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# Economic Religion and Religious Physics: A Comparison in Religiosity's Impact on Women in the Sciences

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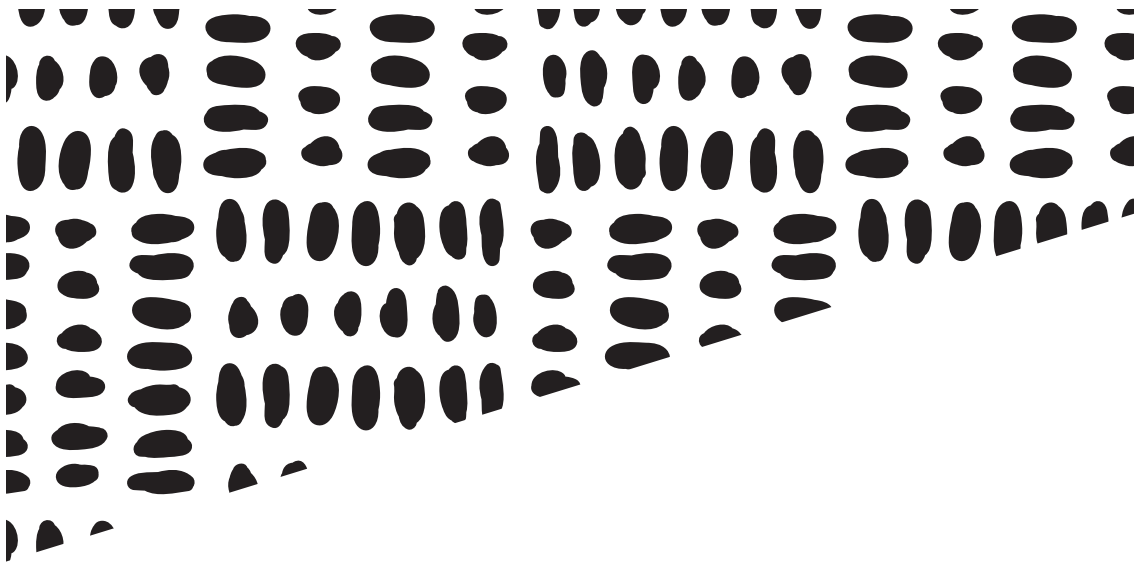
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## Author Bio

Summer Perez is a rising undergraduate senior studying economics and business. Upon graduation, she hopes to pursue economics at the graduate level and continue to research the intersection of economics and feminist theory. In addition to economics, her passions extend to film, where she is currently engaged in a research project regarding the contributions of female authorship in cinema.

## Abstract

This paper explores the historical impact of religion in creating gender paucity within the fields of economics and physics that is still present today. Starting in the Enlightenment, practical applications of physics and economics began to improve the human condition in such dramatic ways that each promised salvation through practical or scientific means. In essence, they became secular alternatives to Christianity. Acting as religions themselves, each developed doctrines and dogmas that would lead to a secular salvation. However, inherent in these doctrines was a gendered hierarchy where the rational and mathematical, gendered as masculine, was equated with the divine while the emotional, gendered as feminine, was equated with the terrestrial or mundane. In addition to gendered theologies, each science developed a relevant priesthood that holds the keys to this salvation. Mimicking the male-only priesthood of the church, physics and economics were exclusively practiced by men and subsequently developed priestly cultures exalting intellectuals as prophetic. Even as women were given official admittance to the disciplines, they have remained underrepresented in economics and physics because of the gendered theologies and priestly cultures that have endured over time.

