

Lecture Notes  
The Fundamental Nature of Reality:  
Where Physics and Buddhism Meet  
By B. Alan Wallace

- Human Beings as Story-Tellers
  - “Muriel Rukeyser: “The universe is made of stories, not of atoms.” (From the poem “The Speed of Darkness”). Sean Carroll: “The world is what exists and what happens, but we gain enormous insight by talking about it— telling its story— in different ways.”
  - Buddhist view of the distinctive quality of humans: We express meaningful information and understand it.
  - All stories we tell ourselves about the physical universe, life, the mind, and human nature all begin with starting assumptions, beliefs, axioms, or theorems which we cannot prove, and they evolve in relation to the focus of our attention, the types of questions we pose, and the methods we use to answer them.
- The Physical Is Fundamental
  - Sean Carroll: “there is only one world, the natural world, exhibiting patterns we call the ‘laws of nature,’ and which is discoverable by the methods of science and empirical investigation. There is no separate realm of the supernatural, spiritual, or divine; nor is there any cosmic teleology or transcendent purpose inherent in the nature of the universe or in human life. ‘Life’ and ‘consciousness’ do not denote essences distinct from matter; they are ways of talking about phenomena that emerge from the interplay of extraordinarily complex systems.”<sup>1</sup>
  - The assumptions underlying this view are the beliefs in determinism (the future follows uniquely from the present), realism (there is an objective real world, independent of any observer), and physicalism (the world is purely physical).
- Mathematics is Fundamental
  - Roger Penrose: The laws of physics are precisely mathematical, suggesting that the physical universe emerges from an underlying dimension that is purely mathematical. (*The Emperor’s New Mind*)
  - Mathematicians mentally explore this realm and make discoveries and confirm their findings intersubjectively.
  - Plato and the Pythagoreans: The physical world arises from pure, geometric forms, which in turn arise from numbers. (*Metaphysics* 987b26 ff)
  - Werner Heisenberg: “With regard to this question, modern physics takes a definite stand *against* the materialism of Democritus and *for* Plato and the Pythagoreans.”<sup>2</sup>

---

<sup>1</sup> (Kindle Locations 215-219).

<sup>2</sup> Werner Heisenberg, *Physics and Philosophy* (London: Penguin Books, 1989), 59; See also E. Schrödinger, *The Interpretation of Quantum Mechanics* (Woodbridge, CT: Ox Bow Press, 1995); H.D. Zeh, “There are no quantum jumps, nor are there particles” *Physics Letters*, A172, 189-192, 1993; P.C.W. Davies, “Particles do not exist” in S. M. Christensen (ed.), *Quantum*

- Life is Fundamental
  - The Anthropic Principle: There is a set of fundamental physical constants that are such that had they been very slightly different, the universe would have been void of intelligent life.
  - John Wheeler: “According to the principle, a life-giving factor lies at the centre of the whole machinery and design of the world.”<sup>3</sup>
  - John D. Barrow and Frank J. Tipler: “There exists one possible Universe ‘designed’ with the goal of generating and sustaining ‘observers.’”<sup>4</sup>
- Mind is Fundamental
  - Max Planck: “All matter originates and exists only by virtue of a force which brings the particle of an atom to vibration and holds this most minute solar system of the atom together. We must assume behind this force the existence of a conscious and intelligent mind. This mind is the matrix of all matter.”<sup>5</sup>
  - Einstein: There is a “superior mind that reveals itself in the world of experience.”<sup>6</sup>
  - Sir James Jeans: “the Universe begins to look more like a great thought than like a great machine. Mind no longer appears to be an accidental intruder into the realm of matter... we ought rather hail it as the creator and governor of the realm of matter.”<sup>7</sup>
- Information is Fundamental
  - Anton Zeilinger: “One may be tempted to assume that whenever we ask questions of nature, of the world there outside, there is reality existing independently of what can be said about it. We will now claim that such a position is void of any meaning. It is obvious that any property or feature of reality ‘out there’ can only be based on information we receive. There cannot be any statement whatsoever about the world or about reality that is not based on such information. It therefore follows that the concept of a reality without at least the ability in principle to make statements about it to obtain information about its features is devoid of any possibility of confirmation or proof. This implies that the distinction between information, that is knowledge, and reality is devoid of any meaning. Evidently what we are talking about is again a unification of very different concepts. The reader might recall that unification is one of the main themes of the development of modern science.”<sup>8</sup>

---

*Theory of Gravity* (New York: Adam Hilger, 1984); M. Bitbol, *Schrödinger’s Philosophy of Quantum Mechanics* (New York: Kluwer, 1995).

