

Enchantment and the Awe of the Heavens

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Abstract. The dominant narrative in astronomy is of the disinterested scientist, pursuing the quest for mathematical data, neutral, value-free and objective. Yet, many astronomy books refer to the “awe” of the night sky, and most amateur astronomers are thrilled by the sight of, say Saturn’s rings or Jupiter’s moons. This talk addresses the issue of the “inspiration” of astronomical phenomena and argues that astronomers should be more forthright about the emotional, irrational appeal of the heavens. Reference will be made to the sociologist Max Weber’s theory of “enchantment”. Weber argued that science and technology are automatically disenchanting. This paper will qualify Weber’s theory and argue that astronomy can be seen as fundamentally enchanting.

The theory of “disenchantment” was developed by 18th century Romantics and notably occurs in the poet Friedrich Schiller’s phrase, “die Entgötterung der Natur” (“the disgodding of nature”), by which Schiller, in Morris Berman’s words, identified the “progressive removal of mind, or spirit, from phenomenal appearances”, the world, in his opinion, which is experienced through the senses¹. In 1918 the sociologist Max Weber (1864-1920) adapted the phrase as “die Entzauberung der Welt” (“the disenchantment of the world”) in order to describe what he saw as the perilous the spiritual plight of humanity in the modern era, using it as a leitmotif for cultural discontent. Weber rejected the Marxist notion that economic determinants played the primary role in the development of ideas; instead, he argued, ideology shaped the economy. Influentially, he proposed that the combined impact of the scientific revolution and the Protestant Reformation in Europe in the 16th and 17th centuries saw the culmination of a millennia-long process of disenchantment, in which the magical aliveness of, and psychic human participation with, the natural world, was lost. Weber wrote that

increasing intellectualization and rationalisation do *not*, therefore, indicate an increased and general knowledge of the conditions under which one lives, [but] the knowledge or belief that [...] one can, in principle, master all things by calculation. This means that the world is disenchanted;

he continued,

¹Morris Berman, *The Reenchantment of the World*, Ithaca and London, Cornell University Press, 1991.

One need no longer have recourse to magical means in order to master the spirits, as did the savage, for whom such mysterious powers existed. Technical means and calculations perform the service. This above all is what intellectualization means².

The consequences of disenchantment were, for Weber, was a source of profound regret³. Now, Weber believed that ideology shapes society, so he was careful to state that it is the “knowledge or belief” in rationalisation’s ability to provide ultimate answers, what we might call “scientism”, that causes disenchantment, implying that rationalisation itself is not necessarily opposed to enchantment. It is not necessarily, therefore, modern science and technology which are at fault, but the *belief* in their ontological supremacy. Patrick Curry⁴, argues that “any attempt to recoup enchantment for science destroys them both”. Weber, in addition, does also invoke technology—“technical means”—as the servant of disenchantment, and one reading of his words is, therefore, that technology itself is necessarily disenchanting, regardless of belief in its value, and hence to be regarded with suspicion: Weber was prone to pessimism, and his historical view was shaped by his political opinion, formed in 1918, that “Not Summer’s bloom lies ahead of us, but rather a polar night of icy darkness”⁵. He looked back to the period of enchantment as a kind of lost, pre-lapsarian golden age.

Sociologists normally refer to Weber’s historical theory, namely that disenchantment is a temporal phenomenon, which took place within a defined time-period. My concern is with his psychological theory; that the cognitive condition of enchantment is necessarily inhibited by rationalisation and technology. The cosmological-psychological aspect of Weber’s theory was summarised by Mircea Eliade, who argued that the old, magical world has been replaced by one dominated by “industrial societies, a transformation made possible by the desecralization of the cosmos accomplished by scientific thought”⁶

Such debates beg the question of what exactly enchantment is. In conventional usage it is synonymous with being bewitched—to be under a spell which has been uttered—or chanted. We might point to Bruno Bettelheim’s use of the word in his study of fairy tales, while bewitchment was generally the sense, for example, in which the term was used in the novels of Sir Walter Scott in novels such as *Waverley* and the *Talisman*⁷. It may also be synonymous with “wonder”⁸ The *Oxford Concise Dictionary* defines “to enchant” as to: “Bewitch,

²Max Weber, *From Max Weber: Essays in Sociology*, H. H. Garth and C. Mills Wright (ed.), London, Kegan Paul, Trench, Trubner & Co., 1947, p. 139.

