Climate Crises Can Lead to Improved Social Cooperation and Economy

Por: April M. Short. 18/06/2021

A new study on the effects of climate crises in ancient Mesopotamia found increased cooperation and a more widespread distribution of power.

The going assumption is that the impacts of climate disasters on institutions and economics will be negative. However, this is not always the case. Climate disasters can actually have the opposite effect, historically, as shown in a recent article about climate-related disasters in ancient Mesopotamia. The study found that climate-related tensions in effect forced greater cooperation and a more widespread distribution of power across social sectors.

The article, "Climate Change and State Evolution," was published in the journal Proceedings of the National Academy of Sciences (PNAS) on April 6 and was authored by Carmine Guerriero from the University of Bologna in Italy and Giacomo Benati from Eberhard Karls Universität Tübingen in Germany. The authors note in the article's abstract that prior literature on climate disasters in ancient societies focuses on "collapse archaeology," and tends to correlate "severe droughts" with "institutional crises." The article instead used a game theory approach to analyze a stream of papers that have been published in recent years on Bronze Age Mesopotamia that challenge this narrative.

As the article's abstract states, the papers the authors analyzed for the study have been "building on more detailed data on Bronze Age Mesopotamia and a more credible theory-based empirical strategy." The abstract further states that the authors' study of these papers yielded the following two results:

> "First, severe droughts pushed the elites to grant strong political and property rights to the non-elites to convince them that a sufficient part of the returns on joint investments would be shared via public good provision and, thus, to cooperate and accumulate a culture of cooperation. Second, a more favorable climate allowed the elites to elicit cooperation under less

> inclusive political regimes as well as a weaker culture of cooperation and, possibly, incomplete property rights."

April M. Short of the Independent Media Institute interviewed the PNAS article's authors, Carmine Guerriero and Giacomo Benati, about how their findings might provide insights relevant to the current global climate disaster and economic realities.

April M. Short: Your article notes that natural disasters/climate crises do not always translate to institutional collapse or crises, though this has been the narrative in most of the available literature up until now. This research shows an example of just the opposite occurring—progress born from a difficult reality. Why was it important for you and your team to provide what can be looked at as an alternative piece of literature and insight into crises?

Giacomo Benati and Carmine Guerriero: First, our framework proposes a theory of hope. It implies that societies embrace more inclusive political, fiscal and legal orders for the sake of enduring cooperation in the face of unfavorable environmental conditions. This idea is in contrast with mainstream narratives in archaeology and economics, respectively linking climate change with tales of overshoot and collapse, or characterizing (preindustrial) state formation as a protection racket with ruling elites acting as "robber barons" and seeking solely to extract rents from powerless citizens via coercive means. In the same vein, [the mainstream narrative of most economics literature, sometimes called "history curse" literature] has been painting a rather gloomy and fatalistic portrait based on the idea that today's economic and institutional outcomes are determined by historical characteristics whose persistence shackles the present, thus entailing that if a country has a history of autocracy, a democratic transition would be unlikely.

Second, it is important to stress the fact that we can attempt to tackle pressing social issues, such as climate change, also by gathering important insights from the past. Ancient societies can be considered "completed social experiments," and as such they provide rich records and time-deep perspectives about the impact of climate change on human communities—perspectives that we would otherwise lack if we were only to consider the contemporary world. However, archaeologists and historians feature very little in policy-making efforts that are aimed at proposing solutions for reducing the social and economic impact of environmental changes—possibly because of the fallacious reasoning that climate change is an inherently modern problem. To make headway in climate change scenario planning,

it would be important to exploit the potential of historical and paleoclimatic records in combination with methods and theories from applied economics that allow specifying causal pathways in historical dynamics.

Short: How did you decide on a game theory approach to this research, and how would you explain your research in layman's terms for our readers?

Guerriero: Instead of guessing the determinants of state evolution as most of the empirical research on state evolution does, our aim is to identify them by analyzing the rational choices of elites and non-elites. Operationally, we study the possible cooperation between these two groups in a joint investment such as a farming activity. When the expected investment return is limited—but not too tiny to avoid any cooperation—the non-elites cooperate only when their property rights are fully protected and they have been granted the more inclusive political process and, thus, the power to fully tax the output and produce their preferred public goods.

