

Epistemic Order

On the Attribution of Truth and its Technology

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I - Truth-Generating Technology

The significance of a *public ledger* may primarily lie in offering its users an orientating point of reference within their respective social order. In a sense, between users, whose predisposition is characterized by mistrust and conflicts of interest, a consensually familiar – possibly trustworthy – object is positioned. This, in turn, within the primarily social network forms a technological reference for statements with their respective attributed truth values. Such a (truth) bearer is typically subject to a process that determines the documentation running on it. Be it the activity of a notary, the records of a historian, the work of a scientist, or something else; in one aspect, these processes are identical: they are primarily carried out manually by an authority external to the document. There is a correspondence between the document and its author, which must be trusted to a greater or lesser extent—just as with the document which itself is subject to an authenticity criterion. The authenticity of the respective document may not be detected by observing its factual use, but can only be determined via its genesis – its provenance. Forgeries which persist functionally equivalent to originals, and above all, without being identified as such can circulate. In addition to the authenticity of the document and its social use, the information it contains is also questionable, insofar as it may represent a claim to truth as a correspondence to a fact. So, why should one consider the complex and costly preservation of data on a blockchain if such modal epistemological problems can occur despite it?

The validity of statements with regard to external references does not increase simply *because* they are stored on a blockchain. The quality of their content is indistinguishable from sources of other types. Rather, the fact *that* they are stored on the blockchain adds bindingness to the dimension of the respective generation of the data. Because *on-chain*, an immanent verification of the genesis of the respective system states proceeds.

This self-referential verification and its system-internal attribution of truth values differs from conventional forms of documentation, which commonly inscribe the (physical) storage medium manually. Blockchain is contingent of truth. Therefore, a *public ledger* can also be characterized as a memory subsystem. However, relevant explanations of this claim would exceed the scope of this work.

The topic of the following text encompasses the complex of *public ledgers* insofar they embody epistemic qualities within a social order; or in other words: why they present data that are treated as true within social interactions and can therefore remain as

premise for subsequent action, discourse, decision-making, and so on.

II – Epistemic Order and Memory

As the case may be, databases are rationalized as fundamental points of reference in regard to the subsequent connection operations that they enable and for which they seem indispensable. From this perspective, databases are technologies that perform memory functions in an increasingly technologized environment. Such bindingness automaton allocate that which refers to them presupposes, namely the references that are then extracted from them. Technology that performs memory functions is, in this respect, an effective protostructure of that which refers to it and is thus the contingency of the contingency of referring to something within the technological environment altogether: quasi a technologically operative *natura naturans*.

Across the past centuries and millennia of human history, there may not have been technological, digitized, and computer-distributed databases like today, but the documentation of referential histories, data, or more generally, instruments representing the past, are as old as the cultures themselves. Self-preservation of culture, in a broader sense, cannot occur without reference to its own past. Jan Assmann states, reconstructing M. Halbwachs: "The past does not arise by itself, but is the result of a cultural construction and representation; it is always guided by specific motives, expectations, hopes, and goals, and shaped by the frames of reference of a present."ⁱ The construct of the past happens qua a disposition which warrants said construct. Memory functions that operate subjected to a somehow conditioned substrate, be it instrumental or cultural, also incorporate this substrate. In the present, the nature of memory selects for the possible pasts which it generates.

(Cultural) memories, as they assign consensual domains qua their structural determinations, establish the epistemic order at the basis of the social order. This also applies to technological formats such as databases. The pre-supposition, the pre-supposedness of the contingency forming apparatus enables such a social order, which can emerge after deselection of social contingency. An under different engagement possible social order is not to be established, because it is rejected by the structural determination of the memory: that means, some possibilities are made impossible, because the system does not conceive its patterns and discards them as *un-*

rememberable errors, thus condition them to *be forgotten* by the social order.

Through the continuous selection of memory contents and due to the forgetting of what has been forgotten memories tend to rigidity based on what has been remembered. The past is rendered via the memory bias and the forgotten, further unknowingly forgotten, disappears from the present and thus also from the future. Such a constant self-reproduction of the memory introduces criteria of selection into the social order, because it relies on the memory to develop itself. Consequentially, a (cultural) memory impregnates itself against such a social order which is based on other contingencies, respectively which constructs past differently and/or refers to deviating consensual domains; this can be the case materially: because the references differ in their informative potential, or cognitively: because the access of another system towards the memory is of an altered form.

In the continuous process according to the referred memory the social order performatively creates structures which tend towards self-preservation and repetition. One can mention an inherent drift towards conservatism without implying any political or ethical orientation, but only regards the establishment of definitive structures. The performance makes itself plausible, if and when it repeats itself. Thus a plausibilization and selection of the repeated via repetition occurs. And such not (just) tautologically or due to a particular defiance; but because in this way systems enable self-identical states of themselves even more so by establishing the expectations that they will. Systemic rigidity may succeed.

