

1. SCIENCE SUPPOSES DESIGN, NOT THE REVERSE

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§ 1 DESIGN GOES BEYOND PROBABILITY

Human imagination may construct *probable* pasts and futures as produced by probability-based empirical research, but also *improbable*^a ones. Some of these are realisable, *possible*. You may *invent* them by *design*, but the required imagination is often blocked by hidden suppositions. This study aims to unmask such blockades.

Some possibilities can be explored by mathematical models extrapolating actual realities as probable by repetition. That may simulate improbable possibilities never observed or imagined before. They are, however, limited to what can be reached by *repetitive* operations. Repetition is the core of mathematics, but not of design.

Exact repetition of *equal* units results in *numbers*. There are, however, different kinds of units, resulting in different kinds of numbers. Their *difference* is usually indicated by the name of variables, expressed in the different characters of algebra.

Operations on numbers such as adding, subtracting, multiplying, dividing, powering, integration or differentiation, suppose repetition as well. Iteration may produce a kind of diversity (eg fractals), but that covers only a part of all possibilities.

The diversity of living nature shows many more possibilities based on *non-exact* reproduction and so does design. In evolution, only *different* genes can produce new combinations. Without any mutation, a combination of equal genes would never have produced the diversity required for the evolutionary survival of some new 'fittest'.

Design does not copy or repete equal things either; it makes something *different*. It may combine old things, but then only the combination may be new.

For an empirical scientist, designers are liars: they draw things that are not true. The modality of design, however, is not *truth*, but a wider concept of *possibility*. What is true must be possible by definition, but the reverse, not everything that is possible is also true. What is true is therefore a subset of what is possible.

That is why I consider any science to be a design, but design not as science only. Science seeks truth, equality, repetition. Design looks for new possibilities, making a *difference* from what is actually true. Science attempts to recognise *equality* and repetition. Only repetition enables to predict and anticipate.

^a Strictly spoken any event has a probability, but I will use the word 'improbable' as an abbreviation for 'with a very low probability'.

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Cusanus(1440)^a already claimed that in reality absolute equality does not exist. That is why complete accuracy in measuring or constructing is also unattainable. The exact world of mathematical concepts and relationships therefore cannot be anything else than an *ideal* image of recurring experiences.

All apparent equality amounts to not more than similarity. A creative mind, however, goes beyond repetition, it should distinguish first, before it may compare, summarise and divide.^b Creation *makes* first of all a *difference*.^c

Van Leeuwen^d, took equality as the limit of difference, its unattainable zero value. Something different can always be imagined as more different, but not always as less different. If you no longer can see or imagine less difference, then you may *call* it 'equality', but you still suppose at least two *different* objects in order to compare them and to conclude 'equality'.

You can count only things that are similar in one way or the other, but you have to be aware that they may differ in other respects.^e

They at least must differ in location, otherwise they are 'identical', the same thing.

Words generalise repeating truths, probabilities, and causalities.

These are the core of empirical science, but design requires more. What is its surplus? In order to specify in what sense design outreaches science, I take

- 1 equality as a special case of difference,
- 2 truth or probability as a special case of possibility,
- 3 science as a special case of design,
- 4 cause as one condition between the many conditions to be fulfilled, and
- 5 verbal language as a limited reproduction of imagination.

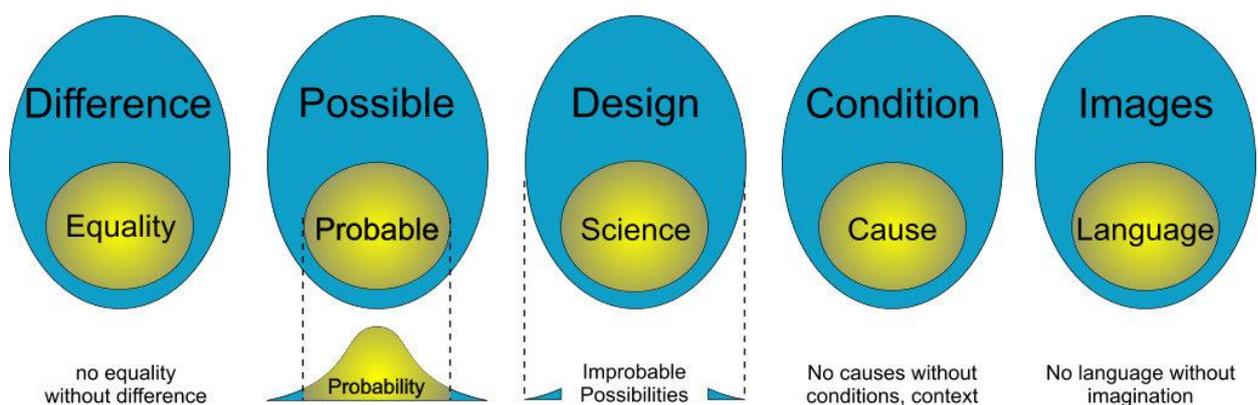


Fig. 1 Primary suppositions

These starting points liberate *design study* from the limitations of *empirical research*. Science *supposes* design (design *includes* science), not the reverse.

^a Cusanus(1440)De Docta Ignorantia II, 1 p92 https://urts99.uni-trier.de/cusanus/content/fw.php?werk=13&ln=hopkins&hopkins_pg=61

^b Cusanus referred by Dijksterhuis(1975)De mechanisering van het wereldbeeld(Amsterdam 1980)Meulenhoff p250

^c According to Anaximandros (as early as ca. -575), creation also consisted of separating opposites from the indefinite (apeiron).

^d My teacher and predecessor as a professor in ecology the University of technology in Delft.

^e The statistical (epidemiological) approach to people in medicine is therefore doubtful.