

Engenetics

The science of species

Outline of Argument and Experiment

Three of the greatest areas of science are: dynamics, wave theory, and thermodynamics. They are accurate; rigorous; have immense predictability; and have all made inestimable contributions to the modern way of life. However, the Austrian economist Oskar Morgenstern, 1902–1977—who with the Hungarian-American mathematician John von Neumann, 1903–1957, founded game theory—highlighted their remarkable and distinctive trait in June 1963 when he spoke at a Symposium sponsored by the American Academy of Political and Social Sciences:

Although some of the profoundest insights the human mind has achieved are best stated in negative form, it is exceedingly dangerous to discuss limits in a categorical manner. Such insights are that there can be no perpetuum mobile, that the speed of light cannot be exceeded, that the circle cannot be squared using ruler and compasses only, that similarly an angle cannot be trisected, and so on. Each one of these statements is the culmination of great intellectual effort. All are based on centuries of work and either massive empirical evidence or on the development of new mathematics or both. Though stated negatively, these and other discoveries are positive achievements and great contributions to human knowledge. All involve mathematical reasoning; some are, indeed, in the field of pure mathematics, which abounds in statements of prohibitions and impossibilities. Oskar Morgenstern, "Limits of the Uses of Mathematics in Economics", quoted in Benjamin Bold, *Famous Problems of Geometry (and How To Solve Them)*, Dover Publications, New York, 1982, pp. ix-x.

As Morgenstern pointed out, these three scientific disciplines were established in the face of a declared impossibility. But the stated prohibition nevertheless allowed a clear set of principles to be established. The conclusions drawn from those principles were then validated by experiment. The underlying prohibitions remain for ever beyond hope of observation, but that non-appearance is not enough to undercut the theory. Far from it, in fact. The imagined impossibles really are impossible. But it is the supreme predictability of the quite inevitable failures of real world events that are in each case the vindication of the theory.

Dynamics is based upon Galileo's observation that it is impossible for any object to keep moving in a straight line indefinitely. Friction, wind resistance, and other such forces will bring it to

a standstill. That observation is now enshrined in Newton's laws of motion. Wave theory is based on Huygens' and Bernoulli's characterization of an ideal wave. It is capable of being indefinitely propagated, without variation, by or through a perfect medium that never loses any of its energy or elasticity no matter how much that medium must oscillate to support it. This is also impossible for no such perfect supporting medium exists. And finally, and as Morgenstern stated, thermodynamics is based on the French physicist Sadi Carnot's attempt to characterize a perpetual motion machine that can deliver endless amounts of work without ever breaking. Carnot's theory first of all proposed just such an ideal engine ... and then showed how and why it was impossible. The key concept in all these cases is "free from the environment". All three models found a way of defining how their given objects would behave when free from all influences—including the environment. That impossible-to-achieve event could then act as a standard.

Charles Darwin's real world observations led him to the theory of evolution. But when he proposed his theory, he did not offer a sound theoretical model—meant in the above strict and mathematical sense—to support those observations. Because of this deficiency, his theory has been attacked since the very day he first proposed it. The purpose of the experiment with *Brassica rapa*, or field mustard (sometimes also called 'fast plant'), that is described in detail on the engenetics web site [<http://www.engenetics.net>] is to demonstrate that the biological sciences can emulate dynamics, wave theory, and thermodynamics by being grounded upon a biological prohibition.

But before conducting any experiment, it is of course first necessary to establish a suitable model—complete with prohibition. So let us imagine the impossible. Suppose we observe a vehicle moving serenely along a road, at a constant speed. Thanks to Galileo and Newton, we immediately know that if we follow it long enough then it will come to a halt. But let us suppose that we follow it, just in case it is the vehicle that at last refutes the whole of science by never slowing down. Suppose, that as we follow it, we observe a succession of tankers approaching it at regular intervals to top up its fuel supply. We now know the reason it never slows down and just keeps on going. By stopping one of the tankers and examining the fuel, we can soon determine how many miles per gallon the vehicle is doing. We can eventually calculate the capacity of its tank. And by

conducting a few experiments on the fuel, we can also determine the force being applied to the vehicle to keep it at its constant speed ... and we can calculate its mass and inertia. Since the vehicle also has to be maintained, then every so often one or another spare part will have to be brought in to replace one that has failed. By watching this complete set of activities very carefully, we can draw numerous conclusions about the construction and capabilities of this vehicle. In other words, by making a carefully selected set of measurements in and from the environment, we can come to know a very great deal about this vehicle. We glean that knowledge from its failure to abide by the ideal of Galileo's conception. By adopting a similar set of procedures and protocols we can come to know a great deal about any "eternal" pendulum, oscillating cycle or waveform, or machine for which wild claims are made. It is their deviations from the ideals that tell us all about them. Their failures and their consequences immediately subject the stated events to all the known laws of science. And those inevitable failures arise entirely because whenever a particle is in motion, or a wave oscillates, or an engine does mechanical work, then material bodies move through space and time and energy is transported, absorbed and released.

By the principles of thermodynamics, and also by that most famous equation in all of science, Einstein's $E = mc^2$, energy is the property of an interaction between two specified objects. Energy interactions must have an observable and measurable locus for their activities. In the case of biological entities, the two minimum objects are the entity itself, and the environment from which it must draw its sustenance. All biological entities must therefore and at all times have an effect upon the environment. By measuring those effects, we can determine all salient details about them ... including the degree to which they do or do not abide by the ideal or model whose full description is given on the engenetics web site [<http://www.engenetics.net>].

