

## Ancient Greek Divination: Cognitive and Cultural Heuristics of Predictive Brain<sup>1</sup>

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### Introduction

Divination comprises a conceptual category which refers to the cultural ideas and beliefs about human abilities and possibilities to foretell future events and to discover hidden knowledge and information. It contains the cultural practices and techniques developed throughout history which promised to unravel the perceived unknowns, whether these pertain to inexplicable past experiences, unconceivable present occurrences or the unpredictable future (cf. Zinser 1998, 109).

In Greek antiquity, multiple divinatory practices developed and played a central role in people's everyday lives as well as to communities' affairs. Individuals used to employ divination in order to explicate the meaning of a current event or experience, or to predict the outcome or consequences of a certain choice, decision, and action. Official states and communities also used to appeal to divination in order to better manage political, religious and military issues and to predict their future effects (Beerden 2013, 204–205, citing Lhôte 2006). Different divinatory practices either presupposed the visit to a special centre of divination (e.g. Oracles) or the consultation of local or itinerant professionalists (e.g. seers, prophets, priests and priestesses) who were available in the cities and offered their services for a fee. Other techniques gave the possibility to ordinary individuals or amateurs to find answers to dilemmas and questions about their possible decisions and actions.

Ancient Greek divination was grounded on the major belief that there were superhuman agents – gods, deities, daemons – who transcended human abilities to know and conceive perceived reality and hold information about the world and human affairs that people ignored but were valuable to know. Divinatory practices promised to establish channels of communication between humans and gods through which divine knowledge could be revealed. Cicero in his *De Divinatione* 1.2.115 classified the multiple divinatory practices in two major modes of divination which employed different paths for achieving that communication and for getting access to hidden knowledge and information. According to his classification, natural divination, on the one hand, promised a direct communication between mortals and immortals which could be achieved through the formers' divine inspiration and 'exaltation of the spirit (concentratione mentis)' (cited by Ustinova 2013,) induced either in wakefulness or in sleep. This mode included enthusiastic prophecies directly given by the gods in the oracular sanctuaries and oneiromancy. Artificial divination, on the other hand, derived from the belief that gods scattered signs in the perceptible world and mortals could discern these signs through observation of the surroundings. In this mode, the various divinatory practices employed by professional seers or individual amateurs were classified, like extispicy,

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cleromancy, hydromancy, pyromancy, ornithomancy and the interpretation of almost every object, action or condition that could be interpreted as carrying a divine sign (see e.g., Aesch. *PV* 484–499).

Starting from Cicero's classification, modern historians approach ancient Greek divination from an emic or etic perspective. Emic approaches attribute a central role to superhuman agents as a source of information and knowledge that could clarify human unknowns (e.g., Bouché-Leclercq 1879-1882, vol. 1, 7; van der Leeuw 1933, 355 – 360; Loewe and Blacker (1981), 1; Bremmer 2004). Even approaches which avoid references to superhuman agents but study divination as a means of knowing the unknowns are emically oriented presupposing that divinatory practices actually provided access to hidden knowledge and information (e.g., Zinser 1998, 109). Etic approaches transfer the focus from the superhuman agents to the active role of human agents to create, recognize and interpret the perceived signs as divine and to attribute divine origins to altered states of consciousness (see Beerden 2013, 20–21). Such approaches study the ways in which divinatory practices were embedded in the ancient Greek world, were affected by the wider cultural contexts and reflected specific cultural ideas, beliefs and practices.

In this paper, I suggest that a cognitive approach to ancient Greek divination can deepen both emic and etic historical approaches, providing crucial insights into the cognitive mechanisms that generated multiple divinatory practices, the cultural beliefs that framed these practices and the individual needs and tendencies that made divination a popular pattern of practice in Greek antiquity. My main intention is to outline how universal cognitive proclivities would have interacted with the specific cultural contexts of the ancient Greek world generating culturally specific practices which however followed highly predictable patterns.

