part of their beliefs as Pantheists. Because of this, Pantheists have agreed to disagree on the subject and to acknowledge that one can differ on this subject and still consider oneself to live an ethical life as a Pantheist.

A Pantheist ethical system is still evolving. This will probably always be this way - like evolution in nature, the evolution of moral systems never stops. Morality grows and changes as humanity changes, and as our understanding of the world changes. But the changes are in the details, not in the basic principles. It is unlikely that there are few moral absolutes beyond the Golden Rule and empathy.

There is a lesson to be learned from the differences between Pantheists on dietary habits. Although it would be nice to create a moral system from first principles, even one that views all of the universe as sacred, morality is not a pure science - it is a process of trial and error. This was the fatal flaw of the morality of eugenics that Ernst Haeckel espoused. He felt that the laws of nature could be in themselves universal laws that humanity must conform to. But humans are not cogs in a machine, and the laws cannot be

applied without consideration for whom these laws apply to.

Both of these situations are confirmations of the naturalistic fallacy, where the good is defined in terms of its "natural" properties. Goodness is hard to define. Even universal laws like evolution are not in themselves a sufficient basis for creating a moral system. No matter how precise our definition, we will be surprised at the outcome. That is why ethics is an inherently empirical study - we need to look at the consequences of our assumptions and our actions to determine what is best.

But this does not mean that morality is arbitrary. The social sciences show us that there are significant and reproducible consequences to our actions. There is a connection between what is and what ought to be. The connection is not a simple application of logic, since logic is subject to the conscious manipulation of the actors who are the variables in the logical equations. But still, the actions of these actors lead to moral consequences. The connection between the two may not be obvious and will change as society changes. But they are still there.

There is no final solution to morality. We will proceed by trial and error, and what is right for one era will be wrong for another. A Pantheist morality embraces both uncertainty and change and makes the best of it. By giving up the illusions of absolute good and evil, we exchange a fixed frozen moral system for one that lives and evolves.

Chapter 7

Science, Art and Religion

”Science without religion is lame. Religion without science is Blind.”

This is one of the most famous quotes about science and religion by Albert Einstein.

Einstein is the most famous scientist of the twentieth century. He gave the explanation of the photoelectric effect and Brownian motion. He came up with relativity, both special and general. He also extended the work of Satyendra Nath Bose into what is known as Bose-Einstein statistics.

Einstein is also known for his criticisms of quantum mechanics, especially his discomfort at the statistical nature of quantum mechanics. Einstein, Podolsky and Rosen came up with the EPR paradox, which claimed that quantum mechanics, if correct, would show action at a distance. This paradox was later shown to actually exist.

He spent the last years of his life attempting to generalize general relativity into a grand unified theory. This attempt was unsuccessful. Robert Oppenheimer was quoted as saying about Einstein: Any man whose errors take ten years to correct is quite a man.

Einstein wrote a number of essays and gave talks on the relationship of science and religion. Although Einstein did not call himself a Pantheist, most of his beliefs are what Pantheists believe. He summarized his beliefs in the following: ”I believe in Spinoza’s God who reveals himself in the orderly harmony of what exists, not in a God who concerns himself with fates and actions of human beings.”

Another time, he said: ”My religion consists of a humble admiration of the illimitable superior who reveals Himself in the slight details we are able to perceive with our frail and feeble minds. That deeply emotional conviction of the presence of a superior reasoning power, which is revealed

in the incomprehensible universe, forms my idea of God.”

Although considering the natural world to be accessible to reason, he also had great respect for the religious approach and the essential mystery of the universe:

”The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He to whom this emotion is a stranger, who can no longer pause to wonder and stand rapt in awe, is as good as dead: his eyes are closed. It was the experience of mystery - even if mixed with fear - that engendered religion.”

-The world as I see it, PG 11

”The further the spiritual evolution of mankind advances, the more certain it seems to me that the path to genuine religiosity does not lie through the fear of life, and the fear of death, and blind faith, but through striving after rational knowledge.”

Einstein’s theology denied a personal God, but allowed for the existence of ‘The Old One’ a spirituality about the universe that was more like Pantheism:

”I’m not an atheist and I don’t think I can call myself a Pantheist. We are in the position of a little child entering a huge library filled with books in many different languages. The child knows someone must have written those books. It does not know how. The child dimly suspects a mysterious order in the arrangements of the books but doesn’t know what it is. That, it seems to me is the attitude of even the most intelligent human being toward God. We see a universe marvelously arranged and obeying certain laws, but only dimly understand these laws. Our limited minds cannot grasp the mysterious force that moves the constellations. I am fascinated by Spinoza’s Pantheism, but admire even more his contributions to modern thought because he is the first philosopher to deal with the soul and the body as one, not two separate things.”

-From Denis Brian, ”Einstein, A Life”

Einstein also made pronouncements on the scientific method comparing the discovery of science to the intuition of the arts:

”We should take care not to make the intellect our God; it has, of course, powerful muscles, but no personality.”

”I never came about any of my discoveries through the process of rational thinking.”

”The important thing is not to stop questioning. Curiosity has its own reason for existing. One cannot help but be in awe when he contemplates the mysteries of eternity, of life of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery every day.

Never lose a holy curiosity.”

Life is change. And with that change comes knowledge.

We learn new things. We see life in new ways. We make new connections. Our curiosity takes us further, as knowledge broadens our horizons. We question our assumptions and our outmoded ideas, We go over the same old ground yet again, seeing it with new eyes, making new connections.

There are different ways to knowledge. One is through the arts, exploring the world through our emotions and our senses. This is knowledge at its most subjective and elemental. The knowledge we gain is conveyed in concrete terms, mostly experientially. What is perceived by the person experiencing the art is hardly ever exactly what the artist created or intended. This is the oldest kind of knowledge, and often the most enduring. It makes the strongest impression, and has the strongest effect.

Religious knowledge, while still being subjective, is a knowledge of the mind. This knowledge is a combination of ideas and concepts, constructs that exist in the mind, with the evidence of our emotions. Religious faith is the sum total of our emotional experience of the world around us. Our senses and emotions, our religious faith, is subject to and filtered by the concepts that form the intellectual backbone of religious knowledge. This structure postulates explanations for what we experience and feel and attempts to generalize the subjective, personal knowledge into universal truths.

The religious sensibility is not tied to a particular concept of a God or Gods, but is as much a universal characteristic of the human experience as the artistic sensibility. Some people are naturally creative artists, some people are natural prophets. Most people can appreciate art and religion, although there are some who lack one or the other capability to some extent. Just as one does not have to appreciate a particular type of art to be able to experience and enjoy art, one can have any, or no belief about God and still be religious. The religious sense is part of the human psyche, and not dependent upon the beliefs of any particular religion. It is simply another approach to knowledge.

Science completes a triangle of knowledge, balancing both the arts and religion. Where the arts are focused on senses and the emotions, science is centered on the conceptual framework of the mind. Science attempts to look for generalities that are independent of each person’s experience. The purest scientific knowledge is dispassionate. It is objective, not subjective. It is not beholden to religious faith, nor is it dependent on esthetics.

Knowledge is a social phenomenon, transferred from person to person. This is how it survives the individual who discovers it and becomes part of human culture. Great art transfers knowledge by its emotional validity.

Each person who experiences a work of art responds to it.

Science works in a completely different way. Scientific knowledge is transferred because the knowledge is universal and accessible through a process of reasoning. Each person can verify for themselves that the knowledge is true. This verification is for the most part dispassionate.

Religion sits between these two types of knowledge. Religion makes claims of universal validity, but these universal truths must be emotionally acceptable. That is why the power of faith, at heart an emotional response, and the claim that religious precepts apply to everyone at every time despite the faith of those who believe. Religion is neither purely subjective or objective. No one, not even the atheist can convince another person by reason alone. It is seldom that a person converts to another religion for strictly logical reasons. Religious conversion is usually an act of faith, accompanied by a strong emotional release. As a logical system, it is impotent without faith. But as a matter of faith alone, it has no universal applicability. Although the emotional response usually comes first, reason must be convinced of its validity.

