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Theurgy and Transhumanism

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Abstract: Theurgy was a system of magical practices in the late Roman Empire. It was applied Neoplatonism. The theurgists aimed to enable human bodies to assume divine attributes, that is, to become deities. I aim to show that much of the structure of theurgical Neoplatonism appears in transhumanism. Theurgists and transhumanists share a core Platonic-Pythagorean metaphysics. They share goals and methods. The theurgists practiced astrology, the reading of entrails, the consultation of oracles, channeling deities, magic, and the animation of statues. The transhumanist counterparts of those practices are genetics, self-tracking with biosensors,

artificial intellects like Google and Siri, brain-computer interfaces, programming, and robotics. Transhumanist techno-theurgy shows how Neoplatonism can be a modern philosophical way of life.

Keywords: theurgy, Iamblichus, magic, technology, transhumanism.

Introduction

Theurgy refers to a system of practices based on Neoplatonic philosophy, on the Chaldean Oracles (Lewy, 1978), and on the Greek magical papyri (Betz, 1986). It is closely associated with Iamblichus, and his book *On the Mysteries* (Clarke *et al.*, 2003; hereafter *Myst.*). The theurgists developed rituals which they believed would enable human bodies to become animated by gods and goddesses (Shaw, 2014). If successful, these rituals would enable human bodies to channel divine energies. Our souls would be lifted to divine heights of being and thus gain great powers (*Myst.* 6.6).

I aim to show that much of the structure of theurgical Neoplatonism can be mapped into the structure of transhumanism. Many concepts in the theurgical structure can be mapped onto highly similar counterparts in the transhumanist structure. For example, the theurgical concept of the soul has a counterpart in the transhumanist concept of the soul, the theurgical gods have counterparts in the transhumanist gods. The mapping from theurgy into transhumanism tends to preserve relations as well as properties. Theurgical souls stand to theurgical gods much as transhumanist souls stand to transhumanist gods. To make this mapping more precise, I will show that theurgists and transhumanists share many metaphysical ideas. They share goals and methods. And many theurgical practices have counterparts in transhumanist practices. According to this mapping, transhumanism contains a theurgical image. I will refer to this as *techno-theurgy*.

The correspondences between theurgy and transhumanism are not accidental. A long chain of artisans carries ancient pagan technology into modern transhumanism. These artisans built moving statues, then automatons, then modern robots and computers (Mayor, 2018; Kang, 2011; LaGrandeur, 2013). Many theories travelled along this chain, and these included theurgical Neoplatonism, hermeticism, alchemy, and eventually modern transhumanism (Noble, 1999). Thus McQuillan (2018) argues that our computer culture is the latest flowering of Neoplatonism. Heim (1993, p. 88) puts it into a slogan: "Cyberspace is Platonism as a working product". Many transhumanists explicitly turn to antiquity for inspiration. Walker (2005, p. vi) says transhumanists are inspired by the Platonic injunction to become godlike. Levin (2017) surveys and criticizes the ways transhumanists have appropriated classical thought. But counterparts are never identical, and appropriation is also evolution. Despite the differences between ancient and current thought, it is fair to say that theurgical ideas have been *technologically projected* into transhumanism. This technological projection is techno-theurgy.

According to Dodds (1947), theurgy is irrational. On the contrary, if my reasoning is correct, then it was the theurgists who first understood the ultimate possibilities of technological rationality. Hence the evolution of technology projects theurgical ideas into transhumanism. This projection appears to provide a conceptual home for a new kind of paganism (Aupers, 2010). For the *techno-pagan*, magic evolves into programming, and nature is ultimately digital. By figuring out how to cast spells into digital nature, techno-theurgists are learning how to turn humans into gods. Peters (2018, p. 357) says transhumanism "may even mean a return to polytheism if heaven is filled with human beings now become gods". But these gods will be natural and computational.