<sup>3</sup> Foreword to John D. Barrow and Frank J. Tipler, *The Anthropic Cosmological Principle* (Oxford: Oxford University Press, 1996), vii-viii.

<sup>4</sup> *Ibid.*, 21-22.

<sup>5</sup> “Das Wesen der Materie” [“The Nature of Matter”], speech at Florence, Italy (1944) (from the Archiv zur Geschichte der Max-Planck-Gesellschaft, Abt. Va, Rep. 11 Planck, Nr. 1797)

<sup>6</sup> Albert Einstein, *Ideas and Opinions* (New York: Crown Publishers, 1954), 262.

<sup>7</sup> James Jeans, *The Mysterious Universe* (Cambridge: Cambridge University Press, 1930), 137

<sup>8</sup> Anton Zeilinger, “Why the Quantum? ‘It’ from ‘bit’? A participatory universe? Three far-reaching challenges from John Archibald Wheeler and their relation to experiment” in *Science and Ultimate Reality: Quantum Theory, Cosmology and Complexity, honoring John Wheeler’s*

- Consciousness is Fundamental
  - Andrei Linde:
    - “The current scientific model of the material world obeying laws of physics has been so successful that we forget about our starting point—as conscious observers—and conclude that matter is the only reality and that perceptions are only helpful for describing it. But, in fact, we are substituting the *reality* of our experience of the universe with a conceptually contrived *belief* in an independently existing material world.”<sup>9</sup>
    - “Is it possible that consciousness, like space-time, has its own intrinsic degrees of freedom, and that neglecting these will lead to a description of the universe that is fundamentally incomplete? What if our perceptions are as real (or maybe, in a certain sense, are even more real) than material objects?”<sup>10</sup>
- The Fundamental Nature of Reality is Unknown
  - Freeman J. Dyson: “I am reluctant to engage in discussions about the meaning of quantum theory, because I find that the experts in this area have a tendency to speak with dogmatic certainty, each of them convinced that one particular solution to the problem has a unique claim to be the final truth...As a physicist, I am much more impressed by our ignorance than by our knowledge.”<sup>11</sup>
  - Sean Carroll: “Quantum mechanics is the deepest and most fundamental picture of the world we now have, but what it says about reality is utterly uncertain.”<sup>12</sup>
  - Marcelo Gleiser: “we are essentially blind to what exists at the very core of physical reality. All we have is our measurements, and they give an incomplete picture of what’s really going on.”<sup>13</sup>
- The Blind Men and the Elephant:
  - Buddha: A group of blind men were presented with an elephant. The men who respectively touched the head, ear, tusk, trunk, the side of the body, a foot, the back, the tail, and the tuft of the tail described it as pot, a winnowing basket, a ploughshare, a plough, a grainery, a pillar, a mortar, a pestle, and a brush. “Then

---

*90th birthday*, John D. Barrow, Paul C. W. Davies, and Charles L. Harper, Jr., eds. (Cambridge: Cambridge University Press, 2004), 201-220, pp. 218-219.

<sup>9</sup> Andrei Linde, “Choose Your Own Universe” in *Spiritual Information: 100 Perspectives on Science and Religion*, Charles L. Harper, Jr., ed. (West Conshohocken, PA, 2005), 139.

<sup>10</sup> Andrei Linde, “Inflation, Quantum Cosmology and the Anthropic Principle” in *Science and Ultimate Reality: Quantum Theory, Cosmology and Complexity, honoring John Wheeler’s 90th birthday*, edited by John D. Barrow, Paul C. W. Davies, and Charles L. Harper, Jr., 426-458. (Cambridge: Cambridge University Press, 2004), 451.

<sup>11</sup> Freeman J. Dyson, “Thought-experiments in honor of John Archibald Wheeler” in *Science and Ultimate Reality*, 72-89. (Cambridge: Cambridge University Press, 2004), 88.

<sup>12</sup> Sean Carroll, *The Big Picture*, (Kindle Location 2392)

<sup>13</sup> Marcelo Gleiser, “Searching For The Essence Of Physical Reality”:

<http://www.npr.org/blogs/13.7/2011/01/19/133037010/searching-for-the-essence-of-physical-reality>

they began to quarrel, shouting, ‘Yes, it is!’ ‘No, it is not!’ ‘An elephant is not that!’ ‘Yes, it’s like that!’ and so on, till they came to blows over the matter.