Knowing these properties and nature of energy; and knowing also that all biological entities—without exception—have need of it; we can now construct an ideal. It is one in the style of Galileo ... of Huygens ... and of Carnot. It establishes a prohibition. It declares the properties and qualities a biological entity must have if it is to be free from the environment, which is to be free from Darwinian evolution. As with these other prohibitions, it becomes a standard of measure.

And once it has been established, then any species is free to try—or not try—to emulate it. In the case of Galileo, if we do in fact see a ball rolling along that never changes its speed, then even though we cannot give it a value for mass and inertia, which depend upon observing changes in speed, not everything has been lost. We can still give it a value for its speed, which is still useful and measurable information. The same holds for the proposed biological model. Whether or not a given biological entity succeeds or fails in emulating the model, there is still useful information to be gained.

The photograph of the *Brassica rapa* experiment that can be seen on every page on the engenetics web site [<http://www.engenetics.net>] is *B. rapa*'s specific actualization of the ideal biological cycle. The data it makes available can then be matched up against the parameters that would be displayed by an ideal entity, were it to be following the ideal cycle. *B. rapa* can then be known by its success—should that be the case—in following that model. *B. rapa* is in fact to be noted because it fails utterly to abide by the model. Specific values indicating the extent of its failure to demonstrate that there is the remotest possibility that it is “intelligently designed” are given on the engenetics web site [<http://www.engenetics.net>].

As explained on the engenetics web site [<http://www.engenetics.net>] (also see the essay “the three principles or constraints”), the simple premises behind the model at the basis of the science of engenetics are that:

1. Biological populations seek to perpetuate themselves. This is, formally rendered as the **constraint of constant propagation**.
2. Biological populations perpetuate themselves by seeking to replace each and every member lost with (at least) one other. This is the **constraint of constant size**.
3. Every such replacement entity will be one “of the same kind”. This is the **constraint of constant equivalence**.

These three principles or constraints immediately establish the boundaries of the system. Those boundaries can be—and are—given specified values. They can be determined from

the experiment. The given experiment can be very simply repeated in any lab. It requires minimal equipment.

The three principles or constraints also allow for the derivation of the **four laws of biology**, and the **four maxims of ecology**. All the parameters and criteria declared by those laws and maxims can be very simply measured. The specific values for *Brassica rapa* are stated in the detailed account of the experiment made available on the engenetics web site [<http://www.engenetics.net>]. From that data, and as stated in the fourth maxim of ecology, it is possible to calculate those values for *B. rapa* that account for:

1. its increases and decreases in chemical potential over the cycle;
2. the changes in its compensatory development, this being the mass and the energy that *B. rapa* takes on and give off as its numbers ebb and flow over the cycle; and
3. the mass and energy explicitly allocated to **essential development**.

And as the data makes clear, far from being intelligently designed and free from the environment, *Brassica rapa* in fact has the benefit (to coin an analogy which is in no guise to be taken seriously!) of being constantly serviced by a set of “biological tankers” that “regularly” “come in” to “provide it” with its “mass” and “fuel”, and utilizing completely ordinary biochemical processes. *B. rapa* is as subject to the vagaries of the environment—and therefore to Darwinian evolution—as would be any proposed vehicle purportedly rolling along at constant speed indefinitely, but that was all the while being serviced by an indefinite line of tankers. When the data made available on the engenetics web site [<http://www.engenetics.net>] is brought together with the **three principles or constraints**, the **four laws of biology**, and the **four maxims of ecology**, it gives a practical demonstration of the power of prohibitions. As Morgenstern stated, a clear and explicit prohibition allows a full set of principles to be established. Those can then act as a standard. Real world examples can be measured against it. Measurements have been taken ... and ... *B. rapa* has been found wanting. *B. rapa* is absolutely the subject of Darwinian evolution. The same holds, by extension, for all other biological organisms, for if *B. rapa* is subject then all others are subject. The only

biological organism that can be free from Darwinian evolution is the one that can demonstrate the impossible biological cycle, details of which are made available on the engenetics web site [<http://www.engenetics.net>].

It is of course possible that there exists a ball somewhere that is rolling blithely along, utterly free from all gravitational, frictional, and other influences. That, however, is immediately a nonsensical proposition that completely misunderstands the basis of Einstein's principle of relativity. Nevertheless, anyone wanting to refute Galileo and Newton, Huygens and Bernoulli, or Carnot and Clausius must positively demonstrate the existence of the very thing that their various theories declare is impossible. No other refutation is possible. Anyone wanting to refute Galileo and Newton must produce a ball or other object that never changes its speed. Anyone wanting to refute Huygens and Bernoulli must first produce a perfect medium to support such a proposed wave. Anyone wanting to refute Carnot and Clausius must produce a perpetual motion machine. And by the same token, anyone wanting to refute Darwin, his survival of the fittest, and the evolution he gifted to the world must now produce a biological organism that is utterly free from all effects of the environment. The proposed organism must abide by the tenets and the strictures whose details are made available on the engenetics web site [<http://www.engenetics.net>]. But since that cycle is impossible . . . then all biological entities both on this planet and any yet to be discovered are subject to Darwinian evolution. This is what is demonstrated by the experiment and the argument whose details are made available on the engenetics web site [<http://www.engenetics.net>].

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