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Antique Almighty and intelligent slime moulds

Performers of ancient and medieval cults claimed to sense with their devices an invisible phenomenon, now considered to be a geomagnetic force. Cultic structures were oriented in alignment with the directions perceived by them. We have formulated four interrelated assumptions, which may give a sense of the train of thoughts leading to modelling of the relationship between cultic orientation and geomagnetism.¹ The direction of orientations appearing in a wide spectrum before the compass was invented and the narrow set of simultaneous geomagnetic northerly directions led to the first assumption.

1. The changing of the direction of cultic orientations is a multiple of the changing of the geomagnetic north.

The siting directions of cultic structures erected before compasses were invented appear in a wide spectrum of different directions. In the band of the globe from the Polar Circle to the Equator, the direction of geomagnetic north contemporaneous with the sitings is rarely more than 30 degrees different from the direction of the geographic north. The direction of the geographic north changed negligibly from the point of view of our investigation, and therefore it constitutes a fixed axis of directional reference for examining the relationship between the sitings and the geomagnetic field changes.

2. There may be an indirect link between the two changes of direction.

The existence of an indirect link is reinforced if we can find a function that is valid, regardless of the continent, for the large majority of the cultic structures erected before compasses were used. In our study, we used a pie chart to show the directions of cultic orientation to which we assigned the declination values typical for the geomagnetic north at the time when the structure was sited and near its location. *The correlation between the set of cultic orientations and the directions describing the geomagnetic north suggests the existence of human perception of magnetic direction.*

3. The phenomenon referring to the hiding, invisible Almighty Creator – which can be interpreted today as a geomagnetic phenomenon – may have appeared in three directions in the course of direction-sensing rituals.

¹ The formulation of the four, interrelated assumptions was made possible by the scientific discovery whereby from the weak remnants of the geomagnetic field of the past millennia the former characteristics could be successfully reconstructed. The resulting so-called archaeomagnetic data were linked with estimated age data. It is rarely possible to establish dates with an accuracy of less than one hundred years, and it is even less frequently typical that the archaeomagnetic data having the most accurate age determination can be associated with the sitings of cultic structures nearly from the same time. Despite the uncertainties, the associations show a clear sense of the nature and closeness of the relationship.

In the depictions of rituals from the ages before compasses were used, we can see network structures which are occasionally interpreted as trees of life. Their branches, as construed today, are the schematic (in case of Assyrian reliefs, however, almost naturalistic) depictions of the different directional components of the magnetic field, which intersect in such a way that they do not stick together and presumably do not even touch. The geomagnetic components running over each other may constitute a spatial network structure. The components closest to the direction-sensing ritual performer make up the three that may once have been interpreted as the triad of the invisible Creator. The appearance of triads was fairly frequent in both anthropomorphic and bare geometrical types of cultic depictions, but also in metaphorical textual representations.²

The total field intensity direction of the geomagnetic field determined with today's instruments consists of countless components, the directions of which are not yet explored, and even their existence is disputed. Each of these components has a geomagnetic direction and a torque value, and as such, they can be interpreted as vectors. *The three components perceived by the direction-sensing ritual performers as well as the triad structure referring to their joint movement disappear if we substitute the actual image of the components operating in a spatial network structure with invented, imaginary lines of force or fluxes.* Scientists examining animals' ability to sense direction based on magnetism may, in the framework of analysing the spatial movements significantly different from the direction of true magnetic north and the direction of total magnetic field intensity, identify the link between the directions of movement and the geomagnetic field's spatial network structure; researchers of the sense of orientation of living organisms such as amoeboid slime moulds may also calculate with the characteristics of *intelligent physical, chemical systems*³ tuned to geomagnetism of spatial network structure (and may convert their Ig Nobel Prizes to Nobel Prizes).⁴

² It is not yet known whether quaternities came to the foreground with the direction-sensing rituals becoming imitations. It is possible that the widening of the elemental, flattened triangles appearing in the spatial network structure toward the equatorial zone was incidental with the appearance of the fourth geomagnetic component having a strength similar to the other three.

³ **Frank (2012)** Till D. Frank: Multistable Pattern Formation Systems: Candidates for Physical Intelligence? *Ecological Psychology*, Volume 24, 2012. *Center for Ecological Study of Perception and Action University Connecticut*.

⁴ **Hart et al. (2013)** Vlastimil Hart; Petra Nováková; Erich Pascal Malkemper; Sabine Begall; Vladimír Hanzal; Miloš Ježek; Tomáš Kušta; Veronika Němcová; Jana Adámková; Kateřina Benediktová; Jaroslav Červený; Hynek Burda: *Dogs are sensitive to small variations of the Earth's magnetic field*. *Frontiers in Zoology*, 2013 10:80. <https://frontiersinzoology.biomedcentral.com/>. Received an Ig Nobel Prize for their study of the body axis of dogs during defecation and urination, suggesting magnetosensitivity. By comparing the triad structure of the spatial network model and the direction of geomagnetic north at the time of the survey, and also calculating with the composition of geomagnetic components rearranging into a thickening network structure at noon explains dogs' changing choice of direction around noontime.

Nakagaki (2000) Toshiyuki Nakagaki; Hiroyasu Yamada; Ágota Tóth: *Intelligence: Maze-solving by an amoeboid organism* *Nature* 4007, 470 (28.09.2000). In 2008, they received an Ig Nobel Prize for the description of the performance of **slime moulds** finding the shortest path to the food source. In the choice of direction, in addition to chemical characteristics, the link with the geomagnetic spatial network may also be significant.

4. **An indirect link may be established between the directions of cultic orientation before compasses were used and the direction of THE geomagnetic north. The validity of the above also reinforces the correctness of two further assumptions, concerning the human ability to sense magnetic direction and the spatial network structure of magnetic fields.**

The possibility of selectively influence magnetic field components may result in new process controlling solutions in a wide range of physical, chemical and biological processes.

The motivation to find the link between cultic orientations and geomagnetic fields

In the years preceding our inquiries into geomagnetic phenomena, we attempted to draw up new models of context-sensitive deductive reasoning. The model integrating the context – also with a view to the interactions between the deductive steps – requires a spatial structure. We presumed that the magnetic aspects of the brain’s electromagnetic phenomena may constitute a spatial network structure in which deductive reasoning works together with its semantic-type – appearing with nesting and linking relationships – ontological context. The cultic orientations of several millennia provided a data set of orientations, which we linked – as could also be conjectured from the depictions of the siting ceremonies – with the sensing of certain characteristics of the geomagnetic field. Such a link between orientation and magnetism, which could be observed on a global scale, may initiate further discoveries in the nanostructure of human thinking, which is also presumed to have a magnetic-spatial arrangement. Our work of interdisciplinary nature may merely open up new paths of thinking for researchers in the areas concerned, including those investigating the geomagnetic operation of human intelligence. As far as our narrower profession is concerned: we assume that the organisational characteristics of the built structures may be representations of the creative intelligence and may also have an impact on the deductive reasoning of those inhabiting those structures.

Our volume analysing the sensing of geomagnetic phenomena, and the relationship between cultic orientation and geomagnetism was published in 2016 in Hungarian and in 2017 in English.⁵

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⁵ **Kőszeghy (2016)** Attila Kőszeghy, Flóra Kőszeghy, Csanád Ábel Kőszeghy: *Kultikus építmények geomágnességre tájolóása*, Debrecen: T4terv, 2016. (in English: *Geomagnetic Orientation of Cultic Structure*, Debrecen: T4terv, 2017).