Seen this way, there is a naturally balance among the arts, religion and the sciences. But in modern society they seem separated from each other. C. P. Snow was correct in deploring the lack of communication of the two cultures of the sciences and the arts. His criticism was based on the fact that neither side was much informed by the other. Scientists seldom read works of literature and artists knew little about the laws of science.

The gap between science and religion can sometimes be even deeper. The late Stephen Jay Gould suggested that it was more than a gap - that science and religion formed two magisteria, two incompatible ways of looking at the world. He claimed that the two types of knowledge are two different areas of expertise: "science in the empirical constitution of the universe, and religion in the search for proper ethical values and the spiritual meaning of our lives". He uses the religious term magisteria to point out that the two disciplines teach - that is, spread their knowledge - in two separate areas of inquiry. There are different magisteria because they deal with separate subjects, and the subjects do not overlap.

It is interesting to note that Einstein agreed with Gould about the non-overlapping magisteria. Here are some paragraphs from an address he gave to the Princeton Theological Seminary on May 19, 1939.

"Science can only ascertain what is, but not what should be, and outside of its domain value judgments of all kinds remain necessary. Religion, on the other hand, deals only with evaluations of human thought and action: it cannot justifiably speak of facts and relationships between facts. According

to this interpretation the well-known conflicts between religion and science in the past must all be ascribed to a misapprehension of the situation which has been described.”

”For example, a conflict arises when a religious community insists on the absolute truthfulness of all statements recorded in the Bible. This means an intervention on the part of religion into the sphere of science; this is where the struggle of the Church against the doctrines of Galileo and Darwin belongs. On the other hand, representatives of science have often made an attempt to arrive at fundamental judgments with respect to values and ends on the basis of scientific method, and in this way they have set themselves in opposition to religion. These conflicts have all sprung from fatal errors.”

He goes on to point out that ”there exist between the two strong reciprocal relationships and dependencies.” Religion may determine the goal, but science gives the means of attaining it. Religion provides the aspiration toward truth and understanding that drives science. He then says his famous quote ”science without religion is lame, religion without science is blind”

Despite this analysis, this appears to be an artificial distinction. There is no good reason to claim that the two fields are completely separate. Discoveries in science can lead to moral conclusions, especially in the areas of psychology and sociology. Religions can make claims about the inherent goodness of mankind, or the existence of original sin. If these claims are left as non-specific generalizations, then they are impotent as religious beliefs. But if these beliefs serve as the basis for drawing conclusions about specific acts that individuals or societies can make, they are open to the test.

The reverse holds true also. Although the pure knowledge of scientific discovery is free of moral judgment, it, like a general religious statement about human nature is impotent. There are very few scientific facts that do not have some implication or applicability that results in actions that can be good or bad for human beings, society or the world around us. We find in the applied sciences the necessity to establish and keep codes of conduct guiding the use of knowledge in the real world. Even in the world of pure research, the question of ethics arises for a wide variety of experimental tests. Science comes in contact with religion once it leaves the printed page or the lecture hall.

There are also consequences for religious beliefs. In the sphere of religion, there are consequences to the moral system or the values that a person holds. Someone with a twisted interpretation of religious belief, no matter how admirable the religion, can be led astray. The result of this can be disastrous, both for that person and for everyone who comes in contact with that person. It is equally true that the adherents of a particular religion can

make the world better with their beliefs. The worthiness of religious beliefs can be measured in their effects on the world.

Also, religion beliefs have consequences in the sense that they make testable hypothesis. A creator must show itself by its evidence in the world. That means that the existence of a creator must reveal itself in some observable and verifiable manner.

Science cannot back away from answering the basic questions that religion asks - that of what gives meaning to life and how to live the good life. If these questions have any meaning at all, then they are capable of being studied in some rational form. If science as it is currently constituted is inadequate to address the questions, then the limits of our scientific understanding must be overcome.

In fact, Einstein spent part of the rest of the address quoted above in a critique of the concept of a personal God. He uses a rational analysis to show that there is no room for a God that interferes with natural events. This is using the objective methods of science, both through the application of logic and the use of careful observation to invalidate a basic principle of a large fraction of the world's major religions.

Although he was arguing for separate magisteria, he acted as if their modes of reasoning affected one another. Einstein was also quoted as saying "Ethical axioms are found and tested not very differently from the axioms of science. Truth is what stands the test of experience."

Although science and religion seem to be qualitatively different, like matter and energy, they convert from one into the other.

All three types of knowledge, religion, the arts and the sciences, affect one another. They are as interlinked as Borromean Rings. The best science has an esthetic appeal. The techniques of the arts and the esthetic effects of art can be explained by science. Religion has been the source of great art just as art enhances the religious experience. Science must verify and inform religion. And religion can just as equally inform science.

One of the consequences of the interlocking of these three areas of knowledge is that all three share in being both rational and emotional, being both objective and subjective. This has not been a problem for religion and the arts, which are willing to recognize the emotional, subjective sources of their knowledge. The best practitioners of both fields will also stress the objective components of these bodies of knowledge. For example, both science and religion understand the place for technique, in everything from painting and dance to the various forms of meditation and religious practice. Even when striving for subjective results, good technique is described and taught objectively, to some greater or lesser extent.

Although there have been many books written on the logic of scientific discovery and the rigorous application of the scientific method, the passion of science seems to be given short shrift. If it is mentioned at all, it is in apologetic terms. But it is a significant part of the practice of science. Science is as emotional and subjective a way to knowledge as any of the other forms, even though the result is an objective understanding of the world.

Science is not coldly rational in its essence. It appears that way after the fact, because scientific knowledge is objective, not subjective. The statement of scientific knowledge is best expressed without the passion. But science builds on passion first, passion and faith.

The passion begins with the choice of becoming a scientist. It is common for people who have chosen science as a profession to speak of an early and strong attraction to the field. Sometimes it is simply curiosity. Other times it is a deep reverence for life, the world or the whole universe that leads to the desire to understand.

This passion leads the person on to understand the field, to find out what is already known. It is usually not enough just to be good at it, although this is almost always a prerequisite for success. The proficiency must be accompanied by the drive to go even farther, the way an athlete, who loves to use their body, strives to go even further, setting personal records in the process.

But to be a successful scientist also requires the courage of conviction. Just as in the arts, the successful scientists are willing to break new ground. This also requires persistence. The great artists have to have the conviction that the work they are creating right now is the best and most important thing they have done, and when it is finished, to know that they can do better. The scientist has this same passion. They need the persistence to see the work to completion no matter what the struggle, and the self-assurance to stay with it despite disappointments.

Einstein spoke often about the passion of the scientific endeavor.

"When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than any talent for abstract, positive thinking."

"The only real valuable thing is intuition."

"After a certain level of technical skill is achieved, science and art tend to coalesce in esthetics, plasticity and form. The greatest scientists are always artists as well."

Because good science is a work of art, the laws of nature are the laws of man. We look up at the sky and see the stars. But their creator is not

there. This means that the laws of the universe are not laws given to us from some superior being, but are human laws. These laws are not perfect because humans are not perfect. We may be fallible, but we try, and each attempt gets us closer to a complete theory of reality.

This does not mean that scientific laws are in any way subjective. They are not. They are a summation of particular properties of objective reality. The truth of a scientific law is not culturally determined. But the expression of the law certainly is.

The laws of physics, for example, are often mathematical laws expressed as algebraic equations. But this is not the only way to state the relationship. In Newton's *Principia Mathematica*, the initial presentation of the ideas behind the calculus was given as geometric diagrams.

There are many other ways of expressing physical laws. If a merely qualitative relationship is required, a descriptive metaphor will do. If a quantitative expression of the theory is wanted, a machine, such as the clocks with astronomical readings such like the phases of the moon or the positions of the planets could be constructed to express many other types of relationships.

Scientific knowledge is expressed in many ways, but it is not arbitrarily relative. It is a human enterprise. The means of expressing the knowledge of science is that which most successfully conveys the knowledge from person to person and what effectively preserves it. To use Richard Dawkins concept of the meme, the unit of information, the form of the meme is chosen to maximize its survivability.

