

Limits to Growth, environmental science and the nature of modern prophecy

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Abstract

The voice of the prophet has both disquieted the complacent and comfortable and provided direction for those willing to listen. I will argue it is the environmental science community, and especially those engaged in sustainability analysis and climate change research, that are acting as modern-day prophets in direct continuation of the biblical prophetic voice, and use as an exemplar the 1972 text, *Limits to Growth*. Providing analysis of their contemporary situation and projecting from those situations into the future, prophets apply an understanding derived from either divine revelation or by collected data and scientific analysis, to describe the outcome of the trends they see. The life of a prophet, both then and now, is not simple, and those offering penetrating analysis of their society face a variety of hardships and threats.

Keywords: prophets, *Limits to Growth*, predicting the future, climate change, sustainability

“The earth is desolate and dry, and the world is withered and dried out... For the world’s inhabitants have polluted it: they have disobeyed the teachings, broken the law, and violated the eternal covenant. Therefore, a curse has consumed the earth, and its inhabitants have been punished. That is why the earth’s inhabitants have been destroyed and few people are left.”

Isaiah 24:4-6

1. Introduction

Readers of this journal do not need to be told in detail that the news about the state of the global environment is not one of increasing resilience and ecosystem health. The questions about the nature of warnings given to societies, what the warnings address, who delivers the warnings, and what societies do about them, are not new. Today, scientists are often the ones providing warnings of social collapse, of disease pandemics, of environmental disasters. In Biblical times, this work was done by a group of individuals called prophets. In this paper, I examine the nature of prophets and prophecy and look at the recent paper by Graham Turner (2008) who examines the prophetic statements of the 1972 book *Limits to Growth*.

2. Prophets and prophecy

The Jewish tradition has a rich history of prophets* including Jeremiah, Isaiah, Hosea, Ezekial and Micah, who appeared between roughly 1000 and 600 BCE (before the common era). It is striking that many of them have similar attributes, and those attributes do not correspond with our common concept of the prophet as a seer into the future. Indeed, Shemtob ibn Shemtob (d. 1489) wrote “The mere foretelling of future events is the lowest stage of prophecy, and in the eyes of the great Prophets of Israel, it was of quite secondary importance” (as cited in Hertz, 1990, p. 828). “The prophets were seldom concerned with the far-distant future, with times not related to their own” (Hyatt, 1958, p. 19) .

First, and perhaps most importantly, the prophet accurately describes their present: what the situation they are living in looks like to them, a situation often of social despair, or of complacency and willful ignorance regarding the “correct” or divinely-mandated manner of human conduct (e.g. “Be shocked and appalled, says God! For My people have committed two sins: they have abandoned Me, the source of living waters, and they have hewed cisterns for themselves-broken cisterns, which do not hold water.” Jer. 2:13). They then present an analysis based on revelation whereby God spoke *to* them (the source of their data upon which they are building their prophecies: “The Word of the Lord came to

me.") and then *through* them (e.g., "I will put my words in his mouth and he will speak to them all that I command him": Deut. 18:18) for the benefit of the community of whom the prophet is part of and speaking to. The prophet then extends his (and for the most part, the prophets are males) analysis, based on their divinely-inspired message as they understand it, out from their present time to paint a picture about what the future will hold *if* nothing changes; and it's usually an unhappy picture of doom, of loss, of exile, of diminishment. Having done that, the prophet then present the choices that the people /nation can make leading either to salvation or damnation, to joy or unhappiness, to fulfilling one's destiny or missing the mark, and these choices are always within the ability of the people to make. "A prophet does *not foretell*. He *warns*. A prophet does not speak to predict future catastrophe but rather to avert it. *If a prediction comes true it has succeeded. If a prophecy comes true it has failed*" (Sacks, 2005, p. 2 italics in original)

The prophet's teaching is usually of an *if/then* variety. They speak of change, but never impossible change: "He begins with *a message of doom*; he concludes with *a message of hope*. The prominent theme is exhortation, not mere prediction.... his essential task is... to disclose the future in order to illuminate what is involved in the present" (Heschel, 1962, p. 12, italics in original). And the prophet doesn't necessarily accept that any particular future is inevitable, but repeatedly presents alternate visions of the future (e.g., Costanza, 2000), visions that may be, and often are, in conflict with the status quo.

