AcademFic

Volume 5 (2024)

ACADEMFIC

VOLUME 5 · 2024

PALNI PRESS AND ACADEMFIC

PALNI Press is committed to disseminating the diverse scholarly and creative content of supported PALNI institutions and their academic communities, helping them meet their teaching and learning objectives. This service provides the capacity to create and host open access publications such as journals, textbooks, monographs, and digital exhibits, without the costs associated with program design or platform maintenance and hosting. We aim to provide equal, equitable, and free access to content by all users throughout the world. PALNI's Publishing Services Admin Team will provide consultation and support for the PALNI Press service.

Butler University is proud to be a member of PALNI and the PALNI Press. AcademFic is hosted through PALNI's Open Journal Systems (OJS), an open source software platform for managing and publishing scholarly journals. PALNI and Butler University are committed to open access for all. For PALNI Press and Butler University, this means giving readers the flexibility to access digital resources that everyone can use.

https://press.palni.org/ojs/index.php/academfic

PSYCHODENDROLOGY. A REVIEW OF THE SCIENTIFIC LITERATURE ON *PSYCHODENDRON PEREGRINUM*

G. V. SILVA

(Footnote to the title: This paper was originally published as: Silva, G. V. (2052). ‚Psychodendrology'. A review of the scientific literature on *Psychodendron peregrinum*. *Journal of Xenobiology, 7*(1), 53-68)

#

Abstract

#

This paper is an interdisciplinary review of the scientific literature on *Psychodendron peregrinum* (‚soultrees'). The first part offers a review of the current state of the literature on *Psychodendron* morphology, physiology, and ecology. The second part recounts some of the hypotheses in the still highly speculative field of ‚vegetate' and ‚soulgarden' psychology. The third part discusses the current theories on the origin of *Psychodendron*.

#

Keywords: *Psychodendron peregrinum*, Soultree, Soulgarden, Xenobiology, Psychodendrology

#

Introduction

#

Up until the appearance of *Psychodendron peregrinum*, the Earth's biosphere could be considered a closed ecological system. However, the novel species' presence on the planet and its broad interaction with native populations – and with *Homo sapiens* in particular – challenges this assumption. Already more than a decade ago, biologist and evolutionary theorist Sandra Ferrara argued that the appearance of the so-called ‚soultrees' on Earth implied the integration of our biosphere as a whole into an even broader ecological system of still unknown proportions. According to Ferrara, because of its consequences for our planet's ecology, this event is more relevant than any of the previous mass-extinction events that revolutionized

it in the past and could be considered the most significant event in Earth's history since the origin of life itself (Ferrara, 2041).

In the last decade or so, and given the impact of the proliferation of soulgardens around the globe, this view has become more mainstream. It has been maintained that *Psychodendron*'s arrival on our planet is also more significant than the advent of *Homo sapiens* and, thus, even more worthy of being considered the beginning of a new geological era that will effect profound changes on the face of the Earth. For instance, a recent estimate shows that, in the last decade, *Psychodendron* has already been responsible for the reforestation of over 300,000 km2 of land worldwide (Meyer & Torres, 2051). The spreading of soulgardens in tropical and equatorial regions also correlates with the reversal of several indicators of climate change in recent years (Katz et al., 2050). In a seminal article on the theme, philosopher of science Akemi Fusè dubbed this new era, which would cut short the already contentious Anthropocene, the „Psychodendrocene" (Fusè, 2050).

Accordingly, worldwide scientific interest in *Psychodendron peregrinum* has been massive, spawning heated debates and opening up whole new fields of research within the life sciences and beyond. It is the goal of this paper to offer an overview of the developments in the different fields of the novel science of ‚psychodendrology' (Bornholmer & Roth, 2050) in its intersections with other scientific disciplines.

#

1. *Psychodendron* Morphology and Physiology

#

a) Problems of taxonomy

The scientific community has not yet arrived at a consensus concerning various aspects of the morphological description and taxonomical classification of *Psychodendron peregrinum*. Obviously, it is the only species in its genus. Some have even argued that *Psychodendron* should be classified in a separate kingdom altogether (Surkov, 2047). Others point out significant similarities with local flora that might suggest remote common ancestry (Bornholmer et al., 2049; Bornholmer, 2050).

Furthermore, it is a well-known fact that, despite its unparalleled ability to enter mutualistic bonds with other living beings, *Psychodendra* can only fully develop in symbiosis with a human organism. So far, there has been no record of a fully functional non-human vegetate, and artificial

insemination attempts both in vivo and in vitro have failed (Urbanski & Baldakian, 2043; Cunha et al., 2043). This obligatory symbiosis of *Psychodendron* with a human organism has led some theorists to argue that the symbiotic whole of these two organisms should be considered a species of its own. In this context, the term ‚holobiont', proposed independently by Adolf Meyer-Abich in the 1940s and by Lynn Margulis in her 1991 book *Symbiosis as a Source of Evolutionary Innovation* to describe a symbiotic multi-species organism (cf. Baedke et al. 2020), has gained in popularity in the last decades. The holobiont has been defined as the biological unit whose genome (holobiome) is the sum of the genomes of all the genetically distinct symbiotic partners that compose it (Zilber-Rosenberg & Rosenberg 2008, Guerrero et al. 2013, Harrison & Mikkola 2029). The fully developed *Homo sapiens / Psychodendron peregrinum* holobiont has become popularly known as a ‚vegetate', but attempts are being made by some to establish a scientific nomenclature for it.

#

b) Stages of soultree development (lignification)

In order to germinate, *Psychodendron*'s seeds must reach the digestive tract of an appropriate symbiont. This happens mostly through direct ingestion of the soultree's fruit.

In the still relatively short time since the first documented occurrence of soultrees on Earth, many studies have been conducted to establish the characteristics of *Psychodendron's* physiological processes and their interactions with the human body as the symbiotic link is being established. Prof. Herbert Rasmussen at the University of California in Berkeley, who conducted the most extensive studies of the soultree lifecycle so far, has repurposed the vocabulary used to describe the growth stages of many plants to divide the development of the soultree within its symbiotic partner's body into four main phases. The whole of the process, which begins with insemination and ends with transplantation when the holobiont reaches maturity, has been labeled *lignification,* and its stages, as proposed by Rasmussen (2046), are as follows:

#

1. *Sprout.* Once a seed reaches a human being's digestive tract, it sprouts and takes root inside the large intestine, where it can feed on the symbiotic partner's nutrient-rich bodily waste. Since the sprout has no access

to sunlight at this stage, it will rely completely on its partner to nourish it throughout the early stages of its growth.

This is a delicate phase for the young soultree, and many do not survive it.[1] Already at this early stage, the soultree's roots establish their first connections with the partner's circulatory and nervous systems. This kicks off a complex (and for the most part still obscure) set of electrical and chemical interactions with the partner, which will be progressively reinforced and extended throughout the soultree's development.

#

2. *Seedling.* Within a few days, if the sprouting is successful, the soultree's roots acquire a firm hold of the partner's innards and begin to spread flexible rootlets throughout their organism. Simultaneously, branch-like vessels permeate the symbiotic partner's flesh to reach the epidermis. Once there, they develop subcutaneous structures that allow the soultree to photosynthesize.

These so-called ‚soulmarks' sprout from nodal points dubbed ‚meristems' in analogy with the tissues associated with growth in native plants. They consist of roughly circular patches of striated cellulose tissue interspersed with chlorophyll-rich cells that slowly expand as the soultree matures. It is due to these structures, vital to the soultree's survival, that patients from the seedling stage on acquire the characteristic green hue of their skin.

Professor Vieira's team at Wageningen University has demonstrated that photosynthesis benefits not only the soultree but also its symbiotic partner, who will also require less calorie intake as the soulmarks increase in surface area and the soultree's photosynthetic activity intensifies. Vieira has also shown that a subject will require more nourishment if deprived of sunlight and that the absence of the latter for extended periods of time entails a rapid degradation of both symbiotic partners' vitality (Vieira et al., 2049).

---

[1] It has been suggested that the partner's diet can influence the success rate of the soultree sprout reaching the epidermis before its energy is depleted and thus commencing to sustain itself through photosynthesis (Rasmussen et al., 2047). Conversely, this would mean that the ingestion of certain substances could render humans more resistant to Psychodendron. However, no attempts in this sense have proven effective to date. The most promising work in this sense is that of Prof. Jeong Bong-Cha at Pyongyang University, who is experimenting with milk protein and sugars to produce a gut environment hostile to Psychodendron peregrinum (Jeong et al. 2049).

Simultaneously, the chemical interactions between both symbionts become increasingly complex, and there is a constant and measurable exchange of electrical impulses between the soultree's roots and the partner's nervous system (Patel et al., 2049). The electrical impulses stemming from the soultree are many times weaker and slower than those in the human nervous system, but it is suspected that different substances akin to neurotransmitters found at the junction of the rootlets and the human nerve endings play a role in converting the stimuli as they move back and forth between the symbiotic partners (Patel et al., 2049a).

This increased neurological interaction between both symbionts can be considered another main characteristic of this phase of lignification. Its profound psychological implications will be discussed separately in the next section. For now, it suffices to say that, through the soultree's mediation, the partner acquires the ability to perceive, interpret, and respond to chemical signals not only from the soultree itself but from various other organisms (mainly insects, plants, fungi, microorganisms; in a lesser extent, other vertebrates), as well as to produce and release their own chemical compounds to induce certain states in them and to elicit specific behaviors from them.

#

3. *Sapling.* At this stage, the human partner's body progressively develops visible plant-like features. The skin around the subcutaneous leaves hardens and acquires a texture similar to tree bark. An increase of cellulose-coated cells in parts of the skin as the symbiotic process advances was observed by different parties (Pearson, 2047; Beenhouwer et al., 2048).[2]

[2] In this paper, I will not discuss the cytology and genetics of soultrees. The studies in this field are still very preliminary and contradictory. What has been established is that Psychodendron has the ability to develop a great variety of differentiated cell tissues, so much so that it defies our conventional understanding of gene expression and epigenetics. The soultree's DNA, which seems to share its basic structures with native eukaryotic life forms (linear double-helix packed together as a chromosome), has been estimated to contain about 900 million base pairs – less than one-third of the human genome (Hussein et al., 2048). However, it has long been known that genome size does not correlate with an organism's complexity (Van Straalen & Roelofs, 2006). Observations suggest that gene expression in soultrees might involve previously unknown mechanisms, which may account for its unparalleled ability to establish meaningful interactions with other species (Ruggiero, 2050). – One more interesting preliminary result in this field worth noting due to its relevance to the speculations to be presented in section 3 of this paper is that the analysis of the soultree's mitochondrial and chloroplast DNA suggests a common ancestry with native eukaryotic life that dates back to at least 1.5 billion years ago, which roughly coincides with the estimated

Another characteristic of this late stage is the slowing down of the partner's metabolism, reflexes, and voluntary movements. The cause of this change is yet to be established, but there is a strong indication that it might have a neurological basis as well as a merely physical one (Patel et al., 2049a).

This phase is also characterized by an increasing aversion to most human nourishment, as the soultree takes over most of the energy production for its partner. Conversely, the need for sunlight becomes vital, and both symbiotic partners show a rapid decline in metabolism when kept away from it for longer than 24 hours (Vieira et al., 2049).

Another typical phenomenon at this stage is what has been dubbed ‚emergence' or – more crudely – ‚bursting': once the coverage with subcutaneous leaves reaches a certain level, the meristems begin to grow vertical stems that break through the partner's skin into the open. In some cases, these can display leaves and even flowers before transplantation. The emergence of roots through the abdomen's walls, though not always present, marks the end of this stage and the need for the sapling to be transplanted into soil.

#

4. *Vegetate*. Once the body is completely lignified, it ceases all perceptible motion, and the soultree is transplanted into the ground along with its partner. The roots of a fully lignified subject will spontaneously reach into the ground and gradually drag the host underground.

However, this, too, is a very delicate stage in the development of the symbiotic partnership, since the emergence of the soultree's roots might produce open wounds on the partner's body that are at risk of infection. Transplantation as a practice facilitates the transition into vegetation and aims at avoiding the risks associated with an unassisted passage into the vegetative stage.

Once the roots take hold in the soil, the soultree sprouts from the spot where the body is buried. The tree's roots spread from the transplanted holobiont underground, forming a chamber around the rootstock in which the symbiotic partner's body lies, enveloped by the soultree's roots. The latter expand indefinitely through the surrounding soil (soultree roots have been found as far as two kilometers away from the nearest rootstock, and it is

---

origin of eukaryotic cells on Earth (Bornholmer et al., 2049). – For a review of the research into soultree cytology cf. D'Avila, 2051.

suspected that they may reach even further, depending on circumstances; cf. Quaid & Hauser 2047).

This final stage of the human-soultree symbiotic relationship is doubtlessly the most obscure one to date. Once a soultree and its partner are transplanted, their behavior changes radically. Soulgardens are autonomous units that will employ a vast array of tactics to defend themselves against invasions and threats, and, unfortunately, this includes curious scholars. However, from the little that is known so far, it is clear that the partner's vital functions remain active even after full lignification, although slowed to an almost imperceptible pace. It has been observed that vegetates react to direct stimuli and that limited movement is still possible. On the other hand, at least some basic physiological functions – such as digestion, for instance – seem to become obsolete at this point.[3]

#

c) Vegetate morphology and physiology

After transplantation, the soultree produces a trunk with a smooth, soft bark of a very dark, purplish color. Its large dark-green leaves (10-20 cm) are thick and glossy and have veins running through them, not unlike the leaves of dicotyledons native to Earth. Also like many native *Angiospermae*, mature soultrees are monoecious and produce perfect flowers. These have a crimson corolla of five petals about 10 cm long surrounding the black stamens and pistils in the core.

The soultree's fruit is quite large (its average length ranges between 20 and 30 cm, weighing from 200 to 500 grams) and elongated like a pear. It has smooth beige skin and a red, fleshy pericarp with dozens of small black seeds embedded in it.[4]

---

[3] The most valuable work so far in this area is doubtlessly that of Prof. Yihan Chen at Nanjing Agricultural University, who managed – at great cost – to register some data on vegetate physiological functions within a soulgarden located in the area of the Zhongshan Mountain National Park (Chen et al., 2047, 2047a; Kelly, 2047). The french anthropologist Romain Rouget (2050) compiled a great number of accounts about soulgardens around Europe that document the practices and experiences of so-called germinators, some of which touch on the subject of vegetate physiology and behavior. However, since such accounts are mostly interspersed with a good deal of mythology and superstition and stem almost invariably from uneducated laymen, their scientific value is questionable at best.

[4] Rouget and others have reported on the supposed psychotropic effects of the ritual consumption of soultree fruit within soulgarden communities. At the moment it is unclear if the fruit requires some kind of special preparation in order to acquire psychotropic

Naturally, this very vague description pertains to what we might call an ‚ideal' or ‚ur'-soultree, which, as such, cannot be found in the wild. As has been widely documented, *Psychodendron*'s structures are incredibly plastic and can be adapted to serve countless purposes, depending on the circumstances and the ecological conditions of its surroundings (Dominguez, 2047).

As we can see from the schema above, *Psychodendron peregrinum*'s relationship with its symbiotic partner is marked by a final reversal of the endosymbiotic relationship occurring in the passage from stage 3 to stage 4 of its development. Here, the soultree ‚emerges' from its ‚host' and, in turn, converts it into an endosymbiont of its own. I make this observation with the caveat that, in accordance with the currently accepted terminology, it is misleading to consider one of the symbionts the ‚host' of the other.[5] To avoid confusion, Rasmussen follows the established use and refers to the organic unit encompassing a soultree and its symbiotic partner at this final stage as a ‚vegetate'. I will be adopting this terminology.

However, it would also be a mistake to consider the vegetate a discrete organic unit, since it is characterized precisely by an extensive – and progressive – integration of both partners' organic functions into an ever-broadening network of cross-species interactions. In this, the soultree seems to act as a mediator, transforming physical, chemical, and electrical signals picked up through the air or the soil into stimuli that the partner's nervous

---

properties. Chemical analyses and in vivo tests were inconclusive (Rouget, 2050; Áquila, 2046; Hansen & Nielsen, 2049; Torres, 2046).

[5] Formerly, co-evolution was often framed as a hierarchized process, and terminology distinguished between a host organism and other bionts associated with it (the host's, microbiome, virome, etc.). Such a distinction might be useful in asymmetric interactions such as commensalism and parasitism, but – not unlike competition – mutualist and symbiotic relations are characterized by the fact that the ecological interaction remains the same from both points of view: here, there are no ‚hosts' and ‚guests', no ‚givers' on one side and ‚takers' on the other. When certain fungi and algae, for instance, enter a symbiotic relationship to form a lichen, how are we to say who is a ‚host' to whom? Or, in the case of mitochondria in eukaryotic cells: since the former lives within the cellular structure of the latter, we tend to identify the eukaryote as the prokaryote's ‚host', which at some point incorporated it to exploit its ability to produce ATP. However, although it is true that a mitochondrion cannot survive outside the eukaryotic cell, the latter is just as vitally dependent on its mitochondria. That is to say, strictly speaking, in symbiosis, there is no subordination or assimilation of one organism by another, but rather the production of a higher unity – a holobiont –, which is distinct from the individual organisms integrated into it and relates to them like an organism to its organs. Accordingly, throughout this paper, I avoid speaking of the ‚host' and its ‚biomes', but instead designate the organisms that compose a holobiont as ‚symbiotic partners'.

system can interpret and act upon. The result of this extraordinary behavior is that the actual constitution of each vegetate is unique, varying from ecosystem to ecosystem as well as from individual to individual within the same ecosystem, even within a single soulgarden.[6]

In vitro studies have shown that, like many plants native to Earth, once a soultree reaches the vegetative phase, it will grow indefinitely and is, as such, virtually imperishable. The meristem-like structures on its branches and roots constantly produce new undifferentiated cells which allow it to grow new tissues as needed (Pearson 2049). In all of this, soultrees are similar to many perennial plants found on Earth, as well as sea sponges and corals.

However, what is most striking about the human-soultree holobiont, is that the soultree's symbiotic partners acquire similar traits. Observations show that from the moment the symbiotic link is established between the soultree and its human symbiotic partner, the aging process of the latter starts grinding to a halt. At first, it was believed that this effect was due to the slowing down of the partner's metabolism, but it was later discovered that senescence had stopped at the cellular level as well: just like the soultree's, the partner's tissues also remain able to grow and regenerate indefinitely. The actual mechanism which operates this change is still unknown, but some data point to the soultree actively producing telomerase and substituting cell senescence with external mechanisms of growth control (Chen et al., 2047a). Additionally, it has been observed that the symbiotic partner's animal tissues continue to grow together with those of the soultree. Samples taken from soultree roots showed the presence of human blood and nerve cells, as well as those of other animals, plants, and fungi (ibid.).

#

d) Soulgarden physioecology

Another distinguishing feature of the vegetate is that it doesn't only maintain an obligatory symbiotic relationship with a single partner and a host of elective symbiotic relationships with countless other organisms of various species, but also has the ability to synergetically coordinate with other

[6] There is still little to be said from a biological perspective about the vegetate's unparalleled ability to establish symbiotic relationships with virtually every population of living beings in its surroundings. The mechanisms behind it are so complex and so conflicting with our conventional understanding of natural evolution and ecology that scholars have so far unable to make any significant advances in delivering a satisfactory naturalistic explanation for it (whereas, naturally, pseudoscientific ‚explanations' abound, none of which are worth mentioning here).

surrounding vegetates to form fully integrated superorganisms. Once the vegetative stage is reached and the holobiont is transplanted, it will actively seek to link itself to as many other individuals as possible, producing a network colloquially known as a ‚soulgarden'. Thus, soulgardens are these higher-level synergetically coordinated superorganisms (‚super-holobionts'?) that arise from the interaction of a network of vegetates with each other and the surrounding fauna and flora.

This unique feature of the soulgarden characterizes it at once as an ecosystem and as a superorganism in which single vegetates are integrated in a manner analogous to organs within an organism. A vegetate's physiological functions are largely subordinated to those of the soulgarden, and individual vegetates build only relatively independent units within it. This has led to much debate around the relative biological status of the soulgarden and the vegetates that integrate it.[7]

More generally, the study of soulgardens has deepened the already ongoing crisis concerning some of the most fundamental concepts of ecology and evolutionary science. A more prominent example of such revisionism is J. E. Morris' critique of the concepts of species and organism, laid out in his controversial work on what he calls ‚physioecology' (Morris, 2047).