³Weber (cit. note 2), p. 155

⁴Patrick Curry, Personal communication, 17 October 2009.

⁵Weber (cit. note 2), p. 128

⁶Mircea Eliade, Mircea (1959), *The Sacred and the Profane*, New York, Harcourt Brace, 1959, p. 51.

⁷Bruno Bettelheim, *The Uses of Enchantment: The Meaning and Importance of Fairy Tales*, London, Vintage, 1977; Irene Baise Beesmyer, “The Vision of Enchantment’s Past”: Walter Scott Rescripts the Revolution in “Marmion”, “Scottish Studies Review”, 1, 2000, pp. 63-77.

⁸Ronald Hepburn, *“Wonder” and Other Essays*, Edinburgh, Edinburgh University Press, 1984.

charm, delight [...] (*cantare* sing [...]), from the French *chanter*, to sing". In this case we should remember the words of the Renaissance philosopher, Marsilio Ficino, who urged his readers, to "remember that song is a most powerful imitator of all things. It imitates the intentions and passions of the soul as well as words"⁹. Patrick Curry described enchantment as "an experience of the world as intrinsically meaningful, significant, and whole in a way that is fundamentally mysterious and includes oneself"¹⁰. The writer J. R. R. Tolkien, who has influenced Curry, defined it as a state of mind in which one is perfectly, and perhaps ecstatically, integrated with cosmos, rather than under another's supernatural control. Tolkien wrote,

Faërie contains many things besides elves and fays, and besides dwarfs, witches, trolls, giants, or dragons: it holds the seas, the sun, the moon, the sky; and the earth, and all things that are in it: tree and bird, water and stone, wine and bread, and ourselves, mortal men, when we are enchanted... *Faërie* itself may perhaps most nearly be translated by Magic—but it is magic of a peculiar mood and power, at the farthest pole from the vulgar devices of the laborious, scientific magician¹¹.

For Tolkien, enchantment was a state of one-ness with a living, wondrous world. The notion that current changes in western culture, such as the supposed rise of alternative spiritualities, is widely accepted, and almost every new catalogue of academic books brings a new title containing the word enchantment¹². Michael Hill suggested that astrology's popularity in the 1960s and 1970s may have represented an attempt to restore the sacred¹³. The argument has been developed by Patrick Curry and Roy Willis in terms of astrology as a desire for re-enchantment and of the appeal of divination as an act of enchantment¹⁴.

John Wallis¹⁵ has explored the phenomenon in connection with contemporary spirituality, Alex Owen¹⁶ in relation to 19th-century occultism and Robert

⁹Marsilio Ficino, *Three Books on Life* ed. Carole C. Kaske and John R. Clark (ed.), Binghamton: State University of New York at Binghamton, 1989, p. 359.

¹⁰Roy Willis and Patrick Curry, *Astrology, Science and Culture: Pulling Down the Moon*, Oxford, Berg, 2004, p. 112.

¹¹J. R. R. Tolkien, *Tree and Leaf*, London, Unwin, 1964, pp. 15-16.

¹²Philip Taylor, *Modernity and Re-enchantment: Religion in Post-Revolutionary Vietnam*, Philadelphia, The Jewish Publication Society, 2007.

¹³Michael Hill, *A Sociology of Religion*, London, Heinemann, 1979, p. 247.

¹⁴Willis and Curry (cit. note 10); Patrick Curry, *Divination, Enchantment and Platonism*, in Angela Voss and Jean Hinson Lall (ed.), *The Imaginal Cosmos: Astrology, Divination and the Sacred*, Canterbury, University of Kent, 2007, pp. 35-46; see also Thomas Moore, *The Re-enchantment of Everyday Life*, New York, Harper Collins, 1996.