# Economic Religion and Religious Physics: A Comparison in Religiosity's Impact on Women in the Sciences

Summer Perez

In 2014, prestigious London-based news magazine *The Economist* published a list of the top twenty-five most influential economists. Among those chosen were Nobel Laureates, John Bates Clark medal winners, and *TIME Magazine* persons of the year, but, perhaps unsurprisingly, not one woman appeared on the list.<sup>1</sup> Even after the authors were criticized for their rankings and the magazine published a new list with improved methodologies, still no women made the cut.<sup>2</sup> The gender divide within the economics discipline is pervasive, extending to imparity among central-bank governors, full-time and associate professors, PhD candidates, and undergraduate enrollment. However, this trend of gender inequality within academia is not exclusive to economics. Other technical disciplines, such as engineering, math, and the physical sciences, also exhibit a lack of female participation. In order to better explain this gender imparity in the sciences, physicist and scholar Margaret Wertheim surveys the intersection of science, religion, and gender across Western history in her book *Pythagoras' Trousers: God, Physics, and the Gender Wars*. She specifically tracks the interconnectivity between religion and physics across time to demonstrate the influence religion has had upon science and, subsequently, upon gender. Although religion and science are currently portrayed as rivals, science found its origins in religion and religious undercurrents can still be seen in contemporary physics. According to Wertheim, it is precisely these lingering religious elements of physics, such as gendered ideologies that subordinate women and the perpetuation of a secular, male-oriented priesthood, which has excluded female participation. By applying her arguments about the influence religion has had in physics to economics, parallels can be discerned between the two

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1 "Shifting Clout," *The Economist*, published January 3, 2015, <http://www.economist.com/news/finance-and-economics/21637412-economists-academic-rankings-and-media-influence-vary-wildly-shifting-clout>.

2 "That Ranking," *The Economist*, published January 2, 2015, <http://www.economist.com/blogs/freeexchange/2015/01/influential-economists>.

sciences. Although economics never received scholarly patronage from formal religion, the social sciences—born out of the Enlightenment—became an alternative to religious dogma and, in essence, a religion itself. Thus, like physics, religious undercurrents in economics have also created gendered ideologies and a secular economic priesthood which have hindered the participation of women both historically and currently.

In her book, Wertheim gives a broad historical survey of religion, physics, and gender, demonstrating the interconnectivity between religion and science to support or undermine each other. Beginning with the ancient figure Pythagoras, Wertheim explains that the quest for truth was driven by religious or spiritual fervor. Mathematics and physical science were pursued in an attempt to interpret the natural world, and, in turn, to interpret the true nature of God. Later, formalized religion began to sponsor scientific scholarship as a means to support and prove religious dogma. Many scientists of the Christian era, such as Nicolas Copernicus, Johannes Kepler, and Isaac Newton, saw their scientific quest for knowledge as divinely inspired, each hoping to uncover the mysteries of God. However, as early as the seventeenth century, tension began to rise as science challenged religion's spiritual core—the idea that the one true path to salvation was through Christ. Newton's quest at the turn of the eighteenth century was to restore “true” Christianity through the restitution of the “true” scientific knowledge of the world; however, this was later appropriated by champions of science as a secular scientific theology in and of itself.<sup>3</sup> New technological advancements following the Enlightenment gave rise to the idea that science, not religion, would prove to be the true savior of humanity. For the first time in history, scientists began to feel that science and religion were incompatible and that religion was indeed irrelevant to science. New advances in the fields of thermodynamics, electromagnetic theory, and telecommunications dispersed power and wealth to the masses, demonstrating the concrete ways in which physics could improve the human condition.<sup>4</sup> Hence, independent of any religious or Christian framework, science would provide salvation; science itself would be the new religion.