According to him, soulgarden ecology is nothing more than the intensification of processes already essential to life on Earth. Morris contends that, since every organism is always engaged in vital interactions with other organisms and thus only a relatively closed system, the limits of any organism as a concrete unit are themselves blurry and more or less arbitrary. All organisms are, at the very least, potentially open to being integrated into a holobiont of a higher level of organization. Consequently, not only the definition of a species as a taxonomical unit but also the delimitation of a concrete biological unit (an organism) would be based merely on heuristic criteria.

In an analogy with the soulgarden, Morris proposes a synthetic view of the evolving biosphere as a single – although internally differentiated – holobiont developing through time, which science divides into discrete units to produce an organized system of knowledge that more or less depicts its complex unity.[8]

---

[7] See the discussions in Bornholmer & Roth (2050).
[8] For a critique of Morris' position cf. Braun & Drusic (2047).

#

2. Vegetate and Soulgarden Psychology

#

a) The Vegetate

Among all the uncertainties surrounding the study of *Psychodendron peregrinum,* there is probably no topic more controversial than that of vegetate and soulgarden psychology.[9]

In its earlier stages, this debate was dominated by two extreme positions which have been repeated in countless variations by scientists and echoed by society more broadly. Ultimately, both lead to the same agnostic attitude toward the possibility of acquiring any kind of scientific knowledge on the psychological experience of vegetates. Only more recent developments in the field of vegetate physiology delivered a somewhat more stable basis for establishing some general hypotheses on vegetate psychology.

The first one of the early theories, already sufficiently refuted by the data available today, stated that the consciousness of the human symbiotic partner does not survive transplantation, but that instead all their organic functions, including their nervous system, are coopted and repurposed by the soultree. We may call this hypothesis – first proposed by Brendan Connor (2040) and then popularized by alarmist psychodendrophobes such as Glen Dukakis in his 2041 documentary *A Case for Humanity* and neohumanist savvysphere influencer Trisha Taylor – the ‚psychic death hypothesis'. It is derived from the initially widespread assumption that *Psychodendron* would simply kill its symbiotic partner once lignification was completed and consume its rotting corpse. It was only the overwhelming evidence of the continuation of human organic processes even after transplantation that forced the proponents of this bleak view to substitute full organic death with a mere ‚psychic death'.

The second hypothesis, which, at first, might seem more nuanced, posed that human subjects do not simply disappear with lignification but that, nevertheless, their psychic structure is so profoundly altered that any attempt

[9] In this section, I will only be reviewing the literature on Psychodendron psychology and epistemology. The profound cultural and socio-economic impacts of the establishment of soulgardens around the globe – especially considering their geographical distribution – have been widely debated. More recently they have been the object of a panel hosted in 2051 by the UN and the World Bank in Oslo.

at communicating with or even at studying them would be futile (e. g. Zaitsev, 2042; Cuervo, 2045). It has been argued that, concerning the possibility of establishing vegetate psychology as a scientific discipline, there is no substantial difference between this hypothesis – which we might call ‚psychic metamorphosis' – and that of plain psychic death (Abbot, 2048).

In more recent years, a growing body of evidence, especially from the life sciences, has rendered both the hypothesis of psychic death and that of psychic metamorphosis all but obsolete. To begin with, research shows that there is no basis to assume that the soultree itself is conscious, at least not in the usual sense of the term (ibid.). Although, as mentioned, there is a measurable exchange of information between the soultree's tissues and its partner's nervous system, *Psychodendron* itself does not exhibit anything akin to a central nervous system, which one would assume to be the biological basis for something analogous to what human beings experience as consciousness. Thus, the notion that there might be a superior alien intelligence controlling or somehow subsuming the human consciousness within the vegetate lacks an empirical basis. Early observations have shown that, as such, soultrees most probably have, at best, a sort of vegetative drive analogous to that of plants (Bates & Surkov, 2046). This has been confirmed by more rigorous studies in more recent times (Marxheimer et al., 2051).

Consequently, concerning psychological traits such as consciousness, memory, and personality, there is no evidence to back the notion that fully lignified vegetates are not still the same human beings as before. Like their physiological functions, their psychological processes most likely remain as they were, and are altered only through their integration into a broader network of organic interactions. However, on the other hand, because of this integration, one must suppose that a vegetate's subjective experience of the world differs greatly from regular human experience.[10] In what follows we will briefly summarize the main hypotheses on which the more recent research in the emergent field of vegetate psychology is based.

#

1. *Psychological drives.* Since direct access to fully developed vegetates is next to impossible for the scientific community, most of our current insights into vegetate psychology are extrapolations from what has been observed in subjects at earlier stages of lignification. For the most part, these

[10] Angelopoulos & Roberts (2050) is representative of the more recent trends in the novel field of what they call ‚dendropsychology'.

extrapolations have yet to be empirically confirmed, but, as Taleb (2048) points out, there are good reasons to assume that the psychological experience of lignification runs parallel to the organic transformations described in the previous section. Already from the very beginning (‚sprout' stage), the soultree will start to influence its partner's organic processes to communicate its own needs. In the partner's conscious mind, this is perceived as a gradual change in drives and inclinations that will lead them to naturally provide for the soultree along with themselves (ibid.). Experiments with patients at the sprout and seedling stages of development have shown that these drives are perceived by the subject as their own and seem to be subjectively indistinguishable from the urges stemming from their animal organism, although they are able to cognitively make this distinction (Donovan et al., 2049b).

#

2. *Senses.* Parallel to this shift in the subject's drive economy, a progressive expansion of its experience of both its internal organic processes and the surrounding world has been observed, especially from the ‚seedling' stage onward. Subjects show signs of being intuitively attuned to environmental conditions, which they pick up subconsciously from cues such as the temperature and humidity of soil and air, the chemical makeup of vapors emanating from the ground, and chemical signals such as pheromones from insects and other animals and aromatic benzenes from plants and fungi (Donovan et al., 2049, 2049a).

Through this, the scope of the human subjects' perception is enhanced far beyond the functions commonly associated with consciousness. This perception is simultaneously very diffuse and, at least in some cases, incredibly precise. On a conscious level, the signals transmitted through the soultree seem to be perceived immediately as given sensations, which subjects can consciously act upon. As described by subjects in early stages of lignification, this novel sensory data, albeit not producing an actual representation of its object, can, nonetheless, interact synesthetically with other senses, adding layers of information to data delivered by the latter (Taleb, 2048). In this sense, the visual data, for instance, of observing a given object, can be enriched with data from non-human sensory sources to produce a more complex visual representation of the object. It is believed that this synesthetic experience – which doesn't always occur and seems to vary from individual to individual – is the product of an attempt by the subject's nervous

system to integrate this new dimension of experience into a coherent unity (Palmieri, 2049).

Since the conclusion of the lignification process consists of an inversion of the endosymbiotic relationship between the soultree and its human partner, one must assume that vegetate perception is characterized by a similar inversion, that is, the non-human sensory apparatus mediated by the soultree should become prevalent, with the sensory data provided by the normal human senses becoming relatively negligible (ibid.).

#

3. *Agency.* Finally, similar to what was discussed in the case of perception, the extraordinary modes of action made possible through symbiosis with *Psychodendron* are perceived by the subjects as immediate effects of their volition. Just like the mind of a regular human being is not aware of the chemical processes involved in transforming electrical impulses issued by its brain into action, subjects affected by *Psychodendron* have no consciousness of the organic processes underlying the actions they perform thanks to their symbiotic link to the soultree (Edwards & Montgomery, 2046). One can only assume that the same goes for fully lignified and transplanted vegetates (Palmieri, 2049).

#

4. *Time perception.* Among the myths and superstitions surrounding soulgardens, accounts of their prescience are doubtlessly some of the most intriguing. Anthropological surveys like that of Rouget (2050) are full of them.

It has been observed that the lignification process, although relatively constant, accelerates exponentially from the subject's point of view. As they go through the various stages of the soultree's development, their time perception seems to accelerate or contract progressively, so that each moment seems to go by faster and faster. (Sanchez & Horowitz 2050).

Based on medical and psychological tests run on subjects at various stages of lignification, Rafaela Sanchez proposed an analogy that provides an approximation of what time is to a vegetate: one must imagine that, for a vegetate, each day is like a breath, and each year like a day. Since humans take around 20,000 breaths a day, one would have to imagine Vegetates as extremely slow, deep-breathing creatures – as plants, in fact, are. (Sanchez 2050).

The effects of this altered time perception – paired with a potentially unlimited lifespan – are decisive for vegetate psychology. It has long been known that time perception varies greatly in different animals (e. g. Healy et al., 2013). Because vegetates perceive time differently, their view on history and evolution must also be quite different from that of humans. It is broader, but also more personal and intimate. A simple analysis would suggest that, proportionally to a human, taking into account its life span and the rate of its time perception, a vegetate would look back on three or four hundred years much like a man would look back on a single year.

Based on similar comparisons, neuroscientist and neopragmatist Richard E. Jones argues that, since lignification allows consciousness to last uninterrupted for thousands of years, potentially even forever, and since all of the soulgarden's minds are integrated into an intuitive network of mutual understanding, the cumbersome and imprecise work of cultural transmission is practically abolished, the psychic equivalent of countless human generations being contained in a single collective mind developing continuously throughout the ages. Consequently, having a much wider consciousness of the development of things, vegetates are also able to foresee and plan on a much larger scale than any human community. This would mean that the soulgarden's projects span over millennia and that a vegetate plans for a whole year just like a man would plan for a single day (Jones, 2045).

Based on this, Jones argues that soulgardens don't possess a time-bending divinatory ability. Rather, they see the future the same way we see it when we predict that an object moving through the air in a certain direction will hit us in the face if we don't dodge it. We don't actually predict anything, but rely on our senses and memories and ultimately on the bulk of our whole experience to *act* a certain way and, in this way, *produce* a certain future. Ultimately, Jones' argument is based on the notion that, while the past is an object of knowledge, the future is a product of action. The difference between us and the vegetates is that both their senses and their lived experience are many times vaster than ours (ibid.).

In more recent times, this view has been backed by empirical studies such as those of Sanchez and her team at Princeton University.

#

b) The Soulgarden

In more recent years, as the reality of the continued conscious existence of fully lignified human beings has become more and more established, researchers have begun to speculate about the psychological implications of one aspect of the vegetate's psyche that finds no direct analogy in earlier stages of lignification. The physical coalescence of vegetates into soulgardens raises the question of the limits of organic individuality touched upon in the first section. Vegetate psychology poses a similar problem on a different level, concerning the delimitation not of an organic, but of a *psychological* unit (Jameson, 2050).

In the current situation, there is, of course, no direct way to confirm that soulgardens constitute cohesive psychological individualities. However, many indices – among which the Mt. Manaraga incident of 2047 is doubtlessly the most prominent – suggest that they are able to act as coherent, highly coordinated units. The way in which they organize and defend their territory and its inhabitants and more generally the character of their interactions with outsiders strongly indicates that the soulgarden itself is an intelligent being able to interpret its surrounding conditions and capable of complex behavior indicative of reflexive reasoning. This also agrees with the scarce available accounts from members of soulgarden communities, which seem consistent in treating soulgardens as unitary conscious beings.[11]

Based on this, some have argued that the soulgarden must have, on the subjective side, a unity similar to that which we call the self. Austrian philosopher Kurt Schlosser has proposed to name this psychological unit a ‚spirit' with reference to G. W. F. Hegel's *Phenomenology of the Spirit* (Schlosser 2051). Drawing on the current knowledge about soulgarden physioecology, Schlosser assumes that, just as human organic structures are preserved within the more complex unit of the soulgarden and its functions integrated into those of the superior holobiont, the self-aware psychic unity of the conscious self also remains, albeit integrated into a larger whole. According to Schlosser, a single vegetate should preserve its psychic identity, but at the same time also acquire an awareness of its partiality, as well as a direct intuitive link to other subjectivities (human and otherwise) that integrate the soulgarden. Thus, it appears that, within the soulgarden, which incorporates an indefinite number of organisms of various species, each previous psychological individual preserves its individuality while

[11] For a number of examples see Rouget (2050).

simultaneously becoming coordinated with other such individuals, like relatively independent nodes within a broader cognitive network.

Naturally, this raises the question if the web of subjectivities that makes out the soulgarden's supposed psychological structure can itself be taken to possess some manner of psychological unity analogous to consciousness or even to self-awareness. As mentioned, the superorganism's behavior strongly suggests that there is an overarching superintelligence that encompasses and integrates the vegetates' single nervous systems into a greater coordinated whole. However, it is not certain if this intelligence is also self-aware (Miranda, 2046). This is a question that, so far, at least, hasn't been answered in a definite manner – and some have raised doubts that it ever will (Irving, 2046). However, the scarce second and third-hand accounts of vegetates suggest that their psychology – their ‚mind', so to speak – includes states and processes of which their human consciousness in the stricter sense isn't directly aware, but which nevertheless inform their experience and influence their thought processes and actions in unconscious and immediate ways. In this manner, it is possible for them to perceive that they are but a part of a larger whole, even though they cannot perceive this whole as such (Roberts, 2050).

#

3. On the Origin of *Psychodendron peregrinum*

#

It is now widely accepted that, although the first documented cases of human infection date from early 2041, *Psychodendron* seeds were first released into the Earth's biome at some point in 2038-39. Patterns of infection across the globe suggest that seeds originated in Antarctica and then spread throughout the planet, finally taking hold in the milder climates of temperate and especially of tropical and equatorial regions (Fabiani et al. 2044).

While some have suggested that *Psychodendron* might have reached Earth recently on an asteroid (e. g. Ovailoglu, 2042), the most accepted theory to date is that the seeds had been lying dormant under the permafrost and surfaced again as the ice melted away in recent decades. More recent evidence from samples extracted from glaciers corroborates this theory (Navarro et al., 2051).

The geological record suggests that these seeds must have been placed there around 15,000 years ago, in the late Pleistocene and before the Younger Dryas (ibid.). There are no fossil records on Earth of anything resembling

Psychodendron, neither before, nor after this point in time. However, as mentioned previously, phylogenetic data suggest that the common ancestry of *Psychodendron* with local life dates back at least 1.5 billion years (Bornhlolmer et al., 2049). Several theories have been put forth to try to combine these disparaging pieces of evidence, none of which have been proven as of yet.

Among the current hypotheses on the origin of *Psychodendron,* the most popular is surely the one put forward recently by philosopher and evolutionary theorist Barbara Goldberg. According to her, based on what we know about evolution on Earth and the soultree's peculiar behavior and life cycle, which includes an obligatory symbiotic relationship with a native species (i. e. *Homo sapiens*) and the potential to spontaneously form mutualistic bonds of varying degrees with almost any other living being in its surroundings, there are only two possible ways to explain it: Either *Psychodendron* evolved within a system quite similar to the Earth's biosphere and more specifically in interaction with an intelligent species equally similar to the human being; or it was intentionally engineered to interact with local fauna and flora the way it does. Both of these hypotheses link *Psychodendron* to an alien intelligence, probably one similar to ours but possibly also far superior to it. According to Goldberg, since it is unlikely that *Psychodendron* would have arrived here by chance, and since its existence implies a being similar to us, it would be reasonable to assume that the species has been placed on our planet intentionally.

Based on this, Goldberg suggests that if these beings have been living in symbiosis with *Psychodendron,* they would have similar characteristics and psychological traits as our vegetates. Considering what was said above about the altered spatial and temporal dimensions of the soulgarden's experience of the world, Goldberg hypothesizes that they could be seeding planets in the same manner that we sow a garden: by picking the right time and place to bury the seeds and awaiting the development of the planet's biosphere. Like a gardener can predict with a good amount of precision that a seed will thrive in a certain spot at a specific time of the year, an extraterrestrial race with a sufficiently contracted sense of time and a correspondingly vast experience might be able to pick the right time and spot for the sowing of soultrees on different planets.

This, in turn, would mean that there are potentially many different races of vegetates across the galaxy – maybe even beyond. Maybe the race that sent *Psychodendron* here was itself once seeded from somewhere else. Based on that, Goldberg concludes that, given enough time, it is natural that, in turn,

Earth vegetates, too, wold eventually seek out foreign planets to sow their seeds on (Goldberg, 2052).

#

Conclusion

#

The review of the current scientific literature on *Psychodendron peregrinum* confirms what was stated at the beginning of this paper: while it is clear that research into so-called ‚psychodendrology' is still in its embryonic stage and fraught with difficulties of all kinds, it already reveals potentially revolutionary intersections with numerous other scientific disciplines. As such, the study of *Psychodendron peregrinum* and its interactions with the Earth's biosphere – and specifically with *Homo sapiens* – must be the object of an interdisciplinary effort that is only in its very beginnings.

It is comforting to see that, despite the adverse conditions and the very real and urgent concerns raised by the proliferation of soulgardens around the globe, the scientific community has been able to produce solid and reliable research in many areas concerning *Psychodendron peregrinum*. It is the position of the author that, whichever the fate of our species, it is certain that acquiring well-grounded scientific knowledge on the topic will be fundamental in shaping it.

#

References

#

Abbot, M. (2048). ‚Soultrees' and the human ‚soul'. *Psi 4*(2), 205-219.

Angelopoulos, C., & Roberts, P. (2050). *Dendropsychology. Laying the groundwork for a new research field.* Princeton University Press.

Áquila, M. (2046). Suspected psychotropic effects of *Psychodendron peregrinum* fruit consumption. *Molecular Plant, 39(4)*, 669-680.

Baedke, J., Fábregas-Tejeda, A., & Delgado, A. N. (2020). The holobiont concept before Margulis. *Journal of Experimental Zoology Part B: Molecular Developmental Evolution, 334*(3), 149-155.

Bates, P., & Surkov, V. (2046). In vitro studies show signs of tropism in *Psychodendron peregrinum. Journal of Experimental Botany, 97*(1), 21-33.

Beenhouwer, K., Sigurðardóttir, B., Abimbola, C., Yesun, U., & Souza, M. P. (2048). Cellulose production in human skin cells extracted from individuals infected with *Psychodendron peregrinum. The Journal of Pathology, 84*(4), 355-366.

Bornholmer, T., Girard, J. F., & Roth, G. (2049). *Psychodendron peregrinum* may have a common ancestor with Earth eukaryotes. *Journal of Xenobiology, 4*(3), 302-314.

Bornholmer, T., & Roth, G. (Eds.) (2050). *‚Psychodendrology'. Scientific approaches to* Psychodendron peregrinum. Botanical Society of America.

Bornholmer, T. (2050) Introduction. *Psychodendron peregrinum*: an unparalleled challenge to taxonomy. In Bornholmer, T., & Roth, G. (Eds.) *‚Psychodendrology'. Scientific approaches to* Psychodendron peregrinum (pp. 1-25). Botanical Society of America.

Braun, E., & Druzic, S. (2047). ‚The night in which all cows are black'. Why J. E. Morris' holism is antiscientific. *Philosophy of Science, 114*(4), 701-719.

Chen, Y., Zhang, W., & Wu, L. (2047). Aspects of vegetate physiology based on findings from the Zhongshan Mountain soulgarden. *Chinese Journal of Xenobiology, 1*(2), 199-220.

Chen, Y., Zhang, W., & Wu, L. (2047a). Aspects of vegetate physiology based on findings from the Zhongshan Mountain soulgarden [II]. *Chinese Journal of Xenobiology, 1*(3), 271-286.

Connor, B. (2040). *Against Transplantationism.* Montgomery.

Cuervo, M. E. (2045). Is there such a thing as ‚vegetate psychology'? *Nature Human Behaviour, 29*(8), 944-965.

Cunha, M., Dellinger, S., Álvarez-Cornejo, O., & Luna, P. (2043). Germination of *Psychodendron peregrinum* in a laboratory environment. *Journal of Experimental Botany, 94*(4), 1221-1243.

D'Avila, M. (2051). The cell biology of *Psychodendron peregrinum*. A review. *Journal of Xenobiology* 6(2), 194-217.

Dominguez, L. (2047). Recorded phenotypical variations of *Psychodendron peregrinum*. *Journal of Xenobiology* 2(4), 314-330.

Donovan, G., Sanchez, R., Horowitz, P., & Brown, M. K. (2049). Hyperosmia in patients infected with *Psychodendron peregrinum*. In *Proceedings of the 2048 Annual Meeting of the American Medical Association* (pp. 15-22). American Medical Association.

