

Zoonotic Pandemics and Judaism's Early-Modern Turn to Science

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ABSTRACT

For thousands of years Jewish law was based on revelation and precedent. God's will, as revealed in scripture, was determinative: it demarcated what was permitted, required and prohibited. A contemporary rabbi could offer only a slight emendation of precedents. The early modern period, however, witnessed a dramatic shift in Jewish norm-making. A new source of knowledge, empirical evidence, became both valid and persuasive. Indeed, it could even override both revelation and precedent. What's so fascinating about this watershed moment in Jewish norm deliberation is that it spawns from an ancient concern about zoonotic diseases arising from pigs.

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Editors' Comment

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Introduction

For thousands of years Jews discerned what to do based on revelation and precedent. God's will, as revealed in scripture, was determinative: it demarcated what was permitted, required, and prohibited. To do anything else would flirt with heresy, exposing one to ridicule, isolation, excommunication, or worse. Jews also looked to prior rulings, promulgated by earlier rabbis, for instructions on what to do. A contemporary rabbi could offer a slight emendation of those precedents but was constrained, for the most part, from being an "activist" legislator forging wholesale novel practices.

The early modern period (starting in the 16th-17th Centuries), however, witnessed a dramatic shift in Jewish norm-making.¹ Instead of relying on revelation and precedent, a new source of knowledge became both valid and persuasive. Indeed, it could even override the other sources.

¹ This history is much more complicated, of course. Mysticism, rationalism, and many other schools of thought, including from other religious traditions, influenced Jewish thinkers in varying ways and degrees.

What's so fascinating about this watershed moment in Jewish norm deliberation is that it spawns from an ancient concern about zoonotic diseases arising from pigs.

Classic Concerns

Concern about pig-borne zoonotic diseases first emerged in the Babylonian Talmud, where a small vignette speaks of Rabbi Judah HaNasi, the greatest sage in 2nd Century Palestine, who was famous for acknowledging that animals indeed suffer.² This vignette tells of his colleagues coming to inform him of an impending public health issue:

They said to Rabbi Judah: There is pestilence among the pigs. Rabbi Judah decreed a fast. Let us say Rabbi Judah maintains a plague affecting one species affects all species. No; pigs are different, as their organs are similar to [those of] humans'.³

Rabbi Judah takes the news of a pandemic arising among pigs so seriously that he immediately declares a fast.⁴ His colleagues try to discern the rationale behind this move. Was it because all diseases move across species? No. It is because pigs are biologically similar enough to humans that how they fare, so do humans.⁵ What's more, Rabbi Judah appears to think that diseases can cross over from pigs to humans!

This idea that diseases can cross over from one species to humans came into vogue only in the latter part of the 19th Century. Despite a few prior naturalists who played with this idea, it was Robert Koch and Louis Pasteur's germ theory that made intelligible the notion that diseases can move, invisibly, between species. How incredible, then, that nearly 1700 years before them Rabbi Judah makes such a recommendation. And not just him. Subsequent generations of rabbis studied the Talmud, including this vignette, and offered their own comments, questions, explanations, and expansions.⁶ Though many added details and nuance, they all agreed that the best course of action in the face of a zoonotic pandemic arising from pigs is fasting. Dissention to this plan ultimately appeared in the early modern period. Why and on what grounds were those disagreements based?

Medieval Advice

Before we can understand the shift away from fasting, we should pause in the medieval period (approximately 9th-14th Centuries) to appreciate what comes next. The 12th Century physician, philosopher, theologian, and legist, Moses Maimonides was so famous and trusted that Salah al-Din, the first sultan of the Ayyubid dynasty ruling Egypt, Syria, Mesopotamia, Yemen, and other parts of the Maghreb, hired him to be his personal physician. During the last two decades of his life, Maimonides wrote many treatises on medicine, drawing from classic Greek and contemporary Arabic medical and philosophical tracts. For him, knowledge is best based on rational criticism formed from direct observation. Maimonides put this method to use in two essays known as "Regimen of Health," that advise Salah al-Din regarding the best ways to stay healthy and, if needed, recuperate from illness and injury (Maimonides, 1964).

Though he does not address pandemics in these essays, much less zoonotic diseases, Maimonides nonetheless stresses that "diseases demand study" (29) and that those who wish to

² Babylonian Talmud (BT), *Bava Metz'ia* 85a.

³ BT *Ta'anit* 21b. This story occurs in a larger discussion about pestilential pandemics spreading among humans.

⁴ Fasting in the face of a pandemic was a common strategy from the 2nd Century onward. See Crane (2020).

⁵ Rabbi Shlomo ben Yitzhaki (Rashi) in 11th Century France explains that pigs, like humans, have but one stomach whereas other farmed animals have more (Rashi, BT *Ta'anit* 21b, s.b., *ma'ayebu*).