Theurgy and Transhumanism Share Metaphysics

The *metaphysics* of transhumanism resembles that of theurgy. They are both instances of *Pythagorean Platonism*. By the time of the later Neoplatonists, the forms of things are increasingly mathematical. For the theurgists, numbers are divine powers. The number-mysticism of *The Theology of Arithmetic* was attributed to Iamblichus. Proclus used the Euclidean axiomatic method to write his *Elements of Theology*. Humans and deities have mathematical forms. Today, Platonism means affirming the abstract mathematical objects. Transhumanists who explicitly endorse Platonism include Moravec (1988, p. 178; 2000, p. 196-198), Tipler (1995, p. 213) and Steinhart (2014, secs. 33-34). The "patternism" of Kurzweil (2005, p. 371, 386-388) is Platonic. For the transhumanists, Pythagorean Platonism evolves into mathematical physics and computer science.

Both theurgists and transhumanists say that *souls are abstract patterns*. Theurgists combine Platonic and Aristotelian notions of the soul. The transhumanists adopt the Aristotelian idea that the soul is the form of the body (*An.* 412a5-414a33). For them, your soul is a form encoded in your DNA and in neural networks. Thus Kurzweil says your soul is your body-pattern. He writes that "The pattern is far more important than the material stuff that constitutes it" (Kurzweil, 2005, p. 388). But the transhumanists make this form Platonic and Pythagorean by thinking of it as an abstract mathematical pattern. The soul is a Turing machine. Tipler (1995, p. 1-2) writes that "the human 'soul' is nothing but a specific program being run on a computing machine called the brain".

Both theurgists and transhumanists believe that *souls are substrate-independent*. For the theurgists, as for Neoplatonists generally, souls can be incarnated into many types of bodies. Plato said human souls can even be incarnated by stars (*Ti.* 41d-44d). Hence souls do not depend on their material substrates; they are multiply realizable. For the transhumanists, souls are also independent of their material substrates. Souls are software objects

which can run on many types of hardware. The genetic information in your body can be encoded in your DNA or in a pattern of 0s and 1s in some computer. When transhumanists argue that our bodies can be uploaded to machines (Kurzweil, 2005, ch. 4), they mean that the abstract form of your body can be implemented by silicon. Human animals can be realized in electricity and silicon just as they can be realized in organic chemistry. But the belief in substrate-independence is just the belief that the forms can be separated from their material realizations. It is precisely because our bodies have mathematical forms that they can be transformed into superhuman cyborg bodies, robotic bodies, and energetic bodies. They can be changed into godlike robots, or godlike animals made entirely of immaterial bits of information.

Both theurgists and transhumanists *share a privative conception of matter*. Although the Neoplatonists and theurgists sometimes portray matter as evil stuff, that portrait is far too crude. More philosophically, Plotinus thinks of matter as *impairment* (*Enn.* 1.8.8, 2.4). Theurgists and transhumanists agree that bodies are impaired. But if something is impaired, then it is impaired with respect to something else that surpasses it. If any thing has some materiality, then it has some capacity for self-transcendence. And technology provides material things with their means to self-transcendence. Dillon therefore argues that theurgy involved an early technical approach to matter. He argues that, because Iamblichus is interested in theurgy, Iamblichus is "driven to take over from the magical and alchemical tradition a positive view of the material world" (Dillon, 2016, p. 185). Likewise, since the theurgists were close to the magicians, their goal "is not to deplore one's presence in the physical world, nor yet to escape from it, but rather to make use of its resources for one's practical purposes" (Dillon, 2016, p. 76). Dillon (2007) says theurgists made use of the symbols of the gods in the physical world (*Myst.* 3.17, 5.23). These material symbols are patterns filled with divine power. Transhumanists likewise think of matter as filled with powerful and benevolent forms or patterns. Kurzweil writes that

> We can 'go beyond' the 'ordinary' powers of the material world through the power of patterns. Although I have been called a materialist, I regard myself as a 'patternist'. It's through the emergent powers of the pattern that we transcend (Kurzweil, 2005, p. 388).