Donovan, G., Sanchez, R., & Brown, M. K. (2049a). Patients infected with *Psychodendron peregrinum* show hypersensitivity. *Journal of Medical Science, 9*(6), 521-535.

Donovan, G., Sanchez, R., & Brown, M. K. (2049b). A survey of diet patterns of patients infected with *Psychodendron peregrinum. American Journal of Psychiatry 206*(11), 982-999.

Edwards, R., & Montgomery, T. (2046). Psychological aspects of chemical environment manipulation through *Psychodendron peregrinum. Psy, 2*(3), 329-341.

Fabiani, R., Neri, A., & Nelson, O. (2044). Patterns of dispersion of the *Psychodendron* epidemic. *European Journal of Epidemiology, 56*(10), 1025-1033.

Ferrara, S. (2041). *Galactic Co-Evolution. Why* Psychodendron peregrinum *upends all assumptions of evolutionary theory*. The New John Murray.

Fusè, A. (2050). ‚Psychodendrocene', or: Why humanity is no longer the protagonist of change in the Earth's biosphere. *Journal of Xenobiology, 5*(1), 32-49.

Goldberg, B. (2052). Souls down to Earth. *Psychodendron peregrinum* and alien intelligence. Berkeley University Press.

Guerrero, R., Margulis, L., & Berlanga, M. (2013). Symbiogenesis: the holobiont as a unit of evolution. *International Microbiology, 16,* 133-143.

Hansen, J., & Nielsen, G. (2049). Documented cases of ritual use of soultree fruit across northern Europe. *Jordens Folk. Journal of the Danish Ethnographic Society, 83*(2), 91-104.

Harrison, M., & Mikkola, K. (2029). Why the holobiont is an indispensable concept for evolutionary theory. *Journal of Evolutionary Theory, 4*(3), 275-289.

Healy, K., McNally, L., Ruxton, G. D., Cooper, N., & Jackson A. L. (2013). Metabolic rate and body size are linked with perception of temporal information. *Animal Behaviour, 86*, 685-696.

Hussein, B., Clark, M. A., & Asunción, P. (2048). Calculating *Psychodendron peregrinum* genome size. *Nature Genetics, 80,* 101-108.

Irving, G. V. (2046). The conundrum of non-human consciousness revisited in the light of *Psychodendron peregrinum*. *Journal of Neuroscience, 66*(10), 1681-1692.

Jameson, J. (2050). The question of subjectivity in a hive-mind type model for soulgarden psychology. In Angelopoulos, C., & Roberts, P. *Dendropsychology. Laying the groundwork for a new research field* (pp. 49-62). Princeton University Press.

Jeong, B., Park, K., & Zhao, C. (2049). The effect of milk components on early stage *Psychodendron peregrinum* patients. *Journal of Medical Science, 9*(5), 432-442.

Jones, R. E. (2045) What is past and future to a ‚soulgarden'? *Journal of Theoretical and Philosophical Psychology, 68*(2), 90-107.

Kelly, H. (2047, September 22). In the Garden of Souls. Chinese researchers gain exclusive insight into a soulgarden community in eastern China. *The Guardian,* p. A3.

Katz, Y. S., Ben-David, R., Moshe, A. N., & Ahmadi, M. (2050). Correlations between soulgarden expansion and climate change deceleration. *Science, 378*(8492), 455-459.

Marxheimer, H., Krause, L., & Müller-Wolf, J. (2051). Phototropismus und Gravitropismus bei *Psychodendron peregrinum*. Ein experimenteller nachweis. *Bonplandia. Zeitschrift für die gesamte Botanik NS, 9,* 172-185.

Meyer, R., & Torres, S. O. (2051). The impact of soulgardens in the recuperation of deforested areas. *Nature Ecology and Evolution, 35*, 143-147.

Miranda, R. L. (2046). Intelligence without awareness? On the cognitive science of soulgardens. *Psi, 2*(3), 551-571.

Morris, J. E. (2047). *Physioecology. Soulgardens and the revolution of evolutionary science.* Oxford University Press.

Navarro, E. F., Muriel, R. M., Souza, A. R., Jesus, V. de (2051). *Psychodendron* seeds in permafrost since at least 15,000 years ago. *Permafrost and Periglacial Processes, 62*(2), 157-178.

Ovailoglu, S. (2046). The asteroid hypothesis for *Psychodendron peregrinum*. *Journal of Xenobiology, 1*(4), 723-739.

Palmieri, G. (2049). A hypothetical model for the sensory study of vegetates. *Journal of Sensory Studies, 56*(6), 776-781.

Patel, V., Bhatt, U., Harris, L., & Steffen, W. (2049). Measuring the exchange of electrical impulses between *Psychodendron peregrinum* and its human host. *eLife, 38*.

Patel, V., Bhatt, U., & Madhukar, K. (2049a). Neurophysiological aspects of human-soultree interactions. *IP Indian Journal of Neurosciences, 34*(4), 242-254.

Pearson, B. (2047). Presence of secondary cell walls in samples taken from humans infected with *Psychodendron peregrinum*. *Canadian Journal of Cytology, 15*(9), 431-441.

Pearson, B. (2049). *Psychodendron peregrinum* lacks PCD mechanisms. *Canadian Journal of Cytology, 17*(2), 187-195.

Quaid, D., & Hauser, C. (2047). Some empirical observations on *Psychodendron* root systems in the Aconquija National Park. *Boletín de la Sociedad Argentina de Botánica, 86(3)*, 335-343.

Rasmussen, H., Gorgasali, V., & Smith, J. T. (2047). The influence of host diet in the early stages of development of *Psychodendron* sprouts. A case study. *Journal of Xenobiology, 2*(4), 392-403.

Rasmussen, H. (2046). A four-stage model of lignification. *Journal of Xenobiology, 1*(1), 66-69.

Roberts, P. (2050). Protoconsciousness and meta-consciousness. A model for soulgarden psychology. In Angelopoulos, C., & Roberts, P.

Dendropsychology. Laying the groundwork for a new research field (pp. 63-75). Princeton University Press.

Rouget, R. (2050). *Eden. An ethnographic survey of transplantationism in Central and Western Europe.* Meridian. Translated by John E. Fletcher. Original title: *Éden. Une enquête éthnographique du transplantationisme dans L'Europe Centrale et Occidentale.*

Ruggiero, F. (2050). Unique gene expression mechanisms may help explain *Psychodendron peregrinum's* adaptive versatility. *Journal of Xenobiology, 5*(1), 21-33.

Sanchez, R. (2050). A breath a day. Extrapolating a model for vegetate time perception. *Journal of Experimental Psychology: Animal Behavioral Processes, 76*(2), 329-340.

Sanchez, R., & Horowitz, P. (2050). Signs of progressively contracting time perception in patients infected with *Psychodendron peregrinum. American Journal of Psychiatry 207*(9), 756-766.

Schlosser, K. (2051). *The Spirit of the Soulgarden. On vegetate phenomenology.* TLP. Translated by Gustav Rödel. Original title: *Der Geist des Seelengartens. Zur Phänomenologie des vegetativen Lebens*.

Surkov, V. (2047). Advenae. A new kingdom? *Journal of Xenobiology 2*(1), 1-10.

Taleb, M. L. (2048). A diachronic study of synesthetic phenomena in patients infected with *Psychodendron peregrinum. Psi 4*(1), 49-59.

Torres, A. (2046). Uso ritual de la ‚fruta del alma' en la comunidad Jardín del Sol. *Revista Argentina de Antropología Biológica, 48*(1), 1-22.

Urbanski, F., & Baldakian, S. (2043). Insemination of *Psychodendron peregrinum* in rhesus macaques. *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology, 356(3)*, 310-324.

Van Straalen, N. M., & Roelofs, D. (2006) *An Introduction to Ecological Genomics*. Oxford University Press.

Vieira, J. M. F., Bakker, L., & van der Vuurst, O. (2049). Effects of sunlight deprivation on subjects infected with *Psychodendron peregrinum. Microbiome, 49*, 199-207.

Zaitsev, A. (2042). Why an alien mind cannot be the object of scientific study. *Psychological Bulletin, 167*(5), 782-801.

Zilber-Rosenberg, I., & Rosenberg, E. (2008). Role of microorganisms in the evolution of animals and plants: the hologenome theory of evolution. *FEMS Microbiology Reviews, 32*(5), 723-735.

ABOUT THE AUTHOR

G. V. Silva was born in São Paulo, Brazil. He holds a bachelor's and a master's degree in philosophy from the State University of Campinas and a Ph.D. in philosophy from the Technical University of Berlin. He is a freelance interpreter and a translator of German philosophical works into Portuguese (Nietzsche, Schopenhauer, Walter Benjamin, among others). He is currently working on his debut sci-fi novel.

FEEL YOUR PAIN

KALEB BEAVERS

From the Editorial Desk:

The following is a collection of responses, critiques, and meditations on New England State University's (NESU) recent decision to allow for the use of fully immersive, pain enabled virtual training environments (VTEs) in medical classrooms. This collection has been put together and edited by a team of student journalists to capture the wide range of feelings the campus community has surrounding the University's decision. New England State University is the first academic institution in the world to allow pain enabled VTEs to be integrated into medical training.

Previous iterations of VTEs relied on visual and auditory cues, limiting user mobility, and context within the virtual environment to convey experiences of pain and other symptoms to users. These earlier versions were heralded as effective tools to cultivate empathy in clinicians. Students from a range of medical disciplines utilized this technology to better understand what their patients were experiencing. Pain enabled VTEs use haptic feedback suits and headsets to mimic a wide range of symptoms, including but not limited to, pain, nausea, and dizziness. Users within fully immersive, pain enabled VTEs are able to physically experience symptoms associated with a wide range of disabilities, illnesses, and diseases.

Recently, this project has taken on an unanticipated urgency, as NESU's administrators debate the suitability of pain enabled VTEs on campus. Less than a week ago, an unnamed student experienced a grand mal seizure while they were in a VTE. While campus administrators have not responded to requests for comments, the editorial board feels that this collection is an important component for the President, Provosts, and Board of Trustees to take into account as they consider the future of pain enabled virtual training environments at New England State University.

Olivia Andrews, first year medical school student

I'm really worried about the VTEs. And I'm kinda mad too. I don't want these to be a required part of med school, but it seems like people kinda want it to be. I mean, the coursework is already so much. I feel like I'm drowning half

the time. The last thing I need is a school requirement that I subject myself to a dozen different types of pains and symptoms. But so many of my peers are excited about the prospect and a lot of professors are encouraging us to do the trainings. So I'm really worried that if I set a boundary and don't do the VTEs, I'll fall really far behind. And I'm scared to speak up about this because I'm worried that people will think I'm less committed to medicine. But it's just a really big ask and I want to respect my own boundaries. I mean, I barely have any boundaries with school anyways, so this one feels almost symbolic. Like, no, this is a line I won't let school cross. It's concerning though, because like I said, I feel like I'm in the minority of people feeling this way in the first year cohort. A lot of them see the VTEs as part of the appeal of being at NESU. I'm the opposite, I'm wishing I'd gone to a less prestigious school that doesn't want to put me through hell. Or at least not that type of hell. If it becomes a requirement I really don't know what I'll do.

From the transcript of an interview with Dr. Kaiya Singh, Assistant Professor of Neurology, conducted for NESU's Future Physicians Association's semester kick-off meeting.

Interviewer: Jasper Blackwood, president, Future Physicians Association

Interviewee: Dr. Kaiya Singh

Blackwood: Dr. Sing, thank you for being here. What do you think about the adoption of fully immersive, pain enabled VTEs on campus?

Dr. Singh: Straight to the big campus question. [laughs] No, it's a good question. And I know it's sort of like the question of the year, maybe longer. So I get that you all, students, want to hear from professors about it.

Blackwood: It's definitely something that feels sort of [pause] tense.

Dr. Singh: And it should. This is a very new thing, a very serious thing. But I think—I really think that there is so much potential here and that these virtual trainings have the potential to fundamentally change medicine for the better.

Blackwood: How so?

Dr. Singh: Over the past few decades the public has lost a lot of faith in the medical establishment. You can trace some of that erosion of trust back to the Covid pandemic in the 2020s and it's just gotten worse since then. And it's not without reason, a lot of people have good reasons to sort of, you know, not feel

like they can trust—not be at ease in hospitals and other medical settings. I think the real potential of the pain enabled trainings is to build back some of that trust, to make patients feel like their doctors and nurses are, you know, in their corner.

Blackwood: Can you elaborate on how these new VTEs will build trust with patients?

Dr. Singh: Sure. So some of this is drawing from research on older versions of these VR symptom simulators, you know, ones that relied on more rudimentary stand ins for patient experience. But the research showed that students and clinicians trained on those simulators felt more empathy towards their patients. And further research showed that patients, ones who didn't know their care providers had undergone VR symptom simulation training, rated the care they received really highly. Much higher rating than surveys from patients who received care from people who hadn't got symptom simulator training. So yea, you know, I think that this, what some people are calling [finger quotes] high fidelity symptoms simulation is just going to jack up the level of sympathy medical professionals feel for their patients. And that will directly translate into patients feeling like their care is better.

Blackwood: Yea, that makes sense. Have you gone through any of these pain enabled VTEs yourself?

Dr. Singh: I have.

Blackwood: Could you share what that was like?

Dr. Singh: [sighs] Yea, you know it was hard. Before these got rolled out on campus I did a migraine VTE. It was really painful. Some of the people who were in the study with me threw up. I got to experience how the pain fluctuated in the VTE with exposure to light and noise. I definitely feel better equipped to talk to patients who experience migraines now. I really think I can provide better care. And since that experience, I'm planning on enrolling in more pain enabled VTE programs to expand my understanding of what patients are going through. And I encourage my students, and all of you here today for that matter, to do the same. We owe it to our patients.

Select responses from NESU's patient feedback system. These responses are recorded as part of voluntary, anonymous surveys from patients at NESU's teaching hospital.

Response One

I think it's actually insulting to think these virtual experiences somehow make doctors understand my condition. I was diagnosed with early onset rheumatoid arthritis when I was twenty six. I've been living with it for twenty five years. Some doctor thinking he knows what that's like after what, twenty minutes of virtual simulation. Ridiculous. My boys play army video games, and they don't think they know what it's like to be a soldier. They get that those are fake games. And I guess that is not getting through these doctor's heads. I read that these simulations are what, twenty minutes long max. That is just not anything like my experience. Twenty minutes is nothing compared to twenty five years. And it's insulting to say it is.

Response Two

The first time I was pregnant, a doctor told me that he understood what labor was like because he had recently passed a kidney stone. When I told my sisters after that appointment we laughed and laughed about that. I laughed even though I'd never given birth before. I just knew how silly the comparison was. He was a well meaning man though, but what a silly comparison to make! As if my pregnancy was just about the pain of labor. And as if passing a kidney stone somehow gave him insight into me creating life and raising a child. He didn't even have kids!

So anyway, a few years go by. You know, I've heard a bit about the new more advanced VR stuff in hospitals and what not, but I'm not thinking about it much. But then recently, I was in the store grocery shopping, and who do I run into but Mr. Kidney Stone, MD! And he sees me, recognizes me after a second. Great big smile, comes right over and asks how I'm doing, how's the kid and so on. And as we're wrapping up he gets real serious. "I want to apologize," he says, looking all ashamed like. I'm confused as all get out, ask him "what for?" He hesitated a bit, awkwardly moved some of the stuff in his grocery cart around. "Well," he says, "I recently underwent the new pain enabled virtual reality training. I was part of a study. A group of male doctors, most of us OB/GYNs, all underwent virtual labor. It was... quite the experience. And when I was done with the experience, I felt horrible for

having compared my kidney stones to your pregnancy. I am very sorry." Well I'll tell you what, I didn't know what to say. I wasn't really holding a grudge. Like I said, he was always professional and well meaning. When I told my sisters later on, I had to admit, it felt good to see him squirm a bit! We laughed about it, still do really. Mr. Kidney Stone, MD, tail tucked between his legs at the grocer. But I suppose that's a good thing. I suppose that these trainings are making doctor's more thoughtful, you know, more experienced.

Response Three

Pain is a part of my experience, sure. I've been dealing with complex regional pain syndrome for the last two years, so yea, pain has become a part of my day to day. I feel a level of relief that the tech companies like Living Technologies have collected information and it sort of validates my experience to an extent. I've had a lot of doctors be really dismissive of what I'm going through. Until there was the biometric data to back up what people with CRPS were experiencing, doctors didn't always believe us. One of my new doctors, who did the CRPS virtual training, he's been the best. I don't think it's the training though. He's just kind and he listens and takes me seriously. And there's a lot about my condition that isn't the pain. Well it is, but it's not just feeling the pain. It's the randomness of it, the not knowing when or why. And not being able to work, having to put big life events on hold. It's not being able to take care of my grandbabies, not being able to help my husband around the house. Some days I can't drive. The pain is bad, sure. But... well I don't know, it's not everything.

From an op-ed written by Susan Lennings, MD and Associate Professor of Pathology

A concern, and an understudied one, is that the prevalence of virtual training environments in medical school settings will end up "virtualizing" real patients. The robust ties between VR technology development and the gaming industry come with an uneasy "gamification" of medicine. This gamification of medicine has escalated as VTEs become more widely utilized and popular. In fact, many of these training simulations are referred to by users, as well as developers, as "serious games," a term that has been commonly used since the inception of VR training technologies. This labeling of medical training as some sort of "game," albeit a "serious" one, is a horrible dilution of the profession. It's tantamount to the reduction of medical school

into one big game, where saving lives equates to a high score. I make it very clear to my students, and I urge my colleagues to follow suit, that we are not playing and our profession is not a game. The people we work with as medical professionals are just that: people. I am deeply concerned that as more and more classroom and clinical hours become virtual interactions, students will be ill equipped to interact with real patients. This "gaming" language has no place in medical settings, and it's ludicrous to think that virtual settings can adequately stand in for real experiences.

From Rachael Kliney, fourth year pre-med student

I mean, I am mostly trying to go to conferences with Living Technologies' VTEs. I don't think I'd make a real effort to attend one that doesn't have VTEs as a big part of the experience. I just know that I won't get as much out of them. I want to feel what my patients are feeling. I think it's the best way there is to put myself in their shoes. Like, the first time I got to experience the vision loss and hearing loss VTEs it was like, wow. I mean I saw my grandma go through that when I was a kid. But I didn't get it and now I do. So in my career, I'll know what people losing their vision and hearing are going through. And I want to go through more trainings so that I can relate to other types of patients better. And Living Technologies' simulations are the best out there. Honestly it's a big reason why I wanted to come to New England State for school, because of the partnership with Living Technologies. So yea, it's a priority for sure.

Written statement from Larry Mulligan, Professor of Philosophy

This technology will have widespread reverberations in a myriad of scholarly contexts, not just medicine and bioethics. It's upending how we know what we know and what we know about who and how we are. Epistemology, our ways of knowing, and ontology, our ways of being, are being fundamentally altered through these immersive VTEs. More so than ever before, someone can experience the physiological realities of another person, and those experiences can profoundly alter one's way of thinking. Fully immersive VTEs are, some might argue, making ontological experiences transferable. I've come to think of it as a sort of ontic fungibility. However, it is a slippery slope. While the VTEs are built on data collected from real patients with real conditions, algorithms, perhaps with the aid of a data analyst, end up finding the most common threads and weaving them together. There ends up

being one VTE accounting for hundreds of people's experiences. In other words, you have a digital actor—the algorithm—distilling the experiences of real people into a singular, virtual experience. The idea that these training environments can instill people with more empathy for their patients hinges on the abilities of digital and virtual actors. It brings to the fore whether or not we can continue to think of these realities as being "virtual." If these digital actors and virtual realities are capable of facilitating epistemological and ontological shifts in human beings, then the humanities and social science will be joining medicine in a truly dramatic paradigm shift. In what is likely a complete accident on the administration's part, NESU has just become one of the most interesting academic institutions in the country, not only for medical professionals, but for humanists and social scientists too. For me, the really delicious question here becomes, what counts as "real" or "lived" experience?