The form of knowledge is determined by the way the mind works. Some cognitive linguists such as George Lakoff make the argument that the mind works primarily in a metaphorical manner. The metaphors are deeply rooted in the physical, sensual and emotional base of human experience. It is difficult, if not impossible to rise above this metaphorical state. This extends even to very abstract forms of reasoning such as mathematics. That is why even very gifted mathematicians and physicists use pictures as a way of explaining and understanding equations, It also explains the importance of *gedanken* (thought) experiments: they act as the metaphors upon which scientific laws are based. This metaphorical reasoning is part of the reason why science goes through revolutions - the paradigm shifts that Kuhn wrote about. An example of this is the work of Alfred Wegener on continental drift.

In the period from 1910 to 1915, Wegener noticed a number of indications that the continents drifted over the earth. For example can be seen on a globe that the continents on either side of the Atlantic have match-

ing coastlines. Geologists had also noted that rocks and fossils were similar when these halves were paired. This had been noted before, but was thought to be due to the disappearance of land bridges that had joined these areas together. But there were other observations. Long-term observations indicated that Greenland was 36 meters further away from Europe than before. This was later found to be overstated and that yearly continental drift is on the order of centimeters.

Wegener's theory was met with skepticism. He felt that the granite of the continents floated above the basalt of the ocean floor, but he could not give a convincing mechanism for how they moved. It took until the 60's for the theory to be accepted. Eventually the discovery of the mid-ocean ridges showed that the continents drifted as new ocean floor was created in some places and disappeared in others.

The change in paradigm in geology was from one metaphor to another. The older metaphor was that of a sphere that cooled, shrinking as it hardened. This caused the mountains to form. The new metaphor was that of pieces of light material floating over a denser material. Benjamin Franklin who came up with an early version of this new metaphor compared it to pieces of a shell floating on a fluid interior. In this new metaphor, mountains formed when the shell pieces crashed into each other.

Because science is human knowledge, science is never finished. Its knowledge is constantly expanding. We know more and that gives us the ability to know even more. Therefore no truth is ever final, and any absolute knowledge is not complete.

This basic truth about knowledge applies not only to science and art but also religion. The revealed religions are like Canute, trying to hold back the sea. They stand on their holy book, a man-made artifact and proclaim that it seals revelation forevermore.

As religion has progressed, this attitude has changed. Religions such as the Baha'i faith believe in progressive revelation, in which there is a chain of prophets each providing more of God's truth. Process theology, the view of God as a work in process is another example of this changing attitude. But for many people, their view of religion is the last word.

This religiously centered attitude to knowledge affects the view of the more strident theists. Christian fundamentalists criticize evolution as being just a theory. They miss the point. All of science is just a theory and all of it can be disproved in some or all of its parts. Criticizing evolution will not help the cause of creationism. Disproof of one theory does not prove another.

An absolute view of knowledge can sometimes infect science. In actuality,

truth is a web. We start from where we are on the web of knowledge and look at the connecting strands that take us from one idea to another. This is completely different from the viewpoint that knowledge can be a hierarchy, where psychology is reduced to biology and then to chemistry, which leads to physics. This crude reductionism leads to the mistaken belief that if you go deep enough, you will get to a Theory of Everything.

There are other ways of looking at knowledge that are equally scientific. For example, we could use probabilistic certainty as a way of organizing our knowledge. This would place knowledge with mathematical certainty at the top of the hierarchy, equating the fact that blood flow is necessary for life as being as certain as the fact that the sun will rise tomorrow and equating the probability that a medicine will cure a psychological disorder with Heisenberg's uncertainty principle. This is just another way to transverse the web of knowledge.

One aspect of the methods of religious thought that has an unexpected correlate in scientific reasoning is the matter of faith. A basic paradigm of Artificial Intelligence and Machine Learning is the method of "Generate and Test": if a solution to a problem or a theory to explain data is desired, there is no better way than to generate a possibility out of a space of models, then to test it to see if it is an acceptable answer. This is likely the way humans actually go about the process of scientific discovery.

Essentially, a possible theory is generated and chosen on faith. The second part of the process, the testing, must be done with skepticism. This is how all discovery proceeds - faith is the first part of learning, verification comes after. Skepticism is a necessity, but not the whole story.

Science and religion emphasize the two different parts of discovery. Science stresses the skepticism in testing, but downplays, the initial act of faith, sometimes to the point of denying that faith is involved at all. Religion stressing the act of faith as superior to the verification, resulting in blind faith as its extreme expression. For many religions, testing is merely used to validate the act of faith, as if one can test without skepticism. But a true test must result in a skeptical rejection if the truth is not found. So we all begin with faith, no matter whether we are being religious or scientific. But we are incomplete until we allow our skepticism free rein.

Like religious practice, good science is also an act of faith. The creation of a scientific hypothesis is an act of faith that is part of the creative process, no matter what the subject or purpose is. This faith is present on a number of levels. In science, there must be a basic faith in the intelligibility of the universe. This is necessary to even try to begin to search for a scientific explanation. At the next level, the scientist must have faith in

their explanatory power, to be able to come up with a new observation or law that works for them and to successfully convey this new knowledge to others. Finally, there is the faith that the hypothesis is correct enough and interesting enough to keep from abandoning it or rejecting it out of hand, until the evidence confirming it is collected.

This faith is a balancing act. Too little faith results in a sterile science that is too tied to old explanations and theories and unwilling to grow and expand. Too much faith leads to the creation of a pseudoscience, where knowledge is claimed despite the weight of evidence refuting it.

The difference between science and religion is seen in the place miracles play. The belief in miracles comes from the lack of skepticism in the believer. In science, there are no miracles, almost by definition. Anomalies are not signs of the supernatural since the universe is all there is. Instead, they are indications of the frontiers of science. The miraculous is a sign of a lack of understanding.

In religion the miracle validates the faith. The denial of miracles is considered to be a challenge to faith and to the idea of religion entirely. The belief in the miraculous is a sign of a religious strength.

Science can be used to validate the claims of religion, but what does religion have to say about science?

In a very deep sense, religion has always provided an intellectual bias to the way we think. Put simply, our religion colors the way we think. When our religion speaks truth, it leads us to better science. The different outlooks of different religious beliefs lead to different insights about the world around us.

Examples of this effect abound. Greek religion and Christianity had the logos as a central intellectual concept. This led to the development of logic as the basic method of expressing scientific knowledge. The scientific progress during the Enlightenment went hand in hand with the changes in religious outlook, where the use of reason became a powerful intellectual force. During this era, deism improved religion by de-emphasizing the exceptionalism of miracles. At the same time, science was showing that the laws of nature were the same in the heavens as on the earth. In the present era the interests of some of the top physicists, such as Nils Bohr in eastern religions led to different ways of understanding and interpreting quantum mechanics.

What does Pantheism have to say to science? Pantheism will certainly continue the intellectual progression that came out of the Enlightenment. The Pantheist knows that God is not present and a personal God will not be revealed to humanity. This means that there is even less reason than before to believe in supernaturalism. For the Pantheist, God is completely

unnecessary for creation as opposed to even a limited theology like deism, where God is at least needed to start things off.

This means that there are unanswered questions that arise about how the universe came to be and why it is even understandable at all. The Pantheist cannot fall back on a pat answer of a supreme being that made things that way, an answer that poses more questions than it answers.

The overall effect of Pantheism on science will remain to be seen as more people embrace Pantheism and develop a Pantheist culture of their own. The effect of religion on science is less from the application of explicit teachings of the religion as from the worldview that the religion has. The early years of Islam had a respect for knowledge, which led to the preservation of ancient texts and the development of the mathematics that underlies science today.

Although a fully formed Pantheist worldview is yet to coalesce, it is certainly true that Pantheism incorporates a reverence for nature. This reverence for the world as a whole could probably lead to the development of sciences that deal with general systems. This would be a science of the big picture, instead of a reductionist approach. Pantheist scientists might well be attracted to a large multidisciplinary approach, one that looks at Gaia more than at a particular ecological niche.

So the practice of religion has affected the practice of science through the ages. What about the other way around? How has science affected religion?

Science has affected religion in some profound ways, but the heart of religion seems not to be affected at all. The most famous example of the effect of science on religion is in cosmology. Galileo and Copernicus showed that we were not the center of the universe after all. This put to rest any attempt to make a holy book a true description of the state of the world instead of a book of metaphorical, spiritual truths. This process is still continuing despite the attempts of fundamentalists to propose a creation science as an alternative scientific theory. In this century, the discovery of the big bang has reinterpreted the creation of the universe not as a creation *ex nihilo* but instead a mathematical singularity at the beginning of time.