¹⁵John Wallis, *Spiritualism and the (Re-)Enchantment of Modernity*, in James A. Beckford and John Wallis, *Theorising Religion: Classical and Contemporary Debates*, Aldershot, Ashgate, 2006, pp. 32-43.

¹⁶Alex Owen, *The Place of Enchantment: British Occultism and the Culture of the Modern*, Chicago, University of Chicago Press, 2004

Scribner¹⁷ in terms of 16th-century magic¹⁸. Richard Tarnas has taken up the theme, writing,

In Max Weber's famous term at the beginning of the twentieth century [...] the modern world is "disenchanted" (*entzaubert*): It has been voided of any spiritual, symbolic, or expressive dimension that provides a cosmic order in which human existence finds its ground of meaning and purpose¹⁹.

I have also subscribed to this point of view in relation to a desire for enchantment as a motive for occult engagement, although I disagree with Weber's historical thesis²⁰. Alkis Kontos, in describing disenchantment as an anthropological-historical process as well as metaphor, has restated Weber's assertion that it is the "*spiritual* dimension of the world" which has been lost in the rationalising process of disenchantment²¹. Some argue that even research methodologies can be disenchanting, for example, that quantitative research generates a disenchanted view of the world. Braud and Andersen argued that conventional approaches to research in a wide range of fields are

incomplete, contain unnecessary biases, are unsatisfactory for addressing complex human actions and experiences [...] [they] [...] yield a picture of the world, and of human nature and human possibility, that is narrow, constrained, fragmented, disenchanted, and deprived of meaning and value²².

However, Weber's theory which may be criticised on several grounds. First, it assumes that the Protestant religious world became disenchanted by the loss of angels and saints, whereas, demons flourished and in a protestant milieu evangelical preachers specialized in creating ecstatic states of mind, both of which can certainly be seen as evidence of enchantment. The entire notion of the Enlightenment as a peculiar rejection of "esotericism" and "occultism" can also be challenged²³. Wouter Hanegraaff has shown that the situation is actually com-

¹⁷Robert W. Scribner, *The Reformation, Popular Magic and the "Disenchantment of the World"*, "Journal of Interdisciplinary History", 23, 3, 1993, pp. 475-494.

¹⁸See also William H. Swatos, *Enchantment and Disenchantment in Modernity: The Significance of "Religion" as a Sociological Category*, "Sociological Analysis", 44, 4, 1983, pp. 321-337; H. C. Greisman, *"Disenchantment of the World": Romanticism, Aesthetics and Sociological Theory*, "The British Journal of Sociology", 27, 4, 1996, pp. 495-507; Patrick Curry, *Magic vs. Enchantment*, "Journal of Contemporary Religion", 14, 3, 1999, pp. 401-412.

¹⁹Richard Tarnas, *Cosmos and Psyche*, New York, Viking, 2006, p. 20.

²⁰Nicholas Campion, *A History of Western Astrology, Vol. 2, The Medieval and Modern Worlds*, London, Continuum, 2009, p. 238.

²¹Alkis Kontos, *The World Disenchanted, and the Return of Gods and Demons*, in Asher Horowitz and Terry Maley (ed.), *The Barbarism of Reason: Max Weber and the Twilight of Enlightenment*, Toronto, University of Toronto Press, 1994, p. 255.

²²William Braud and Rosemarie Anderson, *Transpersonal Research Methods for the Social Sciences*, London, Sage Publications, 1998, p. 6.

²³Margaret C. Jacob, *The Radical Enlightenment: Pantheists, Freemasons and Republicans*, London, George Allen and Unwin, 1981.

plex and depends on our notions of what actually constitutes enchantment²⁴. And, as Richard Jenkins argued, supposedly enchanting beliefs or practices may generate their own disenchantment²⁵.