Written statement from Violet Alvarez, DNP and Professor of Nursing

Empathy is an admirable trait, and it is also fraught. There's no way to get around empathies' self-referential structure. It's easier to feel empathy for people you like, people you can see yourself in. Empathy, despite it being aimed at others, is always generated within the person feeling it. Training clinicians to be more empathetic towards their patients isn't a bad thing by any means, but it also isn't the medical silver bullet that a lot of practitioners want it to be. I've been on NESU's bioethics committee for years and one of the most challenging issues we navigate as committee members is empathy. I immediately feel a connection to patients who are nurses, because I relate to them. I want nurses who enter our hospital as patients to receive the highest possible standard of care. That feeling is, in many ways, limiting. Being a nurse shouldn't inherently grant someone a higher quality of medical care. Because of empathy though, nurses who I've treated in the past absolutely have received a higher level of attention than some of my other patients. I think what we should be focusing on the most as medical professionals and medical educators are the basic tenets of medical principlism: autonomy, beneficence, non-maleficence, and justice. Empathy does not inherently bolster those principles, so I have my doubts regarding the role empathy can, and should, play in healthcare.

From a lecture given by Ethan Thompson, Professor of Surgery

Somehow, empathy has taken over the whole of medical ethics. You know what I think? Every hour my students are "learning empathy" in these VTEs is an hour they have lost honing their technical skills. My patient who needs his appendix removed doesn't give a rat's ass if his surgeon is on the same wavelength as him. He wants an expert, someone who knows his profession inside and out. These virtual trainings reached the point of diminishing returns decades ago. Practicing surgical procedures in VR? Useful and practical. The results were empirically verifiable. This empathy training stuff? Fluff at best. All the data is qualitative. I don't think it has any teeth at all. They're evaluating people's emotions and perspectives. Half of the people they're talking to are just caught up in the excitement of new technology.

Recorded statement from Emma Chen, Director of the Digital Scholarship Program at NESU's Library, Technology, and Information Services

I don't mean to diminish the ethical conundrums these VTEs pose on a surface level, but what I really can't stop thinking about is the data. I mean Living Technologies, through their contract with NESU, just gained access to a huge set of biometric data. And they already had partnerships with hospitals, so it's a major expansion of an already vast dataset. These haptic feedback vests and VR headsets are tracking heart beats, breath rates, eye movement... I mean almost everything. The University has been awfully quiet about the data collection and privacy issues that come with these fully immersive VTEs. And the whole process of Living Technologies and how they compiled data to build these programs... It was shady, at best, from the get go.

Essentially, they found low income patients experiencing the diseases they wanted to build VTEs around and told them they'd cover medical expenses in exchange for the patient's cooperation. So understandably, people who are staring down the barrel of six figure debt are eager to accept the offer. Then Living Technologies comes in with these book length contracts, teams of lawyers, and a blank check. And the deal is, basically, sign here, put on this vest, these biometric trackers, fill out these surveys.

The patients who agreed to this did whatever dance Living Technologies asked them to. So then Living Technologies is collecting biometric data from hundreds, maybe thousands, of people experiencing any given disease. And they end up with a pretty comprehensive picture of what

people are going through physiologically. These datasets, plus some of the qualitative information they collect in interviews, is what they used to build VTEs for specific diseases and illnesses.

So now though, Living Technologies must be just foaming at the mouth for this new dataset. Now, they'll get to put people through these VTEs and see how their bodies react, because all the VTE technology is monitoring everything. Plus the people who participate in the VTEs have to hand over their whole medical history. I mean the amount of biometric information these programs will create is just staggering. Who knows what use that data will be put to, but it's something that makes me really uneasy. Call me crazy, but Living Technologies doesn't strike me as the most... virtuous company ever. I guess we'll see what happens, for better or worse.

From Living Technologies "About Us" page

Here at Living Technologies, we are committed to pushing the boundaries of science and medicine. Our team consists of pioneers who are on the frontier of their fields. We are changing the game of how technology shapes medicine. Our haptic feedback suits, immersive headsets and sensory transmitters represent the bleeding edge of fully immersive virtual reality and its full medical potential.

Through our fully immersive, pain enabled virtual training environments, doctors, nurses and other clinicians can gain critical insight into the battles their patients face. Fully immersive, pain enabled VTEs remove the guesswork. Now, doctors can know exactly what a patient is going through, allowing them to respond quickly in high stress environments. Our technology will allow medical training to reach new heights. Our training systems allow doctors to achieve a new level of mastery over physiological processes by experiencing them first hand. Living Technologies is committed to expanding the realm of knowledge and equipping medical professionals with tools they can deploy in the real world. We are confident that our wide ranging technologies, pain enabled VTEs included, are propelling doctors towards the world's next generation of cures.

From an interview with Dan Kempf, fourth year medical resident at NESU

Patients don't trust doctors. The general public is having a crisis of faith in this country's medical system. And they are absolutely right in feeling

that way. Lots of patients leave hospitals feeling disrespected and objectified. Not to mention that patients leave hospitals neck deep in debt. The unfortunate reality is that hospitals are run like businesses and that's not changing anytime soon. That structure negatively impacts patients and clinicians, but barring a miracle it's a structure that's here to stay. So what do we do? Personally, and I know I speak for a lot of my colleagues too, I have been at my wits end since I started working in hospitals. With the VTE trainings though, I see some hope. The businefication of hospitals has had the unfortunate effect of sucking the joy out of medicine for medical professionals. Everything is a box to check, a form to fill. The system makes it almost impossible to keep sight on what matters, which is caring for your patient. I think these trainings are going to shake things up. I think that it might take a literal jolt of pain to get things back on track. You know what else I think? I think that every paper pusher and administrator should be required to undergo these VTEs alongside medical professionals. At this point, I think things need to be really shaken up. Because we've been in a tailspin for decades. I don't know, maybe, hopefully, we've hit the bottom. Regardless, at this point, anything is worth trying to improve morale, not just for patients but for professionals too. And I think these VTEs might have a part to play in that, by reminding us that we're working with human beings. To remind us that we're human beings too.

From a Parents Against Pain Enabling (PAPE) letter to Joseph VanDerwood, President of NESU

To President Joseph VanDerwood, Provosts, the Board of Trustees, and the NESU Community,

We, the Parents Against Pain Enabling (PAPE), write to voice our vehement objection to the use of pain enabled VTEs at New England State University. The implementation of this practice is inhumane, backwards and puts students in harm's way. As parents, we send our children to college with the hope that they will be inspired and educated; that their experiences at school will lay a strong foundation for their growth and their careers. As parents, we worry about the trials and tribulations our kids might face being away from home. Until this decision though, we did not have to fear that universities would actively encourage our children to subject themselves to pain and harm. Some may consider our demands to remove pain enabled VTEs from campus as a sign of helicopter parenting and an overstep into our adult children's lives. However, we refuse to remain silent on this issue. We

demand that President VanDerwood take immediate action to stop these ludicrous trainings. These VTEs are crippling our children's ability to thrive in college. We will not stand by as out of touch academics and administrators put our kids through these backwards simulations.

Statement from Jack Murphy, fifth year pre-med student

The experience was pretty wild. As an able bodied person, I appreciated getting to see what disabled people live like. I'm gonna keep doing them. I think it's valuable, plus people are saying it's gonna be a resume booster. Especially if you want to go into biotech. Which I totally do. Working for Living Technologies would be a dream. It'd be wild to work for them. The things they're doing, so cool. It is hard to fit them into the schedule though. Like, in one class we could do VTEs for a little bit of extra credit. One of my buddies ended up doing like, four in a day because he was behind. He was pretty messed up after that. The people who help out with the equipment tell you about cyber sickness and how you can get nauseous and stuff. But my buddy was more kind of emotionally shook up. It didn't seem like the cyber sickness I've had, of just being, like dizzy, having a headache. He took the next day off. So, I totally get people's worries, but it's just a matter of time management and knowing your limits, you know.

Statement from Clark Gabel, Custodian at NESU. Mr. Gabel reached out to the editorial team to share his statement

Well yes, I was the one who found her. Spread out and twitchy. Awful sight really, just awful. I came into the library as I always do around seven o'clock in the evening. Started doing my rounds. Made it to the virtual rooms, flicked on the lights. Saw a bit of blonde hair on the floor. Couldn't see much though, because the big VR chairs were between us. Thought that was odd though, hair spread out over the ground like that. I rounded the corner. There she was. On the ground, arms and legs spread out and twitching around. So I dropped my things. Knelt down, checked her pulse. I don't know. I panicked. I thought I was watching this poor girl die right there in front of me. Felt some relief cus' I felt her pulse and it felt strong. I hollered for help, thankfully someone was nearby and heard me. Rung the police. Tried to keep the girl's head from bouncin' off the ground in the meantime, those VR room floors are hard. No carpets so they're easy to clean. Which is good, fair amount of kids throw up in there. A few people came into the room. We were all just shocked

dumb, looking back and forth at each other. Nobody knew what to do. So we waited, someone wadded up their sweatshirt and we put it under her head. After what felt like a long while, the girl stopped shaking and twitching. Didn't come around until the medics showed though. I don't think I'll ever forget how scared she looked as they wheeled her out of there.

ABOUT THE AUTHOR

Kaleb Beavers lives in Providence, Rhode Island. He loves science fiction and graphic novels. In his free time, he enjoys reading, baking, and gardening.

HOW MY WIFE GOT BRAIN-HACKED (AGAIN)

SYLVIA WENMACKERS

I've bought this electric toothbrush for my wife's seventieth birthday, because simple tasks like brushing her teeth have become tedious for her. My Tammy was diagnosed with Parkinson's disease ten years ago. First, she noticed a tremor in her left leg. Later, her hands started shaking, too. When the doctors finally confirmed what we had suspected for a long time, she had trouble walking.

Tammy's disease progressed, and our daughter Suzy moved back in with us. Suzy was recently divorced. She helped Tammy with daily chores. I did my best too, but I've never been of much use in the household. So, when Tammy's previous birthdays came around, I chipped in for whichever gift Suzy fancied. Our daughter has always been sceptical of the internet of things, so a smart toothbrush was not an option. This year I finally got the chance, as Suzy left for Thailand. She celebrated her mom's birthday by video-calling us in front of a sunny temple.

It's a pity that our son George couldn't visit us either, so Tammy didn't get to hug our three grandchildren. They live in New York, you see, where George's wife Michaela works as a professor, so we see them at most twice a year. Tammy always feels stoked when they arrive, but lately, she looks tired by the time they leave.

About two years ago, Tammy's neurologist told us about the possibility of an implant for deep brain stimulation. Although the operation could be risky and there was a possibility of serious side-effects, the prospects for improvement were highly positive for her type of complaints. It took us two months to make our minds up, but we decided to continue the procedure. Leading up to the operation, Tammy was very anxious. Last Spring, she finally received the implant. She remained conscious the whole time, and I stayed with her. Revalidation was tough, but many of her symptoms improved over the Summer, and then Suzy went to Thailand.

It was shortly afterward that my Tammy got brain-hacked for the first time. It happened while George and his family visited us. Our grandson, Kyle, aspires to become a professional gamer. We love hearing about his life at school and his friends, but he spends most visits playing games on his tablet.

The last time was different: Kyle was surprisingly interested in how his granny was doing after the operation. He admired the two bumps on her head and stroked the short white hair that had already started growing back. But he was even keener to see the patient controller that came with Tammy's implant and the setup for recharging, which she must use every few days to keep the implanted battery full and her symptoms at bay.

We had a cosy family evening. George and Michaela helped Tammy with making chicken casserole and fried potatoes. That used to be George's favourite when he was little, so it was nice to see his children enjoy it, too. We all watched a talent show on TV afterwards.

The following morning, my Tammy could no longer walk in a straight line! She looked drunk and bumped into the walls and the furniture, especially those towards her left. I thought she had suffered a stroke, so we hurried her to the hospital. George had to drive us because I was too shaken. Fortunately, the doctor soon noticed that some settings of her implant were off. When we returned home, Kyle declared victory and said he would tell all his classmates how he had brain-hacked his granny. Tammy scolded him but she still couldn't hide her fondness for the rascal.

That was two years ago, and I'm sure Kyle knows better now, but I still remember our helplessness and Tammy's look of despair. Her implant has worked fine ever since, but the illness progressed. At our age, we don't need birthdays to remind us of the passing of time.

When Tammy opened my birthday gift, she looked pleased.

"You shouldn't have," she said, but she wanted to try it immediately.

"We may have to charge it first," I said.

When I put the toothbrush in the charger, it asked to connect to our Wi-Fi, so I installed it for her. After she had brushed her teeth, it rewarded her with a star. I helped her into her nightgown and kissed her goodnight.

Tammy was still asleep when I left for groceries in the morning. She didn't open the door immediately when I returned. That wasn't uncommon, as she had trouble getting up after being seated for a while. Or perhaps she didn't hear me over the droning dance music that seemed to be coming from our upstairs neighbours, even though it was quite early for a party. Just as I rang again, longer this time, our next-door neighbour passed me in the hall.

"It's been this loud for an hour now," he complained.

"That's today's youth for you," I answered.

He raised an eyebrow and went inside.

Tammy looked bewildered and exhausted when she finally opened the door.

"Come on, Johnny, dance with me," she exclaimed.

The hair on her neck was soaked with sweat, and the music boomed much louder now, straight from our living room. She took me by my wrist with a surprisingly firm grip and led me to her dance floor. She danced like no one was watching, like before we'd ever heard of Parkinson's disease.

I escaped from her grip and immediately checked the patient controller of Tammy's implant. The usual smiley indicated that everything was okay, but I clicked the button to show me the log. "Update received," it said under today's entry, but unlike the earlier updates in the list, the source's IP address was the same as the receiver's: it came from within our home. I walked to the bathroom as fast as I could. "Upload complete," said the screen of the toothbrush.

Tammy's rave-of-one was still unfolding in our living room as I desperately searched for the manual. I couldn't find it, but I thought: "As long as Suzy doesn't call us now, we will be fine." That evening, the new toothbrush rewarded us with five stars.

ABOUT THE AUTHOR

Sylvia Wenmackers is a professor in philosophy of science at KU Leuven, Belgium. Most of her research is related to the foundations of chance. Besides academic papers, she writes a monthly column for a popular science magazine. She has published two nonfiction trade books, and her speculative fiction has appeared in *Nature Futures and Danse Macabre*.

WRITER REWIRED

MURRAY EILAND

CHAPTER ONE

Mondays are the enemies of working people the world over, but for Elif, every day is Monday. Whether it is Tuesday, Wednesday, or even Thursday, with the promise of the weekend around the corner, the thought of going to work the next morning never ceases to exhaust her. But despite how much she hates going to work, Elif still loves being a reporter. Unlike most of her friends, who spend hours complaining about their career choices and more fulfilling things they would rather be doing, Elif loves being a reporter. Her problem with her job has nothing to do with her career choice. The problem, she knows, is in the position she holds.

Working at the giant news agency, Kadir, had seemed like a dream at first. Elif had known of Azra Saglam, the brilliant and beautiful founder and CEO of the online news outlet since she was a university student. She had even written a term paper about Azra like the dedicated fan she was. So, when she applied to work at Kadir shortly after graduating, she never imagined she would get an interview. Even now, as she walks into the building with her employee ID and pass hanging around her neck, she can barely believe how easy it was to achieve this dream. However, she must admit that working here is not all she thought it would be.

“Hey, Elif,” Sam, the burly security guard, says as she enters the lobby. ″Looking good as always.″

“Thank you, Sam,” she replies with a smile and slows her pace, basking in appreciation.

“My friend just opened a restaurant down the road from here. It’s supposed to be the new big thing in the city. All I need is a ‘yes,’ and I can get us a reservation,″ he says with a big smile.

“Thank you, Sam, but for the billionth time, I do not date people I work with,″ she says with her smile still intact and hurries away before he tries to convince her like he always does. Honestly, the man is not a bother. In fact, he is one of the few things she likes about working at Kadir, so asking her out is just a daily dance, like an informal tradition only they know about.

As she hurries into the closing elevator, joining two co-workers she does not know well, Elif catches her reflection in the elevator door. Her short black dress stops above her knees, exposing her slender, athletic legs. She imagines Azra, who is slightly shorter, might stare her down today. Her dark hair is packed neatly in a bun, and her face is adorned with minimal makeup and tiny earrings. Azra does not like being upstaged at her company, and Elif does what she can to fit in.

Emre is already at their shared desk when Elif arrives. Although he is the newest hire, he has already gained the kind of company-wide popularity only striking looks can bring. He is a nice man and already a good enough friend that Elif knows he is not an attention hog. Besides, the man used to be in the military, so their lunch breaks are always filled with the fascinating stories he has to share.

"Hey," Elif says as she settles into her seat opposite Emre.

"Hey," he says, tilting his head so Elif can see his face beside his computer screen. "Rumor flying around the office this morning is that Azra has some exciting new stories to assign."

Elif's ears immediately perk up at that. Since she started working here nine months ago, all she has done are silly, fluffy articles about cute cats and fishermen who catch giant fish. She is sure most of their audience does not care about those puff pieces, but she keeps doing them anyway because she believes they are stepping stones toward the more serious stories she would rather be reporting on. "Really?"

"Yes, and I think she is going to have something for you this time," Emre says.

Elif cannot help the smile that spreads across her face. "You think so?"

"Yes, definitely," Emre says with an encouraging smile. "Azra always has amazing things to say about your work, and she has been dropping hints for weeks that she wants you to do more serious work."

Although Emre's words are encouraging, and she hopes Azra gives her a serious story to work on, Elif has learned not to hold her breath regarding Azra and her administrative methods. That is the only way to avoid disappointment.

Shaking thoughts of Azra from her mind, Elif turns on her computer and opens her email. The first real one she sees at the top of her inbox with the subject "Check This Out" is buried under only a small pile of spam. It's from

her friend, Maria. She clicks it open immediately, and her eyes roam the body of the email. There is a short text where Maria adds links to a developing story that might interest Elif.

Since she started working as a reporter, Elif has had to endure numerous "pitches" of "interesting stories" from friends. None of these stories has ever panned out to be anything worth chasing, so she has learned to take these ideas with a grain of salt. But Maria is not one to just ask her to check something out for no reason. She is the most discerning of all her friends, except when picking a man for herself. Elif knows that whatever this is, it might be worth checking out.

With one click, the link opens on her browser and takes her to an anonymous blog page.

"This is... something," she says as her eyes roam through the web page's contents. At first, the long sensational headlines and winding sentences that comprise the articles published by this anonymous blogger seem like a foreign language to Elif. Words like "doping," "illegal," and "unethical" are thrown around with absolutely no regard for their context. It is obvious she is looking at the work of a non-professional who doesn't care much for clarity. However, piece by piece, the core information starts to reveal itself. The blog discloses information about doping, the slang term for mental enhancement surgery. Whoever is behind these articles knows a lot about the people who have had neural implants.

What Elif knows about neural implants and the people who have them done is mainly limited to what she has heard on the news and the rumors that flew in whispers across her college dormitory's corridors. She knows the fundamental facts - that neural implants, when successful, can boost a person's academic output by almost 1,000 percent. People with these implants can write academic papers with only a part of their mind and minimal concentration. Although how it works is an explanation that still eludes her, she knows that with a neural implant, a person can write academic papers, analyze months of research, or grade hundreds of student reports while simultaneously doing everyday tasks like cooking, driving, or even sleeping. Once these things are done in the neural implants (which, scientifically speaking, are microchips and neurons inserted into the cerebral cortex), they can be downloaded via One Touch to a personal computer.

By the time she resumed college in 2049, neural implants were already widely known about in the academic environment, even if the general public

had not yet been aware. There were incessant debates about their ethical implications and who should be allowed to have them. Elif remembers one discussion in particular where a physics professor insisted it was no different from doping with drugs in professional sports and should be treated as such, while a professor of Latin believed anyone should be allowed to do as they wish. "Humans should be allowed to reach their full potential; otherwise, we will plateau and never reach higher levels of civilization," he said, and many agreed.

It has been five years since her first year in college, and she is no longer deep within the academic community hearing about recent developments in neural implants. What she knows as a layperson and journalist is that neural implants are legally banned in most countries, especially in the West and in America in particular. The obvious argument for their ban is that they generate an unreasonable and unsustainable level of productivity that humans just aren't designed to deliver, and allowing academics to exploit the advantages in everyday settings would be a dangerous precedent. What next? Would workers in hazardous jobs need to be engineered to do the job? Would students be encouraged to have implants to enhance their studying and output? What were the long-term effects of doping? Besides, the implants are ridiculously expensive, and the corporations behind them fully exploit the academic community's well-known cutthroat nature and irrational desire for prestige and promotion. However, she can see things have now turned chaotic from the blog posts in the link Maria sent.

If this anonymous, non-professional writer is to be believed, thousands of academics from around the world are flying into Turkey under the guise of medical tourism to have neural implants applied in a few hospitals that cater to them. Unfortunately, it is not legal in Turkey either, but they are unlikely to get caught.