Even more profound changes will come from the sciences of psychology and sociology to the questions of morality that have always been an essential part of religion. Instead of the idea of sin and redemption as the only way out of the state of original sin, we now have the promise of a rational, means of self-improvement being placed in our own hands, every bit as effective as any engineering practice in the biological sciences. These changes go down to the level of philosophy, in that they change the way we think about human behavior. Paula Churchland has pointed out that recent scientific studies of human behavior have disproved Kant's view that the moral

person acts dispassionately. Studies with people who due to brain damage are impaired in their ability to experience emotion show that these people are also impaired in their ability to make moral decisions. This has broad implications for religions that emphasize adherence to absolute sets of laws and customs without the application of empathy to make these laws relative to the situation.

But it does not mean that science will ever replace religion, nor even enhance it in the way that the arts have always been an essential part of the religious experience. Science comments on religion, but it is up to religion to respond to that commentary. Science has not changed religion at its root. It has been said that the theory of evolution made atheism intellectually respectable. But atheism is still a fringe belief, with only a few percentages of people who actively embrace it, even though there are many who agree with its tenants.

For science to enhance religion, there are two changes to be made, both of which break down the magisterium that the two fields enjoy. The first is that religion must need science as much as it has embraced art. It is not enough to claim that the golden rule is a moral law. It must be proven. This will complete the process of learning in knowledge from the faith that helps us choose the beliefs all the way to the skeptical tests that validate it.

Alternatively, science must also embrace religion, the way that it does the arts. Although many scientists deny it, the best science is a form of art. The great mathematical proofs have a form of austere beauty that is emotionally perceived by anyone even remotely informed about the field. The importance of art to science was recognized by Einstein, who said "I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."

But science must also embrace religion and give back to it Einstein also said "I have deep faith that the principle of the universe will be beautiful and simple." This is a statement that is religious in tone, a faith as deep and profound as the belief in a creator God. The scientist, in making universal observations, such as 'all swans are white' is starting from a faith that the observations made up to this point are true for all, a faith that will be validated by further observations, but will never entirely go away. In this way, religion enters the practice of science - it is fundamental to it - and the sooner it is recognized as being equivalent to the essential faith of religion, the better.

Religion provides a grounding in the world that up till now science cannot provide. This is the basic failure of atheism, in that it rejects the feelings

that bring us to religion instead of contributing to those feeling. This needs to change

Eventually, the time will come when science will be able to address the questions that have been formerly only addressed by religion. Science has failed in its responsibilities up till now. It has answered many of the questions of the world that have been puzzling people for ages. But it has not talked about the spiritual implications of what it has accomplished and it has stepped back from answering other questions as if science only answered 'how' questions and religion only answered 'why'.

One example of the failure to address the spiritual implications of scientific knowledge is found in the deep distrust of some people that science is a force for good. There are many people who believe that science has dehumanized society even to the point of condemning the Industrial Revolution as taking us away from some idyllic pre-industrial state. But science has done amazing things to reduce suffering, reduce boredom, reduce predestination. A doctor does not sit at the bedside of a child, watching the child die. We do not spend our winter nights in darkness. We do not have to rely on the village wise man for knowledge, or have to be resigned to the fact that we will grow up to be peasants like our parents.

Science has changed the world. What it has not done is addressed itself to the spiritual needs of society. This is mostly due to that fact that addressing these problems is the proper work of psychologists and sociologists, whose field of expertise is much harder than the simpler sciences of physics and chemistry. Recently, psychologists such as Martin Seligman have started taking this next step in their field by going beyond the study and treatment of pathologies and starting to look at the psychological basis for creating and maintaining an authentic happiness. Although the advances of science have cured the soul sickness of millions of people in a way that faith alone could not, there is the hope that science can find the way to true happiness - and prove it.

Pantheism is situated in such a way to form a bridge between science and religion, taking the torch from humanism that tried to build that bridge in the mid twentieth century. Pantheism is based on a skeptical look at the universe that sees no rational reason to postulate a creator God, and therefore, by Ockham's Razor rejects the hypothesis. Pantheism has replaced revelation by science. But it does more than atheism by preserving the essential truth of religion, that people have an essential spirituality that must be embraced, nourished and developed. Pantheism is the conduit for taking the developments of scientific knowledge and enriching our religious life with them. Science can inform religion; therefore Pantheism changes as science

changes. In this sense it is a 'process theology' whose revelation is never sealed.

Chapter 8

Rational Mysticism

Why do numbers exist and where do they come from?

This is a question that has been at the heart of much of philosophy. Pythagoras was a Greek philosopher who lived around 530 B.C. He is most famous for the Pythagorean Theorem, taught in most algebra courses, that says that if the two sides of a right triangle are of length x and y , the square root of the length of the hypotenuse is the sum of x squared and y squared. The simplest example is a 3-4-5 triangle. The square of the hypotenuse is $5*5=25$, which is the sum of $3*3=9$ and $4*4=16$

Pythagoras himself wrote nothing down, but he gathered together a group of followers in the town of Croton. Pythagoras built a philosophy around numbers. One of the fascinations of he and his followers was the numeric relation between sounds and notes and their harmonic relations. Other followers studied the properties of the golden ratio.

The Pythagoreans believed that numbers were fundamental to everything. The members of the inner circle of his group were termed mathematicians. They believed in the 'music of the spheres' - that the motion of the planets followed mathematical laws that could be translated into music.

The human body was believed to be formed of opposites, and that good health came from the balance of these opposites in the correct proportions - it had to be tuned like a musical instrument.

The Pythagoreans believed that different numbers had personalities and that certain numbers were special. Music for instance was based on relationships with the number four. The number ten was the number of the universe. The five-sided pentagram was used as a symbol.

Numbers and number theory are the foundation of mathematics. Since the time of Pythagoras mathematics has come up with many strange and

unusual concepts. Calculus was originally developed with the concept of infinitesimals and infinite series, notions that had a part to play in the ancient philosophy of Parmenides and his student Zeno.

Later on Cantor developed more fully the notion of infinite numbers in the context of set theory. But these other ideas were met with suspicion. A famous mathematician at the time - Kronecker, was famously quoted as saying: 'God invented the integers; all else is the work of man.'

Mathematics is considered to be the basis of logic and science. But the concept of numbers themselves is considered as being something special. Plato was considered as the major proponent of a concept of the doctrine of the forms. These forms are universal concepts that appear to have a life of their own. Of the universals, the numbers are fundamental.

Many of the worlds great mathematicians besides Kronecker had a Platonic conception of numbers having a separate existence that is not tied to any particular manifestation of what they are. The numbers one and two and the fact that one and one make two seem to be a universal concept that exists on its own. The greatest mathematician of the twentieth century, Kurt Godel professed to be a Platonist in his view of the existence of numbers.

Although the claim that ideal concepts such as numbers have a separate existence has been challenged by many philosophers starting with Aristotle. He considered the various claims, that the ideals exist apart from reality as we know it, or that, as the Pythagoreans claim, that the universe is composed of numbers. But he also noted that these numbers themselves must be manifested in magnitudes that are sensible, and that number and spatial magnitudes cannot exist apart from things. Although there is an otherworldly perfection about numbers, they seem to be tied to the things of reality somehow.

The speculation about Platonism seems to be a facet of science this is not usually recognized as being a part of science. It seems to be an almost mystical feeling that there is something more than mere matter, as understood by modern physics. Mysticism is not usually considered to have a place in science. It is more often thought that the scientist and the mystic are placed at opposite ends of the extremes of knowledge. The mystic is usually thought of as someone who knows that the rational mind cannot understand the depths that nature can attain. The mystic knows that there are other ways of arriving at enlightenment, practices that reveal the hidden truth.

Scientists are seen as being coldly rational, weighing every piece of evidence and not believing what they see until it is expressed as an equation

or a logical syllogism. The scientist believes that every fact is available to everyone who will take the time to understand. The scientist knows that there is no special knowledge that is only available to a select few.

