Knowledge and (Dis)belief

Jamil Ragep

In the interwar years of 1918 to 1939, a diplomat manqué and a Viennese psychologist decided to vent their frustration with what the world had become, and the imagined catastrophes to come, by writing a book denouncing the person they perceived to be the father of these calamities: Thomas Woodrow Wilson. The diplomat was William C. Bullitt, who had become disillusioned with Wilson's efforts at Versailles and had resigned (or was dismissed) in 1919. The psychologist was Sigmund Freud. The book was essentially completed in 1932, but because of Bullitt's desire not to jeopardize his career, publication did not occur until late in 1966.

The book's publication set off a firestorm. Anna Freud insisted her father could not have written such an ill-tempered book, a sentiment echoed by Eric Erikson and Richard Hofstadter in the *New York Review of Books*. Others, such as historian A. J. P. Taylor, used it as a bludgeon against Freud and psychoanalysis. As it turned out, an examination of Bullitt's papers left no doubt that Freud had been an active and equal collaborator.

A few months after the book appeared, my teenage self was going through the Freud shelves at the Toledo Public Library, determined to read everything he wrote (or at least what was translated). I thus came to peruse Freud and Bullitt's *Thomas Woodrow Wilson, Twenty-Eighth President of the United States*, completely innocent of the controversy and history outlined above. I was appalled; whatever Wilson's faults (and they were many), he certainly didn't deserve the inane analyses on offer. The book caused a crisis: how could a great scientist and humanist, liberator of our innermost secrets and thoughts, be driven to write a work based on what were clearly political motives. Later, Arthur Koestler's *Darkness at Noon* provided a partial answer: if ideology could make one acquiesce in one's own execution, it could certainly drive us to fashion truth as we saw fit.

Science and its history seemed to provide a way out of the many pitfalls of ideological belief: here was a subject that was about unvarnished and transcendent truth, that was the closest we could come to our true, rational selves. Years later, I found myself happily studying the history of mathematics and astronomy of premodern Islam with a mentor who shared and encouraged my devotion to the rationality

and objectivity of science. But a tsunami of counterarguments to this Panglossian optimism was heading our way; science might not be so Weltanschauung-frei as I imagined. And my own research began to uncover ways in which social and religious currents could influence and affect scientific change.

I first became aware of this when studying the eminent religious scholar Abū Ḥāmid al-Ghazālī (d. 1111) and realized that his criticisms of Aristotle and Ibn Sīnā (Avicenna) were not only cogent but in some ways rather "modern" in opening up alternatives to Peripatetic physics. Most scholars had emphasized what they perceived as Ghazālī's antirationality and its implications for the decline of Islamic science, but I and others found that his views opened up interesting avenues. The culmination came with one ʿAlī Qushjī (d. 1474), the son of the falconer at the court of Timerlane's grandson in Samarqand. Unlike Ghazālī, Qushjī was a working scientist whose roots were in the ancient Alexandrian tradition of the mathematical savants: Euclid, Ptolemy, and their siblings. But like Ghazālī, and unlike the Alexandrians, Qushjī was also committed to the Abrahamic God, the "volitional Omnipotent" of Islamic theology, who was not bound by the rules of Greek *physis* or physics. But how could one be a "scientist" studying an orderly universe when one also believes in a God who can upend that order at any time?

Qushjī's solution was to evoke the venerable "pots and pans" argument that "after leaving a house the pots and pans inside do not turn into human scholars who take to investigating the sciences of theology and geometry, despite the fact that the volitional Omnipotent might make it thus in virtue of His will." Lying beneath this assertion is a vast array of arguments and counterarguments regarding God and His creation, His omnipotence and will, and the human capacity to understand them. Qushjī, drawing on several centuries of Islamic philosophy and theology, was able to base his ontology and epistemology on a kind of provisional knowledge: some things are beyond question (such as geometrical theorems), but others, such as the nature of the celestial orbs, remain known only tentatively. But where there is a correspondence between our mental constructs and external reality, there is also a sense of wonder that God could give us

the ability to attain knowledge of the order underlying the universe. Yes, He could change it. But our direct experience, whether with pots and pans or observing the celestial spectacle, somehow allows us to believe that a loving God has provided us with an objective reality, called *nafs al-amr*, that contains both our correctly construed mental constructs and external reality. Shades of Popper's Third World.

But this is still belief. And so, what happens to capitalized Knowledge and Truth? Qushjī could live with provisional knowledge. But could I? Many years after my first encounters with Qushjī, Raine Daston invited me to participate in a research project called "Knowledge and Belief." Both in formal groups and over long, hearty meals in the evenings, my youthful optimism that Truth could win out over the ideological commitments of a Freud or a Rubashov gave way to an acknowledgment that my own knowledge was underlain by belief. But like Qushjī, my belief was (hopefully) based on evidence and a shared human experience that belied my pots and pans turning into scholars. During the last few decades, we have witnessed the catastrophes caused by ideologies based on fanciful beliefs and alternative facts, ideologies far more dangerous than the psychoanalytical malpractice involving Little Tommy Wilson. For this nonbelieving Muslim, the antidote was in the writings of a fifteenth-century believer. No one could have been more surprised.

