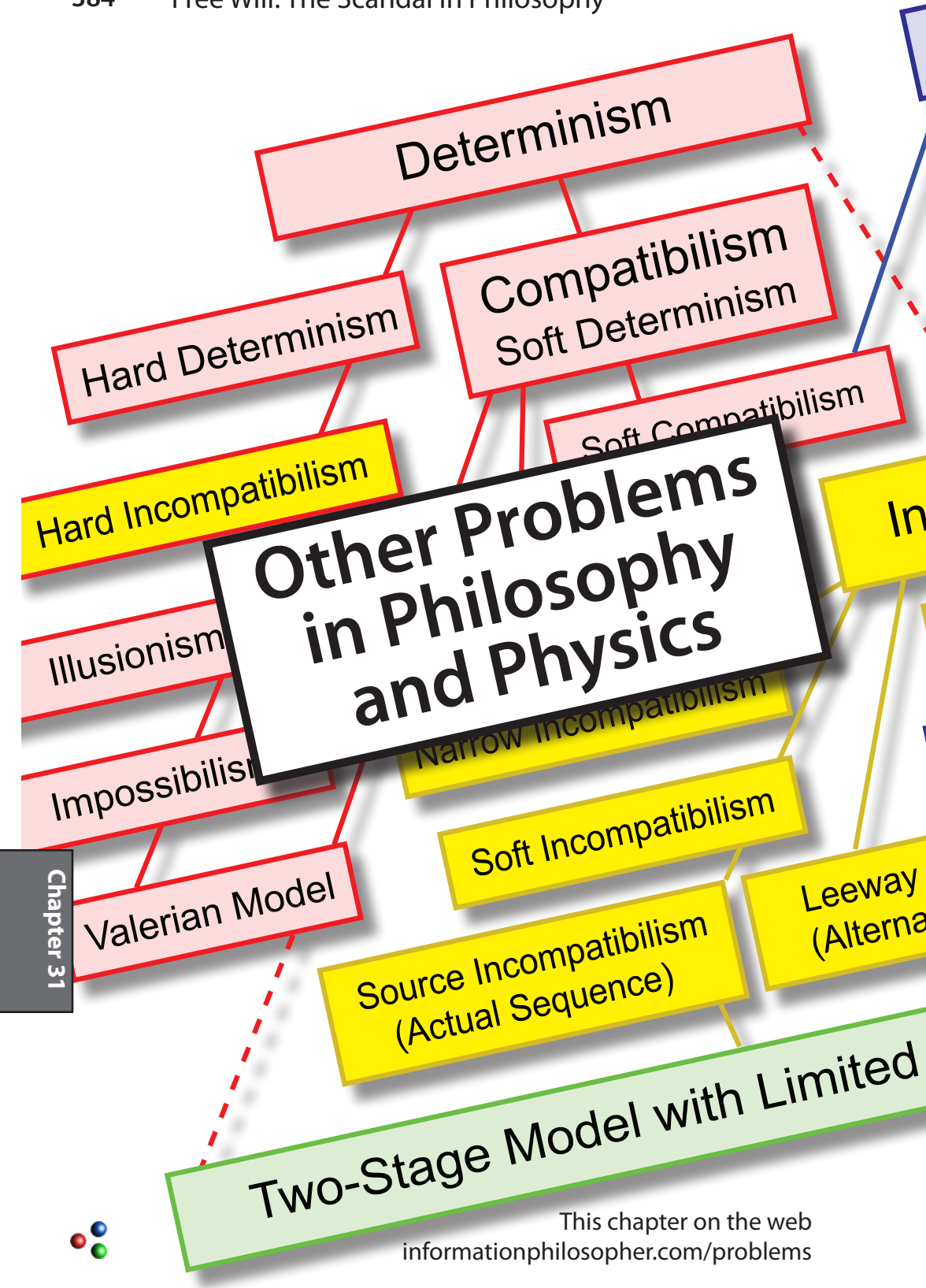

This chapter on the web
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I-Phi Philosophical Problems

The fundamental question of information philosophy is cosmological and ultimately metaphysical.

What is the process that creates information structures in the universe?

Given the second law of thermodynamics, which says that any system will over time approach a thermodynamic equilibrium of maximum disorder or entropy, in which all information is lost, and given the best current model for the origin of the universe, which says everything began in a state of equilibrium some 13.75 billion years ago, how can it be that living beings are creating and communicating new information every day? Why are we not still in that state of equilibrium?

The elucidation by information philosophy of a two-part **cosmic creation process** casts light on some classical problems in philosophy and in physics, because it is the same process that creates new biological species and explains the freedom and creativity of the human mind.

Some Other Philosophical Problems

The Problem of Knowledge

Epistemology is the problem of *certain* knowledge, when our means of perception is limited and fallible. Instead of logical language debates about "justified true belief," information philosophy looks to information structures in the brain that correspond to structures in the world and in other minds.

The Problem of Value[1]

Information philosophy moves the source of ultimate value beyond man and our created Gods, beyond Life and the Earth, to its origins in a Cosmic Providence, which creates stable information structures we call Ergo. Note that quantum mechanics, though normally thought of as adding only indeterminacy, is the source of the stability in most information structures.

1 informationphilosopher.com/value

Note that the problem of freedom (in this book) and the problem of value are tightly linked.

Values without Freedom are Useless.

Freedom without Value is Absurd.