Both theurgists and transhumanists believe in *grades of matter ordered by purity*. For theurgists, the lowest grade is earthly, fire is higher, the highest types are the intelligible matter in Plotinus or divine matter in Iamblichus (*Myst.* 5.23). For transhumanists, the lowest grade is carbon-based organic matter; silicon is higher; the purely energetic or luminous matter of quantum computers is highest. The Neoplatonic grades of matter are reproduced in the transhumanist hypothesis that we live in a simulation. Simulations can be nested (Bostrom, 2003, p. 253). Different simulations can have different physics. Since outer simulations are less dependent, they have purer materialities. Since they believe in purer grades of matter, both theurgists and transhumanists believe that *matter can be purified*. For theurgists, purification is through magic. For transhumanists, purification starts with the enhancement of bodily functions using drugs or medical implants. Your matter can be further purified by transferring your soul from its current carbon matter to silicon matter (Moravec, 1988, p. 110-112). Or your matter can be even more purified by transferring your soul from condensed matter to energetic matter (Kurzweil, 2005, ch. 4). Then you live as an energetic software pattern in some digital universe. If we are living in a simulation, then you can be purified by promotion to the superior physicality of the higher simulations (Moravec, 1988, p. 152-153; Bostrom, 2003, p. 254). Like the theurgists, the transhumanists affirm that patterns can exist without materiality – souls need not be realized by particles of mass-energy. At the extreme end of purification, your soul turns into pure software, realized by the immaterial bits of quantum information which make up the ultimate basis of all possible physicality (Moravec, 2000, ch. 7).

Both theurgists and transhumanists *believe in deities*. If there is some divide between humans and deities (Levin, 2017), both

theurgists and transhumanists are eager to cross it. For theurgists, deities are agents of extreme power and intelligence. They are embodied in higher types of matter or they are immaterial (*Myst.* 1.19, 5.14). Our souls can unite with them through theurgic rituals (*Myst*. 1.12, 3.5, 5.20). Through theurgy, a human can "assume the mantle of the gods" (*Myst*. 4.2). For transhumanists, deities are future artifacts of extreme power and intelligence. These include genetically engineered superhuman animals and inorganic robots. Transhumanists often refer to these future animals and robots as *gods*. Harari (2015, p. 54) says we should think of these future artifacts "in terms of Greek gods or Hindu devas". He says they will be like Zeus or Indra. He says transhumanism aims to upgrade humans into gods (p. 49-56). It aims to "upgrade *Homo sapiens* into *Homo deus*" (p. 53). These transhumanist gods also include celestial computers as large as planets, stars, galaxies, and the entire universe (Kurzweil, 2005, p. 342-367). Many transhumanists refer to these celestial computers as gods (Hughes, 2010, p. 6-7; De Garis, 2005). Sandberg (1999) describes celestial computers he calls Zeus, Chronos, and Uranos. Walker (2005) says transhumanism continues the ancient Platonic project of *theosis*. He says that we can become gods.

Both theurgists and transhumanists believe in the *ascent to the Divine Mind*. For theurgists, the Divine Mind is some immaterial structure of our universe. If purified, our souls will somehow be unified with it. The Neoplatonic Divine Mind appears in transhumanist thought as an infinite computer at the end of time This computer is the Omega Point (Teilhard de Chardin, 2002). Kurzweil says that the universe will become a cosmic computer. This cosmic computer will "wake up," becoming more and more like an infinite mind (Kurzweil, 2005, p. 389, 476). Tipler (1995, p. 249-250) says the Omega Point is "a self-programming universal Turing machine, with a literal infinity of memory". He says it can perform infinitely many operations in finite time (p. 462, 505). It will be an omniscient mind "which is neither space nor time nor matter, but is beyond all of these" (p. 158). The Omega Point is the ultimate goal of all technical fabrication. By constructing it, technology ascends to it. Tipler argues that all the information about the entire past history of

the universe, including our lives, will be absorbed by the Omega Point. We merge with the Divine Mind when the Omega Point absorbs our life-patterns. Our life-patterns will run forever as computations in the Omega Point.

