THE CONCEPT OF 'OBJECT' IS PARADOXAL BY DIRECTION AND SCALE
'Object' is not the self-evident concept that most authors take for granted.[a] It has tacid suppositions. As a newborn (still without references) you will probably not immediately see separate 'objects' in the multiplicity of impressions that you get 'pre-cast' (object is literally pre-cast). This discernment must be *learned* as a representation in a long-term repeated sequence of tactile and visual impressions.

This well observable process in babies sheds some light on assumptions of which we are no longer aware of as adults (Chapter 5 p70). An 'object' in our first phase of life is the part of an incoming image that separates itself from the rest ('everything except' or 'not' the object), by 'parallax exercises'.

When you move, you see something in the foreground appear more quickly than the background, but when you follow that object with your eyes, the background moves in relation to that object ('object constancy'). That active separation (loosening, dis-connection, dis-traction, abs-traction) supposes the observation of permanent differences in all directions despite motion.

This also sets the foundation for the conjunction 'not' (everything except the object). 'Not' leaves everything except the object undetermined. The 'attention' focuses on an object ('focus'). The loosening of an object that is no longer perceived (eg learned with the game 'peek-a-boo'), requires a stack of abstractions that gradually under-lie (are sub-posed in) concrete impressions and experience.

Parallax, however, does not help anymore in the recognizing of a constellation of stars such as Orion, based on an arbitrary traditional outline of the figure. Many other outlines would have been possible. Such arbitrary outlines are taught by culture and become sup-posed in the observation.

The abstraction technique for deriving object constancy is simply repeated in non-concrete representations, even if they are only real as (often taught) internal representations (re-presented, brought back to present). Two paradoxes appear when distinguishing objects: a perpendicularity paradox and a scale paradox.

DIFFERENCE SUPPOSES PERPENDICULAR EQUALITY (PERPENDICULARITY PARADOX)
An omnidirectional enclosing sharp outline of sudden differences between an 2D object and its environment (the difference between 'well' and 'not') does not take up any space. Each difference in the 2D surface supposes a direction. Perpendicular to that direction there must be less difference (some equality) in order to see the difference (*Fig. 5*).

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a Kant (1781) Critik der reinen Vernunft (Riga) Hartknoch, has said wise things, but in the course of his argument he tacitly passes a growing number of suppositions that I do not share. He laid down his foundation at least on the tenth floor. He does not mention underlying floors (the suppositions). As a result, he needs hundreds of pages of scaffolding to keep his building upright on skinny pillars.
One set of assumptions is tacitly stored in the term 'object'. Kant takes that concept everywhere for granted (as many do), but it is not. Recognition of an object and the detachment of that object from an environment full of differences, is the result of a long lasting learning process (p28).
Other unspoken suppositions at Kant are hidden in concepts such as substance, logic, knowledge, the concept of 'concept' itself, and of course also in its categories and judgments (*Fig. 253*, p92).

The kind of difference may be direction-dependent, as long as there is a continuous difference (last figure of *Fig. 5*).
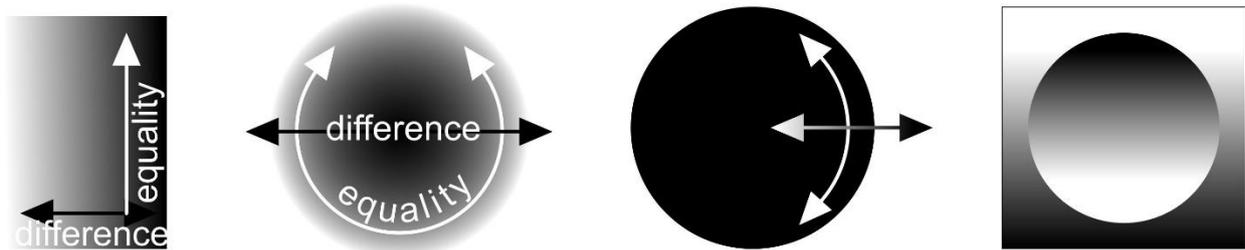

Fig. 5 A perpendicularity paradox in vague and sharp object boundaries

This perpendicularity paradox applies also in space taking vague boundaries and in 3D. It is immediately clear from a 2D drawing, but in a linear language this perpendicular relationship can lead to contradictions. 'The bridge is open' says the skipper. That is at odds with what the motorist reports. Who is lying?

INTERIOR SUPPOSES A CONTRARY EXTERIOR (INSIDE-OUTSIDE PARADOX)
There is also an inside-outside paradox, which produces a seeming disagreement. A ball is hollow, seen from the inside, but convex from the outside. The impression changes drastically coming out, but entering the difference itself remains the same in the opposite direction (symmetry). A linear verbal representation may distinguish a difference 'from black to white' and its reverse, but an image does not prescribe a direction to see the same difference.

Going out from home is like a birth. To step out is called 'ex-sistere' in Latin and 'ek-stasis' in Greek. Existence and ecstasy have the same origin.

DIFFERENT DIRECTIONS ALLOW CONTRADICTIONS
'I lie' is a double message. If I tell an *untruth*, then it is still *true* that I am lying. One message is about the action of my lying (true), the other is the lie content (false). One message ('meta-language') is about the outside, the other ('language') about the inside. A child knows such a thing as it builds huts or tents and experiences the above-mentioned inside-out opposition of viewing direction as coming out and entering (eg light | dark).