They usually spoke about the future in conditional terms, saying that God would punish the people if they continued in sin, but bless them if they repented and turned to him. Thus they usually spoke of the near future as it would arise out of conditions of their own time; and they believed that God's treatment of the nation and individuals in it would be determined in part by their actions and their attitude toward him. Their prophecies of the future were not based upon mechanical foresight, but rather upon their insight into

conditions of their time and into the nature of the God they served. (Hyatt, 1958, p. 20)

This is pretty straightforward stuff: here is “now”, based on the data the prophet has (which is a direct communication with God), the path of “now” *could* lead to a bad “then”, and there is something you can do about it *if* you take the prophets advice and change your actions. Prophets present “ifs”: if you do *x*, then *y* will happen. If you don’t, other things may happen. In contrast, oracles and soothsayers, individuals who searched for patterns to predict future events, differed from the Old Testament prophets in that they present a fate that is pre-determined; nothing that one could do will be able to change that fate. Nothing, for example, could change the fate of Oedipus: he was going to kill his father and marry his mother no matter what his father did (like bind him up and have the baby left on a hillside to die), and no matter what Oedipus himself does (leaving Corinth where he was raised, and returning to Thebes, which he doesn’t know is really his home). He fulfills the oracular vision, kills his father and marries his mother. Old Testament prophets, on the other hand, offer choices of behavior which, once taken can provide drastically divergent alternative futures.

And prophets don’t just talk to one person: the conversation is directed toward the people, the nation, the group and what they can do collectively. As Abraham Joshua Heschel describes, “... national sin would bring about national disaster...” (1962, p. 412). But when prophets do speak to the people, “His tone, rarely sweet or caressing, is frequently consoling and disburdening; his words are often slashing, even horrid- designed to shock rather than to edify” (Heschel, 1962, p. 7). “Often, his words begin to burn where conscience ends” (Heschel, 1962, p. 10).

The prophet did not live a life of comfort, but a life of isolation and rejection, of being ignored and mocked, a life of burden, of hearing the voice of Truth in the midst of falsehoods and self-deception. Jeremiah, for example, was told not to have children or marry or

... even to commiserate with his people... He had

only one task...: to warn the people that Judah would be destroyed unless the Jews repented. As a result, he was reviled, beaten and imprisoned. He was threatened with death, more than once, and his would-be assassins almost succeeded. (Elman & Schapiro, 1995, p. 165)

And he knew that his mission was doomed even before he started. This is a huge burden to be carried. Walter Brueggemann, citing Heschel, says “A man whose message is doom for the people he loves not only forfeits his own capacity for joy, but also provokes the hostility and outrage of his contemporaries. The sights of woe, the anticipation of disaster, nearly crush his soul” (Heschel, 1962 as quoted in Brueggemann, 2007, p. 65).

We usually think about Old Testament characters when we think about prophets: but there seems to be prophets amongst us all the time, and we can choose to pay attention to what they say as we consider the present, think about the future, and make our decisions about how to proceed. Or we can ignore them.

3. Sustainability, biodiversity, climate change and modern prophets

Today, the most important prophets may be those scholars trying to understand the relationships between the environment and our global economic enterprise, trying to predict the outcome of our global environmental manipulations with the potential for unprecedented climate change, e.g. “This paper shows that the climate change that takes place due to increases in carbon dioxide concentration is largely irreversible for 1,000 years after emissions stop” (Solomon, Plattner, Knutti, & Friedlingstein, 2009, p. 1709). This role of scientist as prophet is well expressed by Bron Taylor, who wrote “This represents a significant innovation in the history of religions, where apocalyptic expectation arises not from the fear of angry divinities or incomprehensible natural disasters but from environmental science” (Taylor, 2004, p. 1001). Can we not hear, for example, the voice of Old Testament prophecy in the words of ecological economist

Herman Daly who wrote in 1996 (p. 224), with particular relevance to ignoring 'limits to growth' (and I have taken liberty with the typography, putting his words into a 'versified' format) ...

