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Can Information Philosophy

Good and Evil

The abstract philosophical Idea of the Good began with Plato, who first defined the notion of abstract Ideas in his Theory of Forms. At the end of Book VI of the *Republic* (509D-513E), Plato describes what he called a "divided line," at the top of which is the "Form of the Good, followed by theories (*noesis*), hypotheses (*dianoia*), techniques (*pistis*), and stories (*eikasia*)

Plato describes the visible world of perceived physical objects and the images we make of them (in our minds and in our drawings, for example). The Sun, he said, not only provides the visibility of the objects, but also generates them and is the source of their growth and nurture. Many primitive religions identify the Sun with God, for good reason.

Beyond this visible world, which later philosophers (especially Immanuel Kant) would call the *phenomenal* world, lies an intelligible world (that Kant calls *noumenal*). The intelligible world is (metaphorically) illuminated by "the Good" (τον ἀγαθὸν), just as the visible world is illuminated by the Sun.

Plato's Line is also a division between Mind and Body. The upper half of the divided line is usually called Intelligible as opposed to Visible, meaning that it is "seen" by the mind (510E). Illuminated by "the Good," it is seen by the mind, in Greek, the *nous* (νοῦς), rather than by the eye.

The division of Plato's Line between Visible and Intelligible is then a divide between the Ideal and the Material, the foundation of most Dualisms.[1] Plato may have coined the word "idea" (ἰδέα), using it somewhat interchangeably with the Greek word for shape or form (εἶδος). The word idea derives from the past participle in Greek for "to have seen." The word "wisdom" comes from the same source.

In many ways, Plato's theory of immaterial forms existing outside space and time and providing the shape of material things is consonant with information philosophy's focus on immaterial information as the basis for thought, for mind, for knowledge, and

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1   See chapter 3 for the many names of this fundamental dualism.

for the abstractable elements of information structures in the real world. Plato's distinction between Form and Matter stands at the beginning of the great dualism between Idealism and Materialism.

Information philosophy is a return to a kind of Idealism. It situates the Idea of the Good in the Platonic realm of Ideas, which we now recognize as *immaterial* information. And it shows how immaterial ideas can have causal force in the world of matter and energy, solving the mind/body problem, among others.

Now the Good embodied in an information structure such as a material thing, a living thing, or a complex situation including many things, can in principle be calculated as the quantitative amount of negative entropy that it contains. Perhaps it is equally easy to see the Bad in something by measuring its destructive force. Think of the evil in a thermonuclear weapon, whose only use is to destroy a city and its population.

But it is plain that no single monotonic value can decide between the goodness of two things, since values are deeply context dependent. Indeed, Kenneth Arrow's theorem in economics shows that values are not strictly transitive. A can be preferred to B, B preferred to C, and yet C can be preferred to A.

Information (Negative Entropy) as Objective Good?

Nevertheless, however imperfect it may be, information, or more generally negative entropy, provides an objective, human-independent, starting point for value comparisons, without which all preferences are hopelessly subjective and relative to the individual or to the society. This is as it should be. Facts of the matter are questions for science. What should be or ought to be are cultural question for society or individual persons.

Free will, for example, is a scientific question. But moral responsibility is a cultural and conventional question for society. Nevertheless, those answering the conventional questions of right and wrong can consult the informational and entropic implications of different choices.

Consider utilitarianism, which hopes to achieve the "greatest good for the greatest number." The measure of utility in something correlates strongly with the amount of free or available energy (negative entropy) in that thing.

Evil

It is a sad but necessary observation to note that our definition of Evil as the creation of Entropy or Disorder - that is, the destruction of Information or Negative Entropy - means that the greater of the dualistic forces at work in the universe, at least in quantitative terms, is not the Cosmos but the Chaos.

The unavoidable Second Law of Thermodynamics, the Entropy Law, has been confirmed in the kinetic theory of gases by LUDWIG BOLTZMANN with his H-Theorem, and in statistical mechanics and quantum mechanics by ALBERT EINSTEIN with his analysis of fluctuations in the entropy.

As the universe evolves, the increase in the total entropy, the disorder and chaos, is unstoppable. Fortunately, there are important places where the entropy is reduced locally, leaving behind information structures, pockets of negative entropy or cosmos.

The established fact of increasing entropy led many scientists and philosophers to assume that the universe we have is "running down" to a "heat death." They think that means the universe began in a very high state of information, since the second law requires that any organization or order is susceptible to decay. The information that remains today, in their view, has always been here. There is "nothing new under the sun."