The proposition that the instruments of Weberian disenchantment (technology, science and materialism), necessarily obstruct the enchanted state of mind to which Tolkien aspired are, though, open to question. Can, counter to Weber, rationalisation and intellectualisation be enchanting? My inspiration here is Geoffrey Elton, one of the most influential British historians of the later 20th century, and no romantic. Elton wrote of the manner in which historians (like detectives, and many great scientists), often follow hunches. The process by which professional historians become aware of “what is right” in the selection of evidence and areas of research is, Elton wrote, is a “tool of selection and divination, but an end to the process of reasoning and discovery”²⁶. Elton may not have been engaging in the “enchantment” debate, but he was certainly challenging the concept of enchantment and intellectualisation as discrete and necessarily incompatible cognitive states.

Tolkien despised the instrumental magic of the conventional magician, who manipulates the world while being separate to it. On the other hand, for the anthropologist Susan Greenwood, magic, whether of the supernatural or stage varieties, can provoke a state of enchantment. “Magic, to the outsider’s eye”, she wrote, “is concerned with mystery and beguilement; it is the stuff of enchantment, popularized and synthesized by the films of Disney and synonymous with fantasy and dreams”²⁷. The distinction is a crucial one, for Greenwood distinguished the magician’s technology from its effect: the magician, while being disenchanting in Tolkienian terms, can nevertheless provoke enchantment.

My own experience, as Edmund Husserl (recommended in his account of phenomenological research²⁸, provides the starting point for my argument. I have personally experienced what I believe to be enchantment from astronomy, from observing a rising crescent moon, joined with a bright, shining Venus on a clear summer evening, or gazing at the pre-dawn Milky Way from an island in the Nile while, downstream a muezzin calls the faithful to prayer, and experiencing my first total solar eclipse, high above the Zambezi valley. But I was also enchanted by my first view of the rings of Saturn and the phases of Venus, sights visible only through a telescope. According to Weber, the telescope, as a “technical means” of seeing the stars, should have obstructed the feeling of enchantment, but it didn’t. So I turn to the Latin poet Marcus Manilius, who flourished under the emperor Augustus:

²⁴Wouter Hanegraaff, *How Magic Survived the Disenchantment of the World*, “Religion”, 33, 2003, pp. 357-380.

²⁵Richard Jenkins, *Disenchantment, Enchantment and Re-Enchantment: Max Weber at the Millennium*, “Max Weber Studies”, 1, 1, 2000, pp. 11-32.

²⁶Geoffrey Elton, *The Practice of History*, Sydney, Fontana, 1969, p. 33.

²⁷Susan Greenwood, *Magic, Witchcraft and the Otherworld: An Anthropology*, Oxford, Berg, 2000, p. 2.

²⁸Edmund Husserl, *Ideas: General Introduction to Pure Phenomenology*, London, Collier-MacMillan, 1972 [1913, English trans. 1931].

Before their times man lived in ignorance: he looked without comprehension at the outward appearance and saw not the design of nature's works: he gazed in bewilderment at the strange new light of heaven, now sorrowing at its loss, now joyful at its birth [...] It [reason] freed men's minds from wondering at portents by wresting from Jupiter his bolts and power of thunder and ascribing to the winds the noise and to the clouds the flame²⁹.

Manilius puts the opposite point of view to Weber: reason (aided by the sight of the heavens) does not obscure humanity's experience of the world, but enhances it. Claudius Ptolemy (c. 70-168 BCE), one of the most influential astronomers of the classical world, certainly appreciated sky myths in a deeply feeling, even ecstatic way when he wrote in the poem *Anthologia Palatina* (IX, 557),

I know that I am mortal, the creature of one day. But when I explore the winding course of the stars I no longer touch with my feet the earth. I am standing near Zeus himself, drinking my fill of Ambrosia, the Food of the Gods³⁰.

Ptolemy, the most practical of astronomers, appears enchanted. And to quote the Emperor Marcus Aurelius and his Platonic-inspired words from the *Meditations*:

Survey the circling as though yourself were in mid-course with them. Often picture the changing and re-changing dance of the elements. Visions of this kind purge away the dross of our earth-bound life³¹.

