

Chapter 15

Consilience



MILLENNIA ago, the human mind set out to discover the cosmos it had one day awoke to. After a long and meandering journey it has finally returned and in a final act of cognition faced its own nature.

THE journey was long and challenging but fraught with rewards. Most importantly, novel territories were discovered. The first being the Platonic realm of abstractions. Here, the human mind discovered science. By translating aspects of the real world into formal representations, the workings of nature became visible. The mind could comprehend the mathematical language of the cosmos, revealing its structure. The emergence of science would keep the human mind busy for centuries.

The next domain the mind conquered was the realm of information. Building on zeros and ones, the computational capacity of the universe was unleashed. Again, the mother tongue was mathematics. Equipped with the newly discovered abstract and computational tools, the human mind began to engineer reality. The gift of technology was received.

FOR a long time the cosmos was accommodating to the human mind. Physicists and philosophers alike wondered about “the unreasonable effectiveness of mathematics in the natural sciences.” Then, a couple of decades ago, it was discovered that, surprisingly, simplicity lies at the heart of complexity. Yet again, the reach of the mind was dramatically extended, as complex phenomena could now be tackled. The supremacy of the materialistic scientific worldview was firmly established.

At the same time, however, the human psyche was suffering. Various Copernican revolutions dethroned the mind. Uncertainty seemed inherent and ubiquitous in the human condition. The expanding island of knowledge found itself surrounded by ever longer shores of ignorance. Age-old questions appeared as elusive as ever. “What is the fundamental nature of reality?” “What is the true nature of consciousness?” The universe seemed to only reveal itself to the mind as far as to awaken the false hope in its comprehensibility.

The human mind suddenly reawoke in a cold, pointless, callous, cruel, and cynical cosmos. Moreover, much self-inflicted suffering arose. The financial and economic

systems the mind devised were based on tribal hierarchies of concentrated power, lacking collective intelligence. As a result, inequity and unsustainability became rampant. The entire biosphere, supporting all life on earth, threatened to destabilize. In dramatic turns of events, trench wars were fought globally along social, political, and religious delimitations. The age of post-truth raised its ugly head.

WE are currently witnessing a fundamental paradigm shift, replacing the prevailing scientific dogma. By breaking the taboos of the current materialistic worldview and exposing its blind spots, the human mind is progressing once again. A new domain of reality is discovered—this time at its very core. By rethinking the most basic assumptions and reassessing the most cherished beliefs about existence, a novel scientific paradigm is emerging.

Insights from theoretical physics and theoretical computer science uncover information at the most fundamental level of the cosmos. The fabric of objective reality is woven out of threads of information—not space, time, or matter. At the heart of reality, we find a computational engine which needs to be fed with information. The entire universe is computational in nature. The consequences are far-reaching. For one, the whole cosmos is necessarily finite. The abstract notion of infinity only resides within the human mind. Then, the most groundbreaking and earth-shattering implication is the very real possibility that the universe itself is a vast hologram and reality perhaps a simulation.

How does consciousness enter this new information-theoretic paradigm? For centuries, the materialistic scientific worldview confidently declared with great certainty what was possible and not. Now, in a final act of heresy, this orthodoxy is being denounced. Deep within the structure of reality, consciousness is found. John Wheeler is one of the pioneers initiating this paradigm shift and is considered to be one of the most influential physicists of the twentieth century. He once observed (quoted in Horgan 1997, p. 84):

When we peer down into the deepest recesses of matter or at the farthest edge of the universe, we see, finally, our own puzzled faces looking back at us.

In a similar vein the physicist Carl Sagan, revered in the science community, remarked (Sagan et al. 1990):

We are a way for the cosmos to know itself.

Finally, in the words of Alan Watts, a philosopher, interpreter of Eastern philosophy, and psychonaut (quoted in Crombie and Jardine 2016):

Through our eyes, the universe is perceiving itself. Through our ears, the universe is listening to its harmonies. We are the witnesses through which the universe becomes conscious of its glory, of its magnificence.