- Buddha: “Just so are these teachers and scholars holding various views blind and unseeing.... In their ignorance, they are by nature quarrelsome, wrangling, and disputatious, each maintaining reality is thus and thus.”<sup>14</sup>
- Buddhist Skepticism: Buddha: “It is proper for you... to doubt, to be uncertain, for there are good grounds for your uncertainty.... Do not adopt views simply because they are the status quo, or because they’ve long been assumed to be true. Do not accept them based on mere rumor or because they are written in some scripture. Do not accept them based on pure conjecture, some unquestioned assumption, inconclusive reasoning, your own personal bias or others’ eloquence, or because it’s the view of your teacher.”<sup>15</sup>
- Blind Spots in Modern Science, for science is generally:
  - Blind to any possible insights into the fundamental nature of reality from any of the great civilizations of Asia over the past 5,000 years about the nature of reality, let alone all indigenous cultures throughout North and South America, Africa, and Australia (i.e., non-white men)
  - Blind in the sense of failing to develop any rigorous means of observing the world of the mind and consciousness firsthand → ignorance of the actual nature and origin of the mind and consciousness, and no progress in solving the mind-body problem or the measurement problem in quantum mechanics.
- Buddhist Mind Science: Buddhism presents a highly developed tradition of training attention and sophisticated ways of observing the mind to levels unknown in the West. This “contemplative technology” is called *samādhi*, a “telescope of the mind,” and it has been used successfully for over 2,500 years to explore the nature, origins, and potentials of human consciousness and the role of the mind in nature, with many intersubjectively validated discoveries.
- Buddhist Rationality and Empiricism
  - Buddha: “Monks, just as the wise accept gold after testing it by heating, cutting, and rubbing it, so are my words to be accepted after examining them, but not out of respect [for me].”<sup>16</sup>
  - Dalai Lama: “A general basic stance of Buddhism is that it is inappropriate to hold a view that is logically inconsistent. This is taboo. But even more taboo than holding a view that is logically inconsistent is holding a view that goes against direct experience.”<sup>17</sup>
- Contemplative Science

---

<sup>14</sup> *Udāna* 68-69: <https://www.cs.princeton.edu/~rywang/berkeley/258/parable.html>. For an alternate translation, see *Udāna: Exalted Utterances*, translated by Ānandajoti Bhikkhu, Revised Version 2.2, Feb. 2008, pp. 212-217.

<sup>15</sup> *Kālāma Sutta, Aṅguttara Nikāya* III.65

<sup>16</sup> This verse, often quoted in Tibetan Buddhist literature, is cited from Puṇḍarīka’s *Vimalaprabhā* commentary on the *Kālacakra*, although it appears in the Pāli Canon as well. The Sanskrit occurs as a quotation in Śāntaraṅgita’s *Tattvasaṃgraha*, ed. D. Shastri (Varanasi: Bauddhabharati, 1968), k. 3587.

<sup>17</sup> Francisco Varela and Jeremy Hayward, eds., *Gentle Bridges: Conversations with the Dalai Lama on the Sciences of Mind*. 2<sup>nd</sup> ed. (Boston: Shambhala Publications, 1992) 37.

- Implement rigorous, sustained training in first-person, contemplative methods to complement third-person, scientific methods.
- Explore the broadest possible range of states of consciousness, integrating the methods of physics, psychology, neuroscience, and meditation.
- Open-Minded Science
  - Richard Feynman: “It is only through refined measurements and careful experimentation that we can have a wider vision. And then we see unexpected things: we see things that are far from what we would guess—far from what we could have imagined. . . . If science is to progress, what we need is the ability to experiment, honesty in reporting results—the results must be reported without somebody saying what they would like the results to have been . . . One of the ways of stopping science would be only to do experiments in the region where you know the law. But experimenters search most diligently, and with the greatest effort, in exactly those places where it seems most likely that we can prove our theories wrong. In other words we are trying to prove ourselves wrong as quickly as possible, because only in that way can we find progress.”<sup>18</sup>

---

<sup>18</sup> Richard P. Feynman, *The Character of Physical Law* (Cambridge: MIT Press, 1967), 127, 148, 158.