Complex societies gave birth to big gods, not the other way around: study

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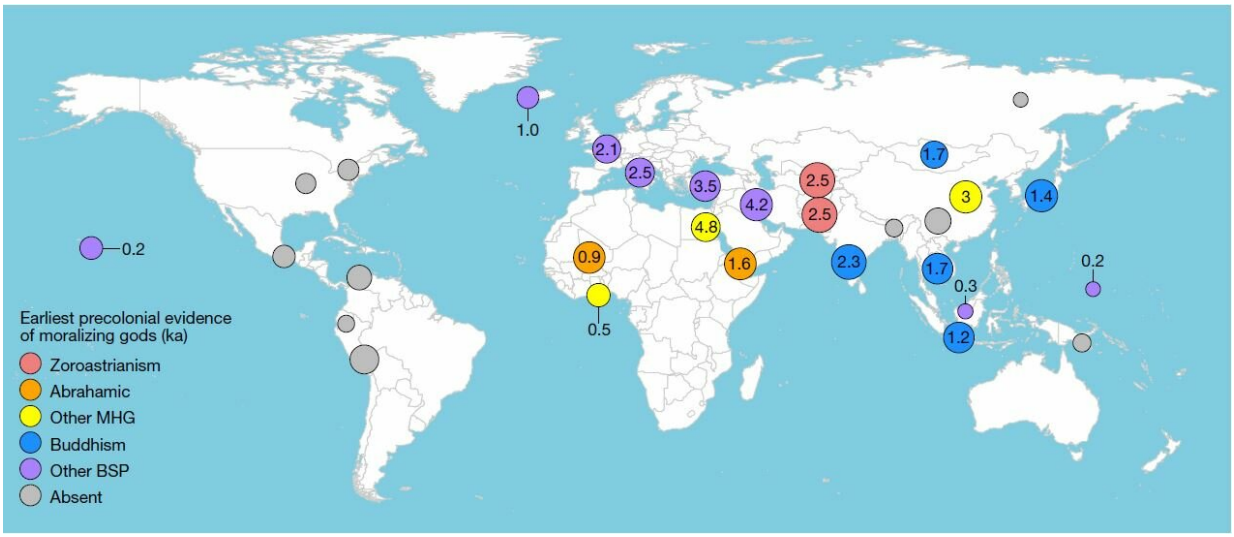

Locations of the 30 sampled regions labelled according to precolonial evidence of moralizing gods. The area of each circle is proportional to social complexity of the earliest polity with moralizing gods to occupy the region or the latest precolonial polity for regions without precolonial moralizing gods.

The numbers indicate the date of earliest evidence of such beliefs in thousands of years ago.

The circles are colored by type of moralizing gods. Credit: (c) the authors of the paper

An international research team, including a member of the Complexity Science

Hub Vienna, investigated the role of "big gods" in the rise of complex large-scale societies. Big gods are defined as moralizing deities who punish ethical transgressions. Contrary to prevailing theories, the team found that beliefs in big gods are a consequence, not a cause, of the evolution of complex societies. The results are published in the current issue of the journal *Nature*.

For their statistical analyses, the researchers used the Seshat Global History Databank, the most comprehensive collection of historical and prehistorical data. Currently, Seshat contains about 300,000 records on social complexity, religion and other characteristics of 500 past societies, spanning 10,000 years of human history.

"It has been a debate for centuries why humans, unlike other animals, cooperate in large groups of genetically unrelated individuals," says Seshat director and co-author Peter Turchin from the University of Connecticut and the Complexity Science Hub Vienna. Factors such as agriculture, warfare, or religion have been proposed as main driving forces.

One prominent theory, the big or moralizing gods hypothesis, assumes that religious beliefs were key. According to this theory, people are more likely to cooperate fairly if they believe in gods who will punish them if they don't. "To our surprise, our data strongly contradict this hypothesis," says lead author Harvey Whitehouse. "In almost every world region for which we have data, moralizing gods tended to follow, not precede, increases in social complexity." Even more so, standardized rituals tended on average to appear hundreds of years before gods who cared about human morality.

Such rituals create a collective identity and feelings of belonging that act as social glue, making people to behave more cooperatively. "Our results suggest that collective identities are more important to facilitate cooperation in societies than religious beliefs," says Harvey Whitehouse.

Big data: a new approach to social theories

Until recently, it has been impossible to distinguish between cause and effect in social theories and history, as standardized quantitative data from throughout

world history were missing. To address this problem, data and social scientist Peter Turchin, together with Harvey Whitehouse and Pieter François from the University of Oxford, founded Seshat in 2011. The multidisciplinary project integrates the expertise of historians, archaeologists, anthropologists, social scientists as well as data scientists into a state-of-the-art, open-access database. Dozens of experts throughout the world helped to assemble detailed data on social complexity and religious beliefs and practices from hundreds of independent political units ("polities"), beginning with Neolithic Anatolians (today Turkey) in 9600 BCE.

The complexity of a society can be estimated by social characteristics such as population, territory, and sophistication of government institutions and information systems. Religious data include the presence of beliefs in supernatural enforcement of reciprocity, fairness, and loyalty, and the frequency and standardization of religious rituals.

"Seshat allows researchers to analyze hundreds of variables relating to social complexity, religion, warfare, agriculture and other features of human culture and society that vary over time and space," explains Pieter François. "Now that the database is ready for analysis, we are poised to test a long list of theories about human history." This includes competing theories of how and why humans evolved to cooperate in large-scale societies of millions and more people.

"Seshat is an unprecedented collaboration between anthropologists, historians, archaeologists, mathematicians, computer scientists, and evolutionary scientists", says Patrick Savage, corresponding author of the article. "It shows how big data can revolutionize the study of human history."

More information: Harvey Whitehouse et al, Complex societies precede moralizing gods throughout world history, *Nature* (2019). DOI: 10.1038/s41586-019-1043-4

The published Seshat data are available at seshatdatabank.info/data

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