Within the nascent new paradigm, consciousness is rediscovered as the inner aspect of information (see next section for details). While its outer manifestation gives rise to objective reality, its inner quality allows subjective experiences to emerge. Now, the implications are truly outlandish. The possibility that consciousness is a fundamental and universal property of reality arises. We thus are inhabiting a

participatory universe, where objective reality and subjective consciousness share an inherent kinship.

Consequently, whole new realms of existence are unearthed. The sober waking state of consciousness represents but one mode of perception out of a vast array of other states. We peer through this lens of awareness and glimpse the consensus reality. This default state of consciousness, however, can only render a tiny subspace within a much richer and broader reality landscape. In effect, vast new reality terrains are accessible to the human mind. By silencing the sober waking state of perception and inducing altered states of consciousness—through meditation, trance, chemical substances, pain, brain trauma, sleep, or spontaneously—new planes of existence appear, transcending space and time.

This information-theoretic paradigm shift is only materializing slowly. As with every scientific revolution, a lot of resistance is encountered. In the words of Max Planck, the discoverer of the quantum world (Planck 1950, pp. 33f.):

A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.

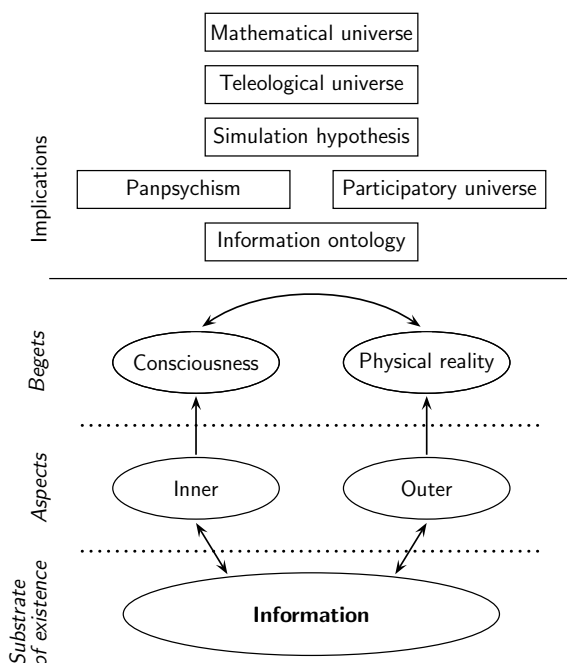
However, the cracks in the current edifice of science are continually growing, exposing more and more of its inadequacy. Quantum physics has defied human understanding since the quantum realm of reality was accidentally discovered in 1901. Nonetheless, insightful, empathetic, and open-minded physicists always harbored a suspicion: the unruly nature of the quantum originates from a fundamental misconception. Namely, the separation of mind and matter. Within the very framework of quantum mechanics lurks a conscious observer embedded in a reality not constrained by space and time. Indeed, quantum experiments demonstrate how the past can be influenced from the present and how the mind can directly manipulate matter. Perhaps most relevant for the current forefront of technology is the notion of intelligence. Intelligence can be a decentralized and non-sentient phenomena, latching onto various inanimate configurations of matter. The emergence of artificial intelligence out of pure software perhaps represents humanities next great challenge.

15.1 The Inner and Outer Aspects of Information

If we choose to believe in the information-theoretic scientific paradigm, then information is truly the substrate of existence. In other words:

- Information tells consciousness how it “feels to be something.”
- Information tells reality how to structure.

Fig. 15.1 The layers of reality. At the foundation of existence lies information. It expresses as two aspects, relating to subjective consciousness and objective reality. The implications of this metaphysics are discussed throughout Chaps. 13 and 14. The teleological aspect is introduced in the next section



The human mind is faced with the dichotomy of information. In the words of Watts (1991):

The only thing you need to know to understand the deepest metaphysical secrets is this: that for every outside there is an inside and for every inside there is an outside, and although they are different, they go together.

This dictum is illustrated in Fig. 15.1.

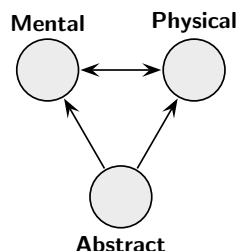
15.2 The Rhizome of Reality and the Entelechy of Existence

In the wake of the mathematical understanding of reality discussed in Part I, epistemological and ontological questions emerged (Sect. 2.2.1):

1. What is the nature of the Platonic realm of abstractions?
2. How can the human mind access this world and acquire information?
3. Why do the structures in the abstract world reflect the structures in the physical world?