Making Manuscripts Confess

Sally P. Ragep

I take great comfort these days in reading medieval Islamic scientific manuscripts. The black-on-white confessions from the pens (or mouths) of authors, copyists, marginalia commentators, and others (re)affirm a respect for the written word and remind me of a common humanity of ideas expressed over time and place. The Islamic Scientific Manuscripts Initiative (ISMI) has given me a wonderful opportunity to examine hundreds of texts in the exact mathematical sciences and be privy to the hearts and minds of scholars past. Some two decades ago, Jamil Ragep and I, working in the trenches of research libraries worldwide, conceived of a database; our modest aim then was simply to manage (i.e., not lose) the valuable material we were amassing that was sandwiched within worn bindings of Arabic, Persian, Turkish, and other codices. We proudly watched our baby mature over the years, with much of its nourishment and support coming from its godmother, Raine Daston, and our MPIWG IT family.

One major perk of the ISMI collaborative has been to look beyond the offerings of a few individual texts and manuscripts, interesting in themselves but often unrepresentative of the tradition as a whole, and to view Islamic science as a social endeavor, not just the idiosyncratic outpourings of a few heroic individuals. Now, one would assume that any scientific tradition that stretched over well-nigh a millennium would be viewed as more than a series of solitary ventures; but, surprisingly, the insistence that the fate of Islamic science ultimately rested with a handful of talented, disconnected, and obviously financially resilient individuals still has currency. I'm not sure how adherents of this stance reconcile it with the tens of thousands of extant scientific manuscripts located in repositories worldwide; left unanswered are lingering questions as to who authored, read, and copied these works. Personal accounts affirm that scores of students showed up on the doorsteps of the madrasas and observatories of Marāgha, Samarqand, Constantinople (and countless less showcased locales, such as Bursa, Konya, Merv, and Tabriz) with prior training in the mathematical sciences, this well beyond a rudimentary level. Patronage is often dealt as a trump card to explain (or explain away) bouts of scientific flourishing; Islamic science becomes like Brigadoon, appearing miraculously every century or so. But

though patrons may pay for buildings, instruments, and salaries, they still can't conjure scientists out of thin air.

Having access to a large pool of extant Islamic scientific treatises via ISMI—something inconceivable in a predigital era—has afforded us a means toward understanding the transmission of scientific knowledge within Islamic lands, both diachronically and synchronically. This has led to a number of surprises.

One is how deeply rooted is the tradition of scientific education within Islamic societies. Another surprise is its depth, evidenced by a plethora of original compositions as well as commentaries, supercommentaries, and glosses composed to elucidate the original compositions. (In the fifteenth century alone, there were almost 500 new astronomical works.) Countless readership, ownership, and copyist notes are embedded in the folios of these works. For astronomy, as for other disciplines, a standardized technical vocabulary develops, attesting to the ability to communicate over geography and centuries. Commonplace are unattributed references, puns, quotations—even whole passages—to unnamed works and authors (predecessors and contemporaries alike) with the expectation that any reader worth his salt will recognize them. That so many astronomical works survived through numerous tumultuous upheavals (including the Timurid and Mongol invasions) is testimony to the tradition's tenacity; and this persistence highlights how swiftly texts found safe havens, most likely assisted by well-established scholarly pipelines that disseminated scientific knowledge throughout vast lands.

That the mathematical sciences were taught in Islamic religious institutions on a regular basis is only surprising given the standard narrative. If one depends solely on Islamic biographical dictionaries, where there is rarely an indication of *where* teachers taught scientific texts, one might well conclude that their study was banished to private homes, backrooms, or elsewhere. On the other hand, manuscripts may contain locales, including religious institutions (and ISMI has allowed us to document them), but detecting these demands a careful read of each text, a painstaking and time-consuming task indeed. Another consideration often overlooked is the discussion of scientific theories (and even the inclusion of sample passages from

scientific texts) in other disciplines such as theological works, which of course were studied in Islamic religious institutions. Finally, the *governmental* sanctioning of scientific teaching in religious institutions is something that is easy to document. It is known that once the Ottomans appeared on the scene, theoretical astronomical works were officially taught within their madrasas, and these institutions were dispersed throughout three continents from the fifteenth to the twentieth centuries.

Islamic historical encyclopedias provide lists of specific titles of scientific treatises ranked according to designated levels of proficiency (categorized as beginner, intermediate, or advanced). It is not surprising that modern researchers have paid most attention to a select few advanced works in that these tend to deal with more seductively complex and sophisticated aspects of theoretical astronomy, such as planetary theory and modeling. But consequently, other scientific treatises have been overlooked, characterized as derivative and uncreative. Relegated to a nonunique status (a dime a dozen), it's not uncommon for a library catalogue to describe yet another copy as "même ouvrage," "dasselbe werk," or collectively as "etc."

That a text's value has often been depreciated because of its large number of copies (in some cases hundreds), and its worth often judged without even a quick perusal, is shameful. As a consequence, the extensive pedagogical careers of so many of these texts (in one case inspiring over 60 derivatives spanning seven centuries) has been ignored. Left buried in each copy is a treasure trove of goodies awaiting discovery beyond the rainbow of the text. Downplayed is that collectively these copies evidence a tradition of an Islamic scientific public. Overlooked is that this commentary tradition was being used to introduce new ideas and teaching methods, including those that would later come from European sources. So not surprisingly, attention must be paid. But surprising is that little did we know decades back that our database journey would become a quest to right this unrightable wrong. For among impossible dreams, this is such stuff as research dreams are made of.