### **Cognitive Proclivities: Fear of the Unknown and Intolerance of Uncertainty**

In particular, the cultural need for divination seems to derive from the disturbance of the tendency of the human mind to operate as 'a sophisticated hypothesis-testing mechanism' that constantly strives to fill in the gaps in the current percepts, to control their outcomes, to make predictions about what may come next, and to minimize the errors of these predictions (see Hohwy 2013). When humans perceive phenomena, events and situations that do not fit their established worldviews – including implicit mental representations and intuitive expectations, explicit knowledge and information, images and assumptions about perceptible reality – they experience uncertainty that harms their inherent desire for controllability and predictability of the experienced situations, and their abilities to make decisions that can lead to desired or expected outcomes. That feeling deriving from the absence of enough 'perceived information at any level of consciousness or [cognitive] processing' is defined as 'fear of the unknown' (Carleton 2016a, 31; 2016b, 5). The enduring fear and the accompanied 'intolerance of uncertainty' can be manifested with varied intensity and may be accompanied by different degrees of emotional (e.g., anxiety, fear, terror), cognitive (e.g., worry, disorganization) and behavioural reactions (e.g., inaction) that may reach pathological disorders (see Carleton 2016a; cf. Freeston et al. 1994; Dugas, Gosselin and Ladouceur 2001, 552). Many cognitive studies trace the origins of the fear of the unknown in human evolution (Moors 2009; Brosschot, Verkuil and Thayer 2016; Carleton 2016b, 12). Such studies consider the human tendency to approach what they do not know with caution as a crucial adaptive strategy that

increases the possibilities of survival, and allow humans to be ready and alert to cope with potentially dangerous situations (e.g. Cosmides 1989; Gigerenzer 1991; Cosmides and Tooby 1996; LeDoux 1996; Gray and McNaughton 2003; Bach and Dolan 2012; Thayer et al. 2012; Brosschot, Verkuil and Thayer 2016; Carleton 2016b, 12). Many further studies support the view that while all the other fears seem to presuppose previous conditioning with the aversive stimuli or knowledge of the potential threats, the fear of the unknown derives exactly from the absence of knowledge and information about the perceived stimuli that automatically are estimated as aversive and potentially threatening (e.g. Mowrer 1947; Skinner 1953; Bandura 1965, 1971; Epstein 1972; Freeston et al. 1994; Pinker 1997; Muris et al. 2002; Powell, Honey and Symbaluk 2012; Carleton 2016a, 31, 2016b, 11). In addition, the fear of the unknown seems to lie at the bottom of all the kinds of things and situations that humans are afraid of, fears that may be finally reduced to the fear of the unknown which is irreducible (Carleton 2016a, 2016b).

To dissolve uncertainty and to minimize the aversive emotions it entails, humans look for missing information firstly in the perceived surroundings. When it is not possible to find information via observation of the extrinsic world, they employ various cognitive heuristics deriving from their inherent reasoning capacities in order to cover the gaps in their knowledge. Cognitive heuristics may involve ascription of greater value to a recognizable percept versus a un-recognizable, equality-based heuristics (weight reasons equally), one-good-reason heuristics (take-the-best; fast-and-frugal trees), and other social heuristics (tit-for-tat; imitate-the-majority) (cited by Volz and Gigerenzer 2012; for more details, see Gigerenzer and Gaissmaier, 2011). Although cognitive heuristics may be effective strategies in every day decision making under uncertainty are not always sufficient to drive our choices, decisions and actions, especially when important matters are at stake. Given that the world, and especially the social world, is more complex that we can handle with our cognitive capacities alone, extrinsic cultural heuristics develop that shape people's worldviews and help them cope with unknowns and uncertainties.

Divination can be approached as such a cultural heuristic that derived from cognitive proclivities shared by humans and provided to people of Greek antiquity a set of cultural beliefs and practices helping them overcome the unpleasant feelings of uncertainty and the fear of the unknown (see Jouan 1990; Beerden 2013, 195–222). The core belief of the ancient Greek divination that there were superhuman agents – i.e., gods, deities, daemons – who hold information about situations that people could not conceive, predict and control, was seemingly grounded on the universal human tendency to detect agency in their surroundings and to attribute human-like intentional psychology and activity to these agents (Guthrie 1992, 189; Boyer 1996, 89–90; cf. Beerden 2013, 239–240). Agency detection also developed as a survival strategy during evolution enabling humans to be alert and ready to protect themselves from the activity of other agents. However, the idea that the gods knew things that people ignored was not enough to moderate feelings of uncertainty and fear of the unknown. There should be a way for mortals to gain access to this information, and divination developed to provide the means for revealing divine knowledge that would be valuable for human affairs. Firstly, the anthropomorphic perception of the superhuman agents entailed that the gods were willing to interact and symbolically communicate with humans in multiple ways (see Guthrie 1992, 178). Further, it assumed that people could be involved in a two-way

communication with the gods during which they could be informed about the divine knowledge and will.