Before long, Elif's confusion turns to complete fascination. Her intuition that Maria would not send her on a fool's errand is correct. There is definitely a story to be told here with these academics and the Turkish hospitals, and she wants to be the one to tell it. Before Elif's excitement dissipates and she begins to doubt her ability to bring this situation to life and onto the pages of *Kadir*, she opens the "Contact Us" section of the blog. There, she finds the email of the person behind the blog, comically monikered 'AntiNeuralImplantRebel.' She composes a quick email, introducing herself as a journalist interested in bringing this story to a broader audience, and adds multiple means for the blogger to contact her. Before hitting send, she rereads

the email, careful not to come across as desperate. She is, of course. It is a real story that will have a significant impact. When she is satisfied with the tone of the mail, she hits send and waits patiently in front of the laptop for a minute as though the blogger would magically respond immediately.

"Pfft," Emre's voice suddenly grabs her attention. "Look alive. The boss is coming."

Azra Saglam is the kind of person who walks into the room with an air of knowing she owns it. Elif wonders where she learned to walk like a queen bee. Besides, her father is Adlee Saglam, the oil tycoon known for his lavish lifestyle and overarching philanthropy. Azra has walked through life with red carpets at her feet at every turn.

"Hello," Azra says with a smile as she stops in the small space shared by Elif, Emre, and four other junior reporters. Her wide smile highlights her high cheekbones and exposes her pearly white teeth, which are too perfect to be natural. Today, she is dressed in a purple silk top, black Palazzo pants, and gorgeous purple pumps that Elif is certain cost more than her rent.

"Good morning, Azra," Lydia, one of the other junior reporters, says excitedly. Elif shares a look with Emre, and they both roll their eyes. So far, everybody knows Lydia is a suck-up whose enthusiastic greetings are only to gain favors with Azra.

"It's a new week, and I am excited about all the amazing things we will be working on," Azra begins, ignoring Lydia. "A few of the more senior reporters already have things they are working on, so some of you will be called upon once or twice to help with research, editing, and proofreading. It is their prerogative, but please make yourself available when they need you. In the meantime, some of you will be assigned a few important pieces to be published in our special women's issue due next month."

Immediately after Azra says this, Elif cannot help the smile that takes over her face, and although she does not look at him, she knows that Emre is watching her. She truly wants this big break, and she and Emre know it, and she just wishes Azra knew it, too.

"Lydia," Azra says. "You will be writing a profile on the new dean at the university. She is only the second woman in the university's 100-year history, so make her look good. Elif..."

"Yes?" Elif says, unable to hide her excitement.

"I want you to go to city hall and interview those women who do the traditional dancing for special occasions. Their group has been doing it for thirty years, which many people will want to read about. Something feel-good," Azra says, then turns away from Elif. "Everybody else, please make yourselves available if anyone needs your help. Have a great week."

As Azra walks away, Elif tries as hard as she can to hide her obvious disappointment but fails. It does not help that Lydia has a triumphant smirk on her face and is clearly elated about being the one writing the more serious article. On the one hand, Elif is happy that she will have her name at the top of an article as its lead reporter. But, on the other hand, she just wishes it was a better story.

"Azra!" Elif calls out suddenly, surprising everyone, including herself. Azra might not be a mean boss per se, but she is still one of those bosses that employees would rather speak to only if she speaks first.

Elif catches up with Azra, whose long strides have taken her out of earshot of all the other junior reporters, and just as she feared, Azra stares her down as she looks up and down at her outfit. Elif does not let this deter her, though. "Thank you so much for trusting me with that story of the traditional dancers down at city hall."

"Of course," Azra says with a patronizing smile. "You are one of the best junior reporters we have. I trust you will do a great job and get some great images, too." She begins to turn away to leave, but Elif quickly stops her again.

"Well, thank you for saying that, but I may be able to take on more impactful stories with my abilities.

"Oh," Azra says, her expression softening slightly. I understand that 'dancers at city hall' might not be what you want. That is fine. Unfortunately, all the other stories have been assigned. We will have to find something else for you."

"What if I have something I could work on?" Elif says, feeling bold. "It won't fit in the women's issue, but it will be a great story for our general publication when it is done."

"You have your own idea?" Azra asks with an approving smile. "What's it about?"

"It is about academic doping," Elif says, and immediately after the words leave her mouth, she sees Azra's entire body stiffen.

“No,” Azra says simply. ″You will not chase nonsense stories like that.”

″But I saw this anonymous blog...″

“Anonymous blog?” Azra asks with a scoff. ″There is no way to verify facts on muckraking sites,″ she said definitively. ″And I was really excited, Elif. I thought you had something substantial. Focus on the city hall dancers and let go of that nonsense conspiracy story. My door is open if you have a better story another time.″ Elif thought Azra spoke very slowly to emphasize that she could choose her next story if she dropped this one.

Still, Elif watches Azra walk away, feeling equally embarrassed and annoyed. Not only does she have to do the story about the dancers, but her boss has also completely discarded the first thing she has been excited about in weeks.

Quietly, she walks back to her desk and slowly sits down, aware the others are looking at her. She feels blood race to her cheeks and realizes she must be blushing.

“Maybe next time,” Emre whispers, sounding almost as disappointed as she feels.

″Yes,″ she says with a grimace bordering on a snarl. “Maybe next time.”

CHAPTER TWO

For the rest of that week, Elif handles the story she has been assigned. She goes to city hall and watches the women dance. Like everyone else, she is enamored by their art and enthralled by the things they can do with their bodies. Her fascination doubles when she talks to them about the history of their art.

While doing this and trying to be the most agreeable and diligent employee of the month, Elif hopes she won’t forget all the information she learned about doping. It has been four days since she sent the email to AntiNeuralImplantRebl with no response. However, no matter how much she allows herself to be enchanted by the dancing at city hall, she cannot forget about the doping story. To be honest, she is not trying that hard.

During breaks, Elif finds herself reading articles and watching videos on the subject. Just as Azra said, many of the threads are conspiracy theories,

but she finds a few of them to be quite knowledgeable. She suspects some were even written by the doctors involved.

As she sits opposite Emre in the corner booth of the small restaurant where they have lunch every day, she scrolls through a New York Times article written by a professor from Princeton on the threats that doping poses for the future of research.

“Are you okay?” Emre asks, startling her a little.

“Yes,” Elif says. "Just reading an article."

If Emre says anything after that, Elif neither knows nor cares because a notification on her screen completely steals her attention.

It states tersely, "We do not talk to reporters, but if you want to tell a story, find Michelle Woodward. She is a student at Dunham University. Do not try to contact us again because we will not respond."

Elif stares at her phone, unable to properly process what she is reading. She cannot say what kind of response she expected from whoever was behind the account, but it was definitely not this. She has nothing to work with and no indication whatsoever that any of her questions might be answered. All she has are questions and more questions. Who is Michelle Woodward? Where is she supposed to find the time to look for a university student?

"Are you sure you are feeling well?" Emre asks with one eyebrow raised in curiosity. From the look on his face, Elif realizes her face must be filled with uncertainty. She considers telling him once again that it is nothing, which, knowing Emre, would be enough to get him off the topic, but suddenly, she realizes that, unlike her, he is not working on an active story.

“Actually, there is something,” she says, pushing her chair closer toward him as though she feared someone might be eavesdropping. "But you have to promise me this will stay between us."

“What is it?” he asks, his curiosity piqued.

"I have a lead on a developing story about Turkish hospitals where worldwide academics are going to get neural implants," Elif says. "I pitched it to Azra, but she dismissed it as a conspiracy theory. So now, I have to do this research myself and unveil the story so I have something substantial to present to Azra to show it is worthy of publication.”

“Hmm,” Emre replies simply.

“What?” Elif asks. "Is that a good hmm or a bad hmm?"

"What's a 'bad hmm'?" he smirks.

"A 'bad hmm' means you agree with Azra that this is a foolish chase I need to drop," Elif says.

"I don't agree with Azra," he says, and Elif releases the breath she did not even realize she was holding. "That 'hmm' was because I have heard rumors that Azra has a neural implant."

"What?" Elif says sharply, sitting up. Not in a million years could she have imagined the conversation going in this direction. She had thought that she would be the one to do all the talking and Emre would just listen, but clearly, he now had something to say, and she had no choice but to listen.

"Yeah. I've heard one or two people gossip about it, but I don't take them seriously. People will say anything if you give them an audience and a bottle of coke."

"Ugh," Elif groans. Emre tends to divert from the topic at hand and never ceases to annoy her. "What did they say about Azra?"

"Nothing substantial or worthy of being taken as absolute truth, really, but if she doesn't want you anywhere near this story, then maybe it is because she is part of it," he says, casually taking a sip of his water.

"Oh, my God," Elif says, leaning back in her chair. "That could be true. So if I am going to do this, I have to present some very conclusive evidence, something that she cannot refute."

"Yeah," Emre says with a shrug.

"I need your help," Elif says.

"No."

"Please, Emre."

"No, do it yourself," he says, looking anywhere but at her. This is the only way to keep himself from succumbing to that helpless expression she wears whenever she needs him to do something.

"I would do it myself, but I have that thing with the dancers at city hall," she says. "Besides, if Azra really has neural implants, she might have someone watching me to see if I am still chasing this story."

Emre still looks skeptical, but Elif can see the wheels turning in his head and his expression softening slowly, so she ramps up her 'pleading' face

and hopes desperately that he agrees. There is literally nobody else at work she would trust with the information she has.

For the rest of lunch and the walk back to their office, Elif tells Emre how she came across the story, what she knows about doping, and her lead on the story. Emre is impressed for the first two parts, but when she tells him all she has is the name of some girl in a university, he is disappointed.

"I know that it is not a lot, but I think we can work from there," Elif says. "I'm sure we can find the girl somehow." Emre nods thoughtfully. "Okay, I'll help you out. But we have to be careful, Elif. If Azra has someone watching you, we don't want to endanger ourselves."

Elif nods in agreement. "I know, I know. But we have to do this. We can't let something like this go unreported."

They arrive back at the office, and Elif immediately pulls up the email from AntiNeuralImplantRebl. "Okay, so this Michelle Woodward person is our only lead. We have to find her."

Emre leans over her shoulder, reading the email. "Hmm, let me see what I can find on her. Maybe she has a social media account."

Elif nods eagerly as Emre walks to his desk and begins to type away on his computer.

"Found her," he says in barely thirty seconds.

"What?" Elif exclaims in shock and excitement, getting up immediately to see Emre's computer screen. "How did you find her so quickly?"

"Kids these days put everything on social media," he says teasingly. "All I had to do was search for her name with Dunham University, and here are pictures of her standing next to the Blue Mosque a few days ago."

"Oh," Elif says, taking in the picture, still unable to believe her luck. Michelle Woodward reminds Elif of her younger sister, Defne, with her hair packed into a high ponytail and the carefree way she smiles in her pictures. She looks like a young adult who still has the innocence of a child. Elif cannot help but wonder how someone like this could be involved with doping.

"So, what do you want me to do?" Emre asks. "How do you want me to approach this?"

"This is a sensitive story that could be very political, not to mention scandalous. I imagine this Michelle girl will put up some resistance if

cornered, so you must be persistent and smart about how you approach her. Employ some of that Emre charm I have heard so much about."

"You've heard I'm charming?" he asks her with a smirk.

"Don't even start," she says, rolling her eyes playfully and returning to her seat.

In fact, this playfulness and recognition of kindred spirits drew them to each other and quickly turned them into friends. Sometimes, even though they try not to make it obvious, Elif sees all the other girls around scowl at her for being so close to Emre. They must think they are having some kind of affair, and Elif would not blame them for thinking that. However, she still has her personal rule not to date co-workers, and Emre is a fantastic friend. A friendship this easy is not one she wishes to jeopardize, no matter how many jokes he makes.

Emre spends the rest of the day planning how to reach Michelle Woodward, and Elif watches him work from her seat, occasionally glancing over to see what he is doing. She is impressed with his thoroughness and dedication to uncovering the truth, even if it is all for her sake. As the day wears on, Emre sends several emails to Michelle, each carefully worded to avoid alarming her, and Elif can see the determination in his eyes as he types away, not once giving up on the task at hand.

Finally, just before they leave for the day, Emre gets a reply from Michelle. Elif's heart races as she watches Emre read the email, hoping it will be a positive response. When he finishes reading, he turns to Elif with a grin.

"We got her," he says. "She agreed to meet me at a coffee shop near her hotel."

Elif feels a surge of excitement. They are finally going to get some answers. "Yes, now remember, don't badger her. Be gentle and reasonable."

"I've got this," Emre says with a confident smile. "I'm charming, remember?"

For the rest of the day, Elif does all she can to focus on something else, specifically the story about the dancers at city hall. She has yet to start writing the piece, and the first draft is due in two days. Yet, she cannot stop imagining how Emre's meeting with Michelle will go. The obsessive part of her wonders desperately if she should disregard Azra and just go to the meeting with Emre, but she knows that's a terrible idea.

"So, I will tell you how the meeting goes," Emre says as the two gather their things to leave at the end of the workday.

"Please do," Elif says, walking beside him toward the elevator.

"Hi, Emre, Elif." Elif hears Lydia's voice before she joins them in front of the elevator door and stands on the other side of Emre.

"Hi, Lydia," Emre says in his usual friendly tone.

"So, I might need some help with the story I'm working on with the dean. Do you want to help me?" Lydia asks with the right corner of her lips curved slightly upward, and Elif resists the urge to roll her eyes and groan.

"Sorry, I can't," he says. "I'm already helping Elif."

"Really?" Lydia asks mockingly. "All she's working on is that fluffy article about the dancers."

"It's always nice talking to you, Lydia," Elif says as she steps into the elevator, and Emre follows her. "Have a great rest of your day."

Before Lydia can respond, the elevator door closes, and Elif finally gets to roll her eyes freely. "I hate that girl."

"She's not that bad," Emre says with a playful chuckle. "She's just unreasonably competitive."

"Well, I'm not her competition in any way, so I want no interaction with her."

The ten seconds she spent talking with Lydia aggravates Elif more than she would have liked. If Lydia openly criticizes what she is working on, what has she been saying behind her back? Now, more than ever, she knows she must properly uncover the doping story. It is not just to tell the truth but also to save her reputation.

CHAPTER THREE

Emre leaves the office with a new sense of purpose. The sky is a bright blue, and the sun shines gloriously against the clear sky as he says goodbye to Elif. He walks confidently as he makes his way to a short taxi ride to the cafe. In his experience, people tend to shy away from talking to you when you tell them you are a reporter, and if they do speak to you, they are less likely to be truthful. So, he wears a disguise of a pair of glasses and a fake ID card, just in

case he needs it. Emre is determined to get to the bottom of this story and knows that Michelle is the key to everything.

From Michelle's social media posts, he has learned she is a chemistry major at the university and stays in Sinclair Hall. Her roommate is a girl named Dalia, and both girls are big fans of some rock band Emre has never heard of. Although he had meant it to be a joke the first time he said it, it is disturbing how much you can find out about a stranger by snooping through their social media.

He arrives at the coffee shop fifteen minutes early. In his email, he told Michelle he was a Ph.D. candidate who wished to interview her about microbiology. As he sits and waits for her, he hopes she trusts him a little before his cover gets blown.

As someone who spent a considerable part of his youth in the Turkish army, watching students walk around in a less strict environment like this is a sight to behold. Yes, he earned a journalism degree while in the army and also made friends that would last a lifetime, but some parts of those experiences are buried so deep within his consciousness that he is unsure if he will ever allow them to resurface. Even now, as he tries to think about his experience in the army on just a surface level, his body cannot help but shiver a little.

"Hello," a thin voice says from behind him, and Emre turns around to face Michelle. "Are you Emre?"

"Yes, I am," he says with a gentle smile. "Please, have a seat. It is nice to meet you."

"Nice to meet you," Michelle says.

Emre's first impression of Michelle Woodward is of a timid girl who does not look like she has much to say. Emre had wondered if perhaps she was the one behind the anonymous blog or if she was a front for that person or organization. But now he sees her, she would have to be a diabolical mastermind for that to be the case.

He decides to take the lead in the conversation, hoping to make it easier for her. "Thank you so much for agreeing to meet with me. I'm conducting a research project and heard you are one of the best chemistry students on campus. I thought I could learn something from you," he says with a charming smile.

Michelle looks at him with a hint of suspicion in her eyes. For a moment, he panics that he might have overdone it while trying to make her feel comfortable. "What kind of research?"

"It's on gene modification," he says, hoping desperately that she would not ask too many questions. His brother is a microbiology major and can go on and on about his work. That is the only reason he might have something to say regarding what he claims to be his research topic, but if she asks too many questions, she will soon clearly see that he is lying.

"Oh," she says, her initial skeptical expression turning into one of excitement. "Gene modification is an area I am really interested in. What direction are you looking to take your research?"

Before he answers, Emre considers continuing this dance for a few minutes by pretending to know anything about what he is talking about, but the sun is beginning to set, and Michelle looks too innocent; he just cannot bring himself to keep her in the dark. He decides to steer the conversation toward his goal. "I am trying to discover how academic doping might be a long-term factor in how gene expression changes."

As soon as Emre says the word "doping," Michelle's body visibly stiffens, and although she tries to hide it, it is too late. Emre has seen that she knows something about the subject and might be willing to talk if the situation is right.

"Oh," she says, trying to keep her voice steady, but her face betrays her. "That is an interesting topic you want to work on."

"You think so?" Emre asks, attempting to lure her into talking about it.

"Yes," she says, shifting in her chair uncomfortably. "You know what? I just realized I have a study group in ten minutes and have to go. I am really sorry. If you want to reschedule, we can talk some other time, or maybe on the phone."

"Wait, Michelle," Emre says emphatically, stopping her in her seat as she tries to stand up. Now, as they stare at each other, Emre can see fear pooling in Michelle's eyes, and Michelle is beginning to realize that Emre might not be exactly who he claims to be.

"What do you want?" she asks, her voice breaking with every word. "I have not done anything wrong."

“Anything wrong?” Emre asks, a little taken aback. “I am not here because I think you have done anything wrong.”

“Then why are you talking to me here about doping?” she asks, the agitation in her voice growing.

“Look, I’m a reporter with Kadir, a news agency in Turkey, and I'm working on a story about doping and the hospitals doing them underground in Turkey. I got the tip to contact you from AntiNeuralImplantRebel. Whoever they are, they think you can help me bring some light to this. I am not here to accuse you of anything or make you uncomfortable. I just want to talk."

“The blogger asked you to come to me?” she asks.

“Yes,” Emre says. "Perhaps they think we could help each other."

Michelle scoffs at that. "I don't know how you could help me. Unless you can get my parents to change their minds about me having the procedure."

“Your parents are making you have the procedure?”

Michelle does not respond to Emre’s question immediately. From her pursed lips and furrowed brows, it is apparent that she is considering whether or not Emre is someone that she wants to talk to about this thing going on in her life. Just as Emre is about to fill the silence with another question, she lets out a deep sigh and opens her mouth to talk. "You know how the academic world is these days. It is very competitive, and everybody is trying to claw their way to the top."

“Yes,” Emre says, shaking his head affirmatively. "I'm aware these neural implants are used by those who wish to boost their chances of getting tenure and becoming full professor."

“Yes, but that’s old news. That was a few years ago,” Michelle says with a sad smile.

“What do you mean?”

"Doping has gone beyond just professors now; students dope too."

“What?” Emre can’t hide his shock. "Are you serious?"

"Unfortunately, I am. Naturally, the competition has become even stiffer, and if you have dreams to ever work in academia, you will have to dope or watch your dreams go up in flames in front of you. From a child, all I have wanted to be is a chemist. I've had dreams of conducting groundbreaking research in top universities worldwide. Maybe if I had studied ten years ago

when everything was fair and getting into a good master's and Ph.D. program was based on your talent and abilities, things would have been much easier. But that's not the case now. Someone like me who is yet to have the incredible research output that doping brings cannot even dream of getting a scholarship to a good school."

"So, your parents are asking you to dope to better your chances?"

"Exactly," Michelle says with a dry chuckle. Emre knows she does not find this even remotely funny.

"But why would they want you to do that? Why can't they just let you work based on your abilities? Aren't they worried about the cost and all the possible side effects?"

"I don't think they are," Michelle says, adding, "I think they have been doped too."

"Okay, this is more serious than I thought," Emre says, sitting up in his seat. "Which hospital do you intend to have this procedure done at? You must tell me."