If it is a sin to kill and to steal, then it is a sin
to destroy carrying capacity --the capacity of the
earth
to support life now and in the future...

We may sometimes have to sacrifice future life to
preserve present life –
but to sacrifice future life to protect present luxury
and extravagance
is a very different matter...

We must face the failures of the growth idolatry.
We must stop crying out to the growth economy,
"Deliver me, for thou art my God!"
Instead, we must have the courage to ask with
Isaiah,
"Is there not a lie in my right hand?"

We as yet have no real idea as to how many of our colleagues engaged in global change science, sustainability analysis and biodiversity research are feeling: in the face of their data, as Heschel puts it, are they too experiencing "*the crushing of their souls*" even as their research reveals that there is "a lie in our right hand". The fact that many of our best scholars have spent their professional lives bringing to light data and analysis of the enormous issues confronting us, and seeing little for their efforts, can I am sure be the source of private despair and depression. Indeed, this also was the state of the Biblical prophets: as Heschel describes it, "The prophet is a lonely man" (Heschel, 1962, p. 18). The prophet Jeremiah (25:3), for example, said "For twenty-three years... the word of the LORD has come to me and I have spoken to you again and again, but you have not listened." The pessimism of environmental scientists today, and in our recent past, is palpable. For example, as far back as 1970, the year of the first Earth Day, the esteemed Yale ecologist G. Evelyn Hutchinson

wrote, in the opening chapter of an issue of *Scientific American* devoted to "The Biosphere",

Many people, however, are concluding on the basis of mounting and reasonably objective evidence that the length of life of the biosphere as an inhabitable region for organisms is to be measured in decades rather than in hundreds of millions of years. This is entirely the fault of our own species. (Hutchinson, 1970, p. 53)

He was not alone in his analysis.

And not only is the prophet a lonely man, he can be a threatened man (Leahy, 2010).

U.S. Senator James Inhofe, Republican from Oklahoma and climate change denier, in late February released a list of leading climate scientists he wants prosecuted as criminals for misleading the government. Those scientists are receiving hate mail and death threats.

"I have hundreds" of threatening emails, Stephen Schneider, a climatologist at Stanford University in California, told Tierramérica.

He believes scientists will be killed over this. "I'm not going to let it worry me... but you know it's going to happen," said Schneider, one of the most respected climate scientists in the world. "They shoot abortion doctors here."

4. *Limits to Growth* and modern prophecy

While the Bible presents the analysis, predictions and potential outcomes of the ancient prophets based on the data available to them, we now have opportunities to test the predictions of contemporary ones using different data sets, but sets that might be seen as being equally compelling. One of the most important pieces of modern prophecy was published in 1972, when a group at the Massachusetts

Institute of Technology (MIT), reporting to the Club of Rome, released a controversial book called *Limits to Growth (LtG)* (Donella H. Meadows, Meadows, & Randers, 1972). Using the *World3* computer model, the MIT group took a stab at presenting the global reality of 1970, and then used the model, which was based on five global-scale features—population, food production, industrial production, pollution, and the consumption of non-renewable resources—to predict the future to 2100. The results were provocative and disturbing: if the computer model included continued economic growth, even at low growth rates, the results indicated the limits of planetary capacity would be exceeded in the middle of the 21st century and a major collapse of the human population and economy would follow.