But the universe is not a closed system. It is in a dynamic state of expansion that is moving away from thermodynamic equilibrium faster than entropic processes can approach it. The maximum possible entropy is increasing much faster than the actual increase in entropy. The difference between the maximum possible entropy and the actual entropy is potential information.

Chapter 6

Creation of information structures means that in parts of the universe the local entropy is actually going down. Our Sun-Earth system is one such place. All life depends on the flow of negative entropy from Sun to Earth, as ERNST SCHRÖDINGER told us.
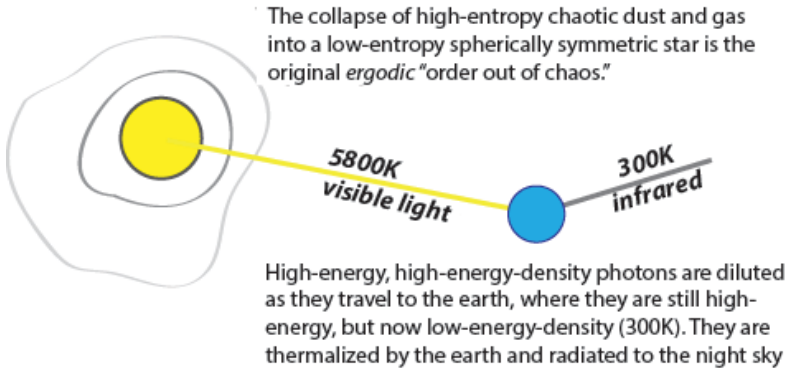

The collapse of high-entropy chaotic dust and gas into a low-entropy spherically symmetric star is the original *ergodic* "order out of chaos."

5800K visible light

300K infrared

High-energy, high-energy-density photons are diluted as they travel to the earth, where they are still high-energy, but now low-energy-density (300K). They are thermalized by the earth and radiated to the night sky

Figure 6-1. Photons from the sun are our major source of negative entropy.

It is a necessary evil that creation of negative entropy (the Good) is always accompanied by radiation of an even larger amount of positive entropy (the Bad) away from the local structures to distant parts of the universe. Ultimately, it goes to the night sky and away through our transparent universe to the most distant cosmic microwave background.
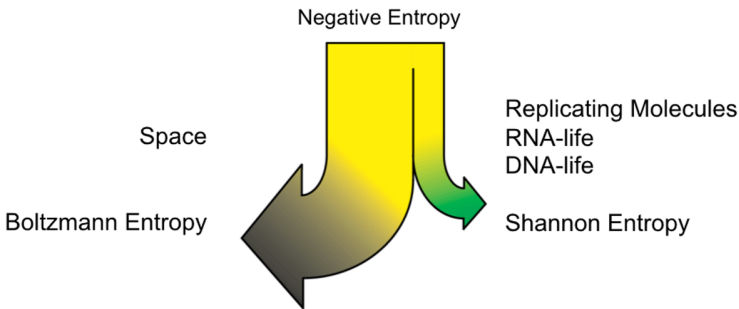

Negative Entropy

Space

Replicating Molecules
RNA-life
DNA-life

Boltzmann Entropy

Shannon Entropy

Figure 6-2. Positive and negative entropy flows to the earth.

As the universe expands, both positive and negative entropy are generated. The normal thermodynamic entropy, known as the Boltzmann Entropy, is the larger darker arrow. The negative entropy, often called the Shannon Entropy, is a measure of the information content in the evolving universe.

A Statistical Comparison with Societal Norms

The pre-Socratic philosopher PROTAGORAS famously said that "man is the measure of all things." The relativism of good and evil, of right and wrong, is a great problem in post-modern society. Any particular action may be judged good in some circumstances, evil in others. No single monotonic criterion of value can possibly serve in all cases. So what does the information theory of value amount to?

It is a claim about how an independent panel of ethicists, including a full range of traditional sources from humanists to theists who cite ancient religious doctrines, would judge a large number of moral choices.

An information-based ethics claims that if a second panel of judges consisted of scientists with expertise in chemical thermodynamics were asked to consider the same list of choices, there would be a significant statistical correlation between those deemed good by the traditional panel and those found by the second panel to preserve the most information, or to produce the least destruction of information, the least increase in entropy and disorder.

So the moral advice from information philosophy is very simple. When confronted with a moral desicion, take the alternative that minimizes the increase in disorder, that minimizes the destruction of information.

Since living things are rich in information, this coincides with a morality that regards life as an ultimate good, but it does not go the extreme of regarding each life as of *infinite* worth, which is designed to make value comparisons impossible when lives are involved..