Did the great Stoic philosopher and Roman emperor state that one can not achieve this effect using a telescope? He didn't, but there is no reason to think that he would have done. Can technology and intellectualisation be enchanting? The psychologist Abraham Maslow implied that they could, writing that

The proper place for the scientist—once in a while at least—is in the midst of the unknown, the chaotic, the dimly seen, the unmanageable, the mysterious, the not-yet-well-phrased³².

Such conditions are precisely those from which enchantment may unexpectedly arise. And does materialistic science necessarily banish enchantment? George Levin thinks not, and suggests, in the publicity for his book, that an appreciation of natural selection can enchant one's view of nature. And here is the description of a talk by the physicist Richard Feynman:

²⁹Marcus Manilius, *Astronomica*, trans. G. P. Goold, Cambridge: Harvard University Press, I, 1977, pp. 66-69, pp. 105-108.

³⁰Franz Cumont, *Astrology and Religion Among the Greeks and Romans*, New York, Dover, 1960, p. 81.

³¹Marcus Aurelius, *Meditations*, trans. M. Staniforth, Harmondsworth, Penguin, 1964, V, 47; see also IX, 29; and Plato, *Republic*, trans. Paul Shorey, Cambridge, Harvard University Press, 1937, 516B.

³²Abraham H. Maslow, *Motivation and Personality*, New York, Harper and Row, 1979, p. 17.

Scientists are sometimes accused of diminishing the beauty of the natural world by explaining it in terms of scientific ideas and processes. Not so, according to the late Nobel prize-winning physicist Richard Feynman, who says knowledge about the inner structure of flowers only adds to the excitement, mystery and awe of nature³³.

Carl Sagan also directly challenged the concept of science as necessarily disenchanting. In his view the opposite was the case. Even if he concedes something of Weberian disenchantment in the notion of “distance”, his solution is the opposite to Weber’s; more science—or astronomy—not less:

We have grown distant from the Cosmos. It has seemed remote and irrelevant to everyday concerns, but science has found not only that the universe has a reeling and ecstatic grandeur, not only that it is accessible to human understanding, but also that we are, in a very real and profound sense, a part of that Cosmos, born from it, our fate deeply connected with it. The most basic human events and the most trivial trace back to the universe and its origins³⁴.

So, to turn to astronomy, the enchanting experience of the sky is evidence in the pages of any newsstand astronomy magazine, and the volume of astronomy books which are either devoted to images of the sky, or dominated by them. Jerry Bonnell, astrophysicist at NASA’s Goddard Space Flight Centre explained the fascination in the May 2007 issue of *Sky and Telescope*.

I marvelled at the image’s detail and sense of depth and listened to him describe his planned, patient, and methodical approach to producing it. I later learned of Gendler’s imaging philosophy and motivation [...] In his own words, “For me the driving force is to make images that the viewer can explore and enjoy over a long period of time. A great image is one that stimulates the imagination not just for a moment but possibly a lifetime. . . .” The writing is informative and engaging, but the images will likely have you reliving a *Year in the Life of the Universe* for many years to come³⁵.

There were three book reviews on the facing page. One, on telescopes represented the dominant discourse amongst astronomer, discussion of the technical tools of the trade, from “pencil, paper and slide rules” to “digital cameras and computers”³⁶. The review of three handbooks by Apogee books noted the number of colour photographs, but without further comment. But the third review returned to the enchanting theme, though discreetly; constellations and clinically

³³Richard Feynman, *In Conversation: The Late Great Physicist Richard Feynman*, 2008, available at <http://www.abc.net.au/rn/inconversation/stories/2008/2276846.htm>.

³⁴Carl Sagan, *Cosmos: the Story of Cosmic Evolution, Science and Civilisation*, London, Warner Books, 1994, p. 12).

³⁵Jerry Bonnell, *Images for All Time*, review of Robert Gendler, *A Year in the Life of the Universe: a Seasonal Guide to Viewing the Cosmos*, “Sky and Telescope”, 113, 5, 2007, p. 82.