Indeed, divination was integrated in the wider religious tradition of Greek antiquity and promised to install a channel for direct communication with superhuman agents (Johnston 2008, 4–5). Employing divination people believed not only that their petitions and requests for protection and salvation would have an immediate recipient, but also that they would in turn receive information that would help them unravel the unknowns. Therefore, in a world of uncertainty it would have been a relief to know that someone had access to the unknowns and would be eager to reveal hidden information helping people predict and control the probabilistic outcomes of the unknowns.

### **Technical and Natural Divination**

Starting from these main beliefs about the possibility for information exchange between humans and the gods, the two modes of divination suggested by Cicero provided the routes and methods for achieving a successful communication with the divine. Despite the apparent differences between natural and technical divination, they were both based on common cognitive abilities and shared common purposes (cf. Annus 2010; Nissinen 2010; Ustinova).

Technical divination comprised of multiple methods that promised to provide the means for interpreting the signs that the gods scattered in the world transferring covert messages to humans. These methods were mainly based on thorough observation and acquisition of information from the perceived phenomena (Pl. *Phdr.* 244a–b; Cic. *Div.* II, 48–49). Observation involves crucial cognitive mechanisms that enable learning both natural laws and social norms. Humans constantly observe the world and other people's behaviours, receiving multiple sensory inputs. The observed stimuli is mentally represented in the observer's mind and is undergone further cognitive processing during which causal relationships between percepts are traced, and inferences about these relationships are drawn. The acquired information is stored and integrated in coherent meaningful patterns which can be used for classifying future percepts and can be recalled for predicting future occurrences and for planning action and behaviour. Thereby, through observation of the natural world, humans update their intuitive physics and develop basic principles about natural phenomena and their possible outcomes (e.g. clouds may bring rain etc.) Similarly, by observing social world, people form and integrate specific social norms available in their cultural surroundings and judge others' as well as their own behaviours in terms of these norms (e.g. stealing is bad, punishment may follow) (e.g. Bandura 1965, 1971, 2004; Frith and Frith 2012, 289; Meltzoff, Waismeyer and Gopnik 2012).

Although causal cognition may be influenced by wider cultural contexts (e.g. Norenzayan and Nisbett 2000), the innate human tendency to mentally construct causal models attributes shape and structure to the perceived world, enabling explanation, reasoning, prediction and control of phenomenal reality (e.g. Cheng and Novick 1990; Corrigan and Denton 1996; Sperber, Premack and Premack 1996; Scholl and Tremoulet 2000; Sloman 2005; Lagnado and Sloman 2006; Sawa 2009; Bramley 2017). Such causal models tend to be automatically constructed during perceptual and cognitive processing of sensory inputs, but do not necessarily represent actual deterministic cause-effects relations that govern physical world (Corrigan and Denton 1996; Sloman 2005; Lagnado and Sloman 2006; Sawa 2009). Instead, humans may attribute causal relationships to perceived entities and events

based on conditional relationships such as the temporal sequences, spatial contiguities and spatio-temporal co-occurrences of the observed entities and events (e.g. Cheng and Novick 1990; Scholl and Tremoulet 2000).

This human ability seems to be at the ground of technical divinatory practices that involved observation of the world, perception of slight signs, association of these signs with each other, and attribution of cultural meanings to their co-appearances (cf. Plato, *Phaedrus* 244a-b; Cicero, *De Divinatione*; Iamblichus *De Mysteriis Aegyptiorum* III, 17). Recurrent associations between such signs and attribution of the same meanings to their relationships comprised a cultural inventory that accumulated knowledge about the gods' and humans' communication code and were available to those who wanted to dive into the art of divination. Employment of technical divinatory practices promised that they could reveal hidden meanings to otherwise neutral, unexplained or random events, and thus to reduce the unknowns and the entailed uncertainty about the future as well as to increase human ability to predict and control the consequences of physical events and social actions.