These puzzles are captured in Fig. 15.2. Within the new information-theoretic and participatory ontology, unexpected answers emerge. Before discussing these, some terms are defined.

Fig. 15.2 Three worlds. The realms interacting in the process of formal human knowledge generation. The figure is reproduced from Page 58 of Sect. 2.2.1



15.2.1 *Setting the Stage*

Aristotle distinguished between the potential and the actual. The process of realizing the potential—making actual what was otherwise potential—is called entelechy. An example is how a sculpture emerges from a block of marble. The rhizome is a term originating from botany, describing an interconnected root system. The notion was introduced into philosophy by Gilles Deleuze and Félix Guattari in their classic text (Deleuze and Guattari 1980). A rhizome is essentially messy and non-hierarchical. In detail, it is characterized by the following¹:

- All parts of a rhizome are connected with no single node having priority over any other.
- There's no necessary structure to the rhizome, instead each person encounters it differently.
- A rhizome can always be broken and restarted.
- The rhizome is always open and any point you choose to start at is irrelevant.

Finally, teleology is also a concept found in classical Greek philosophy. It describes a goal-oriented process or a purpose-driven force. Teleological considerations have been, and still are, used in a theological context relating to the existence of a monotheistic god. This is known as the teleological argument. Indeed (Yanofsky 2013, p. 280):

While this explanation is satisfactory for deists, those who do not believe in a deity will find this solution unsatisfying. Such a deity raises all kinds of other, more mysterious, questions about the nature of a deity.

Overall, teleology is frowned upon from within a materialistic and reductionistic scientific worldview. However, it is encountered at the outskirts of knowledge. Specifically, related to the fine-tuning problem. In detail (Leslie and Kuhn 2013, p. 247):

In recent years, the search for scientific explanations of reality has been energized by increasing recognition that the laws of physics and the constants that are embedded in these laws all seem exquisitely “fine tuned” to allow, or to enable, the existence of stars and planets and the emergence of life and mind. If the laws of physics had much differed, if the values of their constants had much changed, or if the initial conditions of the universe had much varied, what we know to exist would not exist since all things of size and substance would not have formed.

¹See <http://www.mantlethought.org/philosophy/rhizome-american-translation>, retrieved September 4, 2018.

How do physicists respond to this challenge? For instance Leslie and Kuhn (2013, p. 248):

Sir Martin Rees, Britain's Astronomer Royal, presents "just six numbers" that he argues are necessary for our emergence from the Big Bang.² A minuscule change in any one of these numbers would have made the universe and life, as we know them, impossible. Deeper still, what requires explanation is not only this apparent fine-tuning but also the more fundamental fact that there are laws of physics at all, that we find regularity in nature.

Then (Leslie and Kuhn 2013, p. 248):

To Roger Penrose, the "extraordinary degree of precision (or 'fine tuning') that seems to be required for the Big Bang of the nature that we appear to observe [...(sic)] in phase-space-volume terms, is one part in $10^{10^{123}}$ at least." Penrose sees "two possible routes to addressing this question [...(sic)] We might take the position that the initial condition was an 'act of God'. [...(sic)] or we might seek some scientific/mathematical theory." His strong inclination, he says, "is certainly to try to see how far we can get with the second possibility."

Apparent fine-tuning seems ubiquitous. The cosmologist Andrei Linde observes (quoted in Brockman 2015a, p. 46):

There are many strange coincidences in our world. The mass of the electron is 2,000 times smaller than the mass of the proton. Why? The only "reason" is that if it were even a little different, life as we know it would be impossible. The masses of the proton and neutron almost coincide. Why? If the masses of either were even a little different, life as we know it would be impossible.