Mysticism is usually considered in opposition to rationality and a scientific approach, and usually this is true. But this misses the fundamental point of mysticism.

The essential nature of mysticism is that the truth is hidden. This comes from the derivation of the word mysticism. This basic concept does not, in itself, deny scientific knowledge.

We are not omniscient, and the process of science is to uncover the truth. Therefore, in a very simple sense, science presumes that knowledge is hidden to begin with. So there is nothing unscientific about being mystical.

But there is usually more to mysticism than the simple statement that undiscovered knowledge is hidden. Mysticism is usually a recognition that the depths of existence are greater than the human mind can plumb by logic alone. Therefore, the mystics say, try as we might we will never uncover all the knowledge there is to know and express it as a scientific law.

Even if this is correct, this does not make the use of rational thought impotent or irrelevant. History has shown that as science progresses, the better our lives are and the more we can control the blind forces of nature that can overwhelm and destroy us. But this has happened regardless of whether we believe that all knowledge is expressible in science or not. Rationality is a path that we have taken through the wilderness of ignorance, but there is no guarantee that the path will take us everywhere.

Even more fundamentally, if our science is unlimited in its capacity to describe the universe, it may yet fail in getting at the essence of reality. This means that science, at best, provides an ever-increasing approximation of the nature of reality, but this essential nature is always hidden.

Mathematics has actually provided evidence that this may actually be true. To describe the result requires some background on twentieth century logic.

In the 1920's David Hilbert, with his students, set about on a program to formalize all of mathematics in a finite and complete set of axioms, and to prove that these axioms were consistent, that is, they contain no contradictions. Furthermore, the program would show not only that this set of axioms was completely capable of expressing all of mathematics, but there was also a mechanical procedure that would produce all of the true theorems of mathematics and show that any false statement was indeed false.

In 1932 Godel produced two incompleteness theorems that made Hilbert's Program impossible. He was able to show that every formal axiom system

complex enough to express simple arithmetic contained logical statements that could neither be proved true or false. To prove this, Godel was able to encode a variation of the Liar's Paradox into formal logic.

The Liar's Paradox comes in a variety of forms, but the simplest way to express it is the statement 'this sentence is false'. Assume that the previous statement is true. Then the conclusion that must be drawn is that it is false, a contradiction. But if it is assumed that the sentence is false, the statement that it is false is false only if it is true, another contradiction.

A related result, the second incompleteness theorem, showed that a formal system cannot prove its own consistency, one of the fundamental goals of Hilbert's Program. Curiously enough, Godel soon showed shortly after these two incompleteness results were published, that First Order Logic was complete. That is, it is possible to construct a machine for every set of axioms that, sooner or later would grind out every true statement that is derivable from these axioms.

This was one half of Hilbert's program, but the other half, the determination of which statements are false, was shown to be impossible. It was based on a question of whether the computations of effective procedures were decidable or not.

Alonso Church studied different ways of describing scientific knowledge, such as logic and functional notation and showed that every one that was known at the time was equal in their power to express logical knowledge. He stated at thesis that every possible way of describing rational, computable knowledge, termed effective procedures was equivalent to logic. This has been confirmed to this day. Every computer program or electronic circuit has shown to be equivalent in accordance with Church's thesis. Even basic biological processes such as the transcription of DNA has the same essential behavior.

One of these representations was created by Alan Turing. He showed that any idea expressible in logic was expressible by a Turing machine. He also showed that any true theorem in logic was equivalent to a machine that after a finite time halted and produced an answer, and every false theorem was equivalent to a machine that never halted at all. By an argument similar to that of the Godel Incompleteness theorem, he showed that Hilbert's program is unfinished - although we can crank out all true theorems, we cannot do the same for all false theorems. Therefore the question of whether a machine halts or not is decidable.

Another related result came from S.C Kleene, called the recursion theorem. This result is very technical, but the essence of it is that no matter how you define the set of effective procedures, there will be any number of

procedures that have access to their own definition. This allows the procedure to reproduce itself, a technique used by many computer viruses. But it also allows for the possibility for a procedure to be self-modifying.

What all three results have in common, Godel's Incompleteness Theorem, Turing's Halting Problem and Kleene's Recursion Theorem, is that they are self-referential. That is, they have access to their own description. This is the essence of self-consciousness in its most rudimentary sense. Although this is a faint spark of consciousness, compared to what we humans consider a fully conscious mind, this self-awareness is a fundamental requirement for consciousness to develop. Self-awareness is the bedrock of consciousness.

The upshot of these discoveries in pure mathematics is that logic cannot form a simple closed theoretical model of any system in which consciousness is possible, and in any system in which simple arithmetical functions can be defined, consciousness always arises. Therefore, although we can come up with closed form models for an unconscious physical process or a simple logical system such as geometry, when self-awareness arises, all bets are off.

Later results explored the concept of learning. In the 1960's Ray Solomonoff and Mark Gold explored a simple type of learning called Identification in the Limit. This type of learning happens when you have a stream of inputs and try to find a theory that explains, or models that input stream. You have identified in the limit when you come up with a theory to explain the data and do not change your mind. But, the paradoxical thing is that, it is possible to learn something this way, but you will never know when you are done. There can always be another new data item to make you change your mind.

This simple concept of learning was taken by the great mathematician Andrey Kolmogorov as the starting point of a theory of algorithmic complexity that explored some of the basic properties of randomness and computability.

Consider a number, that when written out is some fixed number of digits long. Consider the computer programs written in some programming language powerful enough to compute anything that a Turing Machine can compute.

The question arises: given any number what is the shortest computer program to compute that number? There is a simple, but inefficient answer. Given any number, say 123456712345671234567, the program could be

'Print the number 123456712345671234567'.

A simpler program might be

'Print to 1 to 7 3 times'

Although it appears that the shortest expression depends on the language you choose to express it in, this only changes things by a constant.

Since the simple answer is the same length as the listing of the number plus a small constant, we have bounded the answer. But finding the shortest program can take an arbitrarily long time because the shortest program can take any number of long intermediate calculations.

There are two fundamentally important results out of Kolmogorov complexity. The first one, presented by Per Martin-Lof says that almost all numbers have their shortest computation done by the machine that just lists them, and that these numbers are random numbers for any known test of randomness. These numbers are called 'incompressible' because you cannot compress their description by stating it in a simpler way.

The second result is that the shortest program for any given number can be learned in the limit, but the function that computes the pairs $\langle x, y \rangle$, where x is any number and y is the shortest program is immune. That is, any computer program to compute that function is infinitely wrong, even though it is easy to state and each value is learnable.

Taken together, these results mean that the fact that consciousness exists, learning is possible but that the universe is ultimately unknowable and unlearnable in any closed logical system. The fact that natural immune sets exist such as the list of shortest programs for all numbers mean it is possible to define concepts that cannot be computed. The existence of consciousness and the simple formulations of learning in the limit mean that there is always new knowledge to be revealed. The depths will never be plumbed, and ultimate knowledge is always hidden.

This can be considered to be a rational mysticism. It is a mysticism that acknowledges the limits of logic, but uses logic itself to show these limits.

There are a number of fascinating conclusions that can be drawn from these insights. The first is of particular interest to Pantheists in that formal logic gives an explicit denial of the completeness of any set of holy books. The attempt to claim that any sacred scripture is sufficient to give the answers to all of life's questions now and forever is simply an attempt to create an axiom set. It is and always will be insufficient in and of itself. This is not an objection to theists who recognize a spiritual depth beyond and holy book, but it shows the impossibility of a fundamentalist approach to life that relies on rational syllogisms from a sacred text. No matter how logical it seems, these religious systems are either incomplete - they cannot answer all questions, especially questions that apply to conscious thoughts and human behavior - or unsound - in that they must rely on extra logical reasoning and must contain contradictions.

The second application relates to the fundamental nature of the universe, and the question of why this universe is capable of sustaining life. These results are a challenge to the anthropic principle.

The anthropic principle states that the basic parameters of the universe have been chosen in such a way as to make life possible. Some have argued that there must be creator God who chose those parameters so that life would arise. Others say that there may be a large number or even infinite number of universes, but life only arises in the ones that have the right settings for the fundamental constants.