The *LtG* authors were seen by their contemporaries as prophets and described as such, for example, “But the pessimism of the MIT group and similar prophets with respect to social control mechanisms may also be explained in part by the failure of many early attempts to control pollution hazards...” (Sinclair, 1973, p. 184) or “like the great prophet of world salvation through world breakdown, Karl Marx, their [i.e., Meadows et al] apocalyptic visions of the immediate future are tempered by their glittering image of utopia barely discernable through the fire and brimstone that rages in the historical foreground” (Simmons, 1973, p. 207), or “Those prophets of earth who gave us that sobering if not alarming study called *The Limits to Growth* see that ultimate point [the end of the biosphere] reached within a century, if present trends continue in population, pollution, industrialization, food production, and resource depletion. The result will be sudden and uncontrollable decline” (Napier, 1976). And, like biblical prophets, these MIT prophets also proposed actions, actions that involved changes in government policy, in human behaviour and in the use of technology, which could be applied to avert their predicted collapse.

Paralleling Heschel’s categorization of prophets providing a *message of doom* prior to a *message of hope*, the *LtG* authors state in their concluding paragraphs

Although we underline the need for more study and

discussion of these difficult questions, we end on a note of urgency... Taking no action to solve these problems is equivalent to taking strong action... A decision to do nothing is a decision to increase the risk of collapse... We suspect on the basis of present knowledge of the physical constraints of the planet that the growth phase cannot continue for another one hundred years. Again, because of the delays in the system, if the global society waits until those constraints are unmistakably apparent, it will have waited too long. (Donella H. Meadows, et al., 1972, pp. 182-183)

And then, in their final paragraph, they write

If there is cause for deep concern, there is also cause for hope. Deliberately limiting growth would be difficult, but not impossible. The way to proceed is clear, and the necessary steps, although new ones for human society, are well within human capabilities. He [*sic*] has all that is physically necessary to create a totally new form of human society- one that would be built to last for generations. (Donella H. Meadows, et al., 1972, pp. 183-184)

Using the tools of prophecy available in the early seventies, these modern prophets spoke, yet their prophecy was ignored, and their persons were at times denigrated and demeaned (e.g., see Kaysen, 1972; Turner, 2008, p. 401), and their competence questioned (Jahoda, 1973, p. 212) . That has always been the price paid by prophets, and yet the Biblical lessons tell us that prophecies are often ignored at the people's peril.

Recently, Turner (2008) has investigated the prophecies that were described in the *LtG*. Comparing *World3's* predictions with the last 30 years of independent historical data, the MIT model seems to have remarkably and accurately described the future; that is, it accurately describes our present day. Furthermore, the shapes of the data curves presented in 1972 accurately describe the paths of actual data from then to now. "As shown, the observed historical data for

1970–2000 most closely match the simulated results of the LtG ‘standard run’ scenario for almost all the outputs reported; this scenario results in global collapse before the middle of this century” (Turner, 2008, p. 410).

Turner further points out that,

In addition to the data-based corroboration presented here, contemporary issues such as peak oil, climate change, and food and water security resonate strongly with the feedback dynamics of “overshoot and collapse” displayed in the LtG “standard run” scenario (and similar scenarios). Unless the LtG is invalidated by other scientific research, the data comparison presented here lends support to the conclusion from the LtG that the global system is on an unsustainable trajectory unless there is substantial and rapid reduction in consumptive behaviour, in combination with technological progress. (p. 410)

5. Listening to prophecy and acting, or not

What can we do with such an accurate prophecy as Turner points out *LtG* was? When faced with data that we don’t want to deal with, there are lots of ways to respond. We can chose to simply not believe the prediction; or we can sink into hopelessness and helplessness; or we can fatalistically think that whatever is going to happen will happen; or we can believe that while it will happen somewhere, it won’t happen to me; or we can hope that someone else will take it seriously and fix the problem; or that the problem will just go away on its own; or that we don’t know enough to act, or that even if we acted, the prophecy is going to happen anyway; or that it is God’s will. There are many ways to ignore inconvenient prophets and their prophecies.