In the context of the bindingness of technologies that perform memory functions, this means a cultural eagerness in regard to a fundamental validity of a technology which in that way is functionally nature-equivalent. And herein lies a fatal problem: How immune from its own rigidity is the social order due to the fact that it (nevertheless) is able to reflect on technology as an instrument? In other words: Is technology then indistinguishable from nature and the algorithms display a logical necessity at the level of natural law; perhaps not ontologically, yet operationally within its area of effect.

As an implicit anticipation may have already stated, an ontological analysis of whether the aforementioned *can* be the case does not follow. The circumstance that factually patterns which are usually attributed to nature on the one hand and technology on the other are functionally equivalent translated into social realities poses following matter to be addressed: not that technology *is* law, but that technology persists as lawfully *enframed*.

We explicitly deal with and within social reality with reference to technology. Initially, we will intentionally remain within this second order principle, which understands technology not primarily as an engineer's problem-solving methodology, but first and foremost as a modality of interactions with social effects.¹

III – Disposition of Learning Through and in Spite of Permanency

The common juxtaposition of memory and storage highlights that memories, unlike storage, change their structure over time, and thus alter their content. The term storage refers to primarily an aggregate of information.² This raises an obvious follow-up question about the identity of contents in terms of their transformation in and through the structure in which they are embedded.³ In Nietzsche's *On the Genealogy of Morals* (id est, its “selection structure” or “contingency sequence“), he explains a fatal category error at hand. Namely, the confusion of function and genesis. Since, according to Nietzsche, “there is no more important proposition for any kind of history than the one that has been achieved with such effort, but really *should have* been achieved – namely, that the cause of a thing's emergence and its ultimate usefulness, its actual use and integration into a system of ends, are *toto coelo* separate.”ⁱⁱⁱ

A distributed database and its *public ledger*, for example in the cases of Bitcoin and Ethereum, are primarily and mostly instruments designed to manage financial technology challenges. (And due to their past-verifying form of operation self-referential histories.) Although, in the whitepaper of Bitcoin the intention was formulated to create a P2P cash system, Bitcoin generally is not used as a functional equivalent of cash, irrespective of its ever-increasing popularity; likewise, throughout the history of Bitcoin the rationalizations of its function have shifted, especially since the „Blocksize War“. Decidedly, “rationalizations” is in plural form here because they

1 Posed Heidegger-ish: Is *then then* man *en-framed* in the memory?

2 Compare with this: “At the collective level, storage memory contains that which has become unusable, obsolete, and foreign, the neutral, identity-abstract factual knowledge, but also the repertoire of missed possibilities, alternative options, and unused opportunities. Functional memory, on the other hand, is an appropriated memory that emerges from a process of selection, connection, constitution of meaning—or, to speak with Halbwachs: frame formation. The structureless, disconnected elements enter the functional memory as composed, constructed, connected. From this constructive act emerges *meaning*, a quality that is fundamentally lacking in storage memory.” (Assmann, Aleida. *Erinnerungsräume*. München: C.H.Beck, 2018, p. 137, translated by the author)

3 Compare with this: “Structural determinism” by H. R. Maturana.

are not derived a priori from the technology but rather because they attribute the “ultimate usefulness” retrospectively and express the ends as *presupposed*. The past does not provide binding clues on this matter and it's only apparent in its subsequent phenomena. That means: an end emerges a posteriori. The function is contingent, variable in its context in regard to meaning and thus *toto coelo* apart from the genesis, which initially has no operational relevance.

As described in the logic of evolutionary biology – and this also seems to have inspired Nietzsche's sentence – a part of a system is of importance because of its relation to others and it is not inherently or substantially a performer of its respective function. Thus, one can observe across phylogeny a constant rearrangement and redistribution of functions within organisms. In one case described by Darwin, this can even be observed in the ontogenesis of a fish whose entire anatomy changes from a vertically swimming body to a horizontally swimming one during the lifetime of a single specimen. However, the genetic material remains virtually identical across generations. Whenever functions are dislocated, the previously functional part morphs into a rudiment or now allows for reallocation, both phylogenetically and ontogenetically.⁴ (Thus, Bitcoin can be in one case a substitute for *cash*, in an other case a *settlement layer* with a fee market which is unfitting for *payments*. And this, although the differences lie only in minor details.)

Returning to the potential rigidity due to memory functions this shows that information on the *public ledger* can have different implications in second-order, also socially, in accordance to their interpretation over time and thus the *public ledger's* relative functions differ in the various systems. Precisely because the documentation of data need not to have identical social implications over time; and *public ledgers* do not record in a correspondence-theoretical form truth values in regard to the external world. Despite this, or also because of it, social orders tend toward a rigidity that morphs social engagement to a compulsive repetition. Quite like the *public ledger* as a consensual domain provides social orientation and fosters coordination, it can also support the consolidation and decline of social structures for which it was never intended. Digital memories in the form of *public ledgers* introduce publicly visible permanence in social