Contrary to ex post interpretation of divine signs interspersed in human surroundings, natural divination promised an immediate communication with the deities who could directly reveal to mortals information in the present. Such communication was considered to be possible in a state of mind that differed from this in wakefulness. While asleep and dreaming as well as in ecstasy induced by the release of endogenous opioids in the body (e.g. during religious rituals, dance, fasting, meditation) or by consumption of psychotropic substances (e.g. Winkelman 2004, 208; Romain 2009, 178; Cardeña and Winkelman 2011), people may experience an altered state of consciousness which is characterized by reduced external awareness, partly or total loss of self-control and voluntary action, emotional and even physical euphoria. Such experiences may be accompanied by visions produced from internal cognitive resources and not obeying to natural and physical laws and spatio-temporal restrictions – principles that affect waking cognition and enable coherent cognitive processing and response to sensory inputs (Barsalou et al. 2005). When back to wakefulness, the person employs the normal cognitive processes in order to make sense and achieve a logico-structural integration of the abnormal experiences he had in that altered state of consciousness. And the wider cultural and religious traditions usually provide the conceptual means for interpreting the ecstatic visions and experiences (Björkqvist 1981).

In this light, ecstatic divination presupposed diviner's transit in an altered state of consciousness which greatly deviated from normal waking states of mind. Similar experiences could have all people during their sleep, when they entered the realm of dreams and were cut off from the restrictions of waking reality. After awaking and return to normal state of consciousness, all the normal cognitive processes were back in work but people could not explain their seemingly anomalous and bizarre experiences appealing to intuitive understanding of the world and the major principles of reasoning, causality and logic. Therefore, they recalled and evoked the cultural beliefs and ideas available in their surroundings and used them as conceptual means for explaining enthusiasm, ecstasy and abnormal states of mind. In this conceptual framework, every mind alteration was attributed to the gods who were believed that they somehow inserted peoples' minds in dreaming as well as they possessed diviners' minds and bodies and used them as their mouthpieces (e.g. Hom. *Il.* XXIV, 221–224; *Od.* XX, 351–355; Pl., *Tim.*; Paus. V, 13, 6; Plut. *Mor.* 404f; 414e; 431b; Pluta., *De def. or.* 416f–438e; Apollod. *Bibl.* III, 6, 4; Aesch. *Sept.* 276). Beyond the dreams

and visions that seemed to transfer clear messages to the dreamers or the diviners, most of the dreaming and visionary experiences were puzzling and demanded further interpretation. Such interpretation could be achieved by using the cultural body of divinatory knowledge about the divine signs and their meaning (e.g. Flower 2008, 84–91; Johnston 2008, 9, 28). And here is the point where natural and technical divination often intersected, providing interpretations based of cultural beliefs and ideas.

The overlap between natural and technical divination seems plausible. Divination intended to provide information about human unknowns, and to interpret bizarre, random, and otherwise unexplained phenomena and experiences, giving to people the cultural patterns to conceive them, predict their outcomes and try to control them. Perception of such signs in wakefulness as well as in sleep was amenable to the same cognitive processing in the waking state of mind. Therefore, similar to other signs that the gods scattered in human surroundings, the transit to an altered state of consciousness was considered to be induced by the gods in their will to communicate with humans. The bizarreness of dreaming and visionary experiences – as well as other puzzling phenomena in wakeful world – demanded interpretation that divination could offer by appealing to cultural knowledge about the meanings of the divine signs.

## **Conclusion**

Taking into account cognitive theories and research findings in the study of ancient Greek divination, may deepen emic historical approaches shedding light on the mental origins, processes and functions of people's beliefs in superhuman agents and their need to employ cultural practices for evoking divine help and interventions in human affairs. Simultaneously, it may update etic approaches highlighting the ways inherent cognitive proclivities interacted with the specific cultural contexts of Greek antiquity developing divinatory practice as useful cultural heuristics.

What I suggest is that the employment of cognitive theoretical premises to the study of the available historical material may provide probable explanations of the origins of the unknowns and the sources of uncertainty experienced by people in Greek antiquity and to provide insights into the underlying cognitive processes that generated ancient Greek people's individual and cultural heuristics that helped them deal with the universal fear of the unknown and intolerance of uncertainty.

More broadly, given that historical research cannot apply the scientific methodology – which involves research hypothesis, experimental testing, refute/validation and refinement of the original hypothesis, further controls – in the ways employed by neurocognitive scientists and anthropologists, a cognitive historical approach may inductively examine the theoretical premises coming from (neuro)cognitive research within the specific cultural contexts of Greek antiquity. In this framework, I suggest that historians do not need to employ deductive reasoning in order to reach definite and certain conclusions about human cognition and past people's minds. On the contrary, I consider inductive reasoning as valuable methodological way in order to reach probable explanations of ancient Greek people's thoughts, decisions, actions and behaviours in conditions of uncertainty and fear of the unknown, and may further offer to (neuro)cognitive sciences historical samples that may support and/or update their theoretical models.

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