⁶ For a survey of this lengthy conversation, see Crane (Forthcoming 2022).

practice the healing arts should take this study seriously. When they do, physicians have the potential to offer extraordinary succor to those who ail and, if heeded adequately and early enough, can prevent ill-health from arising in the first place. On his view, physicians and not theologians know from observation and direct experience what can heal. Hence, Maimonides advises Salah al-Din:

For these reasons kings gather numerous physicians and select from among them those endowed with wisdom, and those of long experience, for perhaps by coming together of such minds they will be saved from error (21).

Maimonides repeatedly refers to the knowledge that physicians possess with such phrases as “all physicians have cautioned against,” “it is known to all physicians,” “physicians prescribe,” “the consensus of the physicians,” and the like. Such invocations of what physicians *know* and *do* demonstrate that knowledge and practices *beyond the realm of religion* are valid, pertinent, and actionable.

He also suggests that it is possible to develop such knowledge. In regard to raising hens and roosters, Maimonides promotes keeping them outside, feeding them only periodically, and ensuring that their foods are diverse. “These things have already been tested, and their value is manifest” (37). That something has been *tested* is profound. It means that the practice so prescribed emerged not from revelation or legal precedent but from trial and error. On the role of hydromel, a primitive mead, he says, “This is a most excellent drink, beneficial in strengthening the stomach and the heart, improving the digestion, dilating the spirit, and easing the egress of the two superfluities [urine and feces] with good effect. We have tested it, as have others, time and again” (38). Testing, at least in the realm of personal and animal health, is thus a legitimate means to develop valid, pertinent, and actionable information.

Early Modern Evidence

Insofar as knowledge beyond the realm of religion is valid, and trial and error a legitimate means to develop knowledge, these come together in the early modern period in the case of zoonotic pandemics arising from pigs. For example, the leader of 16th Century Eastern European Jewry, Rabbi Mordecai ben Avraham Yoffe, writes in his ten-volume codification of Jewish law this expansion of the original Talmudic vignette:

When there is pestilence among pigs we fast, because their organs are similar to humans'. For when this pestilence is investigated to be so among them, there is danger/fear that it will also spread to the stomach of people. All the more so this is the case if there is pestilence among gentiles and not Jews: we are to fast, so that it will not spread to their stomach. Heaven forfend!⁷

Yoffe's insistence that *investigating* (קבצת) the nature and extent of the pestilence among pigs indicates a new era in how norms may be generated among Jews, at least in regard to public health. Whereas Rabbi Judah relied upon hearsay, and subsequent sages relied upon his precedent, Yoffe now requires not just surveillance or corroboration but confirmation. Though earlier sages spoke of anxiety or fear

⁷ Levush Malchut, *Orah Hayim* 576.3. He concludes with a reference to Joseph Karo's *Shulhan Aruh* (1563), the definitive medieval compilation of Jewish law. That source refers to mourning practices, to who is obliged to mourn for whom, when and how. It concludes with a gloss by Moses Isserles (16th C): “Some say that during the time of a pandemic one does not observe mourning rites out of fear, and I have heard that some have adopted this practice” (Mapa on *Shulhan Aruh* (SA), *Yoreh De'ah* 374.11).

that a disease would spread from pigs or other humans, he now provides justification for that worry: evidence.

This turn to evidence is huge, not just for Jews and their norms but for European society generally. The scientific revolution had begun spinning rapidly from the middle of the 16th Century. It challenged long-held assumptions about earth's location in the cosmos and humanity's stature therein. It championed inductive reasoning by relying on observations of nature to generate knowledge. This meant that deductive reasoning based on confirming prior assumptions no longer sufficed. Empiricism, experience, and experimentation were both valid forms of knowledge and legitimate means to produce it. In short, evidence became the hallmark signature of the Enlightenment.

Evidence matters, especially when confronting a pandemic. Rabbi Abraham Gabimer in 17th Century Poland, writes,

Now we do not do a general fast during the time of a pandemic since it has been tested that when one does not eat or drink, [the body] absorbs [more/easier] (Heaven forbid!) the changed air.”⁸

For Gabimer, and several subsequent sages who copied this ruling, testing (מנוסה) is a legitimate means to ascertain the protective qualities of fasting.⁹ It has been found through testing that fasting is not ideal; it renders the body even more vulnerable to the ravages of the invisible diseases. This evidence suffices to justify altering the response to a pandemic: one should not fast. How did they know this? By Gabimer's time, the bubonic plague had been decimating Europe and Western Asia for centuries, especially in the last few decades of the 17th Century. There had been plenty of time to observe which measures protected people and to what degree, and which rendered them more susceptible. Fasting, they observed – which also means tested – failed in this regard.

By the late 19th Century, Lithuanian Rabbi Yechiel Michael Epstein integrates this turn to science with the longstanding concern about zoonotic pandemic diseases.