4 Compare with this: “Furthermore, sometimes two different organs or one and the same organ in two very different forms simultaneously perform the same function in the same individual, and this is an extremely important means of transition.” (Darwin, Charles. *Die Entstehung der Arten*. Hamburg: Nikol Verlagsgesellschaft, 2008, p. 225, translated by the author)”

orders, although this may not benefit the social order, even if the technology is intentionally used. Among other reasons, since psychologically as socially reinterpretation and forgetfulness are of particular importance for survival.⁵ As purposeful and life-benefitting the information management may be, notably in regard to accounting, as tyrannical and prone to abuse it can be if the social-integrative interpretation of the data is not perceived as transformable and especially if one attributes them necessary, unchangeable social implications. Such is the case whenever one perceives databases as an epistemic order within the social order, which *simultaneously* portrays databases as the exclusively referred-to truth bearers in conjunction with them also implying social consequences in a rigid manner. (An unreflected exaggeration of „Blockchain never lies.“) In systems theory jargon this is referred to as a falsely assumed “information transfer”, where only the cognitive performance of observation regarding an other system takes place. The attempt to derive a systemic identity from an ontological identity is always wrong, since the prior is only constructed system-relative.

For example, this means that two *homogeneous* operations on the *public ledger* do not have to be interpreted the same way in second order operations. So, for example, from a legal perspective, a transaction can be interpreted as legal one time and illegal another time. Money laundering and maintaining privacy of ownership can (and usually must) appear identical, since their legibility must be based on contingency. Likewise, depending on the respective jurisdiction, one and the same operation can be judged as illegal financing one time and as legal donation another time. The nature of this lies in the circumstance of *public ledgers* in conjunction with their respective consensus mechanisms – for example In the case of Bitcoin and Ethereum – operating as a technology that provides its self-referential epistemic validity and documents their truth values; and again: does not record quasi correspondence theoretically an external world. The epistemic order *does not* host truth values in regard to social behavior, but only the ones in regard to its self-reference.

Now, why is this socially relevant and wherein lies a reason for cautioning against this behavior? Quite simply: because logical consistency relies on the categorical

5 Compare with this: “I would like to assume—entirely in the spirit of Nietzsche—that the signs of the natural basic equipment of humans rather point to forgetting than to remembering, and that the fact of remembering, of interest in the past, of research and working through is the problem that actually requires explanation. Instead of resorting to a special sense or drive, I consider it sensible to ask in each individual case what has led humans to do something with their past.” (Assmann, Jan. *Das kulturelle Gedächtnis*. München: Verlag C.H.Beck, 2018 , p. 67, translated by the author)

arrangement. Second-order conclusions are not necessarily consistent because cognitively congruent elements are treated as equivalents within the observing system, even – and especially – if this facilitates a subsequent connection operation. The primary approach here is to operate according to the principle of the rationality of compatibility.

Like, when a car dealer deduces the customer's solvency based on his clothing. Or, when a HR manager reads the applicant's high school grades infers his cognitive abilities. Or, or. Cases in which cognitive reduction renders highly functional tend to equate reductions with the assumed ontological object, since the reductions sufficiently, reliably and frequently enough ensure high functionality within the systems. The system-relative “prejudice” is not a perceptual *error*; but rather part of a system-maintaining cognition. Precisely when cognitive reduction results in subsequent connection operations within a given system, it seems plausible to conclude that its functionality is based on epistemic qualities. In such a way, systems make their operability plausible, by attributing an epistemic correspondence to their environment, hence projecting their “inner truth” as one ontologically existing within the *public ledger*, even though said system *equally* functions as a self-referential, operationally closed system. Thus, there lies ultimate importance on the potential to learn regarding the reading of data on the *public ledger*.

One characteristic of the blockchain is its self-reference, which, among other things, prevents arbitrary manipulation of the *public ledger* “from the outside”. In equal measure, based on its design and architecture, will this database be deficient in regard to the corresponding representation of an “external world”.

Exclusively if the logic consistency can be guaranteed without interruption, the use of blockchain makes sense in the first place. A system-dependent deselectivity of information with correspondence to extra-systemic references of the blockchain is a design scheme that must be considered if blockchain is to be integrated into social contexts in a sensible way. *The absence of redundancy of information is information that we can derive from the blockchain.* Consequently, the absence of information on the blockchain can be translated into extra-systemic information, given the understanding of *how*.

To formulate a conclusion it is to say, that blockchains as epistemic order is particularly useful and appropriate when it primarily *documents* self-referential operations in its

digital permanence, in spite of users mistrusting each other, and only in rare exceptions represents correspondences. The more consistently applications limit their functionality according to this principle, the more fittingly they are conditioned to become part of an epistemic order. Also, since information, in addition to its content, gains a qualitative dimension related to its own genesis.

Because data on the blockchain in regard to its truth values does not—and so is the common understanding of a document—exclusively contain a corresponding “correctness” but also is subject to the verification of its own past, the possibility of digital provenance is enabled, the capability to seal the “genesis” of information informationally. An “actual use and integration into a system of ends” can succeed.

- i Assmann, Jan. *Das kulturelle Gedächtnis*. München: Verlag C.H.Beck, 2018, p. 88, translated by the author
- ii Nietzsche, Friedrich. *Zur Genealogie der Moral*. Kritische Studienausgabe Band 5. München: Deutscher Taschenbuch Verlag, 2010, p. 313, translated by the author