But both of these conclusions are unnecessary. The recursion theorem is a sufficient condition for life to arise under many forms. The existence of living entities that reproduce themselves is a direct consequence of the existence of functions for which the recursion theorem applies. And it is only sufficient that it is possible to compute basic arithmetic functions for the recursion theorem to be a fact.

This may be a very abstract property, but life as we know it shows that this relationship is generally true. DNA is a numeric encoding of four different base pairs. Therefore a genetic code is just a number in base four. The proteins that make up the ribosome define a function that assembles proteins from their encoding in DNA. Therefore the encoding of the ribosome is a function that reproduces itself. The recursion theorem shows that such functions exist in any world where the arithmetic functions are possible.

How many possible universes is that? Well it is hard to know that just from an inspection of the fundamental constants of physics alone. But the idea of arithmetic functions is very simple. It is likely that almost all possible universes have arithmetic as a possibility and therefore life will arise in almost any possible universe. Therefore life is probably not that very special.

The question of the anthropic principle leads naturally to the more general question of intelligent design. Pantheism denies the existence of a creator of the universe. But what about the question of the existence of a creator of life on earth - can this question be scientifically designed and tested? There is no question that life was created, since there was a time when there was no life on earth. But did this creation involve intelligence? This question could be answered affirmatively even by those who do not believe in God, if the creation of life on earth were done by beings from another part of the universe.

The obvious way to answer this is to look for evidence of such an intelligence in the creation of life. There is no direct evidence of a creator, no footprints in the sand as it were. But a promising approach is to ask how

improbable the creation of life was if not helped along by an outside agent.

Probability can be a tricky thing. One problem that people have is to consider the low probability of an event to be significant in determining the cause of an event. This low probability may only indicate that the size of the space is very large.

For example, a cup of water taken from the ocean contains many different chemicals dissolved in it, such as salt. Consider if we had a cup of water that was measured to contain only a small quantity of salt, that it was almost pure water. Well, if this one cup came from the ocean, the chance of this happening is vanishingly small. But if this cup came from a two cup container of pure water that had added to it twice the quantity of salt that was measured in the sample, the chance of this is very high. But in either case the outcome was the same. Since the amount of salt in the cup has been measured, the chance of it having that amount is 100 per cent.

The problem with probability is that the prior probability of an event that has occurred does not really tell us why the event occurred. The computation of the probabilities themselves is based on assumptions of the possible states of the system. The chance of having a cup of almost pure water is different depending on where we got it from, such as the ocean or the two cup container. But even if the sample came from the ocean, it does not mean that an intelligent entity had removed the salt from the ocean where the sample was taken. The cup could have scooped out water from the surface of the ocean where a monsoon had recently dumped a large quantity of rain, itself a natural process.

To use probabilities as a way of determining the nature of causes is fraught with difficulties. One problem is that probability is a measure of ignorance. This is either because we truly don't know or we're assuming ignorance for the sake of argument.

For example, we can count the number of cases of a rare disease and compare it to the population as a whole. If only a few thousand cases are known in the whole world, then the chance of getting that disease is around one in a million. This is a measurement that is ignorant of the cause. But if we know that the cause is a genetic mutation, then we know the chances of getting the disease are zero for everyone without the mutation, and possibly 100 per cent for those with the mutation.

So an argument from probability that addresses the question of whether life on earth is intelligently designed or not is an argument crafted in ignorance of the causes of life that is trying to answer the question of what caused life to happen. Unless carefully stated, the argument can be circular.

People fall into this trap relatively easily. It is very common for people

to remark on some occurrence and claim that it is more than coincidence. What is often forgotten is that the coincidence is identified after the fact from a whole ocean of events that were not coincidences. We have already sampled by picking out this special case then make the claim that the case is special due to the influence of some cause when in fact the cause was only our own sampling. This error crops up when people claim that scripture predicts some later happening and this improbability is a sign, when in fact the only thing that has happened is that we have picked both the prophecy and the later occurrence. This gives us a certainty by the fact that we did the choosing. In any given ocean of events, there is bound to be a statistical coincidence that we can pick out.

One way of avoiding the circularity in a probability argument about causes is through the use of Kolmogorov Complexity. An argument can be made that looks at the creation of life as having come either from some logical procedure or random chance. The Intelligent Design movement has tried to make this argument. The paradoxical thing about a Kolmogorov complexity argument, though, is that it is a better argument for life having arisen on earth because of space aliens than a divine God. The reason why is that the measure of randomness comes from the complexity of the logical processes - simulated by computer programs - that gave rise to life. But there is good reason to believe that other creatures are bound by logic, being part of this cosmos, but there is no reason to believe that God is bound by such considerations.

Therefore arguments from probability do not do much to prove the existence of God, even sophisticated arguments of the kind. Probability is a measure of ignorance of causes. Without knowing something of the nature of God, the conclusion that something is highly improbable says more about our ignorance than it does about God having caused it.

Another implication of these results relates to evolution and its consequences. One of the arguments against evolution presented by the Creation Science advocates is that evolution is not possible because of the concept of irreducible complexity. This concept says that many biological systems are irreducibly complex in that they exist as a unified whole and that any attempt to create a simpler system is not effective. It just doesn't do the same thing, or if it does, it performs that function in such an inefficient manner that it is incapable of supporting life.

But evolution is a process very similar to that of identification in the limit. Evolution works by coming up with new functions that perform better than the ones that worked before, so that we do not converge to an answer in the limit but we come up with an infinite series of solutions each of

which function better in terms of the survivability of the organism that is in the process of being evolved. Kolmogorov complexity shows that most new processes that are one DNA coding unit are irreducibly complex in that no functions encoded by shorter sequences are functionally equivalent. Therefore, instead of the claim that irreducibly complex functions prove evolution is impossible, their existence shows that evolution is at work and it is successful in the process of creating new organisms.

Another consequence of these results shows a way around an objection by Einstein about quantum mechanics. Einstein did not like quantum mechanics because it appeared that randomness was a fundamental component of the universe as a consequence of its properties. An example of this is the uncertainty principle, where the more that we know about some value of a basic object in the universe, such as the location of an electron, the less we know about another property, such as its momentum. Precision in one measurement leads to randomness in the other. This was the source of Einstein's objection. He famously said that 'God does not play dice' with the universe.

Kolmogorov Complexity shows a way around this objection. It may be that certain fundamental properties of the universe could be defined as immune sets, with properties similar to the incompressible numbers. Calculations then could be defined in an effective manner, meaning that they can be given as fundamental physical laws, but the computation of these properties cannot be fixed in the limit. This means that the universe is not really random as we tend to think of random. Instead it is subject to laws that have a very complex expression that are not exactly computable in a closed form.

This means that the laws of physics could still be expressed in a closed form, even for the properties that appear to be random. The validation of these functions would not be made by a series of fixed predictions of a given set of values, though. A simple theorem of Kolmogorov Complexity shows that only a finite number of incompressible numbers can be proven to be incompressible. Instead, the distribution of the randomness may provide clues to what immune sets could provide a model for the physics of this universe.

The only catch is that a true immune set represents an unlimited sequence of calculations. Unlimited is not infinite, but the distinction is subtle. An unlimited calculation takes a long, but finite time, and any attempt to place a limit collapses the immune set into an effective, computable function.

Assuming the concept of immune sets is sufficient to describe the probabilistic aspects of quantum mechanics, where would this unlimited com-

putation arise? It is known that there is no localized model for quantum mechanics. So there is some indication that the immune set can include the effects over an unlimited range of effects in space and time. A case could be made for the reintroduction of the concept of the infinitesimal into physics. Although the quantum is the smallest measurable unit, it could be composed of infinitesimals that only manifest themselves as the end product of unlimited summations.

This brings to mind a related question: what about numbers that transcend the finite. That is, do infinities exist? The concept of an actual infinity seems far beyond the realm of what a rational person would consider as part of the universe as we know it. Everything we see seems to be finite in some way. The concept of infinity appears to be an imaginary concept that only exists in the mind of mathematicians. Kronecker's famous quote is especially relevant here.

If immune sets really exist in nature, and are the basis of what appears to be what we experience as the indeterminacy of quantum mechanics, this may well be a consequence of infinity in nature. Instead of the infinite algebraic series that are often seen in physics, these immune sets are the consequence of simple but infinite computations, such as the identification in the limit of the simplest representation of numbers.

