

Reference Materials for Pills Cluster: **UNKNOWNNS**

CONTINGENCY: It did not need be. Could it have been otherwise?

Contingency is 'the attempt to think events that take place but need not take place: events that could have been, otherwise' (Mackay, 2011:p. 1). Contingency is closely related to unpredictability – can also be described as 'unknown unknowns'. Contingent events are usually unpredictable, because we can't be certain whether a contingent event will occur. Future events are, in large part, both contingent and unpredictable. Thus, contingency can be constructed as a combination of two negations: something that is both non-impossible, and non-necessary. As a result, some people use the words interchangeably – as though "contingency" had the same meaning of "unpredictability". But contingency and unpredictability are actually not the same thing. Unpredictability means that there may be a specific cause to a situation, but it cannot be figured out in practice. Contingency, on the other hand, is not about the specific cause, it's a fact about the situation.

Contingency has always been a philosophical problem, because it is an ambivalent concept: as philosopher Joshua Ramey writes "in some sense contingent events are both possible and actual, which is what distinguishes the contingent from the merely possible" (Ramey XXX: 118). This is also the paradox of contingency. Being indeterminate, contingency is at the same absolute (an event might or might not happen) and relative (when it does – or does not - happen, that depends on real causes, other real events). An example of this occurrence is a rogue wave, whose conditions may exist, but which may or may not come into existence. But there is another aspect of contingency that has been highlighted: contingency, precisely because it is the space between what is possible and what is necessary, coincides for Giorgio Agamben with the domain of human freedom. It is in other words, the space of potential – which is always the potential of saying yes, or saying no, of doing or not doing, of acting or not acting). Contingency becomes a force to work with or, to borrow philosopher Robin Mackay's expression, an 'anonymous material' that works with us and through us, the ultimate space of choice.

READINGS:

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INDETERMINACY: The borders are becoming fuzzy. Can they still be defined?

What cannot be measured, or tested, what cannot be determined, literally. Indeterminacy (or indetermination) is one of the characteristics of complex systems, together with nonlinearity, unpredictability, non-proportionality between cause and effect; emergent properties; positive feedback. Social scientist Karen Knorr Cetina uses the idea of indeterminacy to frame the object of research ('epistemic objects') as always open, question-generating, complex and incomplete. Because of their indeterminate state they can unfold, mutate and explode indefinitely into something else, and amplify, rather than reduce, complexity. The focus on the inherent dynamism of research in the post-Newtonian paradigm disavows the dualism theory vs. practice and subject vs. object of research.

Indeterminacy can be seen as a force that traverses the stuff everything is made of, with outcomes that cannot be fully planned in advance. For philosopher Henri Bergson the role of life itself is to insert some indetermination into matter (Creative Evolution). Indeterminacy is also the space that allows creativity to emerge. In the theory of affect, affect is understood as indeterminate emergence that allows creative mutation.

Meaning can be indeterminate too: consider a word with an ambivalent meaning, like the word pharmakon, which in Greek is both 'remedy' and 'poison'. As such it cannot be determined fully as either one or the other. Indeterminacy is precisely this ambivalent state that refutes the dualism 'either...or...'. Instead, it affords multiple possibilities, even conflicting interpretations of the same entity, event, object or word. In craftsmanship (both digital and analogue), indeterminacy - or better, precise indeterminacy to use architect Branko Kolarevic's expression (2008: 122) - becomes a resource that questions and supplants design determinism. Here indeterminacy is connected to risk, to the intentional embracing of the unexpected, and to intuition-led transformation, which all become tools in the arsenal of the digital designer/maker as forces to work with.

Finally, in the intensively data-driven ecosystem of algorithmic trading, indeterminacy is acknowledged as immanent to the system itself. It is perhaps the realization of what philosopher of technology Gilbert Simondon in the early 1960s described as the 'open object': the product of a new age of cybernetic ensembles characterized by indeterminacy.