In summary (Leslie and Kuhn 2013, p. 248):

Stephen Hawking presented the problem this way:

Why is the universe so close to the dividing line between collapsing again and expanding indefinitely? In order to be as close as we are now, the rate of expansion early on had to be chosen fantastically accurately. If the rate of expansion one second after the Big Bang had been less by one part in 10^{10} , the universe would have collapsed after a few million years. If it had been greater by one part in 10^{10} , the universe would have been essentially empty after a few million years. In neither case would it have lasted long enough for life to develop. Thus one either has to appeal to the anthropic principle or find some physical explanation of why the universe is the way it is.

The cosmologists Frank Tipler and John Barrow formulated the Strong Anthropic Principle (Tipler and Barrow 1988). In summary (Leslie and Kuhn 2013, p. 186):

The Universe must have those properties which allow life to develop within it at some stage of its history.

Such utterances come close to threatening the materialistic and reductionistic orthodoxy (Leslie and Kuhn 2013, p. 186):

Where could such a necessity originate from within science alone, if that discipline has forsworn any consideration of purpose? The Strong Anthropic Principle is frankly teleological in its insistence that the world "must" have been that way.

²See Rees (2000).

See also Sects. 8.1.2, 10.3.1, and Vidal (2014).

Next to the origins of the universe's initial conditions its inherent organizational principle also challenges the scientific status quo. The nature of self-organizing structure formation and emergent complexity remains mysterious. These themes are encountered in Chaps. 5 and 6, and Sects. 8.1.3 and 12.4.2. Most pressingly, the emergence of life and embodied consciousness represent a fundamental enigma. Indeed (Deacon 2012, p. 58):

In this age of hard-nosed materialism, there seems to be little official doubt that life is “just chemistry” and mind is “just computation.” But the origins of life and the explanation of conscious experience remain troublingly difficult problems, despite the availability of what should be more than adequate biochemical and neuroscientific tools to expose the details.

The theoretical biologist and complex systems researcher Stuart Kauffman also remarked (paraphrased in Horgan 1997, p. 135):

Accident alone cannot have created life; our cosmos must harbor some fundamental order-generating tendency.

For further reading, see Schneider and Sagan (2005), Deacon (2012), Nagel (2012), Lineweaver et al. (2013), Leslie and Kuhn (2013), Wissner-Gross and Freer (2013), Vidal (2014), Ellis (2016).

At the fringes of knowledge, the human mind is challenged by perplexing mysteries. Moreover, the prevailing scientific paradigm is known to suffer from many essential inadequacies. These are outlined and discussed throughout Part II. The hardest problem being the apparent fundamental incompatibility of objective reality and our subjective consciousness (Sect. 11.1). What has the emerging information-theoretic paradigm, introduced in Part III, have to offer?

15.2.2 A Rehearsal

According to the basic myth found within the traditions of ancient India, existence is seen as a play. Watts elaborates (Watts 1971, p. 99f.):

In the beginning—which was not long ago but now-ever—is the Self. Everyone knows the Self, but no one can describe it, just as the eye sees but does not see itself. Moreover, the Self is what there is and all that there is, so that no name can be given to it. It is neither old nor new, great nor small, shaped nor shapeless. Having no opposite, it is what all opposites have in common: it is the reason why there is no white without black and no form apart from emptiness. However, the Self has two sides, the inside and the outside. [...]

Because of delight the Self is always at play, and its play, called *lila*, is like singing or dancing, which are made of sound and silence, motion and rest. Thus the play of the Self is to lose itself and to find itself in a game of hide-and-seek without beginning or end. In losing itself it is dismembered: it forgets that it is the one and only reality, and plays that it is the vast multitude of beings and things which make up this world. In finding itself it is remembered: it discovers again that it is forever the one behind the many, the trunk within the branches, that its seeming to be many is always *maya*, which is to say illusion, art, and magical power.

The playing of the Self is therefore like a drama in which the Self is both the actor and the audience. On entering the theater the audience knows that what it is about to see is only a play, but the skillful actor creates a *maya*, an illusion of reality which gives the audience delight or terror, laughter or tears. It is thus that in the joy and the sorrow of all beings the Self as audience is carried away by itself as actor.