Thirty-five years ago, the world’s economies chose to ignored the *LtG* prophecy and continued building a global economy based on increased throughput of energy and materials. Indeed, in the final paragraph of a serious and extensive multi-disciplinary critique of *LtG* ,written shortly after *LtG* was published, a social psychologist notes “What, then, remains of Forrester’s and Meadows’ efforts? Nothing, it

seems to us, that can be immediately used for policy formation by decision makers..." (Jahoda, 1973, p. 215). Nothing indeed! And while the *World3* model does predict the potential of a few more decades of economic growth before things begin to really fall apart, the question we now have to ask is, do we wait for another 30 years to see if the rest of the *LtG* predictions also come to pass?

Or, do we take the message of hope from these modern prophets? There are things that, when put into the *World3*, will result in a sustainable outcome: universally available birth control resulting in birth rates equaling death rates; less consumption of material goods and more use of renewable services; maintenance of agricultural lands so all people have sufficient food; reduction in resource consumption per unit of industrial output; longer useful lifetimes of industrial capital and advances in pollution control technologies.

6. The issue of false prophets

Of course, there is no way, when listening to a prophet, to know if they are "true" prophets delivering the "real goods", or "false" prophets delivering their own delusions or, more charitably, a faulty reading of the present that, by extension, predicts a future that is not likely to happen.

Biblically, Deut. 18:21-22, says that one should judge a prophet by checking whether his predictions come true. "Now if you should say in your heart: How can we know it is the word that YHWH did not speak? Should the prophet speak in the name of YHWH but the word not happen, not come about- (then) that is the word that YHWH did not speak." And the verdict on "false prophets" is "die that prophet shall!" (Deut. 18:20). In this context, being a prophet is a risky business where unfulfilled predictions could lead to unpleasant ends.

A number of environmental scientists have made predictions that clearly have not come through as predicted (and fortunately, we don't act as Deut 18:20 directs us to). Perhaps the most famous "false prophet" in that context is Paul Ehrlich who first made the population press with the publication of his book *The Population Bomb* in 1968. Taking

his understanding as a population biologist and given the rapid rate of the world's population increase in the 1960's, predicted that hundreds of millions of the world's poor would die through starvation and disease in the 1970s and 80s. Clearly, his assumptions about what the state of the world was like when he made his predictions were flawed in some way. Or, was it that in fact his predictions were accurate and through the use of western science, the disaster he predicted was averted through "Green Revolution" agriculture. Without both a tremendous effort placed on family planning and on increasing food production, the doomsday prophecy of Ehrlich might have come to pass. And yet there is the obvious tension here. If the prophet accurately describes the present and indicates a potential and destructive future, and (and it's a big 'and'), and the people heed the words of the prophet, then the potentially bad prophecy should not necessarily come to pass. This is clearly in the same as that pointed out by the medieval Spanish-Jewish rabbi Moses Maimonides:

If a prophet predicts something bad, such as that so-and-so will die, or that this year will be one of war or famine, et cetera, and his prediction did not come true, then it is not a disproof of his prophecy and we do not label him as a false prophet, for the reason is that God is exceedingly merciful and [often] revokes bad decrees, so it is possible that those on whom evil had been decreed had, like the citizens of Nineveh, repented, or had had their decree suspended, as with Hezekiah. But if, however, the prophet decreed good things and his prediction did not come true, then he is definitely a false prophet, for whenever God makes a good decree, even if it is conditional, He does not revoke it. From here we see that a prophet is tested only with respect to good matters. (Maimonides, 1180/1993, p. Chapter 10 point 14)

Negative prophecy is not a suitable test of a false prophet as there is no way to determine if the prophet is false, or if the prophet's message of change and reconciliation was heeded and enacted. Had the global community taken the LtG prophecy seriously, we would likely be facing a different set of

problems today than we are today. Would that have indicated that Meadows et al were false prophets? No, it would just be that their prophecy was taken seriously, something that seems to be rare in the biblical writings of the prophets..