"I can't," Michelle says, standing up to leave. "I've already said too much. I have to go."

"Wait, Michelle. Just tell me the name of the hospital," Emre says, but it is too late. Michelle mutters another apology and hurries out of the coffee shop as though she is being chased.

Emre does not know what to do for a minute. He stays still, thinking about everything he has heard and allowing it to fully settle into his mind. Still slightly bewildered, he gets up and hurries out of the coffee shop. Just as he steps out, he sees Michelle climb into a taxi, so he quickly stops another one and instructs the driver to follow. As they drive slowly through the university campus, he brings out his phone from his pocket and dials Elif's number. She picks up after the first ring.

"Hello," she says. "Have you seen her?"

"Yes, and trust me, this is much better than either of us expected," Emre says.

"What?" Even through the phone, Emre can feel Elif's excitement at what he just said. "What did she say? What does she know?"

"I don't think we should discuss this on the phone," Emre tells her. "Right now, I'm following her, and I think she might lead us to a big

breakthrough in this story. Once I see where she's going and you've got home, I'll come to your apartment, and we can talk about it."

"Alright," Elif says. "Just be careful."

"I will," he says, then hangs up the phone.

"They're heading out of Istanbul," the driver says. "Should I keep following them?"

"Yes, please," Emre says.

"That's double the fare," the driver says.

"Alright," Emre responds. "Just keep your eyes on her."

Michelle's taxi cruises slowly but steadily along. It is already dark outside, and Emre becomes aware of the increasing unpredictability of the situation.

"Where could she be going?" He thinks out loud.

"Probably Galen's Hospital," the driver says. "A lot of the university students seem to go there. So, I must ask, why are you following that taxi?"

"My little sister is in it," Emre says. "Our parents think she might be getting wayward."

"Oh," the driver says simply. Emre cannot tell whether he believes him. "Looks like I was right," he says as Michelle's taxi pulls into the Galen's Hospital parking lot.

At Emre's instruction, the driver stops several paces from Michelle, who hurries out of the taxi and heads toward the hospital's emergency entrance.

"Thank you," Emre says as he hastily pays the driver and follows Michelle.

"Good luck with your sister, and please be gentle with her. You know how these young people can get," the taxi driver says.

Emre does not respond because he is keeping his eyes on Michelle, who does not enter the hospital's main complex. Instead, she goes around it toward the back, looking around as if afraid of being watched.

More than ever, Emre is confident that Michelle is at this hospital because he is following her. Before going any further, he considers calling Elif to tell her to meet him here so that whatever he uncovers, they will see

together. However, he is a military man, and he is unafraid. Besides, there is still the slight possibility that Michelle is at the hospital for a silly reason, like a sore throat, so he puts this phone away and follows her.

Michelle turns a sharp corner a short distance from the hospital's main complex, and Emre follows closely to avoid losing her. Immediately, a small building the size of a family bungalow comes into view. Emre's body reacts to seeing this building before his brain can process it. His heartbeat accelerates, he starts to sweat profusely, and his knees wobble. When he tries to breathe, his airways feel closed, and he clutches his chest as his ribcage tightens.

Emre finds the nearest wall for support and leans on it. At this moment, he no longer cares about losing Michelle. Instead, he wants his body's fight or flight response to switch off.

The memories manifest as he catches his breath. They come in short flashes and fast recollections. He sees himself at his military training camp, a young and impressionable soldier who listens to his superiors and does as they say. He remembers vividly, like it was yesterday, being brought to this very building in this hospital in the back of a van for what was described as a simple medical procedure. He remembers how afraid he was and how he had no choice.

"Oh, my God," Emre says with a gasp. "I have neural implants."

With this realization, he turns away from the building and hurries to leave. Knowing about the government-sanctioned horrors in that building, he wants to be as far away from it as possible, but his legs are still weak, and his body feels like it needs complete support. He does not get far before a black SUV pulls up before him, blinding him with its headlights.

"My name is Emre Sipal!" he screams. "I am a member of the Turkish armed forces."

That is all Emre can get out before he feels a sharp sting in his neck, and the tranquilizer enacts its numbing powers in his bloodstream.

CHAPTER FOUR

Throughout that evening, Elif waits for Emre to come to her apartment as he said he would. She distracts herself with TV, fights sleep, and checks her phone regularly in case he texts her. She tries to call him multiple times but keeps getting disconnected. Eventually, she concludes that he must have

returned to his apartment because he was tired, although this was not his usual modus operandi.

The following day, Elif arrives at work half an hour earlier than usual and hurries in as quickly as possible. Even when Sam calls out to her in the lobby, she does not stop to talk to him like she usually does. She waves and hurries into the elevator, and when she gets up to her office and sees Emre sitting peacefully in his chair in a well-fitting white shirt, she heaves a sigh of relief and then frowns at him.

"You jerk," she says as she stands before him. "I texted and called, and you could not even be bothered to respond. For God's sake, you told me you were coming last night. I was worried sick."

Emre looks at her for a few seconds, trying to piece together everything she is saying and make sense of it, but nothing seems to click for him. "What the hell are you talking about?"

Elif's frown immediately turns into a scowl. "I am not in the mood for your jokes; I was genuinely worried about you."

Emre searches Elif's face for signs that she might be joking, but he sees genuine concern. "Elif, I honestly have no idea what you are on about. Did I say I was going to meet you?"

"Okay, now I'm worried you're not joking," Elif says as she pulls a chair out from underneath the next desk and sits beside Emre. "Weren't you supposed to give me feedback on Michelle Woodward last night?"

"I remember us talking about her during lunch break, but after work, I just went home and slept because I was tired," Emre says.

"What is happening?" Elif asks, her confusion mounting with each passing second. She moves closer to him and drops her voice to the lowest volume she can manage. "Did somebody get to you? Is Azra watching you?"

"No," Emre says, his voice at a normal volume and one eyebrow raised. "*Nobody* got to me. This sounds like a conspiracy theory, Elif."

"You think I sound crazy?" Elif asks with a dry chuckle. "Something is going on here. We have to figure it out together."

"No," he says emphatically. "I'm no longer interested in whatever chase this is and suggest you let it go too. Azra was right. It is a silly conspiracy theory; even if it isn't, it is not your business."

Elif watches in absolute shock as Emre walks away from her. Not once in her life has she been in a situation so bizarre. She opens her phone and scrolls through her call log to confirm that she isn't going crazy. She sees Emre's name and the time he called her the night before. Someone must have gotten to Emre, and now that person is holding him and his information to ransom.

Elif lets her anger and rage fuel her. She gets up from the chair, grabs her bag off her desk, and heads straight out of the building. If whatever forces are at work here have gotten to Emre somehow, it only means she now has to do all this work alone. She stops a taxi and heads straight for Mehmet University. Over the past few days, she has watched numerous videos of Dr. Smith, a professor of sociology at the university and a vehement protester against neural implants. If anyone can offer some perspective during this confusing ordeal, it is him.

She tracks Dr. Smith just as he leaves his first class of the day, and when she tells him her mission, he leads her quietly into his office. "There are a few professors around who might be willing to talk to you," he says. "Professors who have had those implants and regret them."

One by one, Elif goes to the three professors whose names Dr. Smith provided. Of these three, only two agree to talk to her. One is a mathematics professor, and the other is an anatomy professor. The mathematics professor tells her how he was forced to implant a neural chip because of his high-profile job. He explains how he lost all control over his thoughts and actions after the implant. "It was like I was not in control of my own body. I did things I would never have done in my right mind," he says, shaking his head in disgust.

The anatomy professor tells her about the physical toll the implant has taken on his body. "I feel like I am always being watched," he says, his voice barely above a whisper. "They say the implant is supposed to help me with my memory and focus, but all it has done is made me paranoid and anxious." His eyes dart around the room as if expecting someone to walk in at any moment.

Elif listens intently to their experiences, taking notes and trying to connect the dots. But as each professor shares their story, it becomes increasingly clear that there is no easy way out. The government has too much power and too much at stake to let anyone who knows their secrets slip away. Besides, neither of the professors can remember the procedure, and she

imagines that it is the same for everyone. That must be how the government and these hospitals keep things under wraps.

"I know some doctors you can talk to," the anatomy professor says as she gets up to leave his office. "They were the ones who pioneered this neural implant research, and they have been trying to scrap it since they realized how horribly it has turned out. They might be able to shed more light on it."

"Thank you," Elif says, happy and sad in equal measure about this sudden breakthrough in her investigation.

"Thank you for telling this story," the professor says. "Most journalists are too afraid."

As she leaves Mehmet University, Elif thinks hard about what she is doing and wonders if all this is worth it. Her initial intention with this story was to use it as a stepping stone for her career. Now, she does not care if it jeopardizes her career; she just wants to uncover the truth. Perhaps that is why she keeps going, even though everything the professors have said and whatever has happened to Emre scare her to her bones.

"This is it," the taxi driver says as he stops in front of an abandoned warehouse.

"Are you sure?" she asks skeptically before leaving the taxi.

"Yes," the driver says, slightly exasperated. "This is the address."

"Alright," Elif says. The driver does not even wait for her to step entirely out of his car before he slams on his accelerator and races out of there as though he does not want to wait around any longer than necessary.

The warehouse is the only structure for several miles. It is surrounded by sparse vegetation, and the singular light source comes from a flickering streetlamp. Elif cannot help how afraid she is, but she thinks about Emre and Michelle Woodward and those professors and the numerous other people whose lives have been changed terribly because of these neural implants, and the desire to uncover the truth for their sakes propels her forward.

She pushes the entry buzzer at the warehouse entrance and waits patiently for a response. A deep male voice comes through the intercom, "Who's this?"

"I'm Elif," she says. "Professor Aslan sent me here."

"Okay," the voice says simply, and the intercom goes off.

When nothing happens for a while, Elif worries they won't let her in, but eventually, the door opens, and she is faced with several men and women in lab coats working hard on supercomputers. They are working so efficiently it is hard to imagine they were not coordinated somehow. It is immediately clear to her that this is a gathering of researchers who have most definitely had neural implants.

"Hello, Elif. I'm Dr. John James," the man who spoke to her on the intercom says as he leads her into the secret facility. Elif notes that she has never trusted a man with two first names. "Professor Aslan tells me you are a reporter interested in uncovering the truth about our invention."

"Your invention?" she asks, a little stunned.

"Yes," Dr. James says with a smile that does not quite reach his beaming eyes. "I'm afraid you are looking at the team whose work became the neural implants."

As they walk around the facility, going from desk to desk and examining information, Elif feels like a student on a field trip. Dr. James tells her the entire, unadulterated history of how neural implants came to be. For something so decidedly evil, neural implant research started off very harmlessly as nothing more than a graduate student's research work. After its potential was recognized by a few more experienced researchers, there was no stopping what it would become and the impact it would have.

"We just wanted a good thing, really," Dr. James says. "We imagined a world where, as an academic, all your ideas could come to life. Believe me, every successful academic, no matter how brilliant and dedicated they are, only gets to do about ten percent of the work they want to do in their lifetime. So we wanted to maximize human potential."

The problem began, Dr. James explained, when world powers and corporations caught wind of the project and started intervening. First, they attempted to forcefully take the product's patent from this team, and when that didn't work, they started their own development based on the researchers' work, and that is how the problem of underground hospitals charging so much and causing so much harm began.

"Wow," Elif says as she takes it all in, double-checking to ensure her phone records the conversation. She would hate to have to write all of this from memory. "But how does this concern the government, exactly? What is their business with the research output of college professors?"

"Well, Ms. Fisek, when the government started their research, they did not limit it to an increase in academic output as we did. They wanted something more," Dr. James says.

"In what way?" Elif asks.

"Soldiers."

"Soldiers?"

"At some point, while they were conducting their research, the government agency in charge of it found a way to modify those implants for application in the military. With these modified implants, soldiers can be faster, stronger, and more aggressive than a bull seeing a red cloth. The worst part is their memories can be controlled and erased at will. The military name for this procedure is SOL. You might have heard of it because it is widespread and talked about like it is some supplementary diet for our military when it is, in reality, something far more hazardous. There is even a different set of implants for military pilots and another one for spies to boost their memories to learn more languages and recollect larger sets of information."

"Oh, my God," Elif exclaims. Dr. James keeps talking, explaining the science behind this diabolical modification of his research work, but all Elif can think of is Emre. Could he have had the neural implant during his time in the military? It makes sense that he does not remember because most people don't, and it also explains why he can't remember the previous night. "Is there a way to reverse any of this?"

Dr. James takes in a deep breath and lets it out in a way that tells Elif she isn't going to like whatever he is about to say. "Unfortunately, not yet. But that is why we are here, and that is why we keep working. We created this evil, and we are determined to correct it. Thousands and thousands of people are cheating the system with this *doping*, and thousands of others do not even realize that they have been doped and are being manipulated by their own government. I am glad that there is someone as bold as you with a platform like yours willing to talk about this. I wish you great success in your endeavors." The whole laboratory smiles and waves her out of the door.

Elif hurries out of the facility before anyone can change their minds about the treasure of information she has. She has to walk for half an hour to find a taxi, but she is not tired. Her excitement about getting to the office and documenting everything she knows overpowers anything else she feels. The story needs to be told.

As the taxi driver drives down the mostly empty road, she looks at all the greenery and how a picturesque country view like this can give the illusion that everything is right in the world. But people's lives are not theirs, and the government that should protect its people is the enemy.

"Excuse me," she says when the driver takes a wrong turn. "I'm going toward the city center."

"I'm afraid you're not, Ms. Fisek," the driver says. "You're going on a short vacation."

"What? How do you know my name? Who are you?"

That is all Elif can say before her eyes close and darkness settles in.

*

Elif has been back at work for two weeks since her vacation ended, and her work rate has increased so much Azra has promoted her, much to Lydia's chagrin. She and Emre are friendly as ever, and they playfully tease each other as they head toward Azra's office. They see she is on the phone, so they wait outside for her to finish and ask them to come in.

"Yes, General, I understand," Azra says.

"Elif was a close call. We must ensure all your reporters undergo the SOL program," the gravelly voice says.

"Yes, General," Azra says, aware that their conversation is over.

A faint sound like a "ding" goes off in Azra's head as she puts the phone down, and if anybody were to ask her what she was just talking about, she would not remember.

With a big smile and a wave of a hand, she ushers Elif and Emre into her office and asks them to sit. "So, the women's issue was such a success, I already have an idea for our next one. I want it to be about the glories of Turkish food. Some of my British friends were in town last week, and all we talked about..."

Elif sits comfortably by the coffee table, only half listening to Azra because the other half of her brain is actively working, producing an article she does not even realize she is writing.

END

ABOUT THE AUTHOR

Murray Eiland holds a BA and D.Phil in archaeology and currently works as the Managing Editor of Antiqvvs Magazine. He is an enthusiast of science fiction from the 1940s. Some of their academic work can be found here: https://independent.academia.edu/MurrayEiland. The magazine can be found here: https://www.antiqvvs-magazine.com/meet-the-team.

THE MORPHEUS PROJECT

RYAN ELLER

"Dream or awake, we perceive only events that have meaning to us."

- Jane Roberts

"Dreams are true while they last, and do we not live in dreams?"

- Alfred Lord Tennyson

"There are some people who live in a dream world and some who face reality; and then there are those who turn one into the other."

- Douglas Everett

To those moments when our reality is more terrifying than our nightmare

1 – Luke

Darkness and the smell of disinfectant surrounded Lucas Shepard as he wandered aimlessly through what appeared to be an abandoned hospital. The cold tile floor stung his feet as he quickly rounded a corner to find several beams of light meticulously scanning the hallway looking for any signs of movement.

Jesus, why don't they ever stop?

Fighting against his numb feet, Luke backtracked until he arrived at a vacant nurse's station.

Quickly, he sat down and pressed the power button attached to the wall unit adjacent to the 50' screens that were mounted against the white wall. Instantly the screens jumped to life displaying every room, hallway, and janitor closet in the wing.

What am I even looking for? A file, a history…?

Luke had always preferred to do things the old-fashioned way. Whenever he had to perform his experiments in the lab he would always keep his notes in a good old-fashioned notebook.

"You just can't beat a hard copy of data," Luke would remark to his colleagues whenever they would complain about losing their data due to computer crashes. In their defense, he probably lost his notebook more times than their computers crashed. But still, to him, it was easier looking through drawers for his notebook than searching through endless electronic folders for the recovery logs on a holographic hard drive the size of a sugar cube.

Ever since Google started the Quantum Artificial Intelligence (QAI) Lab with NASA in 2013, computers were becoming absurdly advanced. Nowadays, personal computers could store all the information in the Library of Congress on one partition thanks to the advanced compression algorithm designed by a group of MIT students. Even though technology had its pitfalls, Luke liked being able to store the complete 6 seasons of LOST in a folder that took up only several megabytes.

You just can't beat the classics.

Plus, due to breakthroughs in QAI, computers were now able to map the far reaches of the universe and create "ultra-real-life simulations" used for

training soldiers and pilots. Needless to say, the computer business was now a multi-trillion dollar industry.

You know Luke, you probably have a few more minutes before they notice that someone is using the nurse's station.

After scanning the monitors for any sign of the men, Luke focused his attention to the broad crescent-shaped counter that enveloped a viewer's chair. Luke eased gingerly into the chair and at the flip of a switch, numerous holographic file folders rose from the slate black countertop that read: *INVENTORY, STAFF, EMERGENCY PROTOCOLS, PATIENTS...*

Luke stopped and stared at the folder. Something deep within the recesses of his mind told him that he was looking in the right place.

Why can't I remember anything? How did I get here?

Luke glanced down and for the first time noticed that he was in a hospital gown. As he looked at his reflection in the black countertop, he didn't notice anything particularly unusual. Staring back at him was an athletic 35 year old male with short brown hair and inquisitive green eyes. The only difference was a faded purple bruise above his left cheekbone about the size of a baseball.

Was I in an accident? Retrograde amnesia would be a logical explanation if I'm having trouble recalling the last several weeks.

Looking back to the shimmering folder, he touched the peach colored object lightly and it began to multiply into 26 smaller folders emblazoned with a single bold letter.

I guess looking up my file is the best place to start.

Scanning through until he reached **S**, Luke opened the folder and gawked as an endless list of names rolled across multiple, floating displays filling his field of vision. At the bottom corner of the floating dialog boxes was an indicator that read "1/4053."

My God, how big is this hospital?

Typing in his last name Luke had just enough time to see the results before he felt the hand come around the front of his neck performing a perfectly executed chokehold. As he struggled against his attacker he felt the slight pinch of a hypodermic needle that he guessed was filled with Midazolam, a benzodiazepine used primarily for sedation. Before his vision went black, he made out the following information:

Name:	Admitted:	Room:	Wing:
Lucas Shepard	9/17/2230	B832	D

**Notes: Admitted along with a Cassadee Knight (Wing M; Floor 1; Room 12)

2 – Cassadee

Cassadee Knight's eyes opened to the bright Colorado sun streaming in through the floor to ceiling windows that comprised the east wall of the bedroom. She stretched tenderly, trying to shake off the last traces of fatigue that clung to her tired, but well-toned muscles.

This is my punishment for not stretching after my sprint routine.

As she got up and walked over to the window, she couldn't help but marvel at the stunning view in front of her. In the distance loomed the crisp, snowcapped peaks of the continental divide reflecting tender hues of orange, red, and purple created by the early morning sun. A faint cry broke the serenity of the morning as a hawk flew over the glass and steel framed cottage. Knowing the Red-tailed Hawk's call all too well, Cassadee strained to make out the red colorations that should be visible on the tail feathers. The hawk banked right and continued to glide smoothly on the thin air currents that characterized the Rocky Mountain air. Suddenly, the hawk folded its wings as it dipped downward into an accelerated, but controlled nosedive. When it was several feet from the ground, the bird beat its wings brandishing its impressive pectoral muscles, allowing it to hover above the ground for the fraction of a second it needed to grab its prey. Propelling itself back to cruising altitude, Cassadee could see the faint resemblance of a small rodent clutched in the raptor's massive talons.

Regardless of what anyone says, the view out here never gets old.

Basking for a moment in the warm early morning sunlight, Cassadee ran her fingers through her long amber hair trying to remember the last time she could hear herself think. Living in Chicago had a few advantages, mostly relating to her research, but clean and solitary living were not one of them. Granted, advances in technology and medicine had improved the lives of many. However, as surmised by Sir Issac Newton, "every reaction has an equal and opposite reaction."