As the Enlightenment altered the psychic framework of the Western world, science was not the only discipline to experience the replacement of religion with secular theology. Economics, likewise, received a spiritual

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3 Margaret Wertheim, *Pythagoras' Trousers: God, Physics, and the Gender Wars* (New York: Random House, 1997): 152

4 *Ibid.*, 160.

awakening during the eighteenth century which venerated the science as secular theology. Many historians and economists have commented on this transition, including Austro-Hungarian historian and philosopher Karl Polanyi who claimed that “economic liberalism,” as born out of the Enlightenment, “turned into a secular religion”; it evolved from “a mere penchant for non-bureaucratic methods” into a “veritable faith in man’s secular salvation through a self-regulating market.”<sup>5</sup> To properly understand this psychological shift, it is necessary to contextualize the event in the broader history of economics as a discipline. The study of economics can be traced back to the Bible, ancient Greek philosophy, and Christian medieval thought. Thinkers like Plato and Aristotle philosophized about *oikonomia*—the problem of organizing the *oikos*, or household, the community of those who cooperate under one roof.<sup>6</sup> During the Middle Ages, religious philosophers carried this torch while discussing issues like markets, private property, and interest; however, economic thought did not entertain the same ties with religion as physical science did. Moreover, economics and religion were never thought to complement or exclude the other. Still, the Enlightenment transformed religious thought as religion was supplanted with the belief that humans alone could improve their condition. With the Enlightenment and the Scientific Revolution as sparked by Newton, knowledge began to be disseminated to the masses. Suddenly, the mysteries of God were being unfolded in scientific and social spheres. Within this period of discovery and excitement, modern political economy was born with Adam Smith’s 1776 seminal work “An Inquiry into the Nature and Causes of the Wealth of Nations.” Not only did this mark a departure of economics from philosophy, it also offered an alternate secular theology to religion. Influential theologian Paul Tillich remarked on the vision of Adam Smith: the “idea of Providence is secularized in the Enlightenment . . . [as] expressed by Adam Smith . . . in his idea of harmony as yield by the workings of the natural forces of self-interest in society.”<sup>7</sup> This harmony was found not through God or technological advances but in the invisible hand of markets, an economic phenomenon which yielded an efficient

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5 Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon Press, 1944): 135, 139.

6 Eduard Heimann, *History of Economic Doctrines: An Introduction to Economic Theory* (Oxford: Oxford University Press, 1964): 22.

7 Nelson, Robert H, “Economics as Religion,” in *Economics as Religions: Are They Distinct?*, eds. H. Geoffrey Brennan and A.M.C. Waterman (Norwell, MA: Kluwer Academic, 1994): 230.

division of labor without any conscious intent or plan. No god was needed to reach an efficient outcome of resources or economic harmony within society; rather, man could depend on a sound understanding of the inner mechanisms of markets. Therefore, with the birth of modern economics came the advent of economics as a secular theology and a means of restoring harmony and finding salvation. Now there was no need for a god to intervene; the exploration and application of correct economic principles to a market system alone would lead humanity toward salvation.

The rise in a secular theology within eighteenth-century physics parallels the same phenomenon occurring within the field of economics. As mathematics and technical skills advanced, each discipline found a rebirth in the wake of the Enlightenment. Although the origins of each science differ greatly, as the history of physics is intertwined with formal religion, economics and physics supplanted religion by providing secular theologies which touted an alternate path to salvation—one of concrete social and technical advances rather than of faith and good works. This parallel is significant because during this period, both economics and physics became, in essence, new religions. While thoroughly rejecting Christianity as the means of salvation, each discipline began to take on the qualities of a religion itself: theologies proven to bring about salvation and a priesthood of inspired men who discover and interpret said theologies. It is precisely these elements which justified the exclusion and discrimination of women within each field. Just as women were subordinate within Christian theologies, gendered ideologies in physics and economics inherently implied that women were inferior. Likewise, the exclusive monastic priesthood of Christianity carried over into physics and economics in the form of a secular priestly culture which both directly and indirectly inhibited the participation of women in those disciplines.