This does lead to a choice between two unpalatable alternatives. Is the world at its root essentially random, or does the world manifest the results of infinite computations whose results appear to be random? And how do we tell the difference? The incompressible numbers pass all tests for randomness, so that there may be no way to tell the difference. It may be that the two concepts are essentially equivalent formal representations of reality, and that there is no reason to choose one or the other. If there is a difference; it would probably show itself as an attempt to further define the nature of the immune sets that underlie physical phenomena, leading to some verifiable predictions.

This is just speculation. But one of the fascinating aspects of this speculation is that the concept of learning and creativity leads naturally to a definition of immune sets. This creative force then drives the unfolding of the universe and the living things in it. But there is no necessity to define this creative force as something outside of the universe. All it is a consequence of the fundamental properties of numbers and arithmetic functions.

A corollary to these observations is that in a universe that is immune, it is impossible to predict what living things will ultimately result through the process of evolution. The universe is unbounded in its ability to come up with new phenomena, if the phenomena in the universe form an immune

set. Furthermore, evolution is unbounded in its capability of coming up with new, irreducibly complex capabilities to make living creatures function more effectively in the universe.

But to get back to the question of mysticism, we are presented with a type of mysticism - a scientific mysticism - different from anything that has appeared before.

The modern concept of the universe is one in which consciousness plays a fundamental part. Without consciousness, the universe follows the laws of logic, as expressed in a closed form like the propositions of geometry. But once we allow for simple arithmetic computations, we have a world in which self-awareness is possible, and this self-awareness leads to behaviors that are not closed and computational. Once consciousness enters the world, we can anticipate any simple set of logical rules and transcend them. The conscious mind, the conscious observer adds a new layer of complexity.

Of the mystical religions the one that most resembles this kind of rational mysticism is that of Taoism. One of the basic books of Taoism is the Tao te Ching, a short book of aphorisms that has been translated many times into English. The comparison will use quotes from an interpretation of the Tao te Ching by the Unitarian Universalist minister Jacob Trapp.

Taoism recognizes that ultimate reality, the Tao, transcends the simple dichotomies of yes and no, truth and falsity. As it says in Chapter 2:

It is man's limitation to know
Beauty in contrast to ugliness,
Goodness in contrast to evil,
Being in contrast to non-being ...
The sage knows how relative
Are all these oppositions;
He does not attempt to make the one
Prevail over or exclude the other.

This is a fundamental rejection of the notion of the excluded middle. Logic and mathematics and consequently any science based primarily on mathematics relies on this notion to derive consequences from simple facts, given as axioms. But the limits of this concept are reflected in Godel's theorem, where self-referential statements are neither true nor false for a given set of axioms. No matter how precise your axioms are, there will always be something that is beyond analysis, and cannot be answered as a simple yes or no. Therefore the excluded middle, although it appears to be a universal principle, it is not. It is more like the primitive sense we have the Euclidean Geometry is a universal property of space, only because it

appears this way from a limited perspective. The excluded middle appears to be universal from the perspective of the particular axiom set we choose.

The results of Kolmogorov complexity deepen this mystery, because this theory ties together the notions of complexity, randomness, and induction, the creation of new knowledge. Through the application of these concepts, we can see that the process of evolution is fundamental to the universe, a basic concept that arises out of information and pure numbers, regardless of its manifestation in biology.

The Tao observed this ability for something to arise out of nothing. As Chapter 25 remarks:

Before Heaven and Earth existed
There was something formless,
Fathomless, self-contained,
Unchanging and self-sufficient,
The all-pervading and unending
Source of all things.

Chapter 33 has the injunction that:

He who knows others has knowledge
He who knows himself has wisdom
He who conquers others has strength;
He who conquers himself has mastery

The Taoist presents the ultimate knowledge as self-knowledge. This is the recognition that self-referential knowledge results in infinite regress. This original simplicity is beyond the attribution of any properties via the use of axioms. The enlightened one realizes that any attempt to reach the ultimate nature of reality must do away with any attempt to capture reality as a series of axioms, and instead allow the inner nature of reality to be the realization of knowledge reaching out, not to define different modes of computation, but to turn back on itself and define knowledge in terms of the consciousness itself. Nothing more. The enlightened mind does not need any list of properties of the universe, instead it needs to be in touch with the infinite capacity of the logical mind to access itself, making its exploration of the nature of reality begin and end with the identification and knowledge of self.

This knowledge is presented as a metaphor. Chapter 11 notes that

Thirty spokes radiate
United into a wheel
By the stillness at the hub
Around which they revolve
A bowl of clay

Cups an empty space
Waiting to be filled
And thereby serves.

The essential mystery of reality is still identified as this nothingness, this stillness. This ultimate reality is beyond any simple theorem or mathematical result.

Finally, the Tao appears effable. As Chapter 14 states
It appears to us,
Yet it is invisible;
It speaks to us
Yet it is inaudible;
Touches us,
Yet is intangible.
It is the Elusive, the One.
In endless continuity
It embraces both Being and non-Being.
The Form of the formless,
The image of the imageless,
It is encountered, but not seen;
It is pursued, but not overtaken.

The Tao sees the world as immune in that every scientific theory, every concept that mankind can create, is infinitely wrong.

But one thing that the Tao te Ching does not discuss that plays an important part in modern logic and Kolmogorov Theory is randomness. This is a relatively new concept that had not been explored by the time that the Tao had appeared. Probability theory came originally out of the middle ages, when the idea of insurance and games of chance began to be studied in detail. Although randomness and probability plays a big part in modern thought, it is hard to imagine that it is so recent. In discussions of religion and philosophy from ancient time, it never much appeared.

Probability has become a special part of mysticism in this modern world. It has also played a part in the discussion of the ultimate nature of reality in physics. Quantum mechanics, including the concept of uncertainty, considers randomness as an essential characteristic of reality. Many arguments about the existence of free will, try to rely in randomness and indeterminacy as the cause of free will arising in human affairs. When we talk of the inability to recognize causal relationships in the way that we interact with the world, we fall back on chance and probability, not just as an excuse for ignorance, but as an inherent part of nature.

It is interesting to speculate how chance and probability, if known to the ancients, might have been incorporated into the fundamental Taoist texts, or the religious texts of the other great religions. At best, the only concept in early religions was the Greek concept of Chaos, but even here, this is a misinterpretation of a more Taoist sense of emptiness. Emptiness is not disorder. Emptiness is the nothingness out of which everything springs, an archetypal Taoist concept.

But this also shows an essential correspondence between Kolmogorov Complexity and Taoism. The random number arises out of Kolmogorov complexity through an inability to find function to summarize or explain something. Randomness is not a chance act as much as it is an inability to express an act in anything less than itself. Chance is not something that just happens, it is more an inability to understand, an ignorance that is inherent in the act itself, since there is no way of expressing it except through the presentation of itself alone.

One place where both the mystic and the mathematician agree is that material reality as we now understand it is insufficient to contain and express all that we know. There may be something to the description of existence as being matter and energy.

This is the perennial debate between monists and dualists. The dualist believes that the world has a spiritual, plane, a form of existence that is independent from the world of matter. The monist, though, believes that there is but one substance, matter and that is all that there is. In the discussion about numbers, the Plato believed that the ideal Forms existed separate from the objects that these forms represented, but Aristotle argued that the numbers in were in some way a part of the things they represented.

Mathematics is known as the language of the sciences. It is the fundamental representation of a scientific theory, the way that observations are correlated with one another, the way that basic scientific knowledge is expressed. All mathematics is ultimately reducible to logic. Logic is also the fundamental mode of information transmission. Even biological systems such as DNA use the basic rules of logic and numbers to transmit the genetic code to future generations.

Numbers may be something more than a language. Perhaps there is something to the mathematicians' belief that numbers have a special existence, even though it is not a separate existence. It could be that number logic and the notion of function is a basic property of reality just as matter and energy is. This would preserve monism as a basic principle, recognizing that numbers do not exist apart from the things of this world.