The new information-theoretic and participatory scientific paradigm can be placed within a similar metaphor:

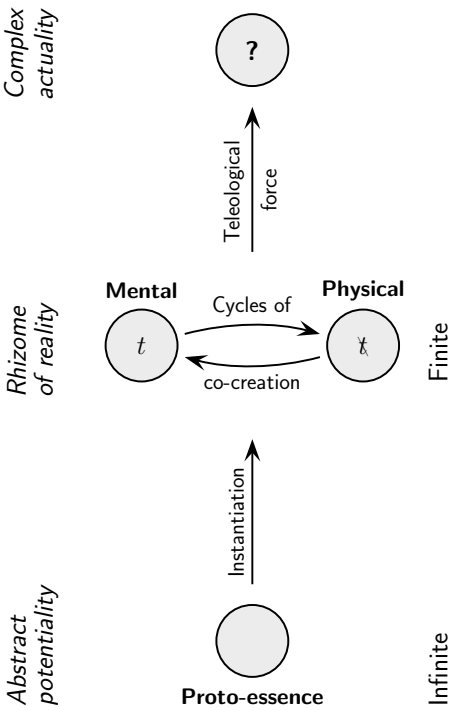
- In eternal cycles of co-creation, the outer aspects of information create the inner aspects and vice versa—the physical creates the mind, which creates the physical, and so forth. This is the rhizome of reality, emanating from pure cognizant information.
- At the source of existence lies infinite abstract potentiality—the ineffable, the incomprehensible. In the process of entelechy, the finite rhizome of reality actualizes out of the haze of potentiality. The proto-essence of existence instantiates and materializes as ensouled information.
- This endless process is guided by a teleological force, driving the transcendental multiverse—the totality of all physical and immaterial rhizomes—to ever higher levels of self-organized complexity and intricate structure. The configurations of information continually realize ever more and more powerful information-processing capacities, manifesting greater and greater intelligence. The process of the entelechy of existence hurtles towards an ultimate complex actuality.

This narrative is illustrated in Fig. 15.3.

As every being probes reality from a different vantage point, the postmodern plurality and ambiguity, seen afflicting science (Sect. 9.1), is explained. Classical consensus reality is at the center, the focal point, of the realization process. At the quantum level, the pool of potentiality is approximated and the borders of objective reality are necessarily fuzzy and indeterminate (Sect. 10.3.2.2). Every quantum measurement is an act of entelechy: the potential is actualized. The finite nature of the rhizome of objective reality dictates its quantum character. Furthermore, it is but one instance in a vast topology of existence—the all-encompassing transcendental multiverse (Sect. 14.3.5), comprised of countless material and immaterial universes. Life, consciousness, and artificial intelligence are inevitable in the computational teleology of existence. No God or gods need to be invoked. The fact that information cannot be destroyed (Sect. 13.1.3) has spiritual implications in the context of physical death. However, the following questions remain unanswered:

- The beginning: Why is there something rather than nothing (Sect. 8.1.2)?
- The end: What is the computational teleology leading to?
- The meaning: Why?

Fig. 15.3 The entelechy of existence. From abstract and infinite potentiality the finite information matrix emerges which manifests its inner and outer aspects. Space-time, energy, and consciousness appear. Whereas the physical is timeless, the conscious is bound to the eternal moment of “now.” The mental and physical realms are locked in an eternal cycle of co-creation—the play of existence. Driven by a teleological force, ever higher levels of computation—and thus complexity—are sought



15.3 A New Horizon

The question, why something is the way it is, seems to lie outside of scientific knowledge by definition. Attributing meaning is seen to belong to the domain of theology. Often science and religion are understood as irreconcilable antipodes. Indeed, there is often much contempt to be found in each faction’s assessment of the other.

15.3.1 Transcending Religion

Some voices tried to overcome the animosity between science and religion. For instance, the evolutionary biologist Martin Nowak, also a Roman Catholic, remarked (Powell 2007):

Science and religion are two essential components in the search for truth. Denying either is a barren approach.

Albert Einstein, perhaps the greatest physicist of all times, agrees (Einstein 1940):

Science without religion is lame, religion without science is blind.

However, he emphasizes (quoted in Dukas and Hoffmann 1989, p. 43):

It was, of course, a lie what you read about my religious convictions, a lie which is being systematically repeated. I do not believe in a personal God and I have never denied this but have expressed it clearly. If something is in me which can be called religious then it is the unbounded admiration for the structure of the world so far as our science can reveal it.