Wertheim addresses many of the nuanced theologies within physics through what she terms Mathematical Man. She describes him as the personification of physics itself, a representation of the desires and ideologies of the science. Wertheim describes Mathematical Man as male because, until very recently, physics was strictly a male discipline. As first embodied by the Pythagorean quest, Mathematical Man was in search of finding universal harmony through mathematics and science. Pythagoras was the first in a long line of mathematicians that tilted his gaze ever more heavenward to understand nature and the divine. While exploring the heavenly and numerical realms, Pythagoras inherited the dualism of the Greeks in which maleness was associated with the heavenly

and immortal while femaleness was associated with the earthy and material.<sup>8</sup> The masculine was equated with the divine and the spirit, while the feminine was linked with the terrestrial and the corporeal. Just as the heavens reign over the earth, the masculine was believed superior to the feminine. Pythagoras applied this heaven-earth, male-female dichotomy to a mathematical context in which a hierarchy emerged even in the numbers themselves: males construed as odd numbers associated with good, while women embodied even numbers which were believed to be evil.<sup>9</sup> Mathematical Man personified this dualism as he continued his quest to understand the cosmos and the divine. Sadly, Pythagoras's scientific successors would retain his mathematical doctrines but reject his social ones in which he gave women equal status in his school, going against contemporary custom.<sup>10</sup> Indeed, he had many female disciples, even among his exclusive and secretive group of *mathematikoi*, philosopher-mathematicians who lived inside Pythagoras's community. Mathematical Woman and Mathematical Man worked side by side; however, the Pythagorean concept of Mathematical Man was to be Pythagoras's legacy, as Mathematical Woman was later overshadowed and subdued. With the rise of Mathematical Man and suppression of Mathematical Woman, the collective conscious of the science was imbued with a gendered hierarchy that placed men above women. This directly influenced the direction the science would take, the topics that would be studied, and the culture that the science would create. Throughout his quest, Mathematical Man remained strictly in control, with little female company in a male-dominated culture. After a long absence, Mathematical Woman now begins to reemerge as a key player within physics.

Just as Mathematical Man dominated the scientific realm for thousands of years, modern economic historians have tracked the existence of another preeminent figure—Economic Man. Much like Mathematical Man, Economic Man goes to the root of economic theologies. Serving as the basis for economic models since the emergence of political economy in the Enlightenment, and as perpetuated by neo-classicist thought, is Economic Man—a self-interested, rational creature only concerned with maximizing personal utility or happiness. His rational nature has become the underlying assumption in nearly every economic model; it

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8 Wertheim, *Pythagoras' Trousers*, 29.

9 *Ibid.*, 25

10 Joscelyn Godwin, foreword to *The Pythagorean Sourcebook and Library*, ed. David R. Fideler, trans. and comp. Kenneth Sylvan Guthrie (Grand Rapids, MI: Phanes Press, 1987), 12.

is assumed that he will act not on emotion but reason, acting on self-interest rather than altruism to maximize his utility. This embodiment of Economic Man serves as a metaphor for how economists view the world and humankind. Economics bases its logic on agents “imagined to be thoroughly—masculinely—rational and individual, detached from all social connection, and living in a tough, dog-eat-dog world of competition for scarce resources.”<sup>11</sup> Thus, Economic Man is rightly a man and not a woman, as his person embodies characteristics which have been historically gendered as masculine. Masculine rationality is placed in opposition to feminine passion or emotion; male self-interestedness is put in contrast to feminine caring or maternal love. Economic Man’s surroundings are also depicted as a ruthless environment of scarce resources where he must struggle to survive, a metaphor lending itself to the paternal figure who must leave the comfort of the home to brave the harsh world and provide for his family. At the root of economic theology and belief is the personification of a rational, self-interested man; Economic Woman has been left out of the equation. Only in recent years has research in areas such as behavioral economics, which fuses economics and psychology, put the rationality and self-interestedness of Economic Man into question. Only as economists take more empirical approaches to their science and challenge centuries-old assumptions about human nature has Economic Woman started to have to find a place within the study of economics.