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SERENDIPITY/CHANCE: How can you have a random encounter?

Chance can be defined as the accidental intersection of two independent causal chains. This is Spinoza's argument when he describes a stone falling onto someone's head and killing them- bringing together a series of distinct chains of events (e.g. the wind, the path etc.) Greek mythology had chance (Tyche) always together with necessity (Ananke). This distinction between the realm of chance and the realm of necessity returns in biochemist Jacques Monod's seminal *Chance and necessity*, according to whom humans themselves are mere accidents of circumstance, the product of "an incalculable number of fortuitous events" – not much different from a pebble: configuration of atoms. For Monod this is the significance of chance and necessity: just like a pebble, we are under no obligation to exist but have all rights to do so. All bearing in mind that the universe is ultimately indifferent to us. It also returns in classic cybernetic where chance (Tyche) stands for quantum indeterminacy, while Ananke is the personification of scientific determinism.

Chance has a perennial role in society, it is both meaningful in relation to purpose (when it favours us we call it luck, or good fortune), but it also circulates in the ideology of neoliberalism where chance as capture of probabilities is invoked to liberalize market forces and manage risk and uncertainty. Unlike the Greeks who believe in a deterministic fate, we tend to experience chance as the manifestation of a nonlinear, turbulent complex system - the unexpected and the unforeseeable event that can be either disruptive or benign.

Serendipity is a curious word that describes the chance encounter with valuable or interesting things that were not expected nor sought. The word 'serendipity' is a success story of word-crafting : it was made up in the mid-1700s, by English author Horace Walpole who recounts this in a letter to a friend (dated 1754) "This discovery indeed is almost of that kind which I call Serendipity, a very expressive word, which as I have nothing better to tell you, I shall endeavour to explain to you (...) I once read a silly fairy tale, called 'The Three Princes of Serendip': as their highnesses travelled, they were always making discoveries, by accidents and sagacity, of things they were not in quest of..." Walpole's memory of the tale (which, as it turns out, was not quite accurate) gave serendipity the meaning it retains to this day. It was rarely used until the 20th century.

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UNCERTAINTY: Can you observe and measure something at the same time?

The uncertainty principle as articulated by German physicist Werner Heisenberg (Heisenberg principle) states that you cannot measure both the position and the velocity of an object. The act of observing and attempting to measure something will alter what is observed. Thus, it can be said that the concepts of exact position and exact velocity together have no meaning in nature. Notions of uncertainty and strategies to deal with it, are subject specific. The way artists may appropriate uncertainty as 'chance encounters' differs from the way uncertainty is viewed by statisticians and policy-makers as 'risk management'. Thus, there is no 'uncertainty' field as such, rather a variety of approaches and perspectives that fit the remit of each individual field. Because of this inherent variety of viewpoints different disciplines will use the term uncertainty to signify different things. Uncertainty has to do with 'negative knowledge' i.e. the awareness of the limits of one's own knowledge, yet it is socially constructed (Knorr Cetina 2003). An example of negative knowledge is the theological perspective that studies the Divine in terms of what the Divine is not rather than in terms of what it is (apophantic theology). A similar approach is found in experimental high energy physics where negative knowledge is incorporated into research through a focus on liminal phenomena. Often connected to uncertainty is the notion of risk. If, as sociologist Nikolas Rose suggests, this distinction between uncertainty and risk is key to understanding the specificity of our present, then it surely is crucial to a framing we take as 'futures'. For Rose, while risk implies a future that can be acted upon in the present because of probabilistic calculations, in the understating of uncertainty enter considerations that are not only probabilistic, but also aesthetic, emotional and experiential.

This pill invites you to examine the words, narratives and metaphors that you use to talk about uncertainty and the genuine dilemma it presents. For instance, what are the relations between uncertainty and knowledge (or lack of)? What is the relationship between uncertainty and expectation of, and preparation for, the future?

READINGS

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