These reforms are favored by the non-elites [through the] accumulation of a culture of cooperation, i.e., the internalized return from cooperating in any economic activity. Intuitively, a larger implicit reward from cooperation credibly signals the non-elites' commitment to invest even in activities inducing a small payoff and, thus, receiving a little value from public goods provisions. When, instead, the expected investment return is intermediate, the elites do not need to give up their preferred public good and accept full taxation to entice the non-elites, who, in turn, do not need to accumulate a large culture of cooperation to credibly signal participation. Then, the elites do not enact the more inclusive political institution, and the tax rate falls with the investment return. Yet, the protection of the non-elites' properties must be complete to assure their participation in investment. When, finally, the investment return is sufficiently large, the elites can also restrict the non-elites' property rights.

Short: What was the most surprising thing you found in your research about this society and these social structures, and why?

Benati: It is a widely held assumption in both historical and social-scientific disciplines that early state societies were characterized by endemic warfare, lack of economic development, and predatory regimes that ruled unconstrained overmasses who had no enforceable rights. This is a portrait that fits well with works offiction, such as “Apocalypto” by Mel Gibson or “300” by Frank Miller, but that doesnot seem to agree with an in-depth scrutiny of historical evidence.

In fact, our research, by combining state-of-the-art concepts about the conditions that drive the rise of political institutions, derived from politics and economics, and a detailed database about early Mesopotamian states, was able to overturn this age-old idea and precisely establish which environmental-related factors incentivized Mesopotamian elites to expand the political franchise by integrating certain formerly disenfranchised groups into their governments, providing a larger share of public goods and more secure enforcement of property rights over land to farmers, and achieving at times remarkable economic development. This is an idea that matches with the view—stretching back to thinkers of the caliber of Hobbes, Locke, and Rousseau—that the state is created as a social contract among individuals for solving development problems.

Short: Why did you decide to focus your research on climate change and societal cooperation in ancient Mesopotamia in particular?

Benati: There are three main reasons. First, we decided to focus on Mesopotamia because my team member Federico Zaina and I have spent several years perfecting the knowledge of Mesopotamian history and archaeology, and therefore Mesopotamia is the ancient society that we know best.

Second, Mesopotamia is not only among the very first places in human history in which states and writing emerged, but it is also one of the best-documented ancient societies due to the fact that the writing medium of choice—clay tablets—unlike perishable materials such as paper, wax, and papyri, is incredibly durable. This has made it possible to recover thousands of documents that illustrate in striking detail the functioning of political institutions. The availability and quality of proxies allowed us to credibly link environmental changes with the changes occurring at the economic and political level in Mesopotamian history and study their coevolution.

Third, understanding the nexus between environmental/political change and

cooperation is at the core of a new strand of literature in historical economics, targeting the biogeographic drivers behind state formation in the preindustrial world—and my co-author [Guerriero] has vastly contributed to this line of research. Thus, we decided to combine our unique knowledge of the historical experiment and of the theories about the geographic-related incentives behind state formation.

Short: The idea of climate crises stimulating social restructuring and what some would consider advancement seems relevant to our current reality. Could you speak to this a bit? Can this ancient model and the findings of this study potentially inform the challenges we currently face on a global scale with climate crises, a pandemic and increased natural disasters?

Benati and Guerriero: We believe it is relevant because, as we say in the paper, the negative effects of climate change on our economies are unmistakable, but we don't know yet—global warming being a relatively recent phenomenon—what kind of long-term effects it will have on our political systems. Our findings clarify that democratization episodes, both in preindustrial and industrial societies, tend to follow dips in income and, more generally, adverse production shocks, and, thus, climate change might ease institutional formation in the long run.

First, generally our results imply that institutions evolve to tackle economically relevant technological failures and that it is absurd to believe that societies remain stuck in eternal institutional traps. Second, our findings will help identify reforms that ease the endogenous rise of the state's institutional capacity in developing countries where transplantation has failed. Both types of societies share a lack of institutionalized decision-making power and a culture of cooperation and, in turn, the difficulty to cooperate in more complex economic activities and to escape the Malthusian trap.

We are currently testing our model, linking climate change and state evolution on a new panel dataset—which is based on factors such as drought severity, farming production, political institutions and public goods—using 39 samples from among the most agriculturally-based developing countries, observed for each year between 1960 and 2018. Preliminary results are consistent with both our time-inconsistency theory of state evolution and the results we obtained for ancient Mesopotamia. Severe drought is linked to reforms toward more democratic regimes and a shift of public spending from military to education expenses.

Short: Do you think there is hope for cooperation similar to that in your article, to provide guidance to the societies of today?