The absence of Mathematical Woman and Economic Woman in the consciousness of physics and economics has had serious implications for these sciences. Their theologies, which have been informed by social and cultural norms, have perpetuated implicit beliefs about the inferiority of women by placing Mathematical Man and Economic Man in the spotlight. It is precisely the veneration of the male and the subordination of the female that directly influenced and shaped their respective scientific cultures. Consistent with the analogy of economics and physics as religions themselves, each formed a secular priesthood wherein physicists and economists were cast as divine and devout priests, constantly searching for the theorems which would redeem humanity and bring about salvation. Within this exclusive priestly culture, Mathematical Man and Economic Man transcended ideology

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11 Julie A. Nelson, *Economics, and Gender: Can Knowledge of the Past Contribute to a Better Future?* (Working Paper, Global Development and Environmental Institutes, April 2009): 8.



to embody the ideals of the physicist and the economist themselves. Therefore, woman was no longer just implicitly subordinated but also explicitly excluded from participating in the priestly culture of physics and economics.

Although the sponsorship of physics by the Catholic church historically called for a scientific culture embedded in the religious priesthood, Wertheim argues that even after physics formally split from religion, a secular scientific priesthood remained. Because of the long association between physics and religion, many cultural aspects of Christianity carried over to the new scientific religion. Wertheim specifically states that the gendered theologies which physics purports have been a “cultural inertia behind the male-only Catholic priesthood” which in turn gives credence to the idea of a “male-only scientific priesthood.”<sup>12</sup> This culture has been perpetuated as many physicists have alluded to the scientific quest as a profoundly religious quest. Because physicists see their work as central to the salvation of humanity, their vigor is imbued with religious fervor and the affirmation that they are secular saviors. Consequently, many physicists devote their careers to finding a Theory of Everything—one equation which will unite all cosmic and earthly forces. Nobel Laureate Leon Lederman used deliberating religious language in his 1993 book *The God Particle* when he likened “particle accelerators to cathedrals” and hinted that “the deity lurks at the end of a proton beam.”<sup>13</sup> This metaphor paints physicists as profoundly religious people attempting to unlock the mysteries of God through science and reaching ever closer to the equation that will bring salvation. Mathematical Man evolved from an abstract representation into a priest persona: equal parts physicist and priest. However, in this priestly culture, there was no room for women or priestesses. With the idolization of Mathematical Man, Mathematical Woman was left out in the cold. Here, Wertheim draws a parallel between the clergy and secular priestly culture: the struggle women faced to gain entry into science mirrors the struggle they faced to gain entry into the clergy.<sup>14</sup> The historical exclusion of women within the religious community is then akin to the official and unofficial exclusion of women within physics as well. Although science separated from religion hundreds of years ago, traces of religion are found within physics, especially in its perpetuation of a secular priesthood.

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12 Wertheim, *Pythagoras' Trousers*, 235.

13 Ibid., 14.

14 Ibid., 9.

This priestly culture within Christianity translated to a secular priestly culture within physics, and subsequently meant the continued exclusion of women from participating in the science.

Even without the inertia of a long association with formal religion, economics has created a priestly culture which venerates Economic Man. Just as many religions rely on inspired leaders to receive revelation and interpret holy writ, economics likewise has cultivated a priestly community of economists whose work is often viewed as revelatory and redemptive. If salvation can indeed be achieved by correctly allocating scarce resources, then “professional economists are the relevant priesthood, that group which through its knowledge of secrets of economic growth now holds the keys to salvation.”<sup>15</sup> Essentially, economists become secular saviors through whom salvation will be achieved. If restoring earth from its fallen state only requires the knowledge of markets to resolve economic inequalities, then, truly, economists hold the keys to this salvation. Modern economists in essence serve as shamans, surrounding presidents and prime ministers and advising them with prophetic statements about what the future economy holds in store. The salvation of a certain nation is then placed in the hands of economists. Frank Knight, a founder of the Chicago School of Economics who took up economics as he abandoned formal religion, recognized that the modern role of the economist was that of the priesthood of old: to “dispense social legitimacy and serve as advisors to heads of government, as other priesthoods once served in these capacities for previous rulers.”<sup>16</sup> Knight explains that the academic economist is not only held in high esteem, but society, at large, also recognizes the prophetic nature of the economist as political advisor. However, this priesthood is not exclusive to political positions; it also extends to academic settings in which economics professors and scholars are venerated as inspired seers. In his 1988 memoirs, George Stigler, a pupil of Knight and another key leader in the Chicago School of Economics, captioned one of the pictures included in the book as “Prophet Frank Knight and three of his disciples,” depicting himself as one of the disciples. A university community, Stigler suggested elsewhere, bears many similarities to a “medieval monastery,” where male economists filled with faith embark on a journey under the tutelage of proclaimed prophets to discover the secrets of salvation