The leaps and bounds made by the healthcare industry worked so well, that people were able to live until the telomeres on their genes finally gave out at roughly 150 years. Essentially, human life was limited only by the built-in biological fuses attached to the end of genes.

Replications to the DNA strand throughout life would shorten the telomere until, after copious replications, the telomere would cease to exist

and replication would stop. Granted, scientists had already found a way to extend telomers indefinitely, but the current overpopulation crisis made the enactment of this breakthrough unthinkable.

Their once beautiful cities were retrofitted to accommodate millions of people more than their capacities would allow. Transportation had to be rationed and their food was plentiful, albeit tasteless, due to the scientifically created Vitopak. This breakthrough was due to the scientists at Boston's Children Hospital who found a way to infuse oxygen directly into the blood so patients could retain oxygenated blood for the duration of a complicated surgery.

Now they are allowing us to inject pure calories, vitamins, and other nutrients in order to avoid a food shortage. The idea is imaginative, but it's also extremely demoralizing not being able to experience a human desire so basic and natural.

It seemed as if their only hope of escaping this failing world was to abandon it – or at least some of it. Once underfunded in the Bush administration, NASA and the other aeronautic programs around the globe had become their last beacon of hope. Upon the discovery of large deposits of water on several of the Galilean and Saturnian moons, the Exodus Program was immediately given the full backing of both the government and private sectors. That is where her research came into the picture. Since the development of the Gateway, a space elevator that anchored London to a multiplatform launch station positioned in a geostationary orbit, armies of mathematicians, physicists, and engineers were needed to calculate the equations needed to launch a shuttle every hour to the distant, terraformed moons. Cassadee was tasked with developing the necessary differential equations needed to keep the shuttles traveling to Europa stable during launch and descent. After 7 years of research, she believed that the answer to the problem lay in clearing her head and taking a step back.

Turning away from the mountains, Cassadee walked over to her dresser and began to put on a pair of green cargo pants when she heard a noise emanate from the bed behind her. She turned to find Luke turning violently with his hand clasped around his throat. She crossed the room with the agility of a trained sprinter and held him steady in her embrace until he woke, gasping for breath, his faced soaked with sweat.

For a brilliant bio-psychologist, I wish he could do something about these recurring nightmares. He's helped so many people and yet he cannot seem to help himself.

"Hey…hey, it's alright I'm here. You're safe," Cassadee cooed in his ear.

After Luke regained his senses, he laid back onto the soft white pillows and stared silently up at the cream colored ceiling.

"And I thought we came out here to clear our minds" "We did, you're just having a hard time adjusting."

Luke rolled over toward Cassadee feeling the kindness that radiated from her warm hazel eyes.

"Yeah, well if I was any good at my profession I would be able to understand why I'm having reoccurring nightmares about wandering around a dark, depressing hospital." "Did you find anything new while you were evading the guards?"

"Yeah, I found an admittance log with my name on it. I found your name too." "Now is that so? Why did we come in?"

"I don't know. The guard sedated me before I was able to find more details about our accident."

"What makes you think there was an accident?"

Luke looked at the continental divide in the background. The sun's intense radiance had already burned off the soft warm colors, leaving the mountains fully exposed, revealing every crevice, canyon, and high-mountain lake.

"I don't know, except I did find a bruise on my cheek" "Well, you look fine to me"

Cassadee pulled away from Luke and stood up beside the nightstand.

"So are you ready for our backpacking trip to Gray's Peak?" Cassadee asked as she put on her Timex triathlon watch.

"Of course, it's one of the reasons why we came out here. I still think you are being slightly optimistic. Nothing against sprinters, but are you sure you can handle a 7-mile hike with a 3600 foot elevation gain? It is called a mountain for a reason."

"Oh, you and your condescending attitude toward sprinters!" retorted Cassadee in a mock- serious tone. "You know, we may not be long distance

marathon runners like you, but we can still hold up under the tough conditions of mountain climbing. You have your niche in the running community to fill, and I have mine. That being said, I particularly enjoy watching your attempts at running the 400 meter. Your sprinting attempts remind me of a limping giraffe."

Actually, I may be sugar-coating it. In reality, it looks much worse.

"It may be fun for you, but it is utter agony to me. My legs were never meant to turn over that fast. Anyway, you can start packing and I'll make us a traditional breakfast of omelets and orange juice. Let's be ready to go at 0900 hours."

"Luke, come on, speak English time and not that government mumbo-jumbo. Don't you get tired of the government lingo since you work for them every day?"

"It starts to grow on you after a year or two. You didn't happen to see my research journal did you?"

"No, I haven't seen it today. You were working pretty late on it last night in the kitchen. I'd start looking there. You never did tell me what exactly you are working on."

"Come on Cassadee I'd tell you if I could. Everything I'm working on is classified."

"One of these days you're going to tell me, regardless of whether it's classified. You know that I can help you work through problems, and the sooner you realize that the sooner you'll let me help you."

With a curt nod Luke got dressed and went downstairs to make breakfast and look for his journal.

3 – Project Morpheus [Classified R&D Notes]

9/10/2230

Experimenter Notes:

0800 hours

This morning patients #521-525 appear to be behaving better than patients #518-520 after undergoing last night's treatment. The increase of lysergic acid diethylamide by 10% in addition to the modification of electrical impulses (see attached Figure 68 for EEG readouts and the condition settings) appear to cause a rapid and complete immersion into the N1 sleep stage. Alpha brain waves (12.05 ±1.62 Hz) transition to theta waves (5.10± 1.16 Hz) at the 25 minute mark. Transitions from the N2 to the N3 sleep stage are also improving at a faster rate. Subjects are now declining into these deeper stages of sleep in as little as 30 minutes. Yet, transitioning into REM sleep is still problematic and sporadic since subjects do not spend more than 20-23% in this desired state. Altering the mixture of hormones may allow REM sleep percentages to increase.

Next, patients will need a new infusion of trace levels of hormones added to the electrotherapy and mild psychedelic treatment. Paul will administer tonight's treatment and inform me of any progress tomorrow. This is, of course, assuming that he doesn't traumatize the patients with his horrendous bedside manner.

4 – Personals

Personal Notes: 9/10/2230

There are only seven more days until I take Cassadee out to Colorado. I have the perfect hike picked out for her (if she can manage it). We should even be able to get there while the aspens are changing color. There's absolutely nothing like it – the colors, the elk rutting, and the first traces of the brisk air that will usher in the Rocky Mountain winter. I'd take the cold any day compared to what we have here. The city is starting to get to me again – the dirt, the smog, and the conglomeration of humanity that engulf everything below the Company's high-rise. I have nearly everything figured out in the lab in order to send the results upstairs for analysis, review, and implementation. I am disappointed that no one will ever know my team was the group that helped resolve the population crisis. Yet, I wish we could exclude Paul from the report. I hate his smug and sadistic personality, which seems to hinder the project more than advance it. Why anyone chose him to be the assistant director of this project is beyond me.

To Do List:

1. Go to the store
    a. Buy hiking supplies and packaged food items (ideally not Vitopak)
    b. Arrange for transportation and clearance out of the city
2. Pick up engagement ring (and try not to lose it)

5 – Cassadee

The drive out to the Gray's Peak was a typical drive through the thick spruce and fir forests that comprise the majority of Colorado's wilderness. The pockets of wild aspen that dotted the drive through Arapaho National Forest reminded Cassadee of ornaments decorating a Christmas tree. Some aspen groves were crimson red, others were golden yellow, and a few had an orange color that would make even the most majestic sunset jealous.

Beautiful, simply beautiful.

After driving for several hours down I-70, Luke turned the Jeep Wrangler down Forest Service Road 189 where they bumped, bobbed, and weaved down the unimproved path until they reached the isolated trailhead. The couple quickly, but carefully donned their backpacking gear and headed down the trail toward Gray's Peak that towered overhead at 14,200 feet.

Despite the early morning frost and last night's torrential downpour, the hiking was fairly easygoing as they hiked up Steven's Gulch. The sweeping panoramic views of cragged Mt. Edwards, Torrey's Peak, and Kelso Mountain were absolutely breathtaking causing Luke to stop every couple of minutes in order to capture their grandeur in a photo.

"Luke! At this rate we will get to the summit when the snow melts in the spring!"

Cassadee was already several meters ahead and gaining as Luke fumbled with the settings on his Canon Horizon T8.

"Yeah, I'm coming!" yelled Luke as his picked up his gear and ran after her.

Several hours before dusk the two arrived at the top of the ridge where they picked a protected spot and began to set up camp. After two hours, Cassadee had successfully set up the fire pit, shelter, and their freeze-dried dinner, while Luke had collected enough fire fuel to last them through the night if need be.

As dusk began to set in the water colored sky, the two admired their well-coordinated handiwork with smug satisfaction.

Ha, look at that teamwork! Bear Grylls eat your heart out!

"Hey Cassadee, come with me for a minute, I have something to show you."

Cassadee looked at him curiously, but with a reassuring smile from Luke, she followed him across the grass-strewn tundra.

6 – Luke

Okay, you've got this Luke. Just keep it short. Don't do anything fancy and for God's sake breathe!

Luke led the way around the boulders scattered on the tundra as he and Cassadee walked up the steep slope of the ridge. As they reached the precipice, Cassadee's senses were utterly overwhelmed. Before her stretched the west slope of the rocky ridge as it descended into groves of yellow, red, and orange quaking aspens. Even from a distance she could hear the harmonic rustling as the wind danced among their leaves. On the slopes of the ridge a herd of nearly 60 elk were peacefully grazing on the tender alpine grasses. And yet, above it all loomed clouds that had erupted into hues of purple, red, and orange that cast gentle streaks across the horizon silhouetting Grizzly Peak in the distance.

"My God, it's beautiful." Cassadee whispered as she sat down on a particularly comfortable boulder.

"It is," replied Luke as he bent down on one knee. "And there is no one else I'd want to share it with than you. Two years ago I was a wreck. Working 70 hours a week on my research, I didn't have a life. My research was the only thing that gave my life meaning. And then, in one of my weaker moments, I decided to go to that track and do sprint intervals to help remedy my lackluster kick to the finish line. And for God knows why, you saw a hopeless case and tried to help me."

Actually, nothing she did really helped. I guess it was the thought that counted.

"During the course of those agonizing months, I got to find out everything about you – your, patience, persistent curiosity, and your compassion. I've seen how our story starts, but now I want to see how it plays out. Cassadee I would do anything for you since I love you in ways you couldn't fathom. I want to wake up every morning and share the sunrise with you. I want to come home and sit awestruck with you as the colors dance away behind the curtains of the horizon.

Cassadee...will...will you marry me?"

Well that went better than expected. It was a little mushy in spots, but it was heartfelt and that's what I was going for.

As Luke progressed through his speech Cassadee looked at him with amusement as a smile grew across her face. By the end she was fighting to hold back the tears long enough for him to finish. Unfortunately for Luke, between the onslaught of natural beauty emanating from the landscape and Luke's obviously rehearsed speech, it took a couple of seconds for Cassadee to register what just happened. While she only needed a moment to regain her voice, she realized that it must have felt like an eternity for Luke. After realizing that his complexion had turned several shades lighter, due to not breathing, she bent down and hugged him just as the levee burst.

"Yes, of course you knucklehead, it's about damn time you asked!"

7 – Luke

He was back in the hospital. Except this time he was lying on the tile floor somewhere that appeared to look like a broom closet. As Luke pulled himself upright, he noticed a slight sting in his left arm. Looking down he saw the end of a needle that was once attached to an IV line.

Great, now I'm being drugged.

As he pulled out the remnants of the needle Luke looked around and quickly found an emergency exit hologram that illustrated the evacuation routes of the wing.

Wonderful, so I'm on floor B6 in Wing D. Now I just need to get to the ground floor and find Wing M. Maybe "dream Cassadee" will have some answers.

Luke was about to leave when he noticed a room on the map that read:

Laundry Pickup

After dodging a couple of doctors, Luke made his way to the room where he awkwardly changed into an orderly's uniform amid the haze of the drugs.

Is it just me or is this room warping? What kind of drugs did they put into me?

After mustering all the coordination he could achieve in his state, Luke walked out of

the laundry room and headed toward the elevator. He walked in and tapped the button for the first floor. Just before the elevator closed shut a glass clipboard appeared between the doors causing the elevator to jolt as the doors jerked back open. A short man donning a white lab coat entered with his clipboard and pressed the button for the B4th floor. Luke gave the man a courteous nod and then quickly looked away in case the doctor noticed his dilated pupils – an obvious sign of being drugged. The doctor replied with a nod of his own and then tapped a button on his clipboard which revealed a three dimensional image of the human brain. The doctor highlighted several lobes with his hand and then began to jot a few notes at the bottom of his digital clipboard. As the bell tolled and the elevator doors opened, the doctor stepped out and Luke peered down the hallway. This floor was similar to the 6th floor, except this section of the hospital had dozens of patients sedated in

glass viewing areas where dozens of doctors patrolled, observed the patients' vitals, and made the occasional adjustment to the plethora of devices attached to the individuals. Before the doors closed Luke made out the words that were at the top of the departing doctor's clipboard.

Project Morpheus – Pilot Studies

Luke's mind was spinning. Whether his confusion was created by the drugs or the sudden revelation that his research was an integral part of his dream was beyond his comprehension.

Deeper I go down this convoluted rabbit hole. Ugh…here we go, more spinning. Maybe my subconscious is trying to tell me something about my research. Is it immoral? No! It helps save lives – it helps save our sanity.

Luke had just reached the ground floor when the elevator bell set off a cascade of colors inside his head. As he stumbled out of the elevator, he felt as if his legs were about to buckle underneath him. Struggling to stay upright, he tried to keep the encroaching fog in his mind at bay for long enough to reach someplace secluded.

[Blue, crimson, purple] Focus! First door is a doctor's private office. [Yellow, jade, pink, magenta] Second door is a…women's restroom. [Brown, silver, emerald, amber, orange] Third door is a linen closet. Perfect! It even has a lock on the inside.

Moments before passing out, Luke dove for the closet where he was somehow able to fall inside and lock the door behind him before collapsing into a stack of bed sheets.

What is truth? It is whatever we want it to be. Then is it really truth, or is it simply our subjectively-based perceptions of the world? Are we naïve? Can we live a life that is a lie? Of course we can! It is only a lie if someone opens our eyes to the truth. Then what is truth?

8 – Project Morpheus [Classified R&D Notes]

9/15/2230

Experimenter Notes (General Observations):

0800 hrs

Paul reported that the subjects are behaving as predicted. The stronger drug cocktail allows them to descend deeper into the N3 and even REM sleep. Also, Pyridoxine shows potential for allowing individuals to store their dreams in the hippocampus for long-term storage. Yet the patients suffer from frequent arousals if something or someone injures them mid-dream. Stronger sedatives may help, but we must proceed with caution as an overdose could prove fatal.

9 – Cassadee

Cassadee woke up beside the obviously distressed Luke who was tossing aggressively from side to side in his sleeping bag.

"Luke! Wake up! LUKE!"

Cassadee pinned his arms and head so he wouldn't hurt himself. Eventually, Luke's eyes, full of fear and confusion, shot open and glanced around wildly. Yet, when he found Cassadee's gaze his posture relaxed and his rapid breathing slowed.

"You know I have a bottle of sleeping pills in my bag that you can use."

"NO! No drugs! I mean, thanks, but I'd prefer not to take any drugs. Last night's dream featured a particularly 'trippy' LSD excursion."

"Now wait a minute, how would your subconscious know what being on LSD feels like?" "Well, I study it in my research, and I am a psychologist. I suppose my mind was able to fill in the blanks."

"Maybe I should put in a couple of requests for my nighttime dreams. I've read enough about Callisto and Europa; maybe my mind can put me there in a dream so I can walk around on it." "You would be surprised at the amount of information your subconscious holds and its ability to construct a scene."

"With the way you were turning last night and this morning, I have no doubt that your mind is doing a fantastic job," commented Cassadee sarcastically.

As the couple ate breakfast and broke camp, Luke's mind wandered back to his dream and the implications it made about his research. He looked nervously down at his pack which contained his research journal.

There's something he's not telling me. If only he would let go and let me in. What has he been working on during the last 10 years that involves LSD? What is the government trying to do?

The second half of the hike was more strenuous compared to the first leg. Besides being higher in elevation, the trail climbed steeply through vast meadows of alpine tundra filled with sharp talus rock, boulders, and the endless expanse of tundra grass that rose up to meet the Colorado blue sky. Onward they hiked toward the ominous peak standing resolute in the distance.

"Boulder field ahead!" called Cassadee as the bend in the trail revealed a section of path that meandered through countless human-sized talus deposits that littered the hill above the swiftly moving Quayle Creek.

"Well, they're not exactly boulders, but I guess they're close enough," corrected Luke playfully.

Cassadee looked back at him unfazed.

"You don't always have to be so technical you know," Cassadee said rolling her eyes. "Just let loose of the technicalities once in a while. Take me, I always try to live life foot loose and fancy…"

Cassadee's last words were stifled in her throat as the ground beneath her gave way.

Talking back to Luke had distracted her from the flat piece of talus that was balanced precariously on the edge of the trail. Walking on the rock had shifted the gravel that was holding the sheet in place, causing the rock and Cassadee to cascade down the incline. Like a snowboarder riding down a double black diamond, Cassadee gripped onto the large, flat rock as she careened down the hill.

With a look of horror on his face, Luke watched helplessly as the distance between them increased. Immediately, Luke collected a few essentials from his pack and raced down the slope covered with the dangerously sharp pieces of weathered rock.

He'll never get here in time. I can either jump off and fillet myself on the rocks or I can take my chances with the river. I pick the river.

Luke barreled down the hill trying to ignore the pain in his legs as the talus quickly shredded his olive-colored cargo pants.

"I will not lose her," he muttered under his breath. "I can get to her."

As Cassadee reached the bottom of the hill, the rock beneath her snagged on the remnants of a gnarled tree root and threw her violently into the river fed by glacier runoff. The collision with the surface of the river knocked the wind out of her, but worse, the icy current prevented her from regaining it. Even though she was a seasoned swimmer, she was unprepared for the challenges the near-freezing, fast-moving water presented. Several powerful strokes brought her closer toward shore, but at the expense of her body temperature. She calculated that she only had a couple of minutes before she would enter shock. As she looked ahead, she saw a bend in the creek.

If I time my strokes until I'm halfway through the bend, I may be able to use the stream's momentum to get to shore. Now here comes the bend. Three...two...ONE!

At the apex of the bend Cassadee used the last of her strength to execute several powerful overhand-strokes tangential to the current. Her strokes, added to her already large momentum, proved to be enough to get her out of the fast moving center of the creek and into the slower moving shallows. Crawling out of the river up the pebble-riddled beach, Cassadee noticed that the only thing worse than the icy river was the merciless wind that tore through her soaked clothes.

I'm numb; literally every part of me is numb.

After what seemed like forever, Luke arrived beside Cassadee who was now turning a light shade of blue. He quickly removed his outer two layers and the reflective heat blanket he had collected from his pack. After removing her wet layers, he wrapped himself and every dry piece of fabric around Cassadee.

"I've got you. I've got you." Luke repeated as Cassadee closed her eyes trying to block out the pain that was now erupting from her warming extremities.

10 – Personals

Personal Notes: 9/16/2230

I can't believe there are only two more days until I take Cassadee to Colorado. So far I don't think that she has any idea of my intentions to propose to her. I've got it all planned out, but I know what happens to the best made plans. That's why I have eighteen contingencies! They say that chance favors the prepared mind. I was able to rent us a Jeep Wrangler and a pass out of the city at daybreak before the city reaches its deadlock state. It'll be nice to drive down Lakeshore Drive when the sun comes up over the lake. I know how much Cassadee loves the sunrise – it'll be the perfect start to our little getaway.

To Do List:

1. Pick up the jeep and make sure we have enough fuel cells to reach Iowa.

11 – Luke

"Well, I can't say that you don't put excitement in my life," commented Luke as Cassadee sat up in a sleeping bag next to a blazing fire.

"Yeah, if it weren't for me your life would be boring," Cassadee said weakly.

"Here, try some of these energy bars and green tea. They should warm you up and give you some of your strength back."

"Thanks. What you did back there, that crazy stunt on the talus slope, you know you are an idiot right?"

Wow gratitude is not exactly her strong suite.

"Yeah, I'm the idiot that saved you."

"Yes…but you shouldn't have risked your life for me. There is no need for both of us to die on this mountain."

"Well I guess I'm more like you than I thought. I try and save the hopeless cases too."