Guerriero: Our findings suggest that in the aftermath of major adverse production shocks, policymakers should calibrate their intervention to the degree which complements the skills of differently powered groups, rather than mechanically limiting heterogeneity and enacting more inclusive political institutions or assuring the rule of law for the non-elites. When the degree of skill complementarity is large, cooperation must be elicited by favoring the participation of elites and non-elites in joint investments. That, in turn, will lead to the endogenous rise of the fiscal, administrative and legal orders. When, instead, group-specific skills are substituted, policymakers can either favor sectors fostering skill complementarity or, if such a strategy induces large misallocations, support the accumulation of a forceful culture of cooperation.

Crucially, these lessons from the far past offer an encouraging perspective through which to assess the full-scale impact of the present-day pandemic and take steps to turn a dramatic short-run social failure into a future success. Finally, the project conclusions will help evaluate the long-run institutional impact of climate change. While severe droughts ease shifts toward open access social orders, less severe ones are related to less inclusive political regimes. Yet, provided that the production conditions generate a sufficiently large output to share, a less inclusive political process will still be able to incentivize joint elite–non-elite investments. This second implication, together with the first one, speaks against the unfettered transplantation of strong political and property rights, a centralized fiscal and administrative order and a decentralized legal order in all developing jurisdictions.

Short: The study's abstract begins by stating, "Despite the vast evidence on the short-run effects of adverse climate shocks on the economy, our understanding of their long-run impact on institutions is limited." Why is this the case, in your opinion?

Guerriero: As we discuss in our article, the only systematic body of research on the impact of climate change on state evolution has focused on ancient societies, which are the most suited laboratories for evaluating the total impact of climate change. These civilizations, indeed, are characterized by economies that were sufficiently simple to credibly relate variation in geographic characteristics to institutional evolution as well as an unparalleled experience with environmental and institutional

change.

This literature, however, has restricted itself to amass anecdotal accounts, first, and empirical evidence, later, on disastrous episodes in which adverse climate shocks were accompanied by social unrest and institutional decline. Assuming that these correlations imply causal relationships, this “collapse archaeology” literature has concluded that severe droughts are bound to trigger epochal institutional crises and induce state dissolution.

Yet, these oversimplified, if not deterministic, conclusions spring from two methodological issues that we solve contemporaneously. First, errors in the measurement of institutional and climate variables are greatly worsened by the usage of coarse-grained archaeological chronologies and by the reliance on the few available local proxy climate data as measures of regionwide shocks. Second, the unfamiliarity of archaeological research with causal inference has greatly limited the credibility of these conclusions because of the endogeneity issues generated by both relevant unobservable factors and the even more subtle possibility of misspecifications of the empirical models embraced to study the relationships between climate change and institutional evolution.

Short: Your team is made up of researchers from around the world. Do you feel these various perspectives and backgrounds benefitted the research and findings you were able to uncover?

Benati: Yes, absolutely, the team integrates widely different expertise—spanning from econometrics, law and economics to geography, archaeology, cuneiform studies, history and so on—which was crucial for both devising the research design for tackling our research questions and for accessing sources that require a high level of specialization. To elaborate on this point, an in-depth knowledge of econometric methods and theories was necessary for establishing the correct identification strategy for testing state formation theories, and a detailed knowledge of historical/archaeological sources was necessary for hand-collecting data since statistics about Mesopotamian institutional history are not available.

By combining these perspectives and skillsets, we have been able to provide not only a highly innovative account of one of the earliest and most important instances of state formation in human history but also a methodological improvement over the research targeting the link between climate and political change and deriving

historical insights that may be relevant for how we conceptualize institutional changes today.

Short: Do you see examples of cooperation that parallel that of Mesopotamia playing out in the modern day?

Benati: There is one main example that comes to mind, the so-called “democratic deepening” phenomenon that some countries in the developing world are experiencing. Bluntly put, to counteract increasingly unpredictable climatic conditions that make agricultural outputs hard to forecast, some governments in those parts of the world that rely most heavily on agriculture are integrating local decision-making groups into the institutional sector, and they are decentralizing policymaking on local matters to [include] civil society.

The rationale here is that local communities are better equipped than central governments to deal with rapidly changing conditions because they have better knowledge of their territories; therefore, it makes sense for policymakers to empower civil society. This evidence matches our own results that climate shocks in countries most reliant on agriculture have the effect of depressing the economy in the short term but have enduring effects on political institutions triggering reforms toward more inclusive political regimes.

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