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15 Nelson, “Economics as Religion,” 235.

16 Wertheim, *Pythagoras' Trousers*, 230.

through economic theory.<sup>17</sup> What Knight and Stigler fail to mention is the inherent gendered nature of their analogies. Implicit in their metaphors of a secular economic priesthood is the absence and exclusion of women to participate in economics. As Economic Man has been professionalized and institutionalized in governments and universities, Economic Woman has faced significant obstacles in just gaining access to this selective priesthood of economists, much less becoming priestesses themselves. Bolstered by hierarchical gendered theologies, these secular priesthoods have remained steadfastly male even as women have been granted official admittance to academia and political institutions.

Although economics and physics attempted to supplant religion with their own secular theologies, they carried over ideological and cultural traits from formal religion which are still apparent today. Both physics and economics developed secular priesthoods after the monastic orders of Christianity in which the members of each group paint themselves as secular high priests doing the work of salvation. Ironically, by denouncing religion and proclaiming themselves as secular theologies, physics and economics still perpetuate cultural practices which find their roots in the very institution they reprove. These cultures proved exclusive to many groups but especially to women. Just as the religious priesthoods have been reluctant to admit women into their clergy, so have these secular scientific priesthoods been slow in allowing for the contributions of women.

This paper compares the theoretical relationships of religion's influence on physics and economics; however, the gendered ideologies and priestly cultures apparent in these sciences have real world implications. While the twentieth and twenty-first centuries have seen a burgeoning influence of women across every discipline, physics and economics have largely remained male-dominated while respective physical and social sciences have reached or neared gender parity.<sup>18</sup> Hence, it becomes necessary to examine the history of physics and economics more deeply to understand why there persists a low participation of women in these fields. By exploring the religious origins of physics and the pseudo

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17 Robert H. Nelson, *Economics as Religion: From Samuelson to Chicago and Beyond* (University Park, PA: Pennsylvania State University Press, 2001): 64.

18 United States; U.S. Department of Education; National Center for Education Statistics; Integrated Postsecondary Education Data System (IPEDS); *Bachelor's, master's, and doctor's degrees conferred by postsecondary institutions, by sex of student and discipline division: 2011–12*; US Dept. of Education, July 2013; table 318.30.

religious beginnings of economics during the Enlightenment, parallels begin to emerge as physics and economics resemble religions themselves, complete with theological truths believed to bring about salvation and the formation of a scientific priesthood. By retaining these cultural elements of religion, physics and economics also retained the gendered archetypes and exclusive priesthood which have directly and indirectly barred women's participation. The ideologies of Mathematical Man and Economic Man and their exclusion of Mathematical Woman and Economic Woman, be it active or acquiescent, over time has contributed to the formation and perpetuation of a priestly culture in the science. Even though modern-day physics and economics actively disassociate with religion, they are subject to the same *faux pas* as their theological brethren: namely, the lack of female participation. Thus arises the great irony: these disciplines claim to hold the keys to salvation but are hesitant in sharing those keys with women and dispersing that saving knowledge. If salvation is ever to be brought about through physics, economics, or any other means, it must be done with women and men alongside each other. As Mathematical Woman and Economic Woman are encouraged to participate, they too will become key players alongside Mathematical Man and Economic Man to improve the future of physics, economics, and the world. ♦