Nonetheless, Einstein's outlook appears quite mystic (quoted in Frankenberry 2008, p. 147):

Every one who is seriously involved in the pursuit of science becomes convinced that a spirit is manifest in the laws of the Universe—a spirit vastly superior to that of man, and one in the face of which we with our modest powers must feel humble.

Indeed (Einstein 2007, p. 5):

The fairest thing we can experience is the mysterious. It is the fundamental emotion which stands at the cradle of true art and science. He who knows it not and can no longer wonder, no longer feel amazement, is as good as dead, a snuffed-out candle.

Einstein, having uncovered much deep knowledge himself, was enthralled by nature's incomprehensibility (quoted in Gaither 2012, p. 1419):

The human mind is not capable of grasping the Universe. We are like a little child entering a huge library. The walls are covered to the ceilings with books in many different tongues. The child knows that someone must have written these books. It does not know who or how. It does not understand the languages in which they are written. But the child notes a definite plan in the arrangement of the books—a mysterious order which it does not comprehend, but only dimly suspects.

He further observed (quoted in Dukas and Hoffmann 2013, p. 39):

What I see in Nature is a magnificent structure that we can comprehend only very imperfectly, and that must fill a thinking person with a feeling of humility.

In essence (Einstein 2009, p. 98):

My religious feeling is a humble amazement at the order revealed in the small patch of reality to which our feeble intelligence is equal.

Einstein's sympathy for the religious longing in humans is perhaps most pronounced in his thoughts on *Cosmic Religion*, a notion transcending common religiosity (Einstein 2009, p. 48ff.):

I will call it the cosmic religious sense. This is hard to make clear to those who do not experience it, since it does not involve an anthropomorphic idea of God; the individual feels the vanity of human desires and aims, and the nobility and marvelous order which are revealed in nature and in the world of thought. He feels the individual destiny as an imprisonment and seeks to experience the totality of existence as a unity full of significance. Indications of this cosmic religious sense can be found even on earlier levels of development—for example, in the Psalms of David and in the Prophets. The cosmic element is much stronger in Buddhism, as, in particular, Schopenhauer's magnificent essays have shown us.

The religious geniuses of all times have been distinguished by this cosmic religious sense, which recognizes neither dogmas nor God made in man's image. Consequently there cannot

be a church whose chief doctrines are based on the cosmic religious experience. It comes about, therefore, that precisely among the heretics of all ages we find men who were inspired by this highest religious experience; often they appeared to their contemporaries as atheists, but sometimes also as saints. Viewed from this angle, men like Democritus, Francis of Assisi, and Spinoza are near to one another. [...]

Thus we reach an interpretation of the relation of science to religion which is very different from the customary view. From the study of history, one is inclined to regard religion and science as irreconcilable antagonists, and this for a reason that is very easily seen. For any one who is pervaded with the sense of causal law in all that happens, who accepts in real earnest the assumption of causality, the idea of a Being who interferes with the sequence of events in the world is absolutely impossible. Neither the religion of fear nor the social-moral religion can have any hold on him. A God who rewards and punishes is for him unthinkable, because man acts in accordance with an inner and outer necessity, and would, in the eyes of God, be as little responsible as an inanimate object is for the movements which it makes. [...]

It is, therefore, quite natural that the churches have always fought against science and have persecuted its supporters. But, on the other hand, I assert that the cosmic religious experience is the strongest and the noblest driving force behind scientific research. No one who does not appreciate the terrific exertions, and, above all, the devotion without which pioneer creations in scientific thought cannot come into being, can judge the strength of the feeling out of which alone such work, turned away as it is from immediate practical life, can grow.

Anyone who only knows scientific research in its practical applications may easily come to a wrong interpretation of the state of mind of the men who, surrounded by skeptical contemporaries, have shown the way to kindred spirits scattered over all countries in all centuries. Only those who have dedicated their lives to similar ends can have a living conception of the inspiration which gave these men the power to remain loyal to their purpose in spite of countless failures. It is the cosmic religious sense which grants this power.