It would certainly be true that they would have properties quite unlike

those of mass and energy. For example, there is no conservation law. The basic unit of numbers, the number one, can attach itself to any collection of matter and energy that can be considered as a unit. If desired, that unit can simply be considered to be a collection of units, giving rise to a larger number even though the same amount of mass and energy is involved.

But this concept is a welcome addition to the way that we view reality. The concept of function naturally gives rise to the concept of time, for example. This has a special place in the process of computation that it does not have in physics. Modern day physics has done away with any special consideration of the dimension of time compared to the other dimensions of space. The consideration of logical functions as a basic property of matter re-establishes a sense of time in the direction of the computational steps that are logically applied to matter taken as units.

If there were a basic unit that number and function attach to, this would probably be related to the notion of the quantum, which has formed one of the fundamental notions of modern physics. Logic has a number of basic computational functions such as the notion of AND and OR and NOT, and more complex computational models such as the general recursive functions and Turing Machines. Although Church's thesis claims that they are all fundamentally the same, this does not necessarily mean that they are equally good representations of the basic computational properties of matter. Some are more elegant than others. For example, it is well known that the function "Not both A and B" can be used to generate the AND OR and NOT functions from this simple basic function. It actually represents the transistor gate that makes up integrated circuits. Therefore it is the basis of our electronics computers and other devices.

The basic quantum of computation may be this concept or a similar concept. If this idea of number as a property of matter has any sense of objective existence, then it should be possible to define the logical operations possible in a single quantum step, and have this serve as the building blocks of this notion of mathematics.

This conception of function gives rise to the notion of entropy. Functions are one-way, it that once a computation takes place, combining two inputs, it is often impossible to back out of the computation again. This is exploited in modern day cryptography, where trap-door functions can go in only one direction in a reasonable amount of time. This leads to the basic thermodynamic principles of increasing entropy. Matter and energy alone may appear to be reversible, but if they compute numeric functions over time, this computation serves to increase the entropy of the matter the numbers represent.

Having logic and functions as a basic property of matter also serves to explain how consciousness arises from matter, since that comes directly from the Recursion Theorem. With the concept of number we get consciousness as a direct consequence, a consciousness tied to the arrow of time.

Once consciousness is understood as a by-product of the notion of number and function, we also have the notion of the observer. The observer has a fundamental part to play in modern quantum mechanics. The observer determines the behavior of a particle as quantum or wave. The observation of a particular quantum property collapses the state, in effect applying a functional computation to a situation where no special computation was previously defined.

It is the observer who defines the way that numbers are attached to objects in the world. This gives rise to the concept of information. Information can always be represented as the transmission of numbers between two observers, a sender and a receiver. There is a difference between information and data. Data transmission can be defined abstractly as a pure bit rate, for instance. This is the basis of information theory as pioneered by Claude Shannon. But there is no such thing as pure information, though. It always depends on the ability of both the sender and receiver to interpret the flow of information as something meaningful.

In the transmission of information it is not necessary for either the transmitter or receiver to be conscious of the nature of the information. It can be completely unconscious. This certainly happens with information transmission in the dance of bees, or even the transmission of scents. This information though is not simply numeric quantities, but can be any type of information at all. The term qualia is used to express the information received by a living creature, either from the outside world, or self-generated.

However information is created and interpreted, though, it is not a characteristic of mass and energy. It exists as part of the numeric properties of matter along with function, time and consciousness. It is in the definition of information that we determine how individual units of matter are perceived as units. The conservation and transmission properties of matter in the abstract can be complex, but in the end they reduce to the platonic numbers that exist as part of the universe.

Although consciousness arises out of the recursion, theorem, it is a very basic, low-level type of consciousness that does not seem to be anything like the quality that we associate with thinking, self-aware human beings. Perhaps it is better to describe this fundamental consciousness as an elementary self-awareness and to reserve the term consciousness to this higher state. But what is the difference between the two? It is obvious that awareness, either

awareness of self or awareness of the outside world, is fundamentally based on the ability to process information. This is what the functions that make up the awareness are doing. This information processing also gives rise to the creation of more information. This creation is not just a reprocessing and retransmission of information that has already been received. Kolmogorov Complexity is intimately related to the process in learning and induction, the creation of new information that adds to, and not just transforms the information already there.

This may be how higher-level consciousness comes about. To use an analogy from physics, consciousness is just the information processing of self-awareness gone critical. There is a qualitative difference between a sub-critical nuclear pile and one that has gone critical. Although different, it comes about simply because in a critical pile, the number of neutrons created are greater than the number that are available in the creation of the nuclear reactions. This is usually a function of the density of the pile, so that the neutrons produced will find a new target for fission instead of leaking away.

In consciousness, the process may be similar. There is a certain level of creation of new concepts in a conscious mind that is above a critical mass. New qualia, or new ideas are created as fast as past information is processed, leading to a self-sustaining condition where as much information is in the state of being created as being processed. In a brain that has not reached that level of consciousness, new information can arise spontaneously, but it does not "go critical" in the same way as in a conscious mind.

This could actually be a testable hypothesis. Kolmogorov complexity has the notion of randomness applied to incompressible functions, functions, whose information is represented as ideas that summarize their essential information content. It might well be that an unconscious mind exhibits less randomness than a conscious mind, a randomness that defies any attempt to apply tests of regularity.

Because Pantheism rejects the idea of a supernatural God, it is often thought that Pantheism must also reject any type of supernatural substance. Therefore a Pantheist must also be a monist. It is true for many Pantheists, even though it does not happen always to be the case. In general, though, most Pantheists are also monists. A monist believes that there is a single substance that is the essence of everything that exists. The physicalist believes that this substance is the matter and energy of physics.

The current argument allows the monist to claim that there is a single substance, but this substance has the extra attributes of consciousness and awareness that matter and energy alone do not have. A mysticism based on these principles accounts for the existence of consciousness and awareness,

the kinds of phenomena that the dualists have hypothesized but as part of the single substance the matter provides. It also has the advantage of representing these phenomena as emergent properties of this quantitative, numeric functional aspect of reality, once the preconditions of the recursion theorem and learning, such as identification in the limit have been satisfied.

Some questions arise, though. We have postulated that the idea of number and function attaches to the physical world, conveying information to observers capable of interpreting this information. This information represents numbers of units that are experienced as individual entities by observers who are themselves units of matter and energy.

But this means that the concept of mind and thought are the manifestations of number and quantity as a characterization of the matter in the universe. At first sight, this would appear to imply that the mind is some sort of pure logic-stuff that somehow uses the physical processes of the brain as a substrate. Actually, it is better to think of thought in terms of the notion of the "embodied mind" as considered by George Lakoff and others.

Since we are considering that numbers are a property of matter, that give rise to functions and a sense of time, they are part of the physical processes of the brain. The way the brain is configured and operated gives rise to the basic functional properties that operate on the information perceived in the real world. This means that consciousness is not some pure Cartesian dualism, but an essential physical property of the mind that gives rise to these thoughts.

This sense of consciousness arising from the application of recursion theory means that a radical Panpsychism, where everything in the universe is some sense conscious is not possible. Actually, awareness would arise from any observer, that is, any functionality that processes the information inherent in the universe, but only if that functionality has reached a certain level of complexity where the recursion theorem would apply. Thus, a living thing is aware, but a rock isn't. Further, consciousness is a qualitatively different level of awareness, where the number of new or original perceptions is above a certain self-sustaining level of criticality. There is a limited version of Panpsychism, called Panprotoexperientialism that captures this limited concept of panpsychism. It is metaphorically equivalence to chemistry, where protons and electrons make up atoms, which in turn make up molecules, which interact in chemical processes - a hierarchy of different levels of awareness of the physical world.

In a Pantheist worldview, one in which there is no supernatural deity, this association of function to physical properties allows for a materialism is

not pure reductionism. Mysticism arises out of a an irreducible complexity something that, although it is made up of elementary quantities and functions, its nature as consciousness cannot be reduced to this simpler parts without losing the essence to the phenomena. This emergence is the essence of spirituality, the sense that there is something else in the universe that is not reducible to mass and energy. Although it equates mystical experience to fundamental mathematical results of the twentieth century, it recognizes that reality does have unplumbable depths of mystery, the Tao that cannot be contained in the duality of truth and falsity.