Both theurgists and transhumanists believe in *some ultimate power* driving all natural processes towards their ends. For theurgists, this was the power of the One or the Good. Thus Iamblichus often talks about a divine creative energy which pervades the universe (*Myst.* 1.8-9, 1.12, 2.4, 3.20, 4.3). Teilhard de Chardin referred to this force as *radial energy* (Steinhart, 2008). Kelly refers to this force as *exotropy*. He writes

> Exotropy can be thought of as a force in its own right that flings forward an unbroken sequence of unlikely existences. Exotropy is neither wave nor particle, nor pure energy, nor supernatural miracle. It is an immaterial flow that is very much like information (Kelly, 2010, p. 63)

Something like exotropy is assumed in many transhumanist arguments.

Theurgy and Transhumanism Share Goals

The goal of theurgy was the deification of its participants: to practice theurgy was to somehow become godlike. Shaw (2013) says the theurgic rituals were "deifying in the sense that participants entered a divine current of energy through their performance." He says that by performing theurgic rituals, "the human being became transformed into a living icon of the god." Theurgists believed their rituals "had the power to transform human beings into gods." But what are the gods? The theurgists argued for a series of ranks of superhuman entities. For Iamblichus, the main ranks, in order of greatness, were the pure souls, the heroes, the daemons, and the gods (*Myst.* 1.5). The gods seem to divide into two ranks. The lowest rank of gods is the "visible gods who have bodies" and the higher rank is the intelligible gods with no corporeality (*Myst.* 1.19, 5.14).

Transhumanists share the theurgic goal: they also aim to deify or divinize human animals. Transhumanists likewise agree that there are many ranks of increasingly divine entities. These ranks entail that the goal of deification divides into a series of subgoals. If these goals are taken from the theurgical hierarchy, then the first subgoal is to change your self into a pure soul. Transhumanists can interpret this as making your human body as positive as possible. You use science and technology to make your human body as healthy and virtuous as possible. The second subgoal of theurgy is to become a hero or daemon. For transhumanists, this means using technology to modify your original human nature. You may augment your body with external or implanted devices. Or you may use genetic engineering or nanotechnology to gain super-functionalities.

The third subgoal is to rise to the level of the visible gods who have bodies. Here the transhumanists can take the Homeric deities as models. The myths portray the Greek deities as *superhuman animals*. The bodies of many deities externally resembled human bodies. And their internal anatomies were similar too. They had veins filled with divine blood called *ichor*. They had sex organs. Their enjoyments were like ours. They enjoyed eating food called *ambrosia* and drinking liquid *nectar*. They enjoyed sex and they loved their children. Much as we seem to love to fight, so too they seemed to love fighting. The deities resemble humans in that they can be injured and suffer pain. And they used medical technologies to heal their bodies. The medicine-god Paeon used an ointment to heal Ares and used herbs to heal Hades (*Il.* 5.352-430). The divine medical technology never fails to soothe and heal. The Greek deities had many superhuman powers. They could become invisible; shape-shift; control the weather; cause earthquakes; throw lightning bolts. They are ageless and deathless.

The Greek myths indicate that it is possible for human animals to change into Olympian animals. This change is also known as *transfiguration* or *apotheosis*. Sometimes the deities used their own powers to raise human bodies up to their own divine ranks. Asclepius and Hercules were transformed into gods; Ariadne was transformed

into a goddess. However, in transhumanism, it is not likely that any human animal can be directly changed into an Olympian animal. It is more likely that the change will occur over many generations of humans. Transhumanists advocate using genetic technologies to slowly change humanity into a transhuman then superhuman species. This slow apotheosis will transform us into divine animals. Harari writes that by applying technologies to our bodies, we may gain "the strength of Hercules, the sensuality of Aphrodite, the wisdom of Athena or the madness of Dionysus" (Harari, 2015, p. 49-50). For the transhumanist, the name "Athena" refers to any member of a species of possible superintelligent bodies. Some of these Athenas may be made of silicon; others of organic matter. Following Harari, if you were to take some nootropic drug that would radically increase your intelligence, that drug would *Athenize* you. And if genetic engineering changes future humans into superintelligent animals, that is also Athenization.