If it is found that there is no pestilence among Jews but there is among other humans – we are to fast. There is one [prior scholar] who says that Satan cannot rule over two nations, but no decisor cites this. If there is pestilence among beasts, we only fast if it is among pigs, because their organs are similar to humans'. But they wrote that now we do not decree a fast on account of pestilence, for it is an examined and tested [fact] that [pestilential] air is absorbed [by the body] in the absence of feeding and watering.¹⁰

Epstein apparently disregards the earlier position that fasting fails to protect Jews from pandemics spreading among humans. And he rejects the ruling by an earlier (14th C) scholar that references Satan. He does accept, though, the earlier reasoning that fasting is appropriate only when pigs are the source of the pandemic, not when just any farmed animal is. It is in his conclusion that he turns aside from these conflicting precedents to render his own ruling. On his account, we do not call for a fast today because it is an *examined and tested* (בדוק ומנוסה) fact that fasting makes the body more vulnerable, not less, to a pandemic.¹¹ This phrase is significant.

⁸ *Magen Avraham* 576.2.

⁹ See Be'er Hetev (17th C), *Orah Hayim* 576.2; Ma'aseh Rokeach (17th-18th C), *Ta'anit* 2.6.1; Mishnah Berurah (19th-20th C) 576.2.

¹⁰ Aruch HaShulhan, *Orah Hayim* 576.9.

¹¹ 19th Century British and American governments apparently did not give much weight to such evidence. They still promoted fasting as appropriate national responses to pandemics. See Tuan (1979) and Federer (n.d.).

The earliest this dual-verb expression “investigating and testing” appears is in the first part of the 17th Century when the Polish Rabbi Yaakov Moshe ben Avraham Ashkenazi Helin used this phrase in a discussion about determining which oil and wine are superior and may be used for ritual and consumptive purposes.¹² A few decades later, Rabbi David Halevi Segal deploys this phrase to ascertain the integrity of a vessel’s seal.¹³ That this phrase does not exist prior to the early 17th Century suggests the advent of a new epistemological method as the Enlightenment sped up. Investigating and testing would, by Epstein’s time a few centuries later, become legitimate methods to develop valid, pertinent and actionable knowledge, even in and for Jewish communities.

Embracing Scientific Knowledge

As already evident with Maimonides in the medieval period, Jews accepted knowledge beyond the realm of Judaism. By the early modern period, it should be no surprise, then, that Jews both embraced that exogenous knowledge as well as the emerging means to discover and develop it.¹⁴ Indeed, by the 16th Century, rabbinic sages even encouraged their minions to study the natural world. They could do so by taking advantage of the new scientific instruments being invented, the explosion of printing technologies, and opportunities to study in universities. Though these early medically-trained Jewish physicians rarely made significant contributions to cutting-edge biomedical knowledge, they nonetheless imbibed the ethos of the age: evidence matters most!¹⁵

To be precise, scientific method and evidence matter when it comes to physical issues like medicine and public health. In regard to Jewish metaphysical, philosophical or religious concerns, however, science and evidence had little to say, much less influence.¹⁶ This all-too-brief survey of Judaic responses to zoonotic diseases arising from pigs demonstrates the possibility, perhaps even the necessity, of religious norm-making taking scientific evidence seriously. It shows that knowledge beyond the realm of religion need not be threatening to religionists but in fact embraced. What’s more, such knowledge may justify overturning prior norms and save innumerable lives.

It remains to be seen whether non-religious knowledge is valid and persuasive in domains not religious at their core (for example, aesthetics, psychology, history, economics). For now, though, it suffices to acknowledge that at least in regard to something as complex as a zoonotic pandemic, scientifically-tested and developed knowledge is religiously welcome and decisive.

Conversely, this brief essay also suggests that science would do well not to ignore religious resources, especially when it regards issues of public health. Many religions, like Judaism, have been around for thousands of years and their textual traditions are repositories rich with observations of practices that work and do not work to protect people from diseases. Indeed, science education may find that so-called cutting-edge ideas, like zoonotic pandemic diseases, are in fact quite old and have long been deliberated, though, admittedly, not in contemporary scientific terms. For perhaps, should science take religion more seriously, the public’s health will be better off.

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¹² Yedei Moshe on *Shir HaShirim Rabbah*, 1.3.2.

¹³ Turei Zahav on SA, *Yoreh De’ab* 202.6.

¹⁴ For more on this, see Ruderman (1995).

¹⁵ See Brown (2013) for a similar Jewish turn to scientific evidence in the field of astronomy at about the same time.

¹⁶ For more on this, see Samuelson (2009), who argues that though Jews were great physicians, Judaism as such made little contribution to the study of medicine, and conversely, Jewish thought has not adequately wrestled with the philosophical implications raised by the healing arts – specifically on the questions of suffering, race, and the specifics of what constitutes life and what death (see chapter 4, especially).

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