However, both scientific and religious dogmatism can be harmful. While the former can lead to closed-minded thinking (Sect. 12.4.4), false certainty (Sect. 8.1.1), and blind spots (Part II and III), the latter tries to warp reality into a preconceived cage (Sect. 12.2.2). As an example, the following theistic interpretation of the information-theoretic ontology should heed as a warning (Davies and Gregersen 2014, p. 412):

The Christian idea of a Triune God—Father, Son, and Holy Spirit—may [...] be a unique resource for developing a relational ontology that is congenial to the concept of matter as a field of mass, energy, and information.

Sagan also warns (Sagan 1979, p. 332f.):

But religions are tough. Either they make no contentions which are subject to disproof or they quickly redesign doctrine after disproof. The fact that religions can be so shamelessly dishonest, so contemptuous of the intelligence of their adherents, and still flourish does not speak very well for the tough-mindedness of the believers. But it does indicate, if a demonstration was needed, that near the core of the religious experience is something remarkably resistant to rational inquiry.

However, recall his openness towards spirituality (Sect. 14.2.3).

15.3.2 In Closing

If we are truly living in a participatory universe, then the profoundest implication is the mind's capacity to sculpture physical reality.³ Expressed within a different metaphor, the inner aspect of information continually reprograms the outer information matrix. As a consequence: "I give meaning to the reality I create." This dramatically shifts the unquenchable human yearning for knowledge from any outer authority to an inner authority. I find myself at the center of my universe, fully accountable. Perhaps this secret was known from the beginning of the mind's awakening, permeating ancient Hindu cosmology, Buddhist teachings, shamanic traditions, and now emerging within an information-theoretic and participatory scientific paradigm.

Many mathematicians and scientists are Platonists (Sect. 2.2). In other words, they believe in the reality of a transcendental realm of abstractions, from which mathematics springs. Perhaps the most radical Platonic proposition is that of the cosmologist Max Tegmark. He argues for the Mathematical Universe Hypothesis. In essence, our external physical reality is a mathematical structure (Sect. 13.4.3). Platonism, and the issues it raises (Fig. 15.1), can be incorporated into the template of the entelechy of existence (Fig. 15.3). Essentially, the Platonic abstract realm is at the root of the potentiality of existence, from which the mental and physical emanate. Their structural similarity drive the knowledge generation process discussed in Sect. 2.1. Moreover, the Hindu myth of existence also shares a congruence with the entelechy of existence. The concept of *nirguna*, "which is to say that it has no qualities and nothing can be said or thought about it" (Watts 1971, p. 98) corresponds to abstract potentiality. The play of *maya* is the rhizome of reality. These ancient truth-seekers also discovered the transcendental multiverse (Watts 1971, p. 101):

The worlds that are manifested when the Self breathes out are not just this one here and those that we see in the sky, for besides these there are worlds so small that ten thousand of them may be hidden in the tip of a butterfly's tongue, and so large that all our stars may be contained in the eye of a shrimp. There are also worlds within and around us that do not reverberate upon our five organs of sense, and all these worlds, great and small, visible and invisible, are in number as many as grains of sand in the Ganges.

It is truly remarkable, that the human brain is equipped with the neurochemical makeup allowing its disembodied consciousness to experience these transcendental worlds firsthand (Sects. 14.3.2 and 14.3.5).

Returning to the nine explanatory templates for reality, introduced in Chap. 1 and again discussed in Chap. 14—i.e., *E1–E9* on Page 5 or 519—we are left with the following adapted option of *E5*:

³As a result, by not believing in this mechanism, the mind is instructed to utilize its creative potential in a way which renders a reality reflecting this instruction. In other words, by denying the participatory ontology, a reality will be experienced which has no participatory ontology.

E10 Only information exists. It manifests itself out of an ineffable abstract source and actualizes physical individualizations and pure consciousness, which interact in endless cycles, allowing for an experiential context to emerge. Existence is driven to ever higher levels of actualized complex structure, expressing intelligence. [Information-theoretic and participatory ontology]

E1 and *E2* are explanations arising within the dogma of the materialistic scientific worldview and Abrahamic religions, respectively. *E3* and *E4* are Eastern creation myths which can be placed within *E10*. *E7* is also a compatible scientific explanation. *E8* is the scientific explanation underlying *E10* (Sect. 13.4.1). Finally, both *E6* and *E9* (Sect. 13.4.2) can either be incorporated into *E10* or they incorporate *E10* itself.