The fourth and ultimate subgoal of transhumanism is to become like the theurgic intelligible gods. For Iamblichus, the deities were deep natural powers. The intelligible deities seem to be integrally omnipresent (*Myst*. 1.8-9). They resemble perfect holograms. Some physicists argue that our universe is a 3D hologram generated from information inscribed on a 2D surface. They argue that gravity emerges from entangled quantum bits (Verlinde, 2016). The fourth goal of transhumanism is to change human animals into structures written into the very fabric of nature. Moravec (1988, A3; 2000, ch. 7) says the final goal of intelligence is to become quantum.

Theurgy and Transhumanism Share Methods

The methods of theurgy were practical. Theurgy was not mere contemplation or meditation (*Myst.* 2.11): it involved rituals, that is, procedurally structured operations. These operations often utilized instruments and substances. Here my understanding of theurgy is inspired by Dillon (2007; 2016). Dillon argues that theurgy was a system of rule-governed techniques; it was a craft or technical art.

Johnston (2008) refers to theurgy as the *hê telestikê technê*, the craft of self-perfection. But I will think of the *hê telestikê technê* as the *craft of self-surpassing*. The ancient theurgists used methods guided by the primitive science and primitive technologies of their day. They couldn't really do much. But they had methods. They followed procedures in order to facilitate the flow of divine power and energy through their bodies. Dillon (2007, p. 35) says the theurgists were "*tuning in* to the gods, getting onto their wave-length, by utilizing the *symbola* [symbols] that they themselves have sown in the cosmos". The theurgists used tools and techniques to enable their merely human bodies to gain divine powers. Of course, the transhumanists also use technical methods to change their bodies.

Since the theurgists were Pythagorean Platonists, they made extensive use of numerical and mathematical symbolism. According to Shaw (1993; 1999), the theurgists inspired by Iamblichus aimed to reveal and optimize the *numbers of the body*. It is by means of mathematical rituals that we ascend to the gods. Shaw (1999, p. 132-134) suggests that the theurgic rituals used models of the Platonic solids and other numerical symbols. The transhumanists also use mathematics to help deify human animals. They use digital technologies to reveal and optimize the numbers of the body. Transhumanists do self-quantification. The motto of the Quantified Self Movement is "Self-knowledge through numbers"; it could have been written by Iamblichus. Mathematics is key to the transhumanist concept of transfiguration. Our bodies have mathematical forms. Our genomes can be expressed as digital strings of zeroes and ones. The neural networks in our brains can be expressed as matrices of neural connection weights.

Magic was associated with *experimentation*. Since the Greek magical papyri often contain many recipes for solving the same problem, it is plausible to say that the theurgists (and other magicians) did experiment (*Myst.* 7.5). They manipulated physical things, including their own bodies. But this experimentation was not blind. Dillon (2007, p. 40) says theurgy is a *techne* backed up by a "rational account" of the universe. If that is right, then theurgic magic

tries to solve problems within the context of a rationally ordered universe. It is early science. Theurgic magic included sympathetic magic. But it was based on the rational picture of the universe as a whole whose parts were systematically entangled (*Enn.* 4.4; *Myst.* 3.27, 4.12, 5.7). In this context, sympathetic magic finds solutions to problems by searching for similarities. This method directs medical technology to search for substances that cure diseases based on similarities to substances in the body. This evolves into modern pharmacology: drugs work through similarities of molecular shapes. Ligands correspond to receptors; genetic editing technologies like CRISPR-Cas9 work by correspondence.

The theurgists mainly used technologies to somehow cause their souls to ascend through the ranks of superhuman entities. The Greek magical papyri describe procedures which humans can use to ascend to higher levels of existence. The *Mithras Liturgy* describes ritual technology for human ascent (Stoholski, 2007). The Mithras Liturgy does not merely involve incantations. It also involves using tools to manufacture substances. It involves procedurally structured actions. It will be useful to organize theurgic operations according to the Iamblichan grades of superhuman entities. The first level of theurgical operations corresponds to the pure souls. Here these are thought of as human lives as free as possible from negativity. The papyri listed spells intended to cure many illnesses and troubles: you have a bone stuck in your throat; you have a migraine; you have been bitten by a potentially rabid dog; your testicles are swollen; your menstrual blood won't stop; and so it goes. This experimental method continues into modern self-experimentation and into transhumanist self-hacking (body-hacking, consciousness hacking, etc.).