## Bibliography

- Bertaux, Nancy E. "Gender in Economics and the Gender of Economists." In *Borderland of Economics: Essays in Honour of Daniel R. Fusfeld*, edited by Nahid Aslanbeigui and Young B. Choi, 104–118. New York: Routledge, 1997.
- Dimand, Robert D. "The Neglect of Women's Contributions to Economics." In *Women of Value: Feminist Essays on the History of Women in Economics*, edited by Mary Ann Dimand, Robert W. Dimand, and Evelyn L. Forget, 1–24. Northampton, MA: Edward Elgar, 1995. pp. 1–24.
- Forget, Evelyn L. "American Women Economists, 1900–1940: Doctoral Dissertations and Research Specialization." In *Women of Value: Feminist Essays on the History of Women in Economics*, edited by Mary Ann Dimand, Robert W. Dimand, and Evelyn L. Forget, 25–38. Northampton, MA: Edward Elgar, 1995.
- Godwin, Joscelyn. Foreword to *The Pythagorean Sourcebook and Library*, Edited by David R. Fidler. Translated and compiled by Kenneth Sylvan Guthrie. Grand Rapids, MI: Phanes Press, 1987.
- Heimann, Eduard. *History of Economic Doctrines: An Introduction to Economic Theory*. Oxford: Oxford University Press, 1964.
- Keynes, John Maynard. "Economic Possibilities for our Grandchildren." In *Essays in Persuasion*, edited by John Maynard Keynes, 348–374. San Diego, CA: Harcourt, 1932.
- Nelson, Julie A. *Sociology, Economics, and Gender: Can Knowledge of the Past Contribute to a Better Future?* Working paper. Global Development and Environmental Institute, April 2009. Web.
- . "The Study of Choice or the Study of Provisioning? Gender and the Definition of Economics." In *Beyond Economic Man: Feminist Theory and Economics*, edited by Marianne A. Ferber and Julie A. Nelson, 23–36. Chicago: University of Chicago, 1993.
- Nelson, Robert H. "Economics as Religion." In *Economics as Religion: Are They Distinct?*, edited by H. Geoffrey Brennan and A.M.C. Waterman, 227–236. Norwell, MA: Kluwer Academic, 1994.
- . *Economics as Religion: From Samuelson to Chicago and Beyond*. University Park, PA: Pennsylvania State University Press, 2001.
- . *Reaching for Heaven on Earth: The Theological Meaning of Economics*. Lanham, MD: Rowan & Littlefield, 1991.
- Polanyi, Karl. *The Great Transformation: The Political and Economic Origins of Our Time*. Boston: Beacon Press, 1944.
- Pujol, Michèle. "The Feminist Economic Thought of Harriet Taylor (1807–58)." In *Women of Value: Feminist Essays on the History of Women in Economics*,

edited by Mary Ann Dimand, Robert W. Dimand, and Evelyn L. Forget, 82–102. Northampton, MA: Edward Elgar, 1995.

“Shifting Clout.” *The Economist*. Published January 3, 2015. <http://www.economist.com/news/finance-and-economics/21637412-economists-academic-rankings-and-media-influence-vary-wildly-shifting-clout>.

“That Ranking.” *The Economist*, Published January 2, 2015. <http://www.economist.com/blogs/freeexchange/2015/01/influential-economists>.

United States; U.S. Department of Education; National Center for Education Statistics; Integrated Postsecondary Education Data System (IPEDS); *Bachelor’s, master’s, and doctor’s degrees conferred by postsecondary institutions, by sex of student and discipline division: 2011-12*; US Dept. of Education, July 2013; table 318.30.

Wertheim, Margaret. *Pythagoras’ Trousers: God, Physics, and the Gender Wars*. New York: Random House, 1997.