The first of these views was the position of the John Stuart Mill utilitarians and the early twentieth-century Anglo-American philosophers, who argued for utilitarian value but accepted determinism.

The second view was that of the Continental Existentialists, from Nietzsche to Heidegger to Sartre, that we have freedom, but because God is dead there are no absolute values.

The Problem of Free Will[2]

A dozen thinkers since William James in 1884 have proposed "two-stage" models of free will - first "free," then will," - first chance, then choice, - first alternative possibilities, then one actuality. The most plausible and practical solution to the 2400-year old problem of free will is our **Cogito** model. The critical random component of the first stage is provided by noise in the brain's information processing. The second stage is determined, but not pre-determined.

Consciousness[3]

Consciousness can be defined as the capacity of an entity, usually a living thing but we can also include artificially conscious machines or computers, to react to the information, and particularly to changes in the information, in its environment. We call it information consciousness.

The Problem of Evil[4]

Theodicy - "If God is Good He is not God. If God is God He is not Good." (from J.B., by Archibald MacLeish) The question is not "Does God exist?" The question is "Does Goodness exist?" The

2 informationphilosopher.com/freedom
3 informationphilosopher.com/problems/consciousness
4 informationphilosopher.com/problems/evil

solution lies in a dualist world with both bad and good. If ergodic information is an objective good, then entropic destruction of information is "the devil incarnate," as Norbert Wiener put it.

Immortality[5]

Information philosophy implies two kinds of immortality, the material survival of genetic information and the survival of ideas in the Sum of all knowledge and human artifacts. The survival of parts of the genetic code in DNA is the longest approximation to immortality known in living things. The "immortals" among us are those whose life's work is remembered.

The Mind-Body Problem[6]

Solved in part by our Sum model, which explains how abstract information, an idea, or knowledge is incorporated into a human mind, and how pure ideas act on the physical world. Information is neither energy nor matter. But it needs matter for its embodiment and energy for its communication.

Information is the mind in the body, the ghost in the machine, as close to a spirit or soul as science can get. When we die, it is our information that is lost.

Our ERR (experience recorder and reproducer) model for the mind is simpler than, but superior to, cognitive science computational models of the mind.

Man is not a machine. And the mind is not a computer.

5 informationphilosopher.com/problems/immortality
6 informationphilosopher.com/problems/mind_body

Some Other Physics Problems

It is of the deepest philosophical significance that information is based on the mathematics of probability. If all outcomes were certain, there would be no "surprises" in the universe. Information would be conserved and a universal constant, as some mathematicians mistakenly believe it is.

Information philosophy requires the ontological uncertainty and probabilistic outcomes of modern quantum physics to produce new information. But at the same time, without the extraordinary stability of quantized information structures over cosmological time scales, life and the universe we know would not be possible.

Quantum mechanics reveals the architecture of the universe to be discrete rather than continuous, to be digital rather than analog.

Moreover, the "correspondence principle" of quantum mechanics and the "law of large numbers" of statistics ensures that macroscopic objects can normally average out microscopic uncertainties and probabilities to provide the "**adequate determinism**" that shows up in all our Laws of Nature.

The Arrow of Time[7]

Arthur Stanley Eddington connected "Time's Arrow" with the direction of increasing entropy and the second law of thermodynamics. We now show that it is also the direction of increasing information.

Entanglement/Nonlocality[8]

Thus is a mysterious phenomenon that seems capable of "transmitting" information over vast distances faster than the speed of light. Information physics shows that measurements change probabilities everywhere, faster than the speed of light, although no signaling is possible, since no matter or energy is transmitted.

Macroscopic Recurrence[9]

Ernst Zermelo argued against Ludwig Boltzmann's H-Theorem (his derivation of the second law of thermodynamics), on

7 informationphilosopher.com/problems/arrow_of_time
8 informationphilosopher.com/solutions/experiments/EPR
9 informationphilosopher.com/problems/recurrence

the grounds that given enough time, any system would return to the same starting conditions and thus entropy must decrease as well as increase. Information physics shows that exactly the same circumstances can never recur. Friedrich Nietzsche's "Eternal Return of the Same" is a physical impossibility, because of the increasing information in the universe.

Microscopic Reversibility[10]

Joseph Loschmidt also argued against Ludwig Boltzmann on the grounds that if time were reversed the entropy would decrease. Boltzmann agreed that it would, according to his initial version of the H-Theorem which was derived from classical dynamical physics. He then defended his case for entropy increase on the basis of probabilities and an assumption of "molecular disorder." A quantum-mechanical treatment of binary (two-particle) collisions validates Boltzmann's "molecular disorder" assumption.

The Problem of Measurement[11]

We explain how our measuring instruments, which are usually macroscopic objects and treatable with classical physics, can give us information about the microscopic world of atoms and subatomic particles like electrons and photons, which are described with quantum physics. The so-called "cut" (John Bell called it the "shifty split") between the classical and quantum worlds occurs at the moment that stable observable information enters the world. It does not require the consciousness of an observer.

Schrödinger's Cat[12]

Erwin Schrödinger's paradox of simultaneous live and dead cats is solved by noting that the wave function probabilities refer to the proportions of live and dead cats that would be found in many identical experiments. In every particular case, the wave functions collapse at the instant the random quantum event produces stable information in the world. No "conscious observer" is needed. The cat is its own observer.

10 informationphilosopher.com/problems/reversibility
11 informationphilosopher.com/problems/measurement
12 informationphilosopher.com/solutions/experiments/schrodingerscat