The second level of theurgical operations corresponds to heroes and daemons. The heroes and daemons have superhuman powers. The Greek magical papyri provide many procedures for trying to temporarily gain specific superhuman powers (Betz, 1986). The papyri describe spells for amplifying the powers of your own body. These spells aim to make your body invisible, to enable you to control the shadow of your body, to enable you to gain immediate answers

to hard questions (often about the future). They provide spells for cognitive enhancements like better memory. These spells used words and symbols in esoteric languages to allow the magician to tap into divine powers (*Myst.* 5.26, 7.4-5). These spells also often involve substances, methods, and devices. One spell for direct knowledge involves the fabrication of an elaborate visionary apparatus (*PGM* 3.282-409). Today you would use a smartphone to talk to Google. Transhumanists seek technologies that enable our bodies to gain superhuman powers.

The third level of theurgical operations corresponds to the corporeal gods. Theurgists used various magical practices to enable their souls to ascend to the level of these gods. It is hard to understand precisely what that means. For greater clarity, it will be useful to think of these corporeal gods as the Homeric deities. The poets described mythical technologies that can transfigure human animals into Olympian animals. These mythical technologies involve the application of *divinizing substances*. These divine substances are typically *nectar* and *ambrosia*. And while these substances are divine, they are also natural – they are kinds of stuff that occur in the natural world. Ambrosia and nectar have to be carried to Mount Olympus. Clay (1982, p. 115) provides many examples of humans transfigured by these divine substances. These substances are powerful anti-aging drugs. They are pharmacological technologies. Transhumanists also seek to use substances to ward off illness, weakness, aging, and death.

The story of Glaucus is a striking case of the use of a naturally occurring divinizing substance to transfigure a human animal into an Olympian animal (Ovid *Met.* 13.898-968). Glaucus was a fisherman who discovered a naturally occurring plant with the power to revivify dead fish. After eating some of it himself, his body began to change into that of a merman: his legs became a fishtail. He leapt into the ocean. He had become divine, and he was welcomed into the community of the sea-gods. Glaucus ate a divinizing substance located in a plant which grew wild on the earth. The substance consumed by Glaucus caused his body to change its biological

structure. When Dante referred to the transfiguration of Glaucus in his *Divine Comedy*, he coined the Italian word *trasumanar*. The translator Henry Carey rendered this into English as *transhuman:*

> As Glaucus, when he tasted of the herb, That made him peer among the ocean gods; Words may not tell of that transhuman change. (Dante *Paradiso* 1.67-72)

According to Harrison and Wolyniak (2015, p. 467), this is the first occurrence of the term *transhuman*. Translated into modern biotechnology, the story of Glaucus points to techniques of genetic engineering. The substance he consumed transhumanized him by reprogramming his cells at the genetic level.

The fourth level of the divine hierarchy is extremely abstract. The intelligible gods can only be approached through mathematical methods. For the transhumanists, this means that your body-form becomes translated into software running on some very deep computer, perhaps some quantum-mechanical machine whose circuitry is inscribed into the deepest levels of physicality. Some physicists argue that our universe is ultimately a network of entangled quantum bits (qubits). So if you are transfigured into an intelligible god, then your body becomes a network of entangled qubits. Moravec (2000, ch. 7) has argued that this is the ultimate goal of transfiguration.

Transhumanist Counterparts of Theurgic Practices

The parallels between ancient theurgy and modern transhumanism can be illustrated by looking briefly at some specific practices. Start with the ancient theurgists. They practiced astrology; the reading of entrails (*haruscipy*); the consultation of oracles; divination by channeling deities; magic; and the animation of statues. All these old theurgic rituals have modern techno-scientific counterparts, counterparts closely associated with transhumanism. However, while these counterparts are *analogous* to the old practices,

they are not *copies* of the old practices. As technology evolves, the old practices also evolve. Their modern counterparts make up techno-theurgy.