Ahrens (2009) makes a more provocative interpretation of Jeremiah's description of telling a true from a false prophet, and I believe that the psychological truth here is apt for the meaning of relating prophecy and environmental science as developed in this paper. Timothy Ahrens writes

...if the message is painful for the prophet to utter and the people to hear, it is likely authentically from God (Jeremiah 28:8-9). But, if prophetic words are popularly received, we have reason to doubt them, and the prophet would have doubt to trust the authenticity of the message as well. (p. 2)

It is easy to discount environmental predictions that don't come to pass as evidence that we should ignore these prophets. Referring to the writers who have regularly denied that the environmental crisis is real, Robert Kates has written

But if the crisis is real and society heeds the warning, then doom may be forestalled and the crisis may be abated. Thus the failure of the prophecy to materialize is not by itself evidence of its falsity... Counter to our intuition, accuracy may not be a fair test of the prophecy. Instead, we can only ask if the prophets' concerns were reasonable for their time and knowledge. Would a jury of their peers, knowing what they knew, share their concerns at least, if not their passion? (Kates, 1995, p. 631)

There neither has been, nor will be, a sure-fire means for detecting false prophets and so we, like the Israelites of biblical times, will have to make difficult bets engaged in what the future may hold and what our actions today need to be.

7. Conclusion

Prophets seek to influence current events and through that influence, seek to shape and direct the future. The prophets of Biblical times sought to influence the direction of the Israelite people, and while the people were not necessarily amenable to the entreaties of the prophets, neither could the people ignore them entirely. Similarly today, after billions of dollars spent on climate change research and dissemination of findings, more than 50% of US citizens “resolutely refuse to accept that our emissions are changing the climate” (Marshall, 2009). No one would say that the citizens of the US are unaware of the contents of the climate change science message; it’s just that the message, and increasingly the messenger, is not believed.

For the people collectively, it’s always about betting, in a sense, on the prophecy and the prophet (e.g., Costanza, 1999, 2000). Neither the people of ancient Israel nor those of us today are in a position to know fundamentally whether the predictions made and directions for action proposed, either by the ancient prophets or those such as the authors of LtG, are correct. Both policy and decision-makers and citizens alike are now having to judge which of the modern-day prophets are giving us the best description of our current reality, and then by extension, of our likely future. All hinges on whether the prophecy is compelling, the prophet believable, and the changes that we are being told that have to make are perceived to be do-able. It also hinges on our imagination that must be able to ask the question, can we and our children live with the consequences of not taking the modern prophets seriously? Prophets of doom, such as Ezekiel in Babylonia and Jeremiah in Judah, also were prophets of hope (e.g., Ezekiel 37:11-14; Jeremiah 2:1-2; 46: 27). Similarly, both messages of doom and hope are also contained in the injunction of Meadows et al in 1972; “Taking no action to solve these problems is equivalent to taking strong action.” And with the self-awareness of a prophet, Donella Meadows and her colleagues wrote in their preface to the 1992 update to the *Limits to Growth*:

We went through the entire emotional sequence- grief, loneliness, reluctant responsibility- when we worked on the Club of Rome project twenty years ago. Many other people, through many other finds of formative events, have gone through a similar sequence. It can be survived. It can even open up new horizons and suggest exciting futures. Those futures will never come to be, however, until the world as a whole turns to face them. The idea of limits, sustainability, sufficiency, equity and efficiency are not barriers, not obstacles, not threats. They are guides to a new world. (Donella H. Meadows, Meadows, & Randers, 1992, p. xvii)

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* ancient Greek *προφήτης*; interpreter, proclaimer, expounder, especially of the will of the deity (from Oxford English Dictionary). The Hebrew term is *navi*, translated as spokesman or mouthpiece, comes from a root meaning “to bubble forth, as from a fountain.”