³⁶Stuart Goldman, review of Michael K. Gainer, *Real Astronomy with Small Telescopes: Step by Step Activities for Discovery*, “Sky and Telescope”, 113, 5, 2007, p. 83.

names “observing targets” are described as “celestial wonders”³⁷. The following article was a double-page spread on the recent Mercury transit by David Levy. Could, Levy, asked, a Mercury transit compare with that “experience to be treasured”, a solar eclipse³⁸.

For the most part, Levy was concerned with the technical set-up and apparatus but between the anecdotal recollection and factual discussion he revealed his motivation:

I was filled with a sense of the solar system in motion. Instead of watching Mercury meander across a silent backdrop, we watched it move gracefully from one solar feature to another [...] the closest planet to the Sun is capable of putting up a marvellous show³⁹.

Significantly, for the Weberian thesis, the technology itself facilitated the enchanted experience:

Just after noon we took our observing positions. My wife Wendee, was at the eyepiece of the hydrogen alpha scope, while I was viewing in “white light” with a telescope equipped with conventional solar filter. Suddenly Wendee called out that she saw a little nick in the Sun’s edge not far from a big sunspot. I couldn’t see the tiny planet, but as Wendee described the widening intrusion, I realised that she was seeing Mercury against the Sun’s chromosphere, which is clearly visible in hydrogen alpha light and extends beyond the Sun’s white-light limb. About a minute later I saw Mercury’s first contact with the Sun’s photosphere the surface visible in white light. *Experiencing that double entry was an adventure we couldn’t have enjoyed before the development of hydrogen alpha filters* [my italics]⁴⁰.

We should emphasise Levy’s last sentence: the experience was impossible without the technology. Levy’s excitement is apparent behind his mundane discussion of the Sun’s physical composition. This is enchantment, but not within the confines defined by Weber envisioned it. The experience has not been wiped out by technology. Similarly challenging for Weber is the relationship between mathematics and enchantment. Levy’s observing group included Eli Maor, author of the 2006 Princeton University Press publication, *Venus in Transit*. Maor’s presence added to Levy’s sense that “this would be a special day”⁴¹. Maor, Levy reported, “is as interested in how the mathematics of the solar system allow such rare events as he is moved by the physical beauty of them”⁴². It’s not Weber’s identification of enchantment as an experience of

³⁷Stuart Goldman, review of Ken Hewitt-White, *Patterns in the Sky: An Introduction to Stargazing*, “Sky and Telescope”, 113, 5, 2007, p. 83.

³⁸David H. Levy, *Our Memorable Mercury Transit*, “Sky and Telescope”, 113, 5, 2007, p. 84.

³⁹Levy (cit. note 38), pp. 84-85.

⁴⁰Levy (cit. note 38), pp. 84-85.

⁴¹Levy (cit. note 38), p. 84.

⁴²Levy (cit. note 38), p. 85.

identity with the cosmos that is the issue here, but his contention that the experience is *necessarily* antithetical to technology and measurement. To make this condition is to deny the evidence that technology can be enchanting, or an aid to enchantment. It is to elevate technology to the position of some spirit-denying role. To dismiss experiences obtained with the aid of technology as not genuine enchantment is to adopt a position as elitist and dogmatic as that which, in the opposite direction, denies the reality of experiences of the paranormal.

As the British astronomer Heather Couper said “Astronomy is not just about the science. It’s visionary, inspirational and romantic”⁴³. My own conclusion, then, working from a phenomenological perspective and including my own experience, is that astronomers’ testimony must be heard and accepted on its own terms, in which case Weber’s psychological thesis is challenged. Science, technology and intellectualisation are not necessarily enchanting, but neither are they necessarily disenchanting. The astronomer is indeed fitted, as Ficino would have it, to sing the song of the cosmos, and the song is not silenced by technology.

⁴³Heather Couper, *Cosmic Quest*, BBC Radio 4, 29 May 2008.