The ancient theurgists wrote about *astrology*. For example, although Iamblichus says astrology deals only with the lower and less valuable levels of existence, he seems to approve of it (*Myst.* 8.4-5, 9.1-4). Astrology asserts that (1) there exist deep, ancient, and hidden powers which shape the course of your whole life; (2) these powers exert their influences at the time of the origin of your body (your birth-time); (3) these powers are the heavenly bodies (stars, planets, moons). So, according to ancient astrology, knowing the positions of the heavenly bodies at your birth-time can help you understand your destiny. The seasonality of your birth does correlate with many features of your life. But those correlations are not due to the positions of the heavenly bodies.

The techno-theurgical counterpart of astrology agrees with ancient astrology that (1) there exist deep, ancient, and hidden powers which shape the course of your whole life. It also agrees that (2) these powers exert their influences at the time of the origin of your body. But it changes that origin from your birth to your *conception*. And it revises the third point by saying (3) these powers are your *genes*. Hence the techno-theurgical counterpart of ancient astrology is modern genetics. James Watson said "We used to think our fate was in our stars. Now we know, in large measure, our fate is in our genes" (Jaroff, 1989, p. 67). Many writers talk about "genetic horoscopes" (Patch *et al.*, 2009; Jablonka, 2013; Zhang, 2017). Of course, it is necessary to exercise skepticism and caution here. But genetic forecasting techniques are gaining impressive accuracy and are constantly being improved. For many applications, such as genetic pharmacology, they are increasingly useful. Techno-theurgists do genetics.

The ancient theurgists endorsed divination using the *entrails* of sacrificed animals (*Myst.* 3.15-16). After cutting open their sacrificed bodies, a religious technician called a *haruspex* read the normally hidden features of the internal organs. Hence such reading was called

haruspicy. Haruspexes used *revelatory tools* to disclose the hidden features of the internal organs of some *revelatory animal*. They also used *interpretive tools* to help understand the meanings of the features of the revelatory organs. They used handheld model livers to assist with their readings of animal livers (Collins, 2008). The features of the revelatory organs were thought to be signs pointing to future events. For example, haruspicy was used to predict the outcomes of proposed political or military actions. But it was also used in medical diagnosis: haruspexes studied the revelatory organs to predict the future course of the illness of some human patient.

Today you can learn about the hidden features of your internal organs using medical devices. By getting your microbiome analyzed, you can learn about the contents of your entrails. The revelatory tools of modern haruspicy are biosensors. These include tools to measure your heart rate, blood pressure, galvanic skin response, blood sugar, breathing patterns. You can wear an EEG cap on your head. You can add sensors and apps to your smartphone to measure many features of your organs. The signals from these biosensors are usually fed into computers. So the interpretive tools of modern haruspicy are computers. Equipped with biosensors and computers, you become your own *techno-haruspex*, and you become your own revelatory animal. You can use the algorithmically-interpreted revelations of your biosensors to make predictions about your future medical status. You can use those predictions to guide your future courses of action: maybe you need to exercise more or to change your diet. Thus the techno-theurgical counterpart of ancient haruscipy is numerical *self-tracking* or *self-quantification*.

The ancient theurgists discussed *oracles* (*Myst.* 3.11-12). An oracle was a human inspired by some god. People came to oracles seeking answers to questions about the future or other mysterious things. After the oracle performs some rituals, the god speaks through them. Through the oracle, a divine superintelligence answers the question. The techno-theurgical counterparts of ancient oracles are computational. You consult a digital oracle every time you use an internet search engine like Google to gain information. Google looks

much like a superhuman mind; it satisfies some of the theurgic features of divinity. And, like the ancient oracles, Google often provides only ambiguous signs. Our digital oracles also include massive software engines used to predict the future by simulating it (Meadows & Robinson, 1985). These digital simulators generate prophetic descriptions of future economic, climatic, and other conditions.