Something similar happens when we think *about* 'thinking' (philosophy, psychology). The second 'thinking' is the content, the first supposes what we want to say *about* that 'thing'. We must then be prepared for apparent contradictions (paradoxes). When we say something 'about', it suggests that we look at it 'from above' and that is 'at right angles' to the area being looked at. Whether that content is true or false, *that* I think about it is true (the 'cogito' of Descartes).[a]

So you can tell truths about truths, truths about falsehoods, falsehoods about truths and untruths about falsehoods.

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a The latin background of cogitare (co-agitare, thinking) is interesting: 'repeatedly acting with'. For the Romans thinking was apparently acting parallel to reality. I will indicate it further with 'co-action'. 'Inventing' or designing would then be counter-acting to reality. Designing is then indeed 'ejecting' from an existing reality.

Can the past be 'true'? If you talk about something, it is already a thing of the past, no longer accessible to your own action, no longer 'actual'. Even a football reporter can only tell what happens if it has already has happened. We are only convinced of that unreal past when more sources tell the same thing, but those stories can not be chequed or tested because they are no longer accessible for such a controlling *action*.

Moreover, every memory is based on a flat image[a] of which, in spite of all kinds of additions and associations, little remains. The sequence of memories as a stack of photos is then 'perpendicular' to the images. The three spatial dimensions are 'perpendicular' to each other, perhaps the fourth (time) too.

A JUDGEMENT MAY TURN INTO ITS OPPOSITE BY CHANGE OF SCALE (SCALE PARADOX)
If you observe the pattern in **Fig. 6** In detail, then you only see differences: every black dot has a white one in its surroundings and vice versa, but at a distance you see equality.
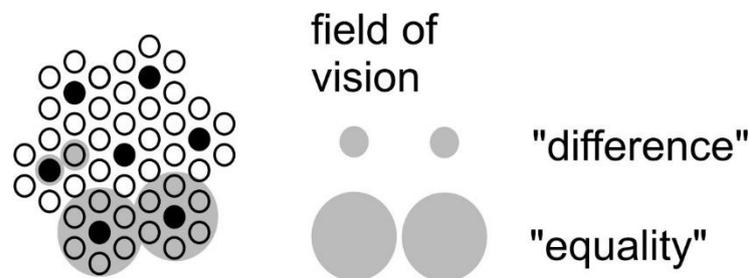

Fig. 6 Scale paradox

The judgment 'difference' or 'equality' can therefore be reversed already at a linear scale difference factor of 3. That is a minimum and only a possibility, but there are 10 decimals between the size of a grain of sand and of the earth. These are at least 20 factors 3. So there are in theory more than 20 possibilities to disagree, while you actually agree, if you keep an eye on the scale of the claim.

The scale paradox leads to senseless differences of opinion. A street with all different buildings looks like other streets with such an arbitrary mixture of buildings. Paradoxically, some equality between buildings in each street is required to distinguish the difference from other streets. An urban planner who complains about the characterless uniformity of the streets will therefore disagree with the architect who enthusiastically praises the individually different character of each home.

Meaning rests on suppositions. With other scale suppositions, the meaning can change. If your conversation partner is arguing with *two* reversals above the scale you have in mind, then you can even agree with each other while you do mean something different.[b]

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a A memory is also largely coming from the flat retina or flat skin. The third dimension must then be a construction with (possibly remembered) experience of our own movements (motor skills).

b This also applies to the exchange of cause and effect on different time scales. See for example: Jong(1998)Wat eerst: wonen, water, wegen of welvaart In Angremond Editor Watertovenaars Delftse ideeën voor nog 200 jaar Rijkswaterstaat pp 42-52(Delft)

With the insight of the scale paradox, I do not have to assume mystical forces like an 'invisible hand' of Adam Smith in the economy or the 'self-organization' of 'complex systems' that astound physicists when they observe sudden order ('synergy') in microscopical chaos ('emergence', a 'phase transition' such as freezing, p186) under certain macroscopical conditions.

The scale paradox does, however, give rise to the relevant question what 'disorder' and 'order' exactly mean. In physics, 'disorder' ('entropy' S) is a probability of distribution (p176). An orderly state (all gas concentrated in a corner) is improbable (low entropy).

In computer science, the amount of information which is at least necessary to describe a system (H, expressed in 'bits' p180) is intended analogously. Disorder requires more bits than order. If in a larger radius one or another repetition appears, then you can suddenly describe the system with fewer bits ('information compression').

Both kinds of 'order' are different from 'organization' between different organisms or different organs with different functions. In ecology this is seen as a valuable, less chaotic increase in the information content of a system. A phase transition to less biodiversity may mean more order, but also less organization.

An ecosystem with few species is easier to describe with addition and multiplication than an ecosystem with many species and many different mutual relationships. There is then plenty of reason to shift the attention to rare organisms and unlikely situations. That is also typically the focus of designers.

Self-organization then is a misleading term feeding the risky confidence of laissez-faire liberals. I would prefer to speak of repetition, regularity or coordination that can occur in large numbers of particles, individuals or waves as a sort of resonance in a laser, or in a 'wave' in a football stadium (simply because you do not get space enough in the opposite direction).

It is questionable whether 'self-organization' is desirable, if it means extinction of deviating categories. 'Synergy' in the ecological sense of symbiosis with mutual benefit between different species is just the opposite.