And so the curtain closes as the human mind remembers and glimpses more of the essence of existence, while the next act is being forged in the furnace of information...

References

- Brockman, J.: This Idea Must Die: Scientific Theories that are Blocking Progress. Harper Collins, New York (2015). <http://www.edge.org/annual-question/what-scientific-idea-is-ready-for-retirement>
- Crombie, D., Jardine, C.: The Best Alan Watts Quotes. Crombie Jardine, Bath (2016)
- Davies, P., Gregersen, N.H. (eds.): Information and the Nature of Reality: From Physics to Metaphysics, Canto Classics edn. Cambridge University Press, Cambridge (2014)
- Deacon, T.W.: Incomplete Nature: How Mind Emerged from Matter. W.W. Norton & Company, New York (2012)
- Deleuze, G., Guattari, F.: Mille plateaux. Les Éditions de Minuit, Paris (1980)
- Dukas, H., Hoffmann, B.: Albert Einstein: The Human Side. Princeton University Press, Princeton (1989)
- Dukas, H., Hoffmann, B.: Albert Einstein, The Human Side: Glimpses from His Archives. Princeton University Press, Princeton (2013)
- Einstein, A.: Science and religion. Address at Princeton Theological Seminary, 19 May 1940
- Einstein, A.: The World as I See It. The Book Tree, San Diego (2007)
- Einstein, A.: Einstein on Cosmic Religion and Other Opinions and Aphorisms. Dover Publications, Mineola (2009)
- Ellis, G.: How can Physics Underlie the Mind. Springer, Heidelberg (2016)
- Frankenberry, N.K.: The Faith of Scientists: In Their Own Words. Princeton University Press, Princeton (2008)
- Gaither, C.C.: Gaither's Dictionary of Scientific Quotations. Springer, New York (2012)
- Horgan, J.: The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age. Broadway, New York (1997)
- Leslie, J., Kuhn, R.L.: The Mystery of Existence: Why is There Anything at All?. Wiley, Chichester (2013)
- Lineweaver, C.H., Davies, P.C., Ruse, M.: Complexity and the Arrow of Time. Cambridge University Press, Cambridge (2013)

- Nagel, T.: *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False*. Oxford University Press, Oxford (2012)
- Planck, M.: *Scientific Autobiography and Other Papers*. Williams & Norgate, London (1950)
- Powell, A.: Can science, religion coexist in peace? *Harvard Gazette*. <http://news.harvard.edu/gazette/story/2007/03/can-science-religion-coexist-in-peace/>, 15 March 2007
- Rees, M.: *Just Six Numbers: The Deep Forces That Shape the Universe*. Basic Books, New York (2000)
- Sagan, C.: *Broca's Brain*. Presidio Press, New York (1979)
- Sagan, C., Druyan, A., Soter, S.: *Cosmos: A Personal Voyage*. PBS, Episode 1
- Schneider, E.D., Sagan, D.: *Into the Cool: Energy Flow, Thermodynamics, and Life*. University of Chicago Press, Chicago (2005)
- Tipler, F., Barrow, J.: *The Anthropic Cosmological Principle*. Oxford University Press, Oxford (1988)
- Vidal, C.: *The Beginning and the End: The Meaning of Life in a Cosmological Perspective*. Springer, Cham (2014)
- Watts, a. (1991): *Man, Nature, and the Nature of Man*. Macmillan Audio, collected public lectures
- Watts, A.W.: *Does It Matter? Essays on Man's Relation to Materiality*. New World Library, Novato (1971)
- Wissner-Gross, A.D., Freer, C.E.: Causal entropic forces. *Phys. Rev. Lett.* **110**(16):168,702 (2013)
- Yanofsky, N.S.: *The Outer Limits of Reason: What Science, Mathematics, and Logic Cannot Tell Us*. MIT Press, Cambridge (2013)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 2.5 International License (<http://creativecommons.org/licenses/by-nc/2.5/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