The ancient theurgists practiced *divination through channeling deities*. It looks like magical fortune-telling. But Iamblichus asserts that such divination runs much deeper than any fortune-telling (*Myst.* 3). When the theurgist practices divination, her mind becomes exalted; it participates in the cognitive power of some deity. The deities can see the entire spatio-temporal expanse of the universe in a single glance. They have omniscience. Some neopagans and New Agers say they can channel supernatural spirits. However, the modern techno-theurgical counterpart of channeling does not involve any supernaturalism. Here again the techno-theurgist turns to artificial intelligence. Google's AlphaGo already has something close to divine omniscience in the game of go. Google's AlphaZero looks like the god of chess. Perhaps future artificial superintelligence will grow ever closer to divine omniscience. A transhumanist channeler does not tap into the mind of Zeus through occult rituals; on the contrary, she taps into some godlike artificial intelligence through a brain-computer interface. The modern techno-theurgists channel deities by linking their brains to computers.

Theurgy was closely associated with *magic*. Many writers have discussed the parallels between ancient magic and computer programming (Aupers, 2010; LaGrandeur, 2013, ch. 7). Ancient magical spells and modern programs are both expressed in arcane languages using specialized glyphs. The glyphs in *The Greek Magical Papyri* resemble those in programming languages like APL. Ancient spells were intended to serve as instructions to divine agents, that is, agents with superhuman intelligence and power. For the modern techno-theurgist, those agents become robots and computers. Thus Kurzweil (2005, p. 5) says "our incantations are the formulas

and algorithms underlying our modern-day magic". One strategy for teaching programming treats it as a discipline of spell casting (CodeSpells, 2019). More deeply, computer scientists like Wolfram (2002) argue that nature is a ultimately system of programmable bits. The faith of the Pythagorean-Platonic magician thus turns into the faith of the computer scientist: nature is generated from programmable numerical patterns. From these parallels, a new kind of techno-paganism has recently emerged (Aupers, 2010; Davis, 2015).

The ancient theurgists practiced the *animation of statues*. Iamblichus briefly discusses the animation of statues (*Myst.* 5.23). The statues of the Olympian deities share their external forms; through sympathetic magic, theurgists thought the powers of deities could be aroused in those statues (Johnston, 2008). They used spells and incantations to try to arouse those powers. If animated, the statues would become divine avatars. They might give signs about the future. For the transhumanists, the statues are computers and robots. Techno-theurgists aim to arouse intelligence and life in statues made of silicon and metals. And, like their ancient counterparts, they use spells to do this. But their spells are codes written in esoteric computer languages. When they program computers, techno-theurgists cast effective spells on stones (Hillis, 1998, p. vii).

Plotinus used the animation of statues as an analogy for self-surpassing (*Enn.* 1.6.9): your own self is a statue that you should seek to have animated by divine power. Your statue is your body. You work on your body by reprogramming its codes; you cast spells on it in the languages of molecular biochemistry and genetics. You thus transform your body into a superior organic body. Medical technologies increasingly enable us to replace our organic body parts with artificial parts. We are progressively transfiguring our organic bodies into cyborg bodies and robotic bodies. For the techno-theurgist, the *hê telestikê technê* means using technology to enhance our bodies. This enhancement includes moral self-improvement (Froding, 2013).

Conclusion

Modern transhumanism resembles ancient theurgy in many ways. The theurgists and transhumanists share many metaphysical ideas; they share goals and methods; many ancient magical practices have modern technical counterparts. These similarities suggest several further lines of research. One line continues to explore the similarities. A second line studies the ethical or normative relations between theurgy and transhumanism. Can ancient Neoplatonic conceptions of the Good provide transhumanism with deeper ethical foundations? A third line uses the relations between theurgy and transhumanism to try to develop a contemporary Neoplatonic way of life. Much work has recently been done on *philosophy as a way of life* (Hadot, 1995). So far this work has focused on Buddhism, Stoicism, Epicureanism, and Confucianism. However, if the reasoning here is correct, then it provides a strategy for translating ancient Neoplatonism into a modern way of life. Ancient Neoplatonic ideas and practices get translated into their modern transhumanist counterparts. This translation produces techno-theurgical practices. However, much work still needs to be done to develop this Neoplatonic way of life.

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