Staffan Müller-Wille:
“Recurrence / Introduction”

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SHADOW OF THE TREE

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RECURRENCE

INTRODUCTION

Diagrams tend to have a long life. In their geometrical or, more broadly, topological simplicity, current instantiations of diagrams immediately call up forebears from centuries, even millennia ago. There is something ornamental about them that evokes the beginnings of human art. And indeed, not so long ago, a team of researchers in the UK claimed to have deciphered a notational system in 23'000 years old cave paintings. Hunter-gatherers in the ice ages apparently used "non-figurative" dots, lines and y-shaped signs, "in which a second line diverges from a first," to encode information about the reproductive cycles of the animals humans hunted back then. The authors of the corresponding study are hesitant to speak of a writing system representing written language but address the signs as "exosomatic devices" designed to serve as a kind of external memory system which, as they emphasized, "remained stable over a wide geographical area and over a period of tens of thousands of years."[1]

Histories of diagrammatic representations therefore tend to be histories in the *longue durée*. Some examples may illustrate this. Theodore W. Pietsch's *Trees of Life: A Visual History of Evolution* (2012) begins with some bracketed sections of text from Conrad Gessner's *Historia animalium* (1555). Manuel Lima's richly illustrated popular works, *The Book of Trees* (2014) and *The Book of Circles* (2017), take us all the way back to Bronze Age Mesopotamia. And even those scholars who, a while ago already, have described epochal changes in the deployment of diagrams – Stephen Jay Gould in his provocative *Time's Arrow, Time's Cycle* (1987) and Giulio Barsanti in his masterful *La scala, la mappa, l'albero* ("The scale, the map, and the tree," 1992) – take account of these changes as a protracted, laborious process, in which "old" and "new" ways of envisioning the natural world coexist and alternate. Diagrams seem to present us with an achronic medium. It is difficult, if not impossible, to associate particular diagrammatic shapes with stable meanings on historical time scales in order to tease out the "new" from the "old." As a consequence, and perhaps more productively than historians tend to think, diagrams constantly invite anachronistic readings.[2]

This section provides glimpses of some of the patterns of recurrence – "gaps, loops, redeployment, nesting, layering," as Ruth Amstutz and Eric Hounshell put it in their Editorial – that characterizes the history of diagrams. Marianne Sommer offers a wonderful example of layering. ▸RECURRENCE / THE HUMAN FAMILY TREE On the face of it, Henry Fairfield Osborne's "Recent Evidence to the Ascent or Phylogeny of Man" presents us with an evolutionary tree, a "family tree" of humans and their closest relatives, extant and extinct, that emphasizes genealogical relationships. But as the title of Osborne's diagram already indicates, and as Sommer brings out through her thorough analysis, a hierarchical arrangement of hominids along an evolutionary scale is superimposed onto the treelike diagram, erasing any direct relations among human races, not to speak of humans and more ape-like creatures.

The same layering and, more specifically, nesting of different diagrammatic elements has characterized tree-like representations of genealogy from their European beginnings in the Middle Ages. Not depicting actual genealogies but rather degrees of kinship, as Christiane Klapisch-Zuber shows, *arbores consanguinitatis* could be drawn out into linear successions but were generally contained by a male "figure of presentation" – "Christ, a crowned sovereign, or a wise man" – that clasps, or embraces, the proliferating diagram.
▸RECURRENCE / TREE OF CONSANGUINITY It is tempting to ascribe a similar function of containing an open-ended process, depicted in the branching "tree of mankind," to the stratigraphic grid and overall frame of Osborne's diagram. The tree icon may generally suggest processes of open-ended growth and diversification, and tree diagrams were often designed with that in

mind, as Astrit Schmidt-Burkhardt shows with an example from art history, Nathaniel Pousette-Dart's "Gestaltian Chart of American Art" (1938). ▸RECURRENCE / TREES OF ART As her analysis reveals, this chart was designed and revised as a "robust riposte" to contemporary totalitarian conceptions of art. But Klapisch-Zuber's and Sommer's case studies demonstrate the equally prominent urge to impose limits onto the openness of the figure of the tree, especially when it came to depicting human relatedness; in the case of the medieval *arbores* to such a degree that the tree actually grows downwards, resulting in an arrow that, curiously to us, points backwards (or "up") in time.

Ruth Amstutz's essay literally takes us with her back in time to meet Jan Czekanowski, a Polish anthropologist active in the first half of the twentieth century with a predilection for squares. ▸RECURRENCE / BIOMETRIC MOSAICS His *Quadrantenmethode*, at its time a rather esoteric device to graphically represent similarities from multiple measurements taken from a series of skulls, is strikingly similar to the "clustered heat maps" that abound in present biosciences not only to represent ancestry but also a whole range of other phenomena, such as gene expression and metabolic networks. Amstutz reveals the underlying mechanics of constructing such representations – and how much depends on certain decisions in the process. Again, the diagram turns out to be an instrument to contain or, quite palpably, encase diversity rather than unleashing it. A similar leap, spanning centuries rather than decades, is performed by Niklaas Görsch, who compares diagrams employed by the seventeenth-century polymath Joachim Jungius in his botanical writings with contemporary plant identification apps. ▸RECURRENCE / TREE BLOSSOMS An important diagrammatic tool that Jungius employed, the decision tree, is still fundamental to the AI technologies. But it has become black-boxed in the mobile apps we employ: a diagram persisting in hiding.

Historians of science are notoriously wary of anachronism; past representations by scientists should be analyzed and evaluated in light of their particular context alone. Historians of technology, in contrast, have learned to appreciate the "shock of the old" (David Edgerton) to counter their discipline's obsession with innovation. This part addresses diagrams as technologies with long historical careers that take surprising turns – just like the lever, the wheel, or the screw. Looking at such technologies across time can become speculative and abstract – think of Tim Ingold's "comparative anthropology of the line." But it also has great potential of revealing the inner mechanics of diagrams, how they work, both in isolation and in conjunction, and beyond the meaning with which they are invested by particular cultures.

Notes

1 "Londoner solves 20'000-year Ice Age drawings mystery", in: *BBC News,* https://www.bbc.com/news/uk-england-london-64162799 (January 5, 2023); see also Bennett Bacon et al.: "An Upper Palaeolithic Proto-Writing System and Phenological Calendar", in: *Cambridge Archaeological Journal* 33/3 (2023), pp. 371–89, p. 373.

2 For a recent attempt to tackle this problem, see Nick Hopwood et al.: "Cycles and Circulation: A Theme in the History of Biology and Medicine", in: *History and Philosophy of the Life Sciences* 43/89 (2021).