Cassadee giggled as she sipped her tea. Night had fallen hours ago, plunging the landscape into an abyss-like darkness. Luke admired the amorphous flames of their campfire that danced in the lonely and chilled night, reciprocated by the twinkling starlight of a trillion Milky Way stars. Far away a pack of wolves howled in the darkness, breaking the eerie silence that had settled over the pine forest.

"Thank you. You know, for not giving up on me," said Cassadee looking up from the simmering surface of her green tea.

"You are going to have to do a lot better than jumping into a freezing river to get away from me," replied Luke shifting his gaze away from the heavens.

"I know it's morbid, but what would you have done…if you couldn't have gotten to me in time?"

"I don't know. I guess I would feel guilty. I would replay it over and over trying to see if there was something I could have done differently."

"There is always something that we could have done differently. I could have done this, you could have done that. You can't relive a situation in your head trying to change things; otherwise you'll spend your life in the past."

"It's not that simple. You are telling me that if something happened to me, you wouldn't try to figure out whether there was something you could have done?"

"Of course I would. But, I would try and not blame myself for being unable to stop it. Some things are just unseeable, unavoidable, and ultimately out of our control. Sooner or later you'll have to put it in God's hands; otherwise you will drive yourself insane trying to control things that were never meant to be controlled. Luke I love you, but sometimes my little control freak, you have to learn to let go."

"Yeah, that's easy for you to say."

"You're right; I can't imagine how you must have felt. All I can do is have faith that everything happens for a reason, and that He'll take care of us."

"So what exactly would be the reason for you dying? How would you drowning in a river improve anything?"

"I don't know. I'd like to think that every difficult situation I face has a purpose. As soon as I start believing that challenges have no purpose, that suffering has no purpose, then that is when my life starts to lose its purpose. 'I am not skilled to understand, what God has willed what God has planned.' That is a line from one of my favorite gospel songs. It reminds me that despite having misfortune dumped on me, there must be a reason even if I am not able to see it."

"Yeah, I remember my mother telling me something similar to that once. 'God grant me the serenity to accept the things I cannot change, the courage to change the things I can, and the wisdom to know the difference.' It's too bad it's easier said than done." "All the important things in life usually are."

12 – Luke

Luke opened his eyes staring up at the bleach-white ceiling.

Here we go again. You know Luke the fact that you are aware that you're dreaming should give you an advantage. How many patients did you treat with trauma and reoccurring nightmares before you joined the government? Every time they entered a dream aware that they were dreaming, they were able to control their surroundings. It is one of the hallmarks of lucid dreaming we learn in Psychology 101. Maybe if I try and imagine I'm with Cassadee... ouch! Apparently that's not going to work.

Luke grabbed his head, aware of the throbbing pain spreading radially from his frontal lobe.

I guess teleportation is out of the question then. I'll just have to find Cassadee the old-fashioned way.

Luke got up, still dressed as an orderly and exited the cramped linen closet. He walked for what seemed like an hour through floors that contained patients with dozens of psychiatric conditions monitored continuously by doctors. Every one of them was attached to dozens of cords that emanated out from an endless row of medical equipment. Medical equipment ranging from re- atomizers to AI's that regulated their body functions were used in order to "normalize" the patients' abnormal thinking.

What is abnormal but a deviation from what is typical? Is change really something that we need to correct?

At one point, Luke stopped and stared at a nurse who was wheeling the newly patented STIP (Stimulus Treatment for Immobilized Patients) machine down the hallway. The machines were a miracle for coma patients, whose muscles atrophied due to their prolonged immobilized state. What's more, the machines provide enough neuronal stimulation to allow patients to keep control of their peripheral nervous system since especially prolonged comas cause patients to "forget" how to work their limbs. Yet, despite decades of research, the machine was still not able to stimulate the brain to a high enough level to prevent irreversible brain loss. Their bodies work, but their minds fail them.

Luke reminded himself that his current objective was finding Cassadee, not gawking at a piece of equipment. He hurried down a corridor until he reached a set of large stainless steel doors that must have been at least

a half-foot thick. From the one side the doors were protected by several keypads. One of them looked like a retinal scanner while the other required a nine-digit PIN number. Above the door hung two security cameras that monitored each side of a long hallway that ended with another set of double doors. Luckily for Luke, there was relatively no security for those leaving this area. Curiously, Luke pushed in on the push bar expecting to heave the doors open. Surprisingly, the well-balanced doors open with a slight touch and Luke exited the heavily secured area. As he stepped out Luke looked back and read the sign positioned over the door.

Restricted Access – Secret Clearance Required

Luke only had a moment to realize that the second security camera had turned toward him. During the early 21st century, facial recognition programs had relied on a series of facial markers that allowed a computer program to identify a human face with mediocre results at best. Now, however, with the advent of advanced 3-D imaging, holographic facial scans used for the state-mandated identification cards, and AI supercomputers, facial recognition had become an art. It now allowed for a near perfect match of an individual within seconds. Deciding that the computer would positively identify him anyway, Luke turned and attempted a sprint down the hallway toward the second set of double doors. Within seconds, the white fluorescent light were cut and replaced by malicious red security lights as a well-built security guard entered the hallway from an adjacent door.

"STOP!" the trim officer cried as he closed in on Luke. "Seal the doors. I repeat, SEAL THE DOORS!"

Only feet from the second set of double doors, Luke threw himself the last couple of feet and crashed into the push bar half-expecting to break his ribs on the wall of reinforced steel that he presumed was now locked.

13 – Personal

Personal Notes: 9/17/2230

I have my bag packed and Cassadee and I have loaded everything into the Wrangler. We have about another hour or so before the sun rises and our departure time arrives. We are leaving. I can't get it through my mind that we are leaving this God-forsaken city. What I would give if we could spend the rest of our lives out under the clear, blue skies in the mountains. It's true that it would be selfish since our research could save thousands of lives, but still, there comes a point when you begin to question why we are invested in our work. Why should we release the plague that has destroyed countless peoples, cultures, and ecosystems? Who are we to unleash this devastating force onto another world? In some ways it is sad that we are forced to throw our lot in with a species that is so narcissistic and selfish. Perhaps my negativity stems from this disgusting environment, yet I feel as though humans do too little too late. Who's to say that if we are given another world, we won't just ruin it as well? Do we even deserve a second chance?

14 – Ryan

Outside a remarkably dense set of double doors, a young child sat on a bench playing with a small, life-like Brachiosaurus as his father relieved himself in the men's restroom. The Brachiosaurus was leaning down to take a bite of virtual grass when a man dressed in a white uniform seemingly flew through the doors and skidded to a halt a few feet away on the smooth tile. The little boy thought he could hear the sound of a faint click emanate from the heavy doors behind him. The stranger looked up at the little hazel-eyed boy, smiled, and then headed down the hallway that led to the general admission area.

"Nice dinosaur kid," the man said as he rounded the corner.

The father reemerged from the restroom and noticed his son's apparent confusion. "What is it?" the father asked.

"It was a man who flew through those double doors. He liked my Brachiosaurus!" squeaked the child.

"Okay Ryan, whatever you say." "NO REALLY, he was here!"

"Okay, I believe you. Now let's go find your mother and get to Oncology. We don't want to miss your re-atomization therapy."

"Sure Dad," the little boy chimed. As he walked away from the strange section of the hospital that he and his directionally-challenged father had wandered into, he almost thought he could hear the faint sounds of banging coming from within the windowless, stainless steel doors.

15 – Luke

Luke approached the receptionist desk in what appeared to be the largest waiting room he had ever seen. Despite its size, nurses were admitting several patients at a time, which effectively kept up with the steady stream of sick individuals who trickled in off the dusty street.

"Excuse me miss. I appear to be a little lost on my first day. I'm looking for M Wing."

The blond-haired receptionist looked up from her holographic screens and looked at what appeared to be an orderly who was having a particularly difficult day.

"Sure thing, just go through these doors, turn left, and it'll be on your right. Let me buzz you in."

Luke had reached the double doors when the receptionist got a call on her headset listed as urgent. She had just buzzed him in when her eyes widened in panic as she tore her hand away from the red button. She looked back toward the door to try and get him to come back, but the door was already swinging shut behind him.

I'm almost there. I just need to make a left and then Cassadee and I can figure this out together.

As he turned the corner and walked through the first door on the right, his first thought was that this was a strange place to keep a patient. The lights were bright and the smell of disinfectant was extremely strong. However, the most prominent feature of this room was the cold. Yet despite the frigid temperature, Luke's chill originated from within himself as he realized that he wasn't in a section designed for patients at all – at least not for patients who were still living.

"No..." Luke whispered as his knees buckled underneath him. His hands hit the ground bringing him to all fours as he vomited into a bucket underneath a gurney. Laid before him were dozens of rooms arranged in a radial pattern spiraling outward from the central examination room. Each room contained a wall that contained hundreds of drawers in which Luke expected lay cadavers.

"You are a sly one doctor, I give you that," said a hollow voice echoing off the numerous metallic instruments in the room.

Luke got up and faced the slim man who was making his way toward the center of the examination room. The man must have been in his late 60's, made apparent by his white hair and cane. Luke eyed the white lab coat and the digital clipboard that the man carried in his left hand.

"This is a dream. This isn't real!" Luke shouted at the man. The reverberations caused by his voice rattled the scissors, forceps, and dissection blades that were sitting on a nearby instrument tray.

"Now how did you come to that conclusion, Luke? Is this a dream because you want it to be, or is this in fact reality?"

"If this is reality, then it's not one that I want to be a part of."

"Now there, let's be a little less melodramatic shall we? What do you remember?" "What are you talking about? What kind of things should I remember?"

"Let me rephrase. What is the last thing you remember about you? Who are you and what do you do?"

"My name is Lucas Shepard and I'm a bio-psychologist who works for the CIA. My research is based on allowing patients to enter into a dream state that allows them to create ultra-real simulations."

Wait, was Colorado a simulation? Was Colorado my simulation on a program I helped to design?

"Now we are getting somewhere, Luke. Let us proceed."

"How do I know that this is not a simulation? How do I know that I didn't create all of this to help me work through the moral dilemmas of the Morpheus Project?" Luke was close to tears, trying to hang on to this last thread of hope. The frail man stepped closer causing Luke to step back behind the steel gurney.

"Easy Luke, I'm just reaching for a stool. My tired legs have almost had their limit of physical exertion today from chasing you up and down this damn hospital. As you might have guessed by now, this is not just a hospital."

"Yeah, tell me about it! When was the last time hospitals had wings with Secret Security clearances and next generation facial recognition?"

"You're right. This hospital has a special wing that conducts research for the CIA. In particular, that wing conducts your research, Project Morpheus. Do you remember yet?"

"Sure, I remember my own project! That still doesn't explain why I'm here, if I'm really here, why I was drugged, and why I don't remember anything else."

"Luke, you are a psychologist use your head. You can't remember anything because you were in an accident and you have retrograde amnesia. However, most of your confusion is caused by the numerous drugs you have in your system." It was apparent that the older man was growing tired of arguing with the immovable younger doctor.

"I don't think so," Luke responded. "This is a reflection of my subconscious that is telling me what will happen if my project is a success. Thousands of people will be forced to live a lie. They will be put into a medically induced coma. They will exist in a made-up reality built by their subconscious and acted out in their dreams. They will live and die without ever living at all. I no longer care that it will help overpopulation, since what this is, isn't real."

"So you would rather let people lead miserable lives instead of letting them live in ignorant bliss? That's not the same Lucas Shepard that I once knew."

"I guess my ordeal has given me clarity then doctor."

"Doctor? Ha, really? Come on now Luke, you don't remember the person you've worked with for the last ten years?"

Wait he does look vaguely familiar. His name is...Paul.

"Your name is Paul, Paul Callowell. You were the assistant director of the project," Luke stammered as he eyed the sinister dissection equipment lying next to him.

"Yes, I *am* the assistant director of this program, and you, Luke, are the director. But unlike me, you were unwilling to take steps with this project that I was willing to take. You saw something malicious and deceptive and you tried to turn it into something far more poetic."

"What are you talking about?" Luke shouted as several guards appeared in the doorway. "Why am I here?"

"It is okay gentlemen – I will need no assistance with Dr. Shepard at this time. You may stand outside," said Dr. Callowell casually waving off the guards who reluctantly stepped back into the shadows of the hallway. "Luke, tell me about the morning Cassadee and you left for Colorado."

"I waited with her outside our apartment for our departure window. Then we packed our bags into the back of the Wrangler and we drove south on Lake Shore Drive. We wanted to catch the sunrise over the lake."

"Yes, yes, keep going," urged the doctor who was now leaning forward interested in the spectacle developing in front of him.

"We were driving west on I-290 about to cross I-90, but some driver missed his exit so he cut over two lanes trying to get to the exit ramp. His bumper clipped the side of our Jeep. We were spinning...."

Luke held his head in his hands as vivid flashes of that morning cut through the haze of his memory. He had broken out into a cold sweat, and he tried to regain his composure despite his rapidly beating heart that was now thundering in his ears. His entire body felt numb, but he continued.

"We were stopped by the kinetic barriers lining the guard rails, but several cars behind us crashed into us, forcing our jeep over the guard rail and onto the off ramp several feet below. We rolled, but for how long I can't remember. All I can remember are her screams. The emergency crews appeared shortly after the hydrogen fuel cells started leaking. There must have been some spark from the electric engine since there was a small fire that had appeared from underneath the hood. They were able to get us out, since they drenched us in flame-retardant liquid. There was a firefighter there who dragged me away..."

It is hot and dry. The dusty air sweeps over me as I try to open my eyes. I'm upside down suspended in my seat restraints.

"Sir, I'm with the Chicago Fire department. I'm here to help you. We need to get you away from the crash site.

"No, please, save the girl!"

"Sir, we have someone attending to her. But, now we need to get you out while we still can."

Flames, burning rubber, and sirens fill the air. People are screaming and running. Firefighters are spraying the mangled piece of metal that once served as a vehicle with F-foam. Its smell is putrid, but it crystallizes with the metal on contact incasing it in a crystalized, fireproof sheath. Cassadee is on the other side of the off ramp with another firefighter. He calls to someone back at the engine. Soon an ambulance is racing up the off ramp toward us. Two paramedics get out and run toward Cassadee who lies limp on the ground. They bend down to take her vitals as they pull out their equipment. One frowns as the

other shakes his head. The one who frowned begins performing CPR as the other charges the paddles of a defibrillator. Shock! Cassadee's body convulses once as the CPR compressions continue. Shock! It all happens in slow motion. I feel a trickle of blood roll down the side of my face where my forehead was cut by the broken glass lying scattered around the scene. Shock! I look back up the road where several people stop and attempt to help the other drivers in the crashed cars. Shock! The highway is now backed up and officers arrive to divert traffic. Shock! The firefighter looks at my face and attempts to close the lacerations with amorphic bandages, but I ignore him and look back toward Cassadee. Shock! The paramedic reaches down and sets the paddles back into their respective holders as the other waves his hand across her face. Then all is still inside my head. I hear no sirens, no screams, and I feel no pain. I hear only silence and feel nothing. That's not true, I feel alone – completely alone.

"So Luke, do you remember now?" asked Dr. Callowell in a hollow tone.

"I do," responded Luke as his knees crumpled, pulling him to the cold tile where the darkness again enveloped him.

16 – Cassadee

The sun shone brightly on the banks of the Quayle Creek causing Cassadee to squint as she looked upstream. The chill that had plagued her all night had subsided thanks to Luke's handiwork with the fire, blankets, and endless cups of hot tea. She was thankful that she could have a fiancé who was both caring and resourceful. Yet when Luke woke up she could see that his eyes were empty, as if a giant hole had been cut into his soul.

"Hey, what is it?" Cassadee asked nervously.

Luke glanced back at her. His gaze was hollow – his voice was weak and shaky. "You died."

"What are you talking about? You pulled me out of the river – I'm right in front of you." "NO YOU'RE NOT! You are just an elaborate dream created by my project at the CIA." "Luke, calm down, you're starting to scare me. Wait, you think this is a dream? Why would you dream about almost killing me?"

"Correction, why would I dream about saving you? I don't know, maybe because I felt helpless on that exit ramp where I couldn't do anything to save you – how I couldn't evade that car on I-290 and prevent that accident. How your death was completely my fault!"

Luke gasped on the thin air trying to fathom the gravity of the situation.

"Wait, are you talking about that car that almost hit us the day we left for Colorado? Luke, you swerved and missed that car – it never hit us."

"What are talking about? It hit our bumper causing us to hit the kinetic barrier. We spun over the guardrail and they pronounced you dead at the scene!"

"Luke, listen to me, I didn't die. It was a close call, but we dodged that bullet and made it out here. This is real, not the dream you've been having for the past couple of weeks. Come on you've been having those dreams since we came out here. You are probably still shaken from that close call, and your mind is playing out the possibility of what *could* have happened. Like it or not, you are going to be stuck with me for a very long time." Cassadee smiled, but Luke's expression stood resolute.

"Then explain to me how I had memories inside my dream Cassadee. How is that even possible?"

"You already answered that. Remember when you told me that the brain is a remarkable piece of engineering that can create situations from small pieces of data? You told me that the brain can place us on planets that we have only seen through telescopes, or how it can give us a LSD hallucination despite never using the drug. Please Luke I'm begging you to believe me."

"I just...can't. I want to believe that this is real more than anything, since I can't imagine living without you. But, now I'll forever question whether this real. That is...unless I can figure out what is really going on. I need to fall back asleep one last time. Do you still have those sleeping pills?"

There's nothing I can do or say that will convince him that this is real. I have no choice but to let him go back into that accursed dream.

"Of course Luke, I still have a few of them in my bag. They are a little damp, but they should still work. Just know that I'm going to be right here beside you the entire time. You're not alone in this. I love you Luke – don't forget that."

With that Luke kissed his fiancé, downed two of the pills, and awaited Dr. Callowell who he knew would be waiting for him on the other side.

17 – Luke

"Round and round we go Luke. What is real, what is an illusion, and is there any difference that separates the two?" croaked Dr. Callowell as he sat on a black leather chair underneath harsh fluorescent lights.

Luke looked up in order to take stock of his surroundings. Apparently he had been moved from the morgue to Dr. Callowell's office while he slept. Or perhaps he was awake – at this point he wasn't sure what was real anymore. Wherever he was, he appeared to be sitting on a brown couch in the corner of a large office that looked out at the hospital's courtyard. Plants of all shapes and colors inhabited the penned in area at the center of the compound. The green courtyard contrasted sharply with the dusty brown habitat that surrounded the hospital grounds.

"Nice office doctor. You could add some color to it though."

"I don't see many patients here anyway, and the colors suit me," shrugged Dr. Callowell. "Was your deceased counterpart able to talk you into believing that this is a dream?"

"All I want is the truth doctor."

"Ha, all you want is the truth," mocked Dr. Callowell harshly as he folded his hands on his mahogany desk. "Luke, sometimes the truth can be more twisted than the fantasy. Are you sure you want to go down this road?"

"I have to see this through to the end, regardless of what I may find," stated Luke in a solemn tone. His disdain for the vile man in front of him was great, but he believed that the doctor held one last piece of this convoluted puzzle.

"Very well Luke. Three weeks after your accident you came to me with a proposition. You asked me whether it would be possible to modify the project to allow for brain stimulation. In essence, you wanted to run tests that would test the rate of brain growth and decay while undergoing the 'dream therapy.'

You had this crazy notion that you could help finish the Exodus program in honor of your girlfriend. The scientists were able to figure out everything to get to the terraformed moons. They had the flight vectors, the stabilization models completed by Cassadee, and they even had the funding. But, the prolonged travel time posed a problem. If we put the astronauts into a

medically induced coma, then this would allow them to reach the moons while they were still young. The problem is comas have a nasty tendency to atrophy parts of the body that we do not use for sustained periods of time. We were able to stimulate the muscles and nerves to retard the degradation caused by the hibernation-like state with the STIP, but the brain was too complex to stimulate without causing irreversible brain damage. That is when you thought you could hijack this program, *our program*, to suit the needs of a failed project. You spent every night in the lab working through the models in order to make it work. You just couldn't *let…her…go*. You had to figure out this puzzle just so she wouldn't die in vain. You kept saying everything must happen for a reason."

Dr. Callowell got up from his chair and began to walk around his desk looking out the window at the green plants with a profound sense of sadness.

"You see Luke, all of your objective thinking was lost after you became emotionally involved with this girl. You lost sight of the *true* goal of our project, and instead tried to pervert it to aid those who believe that the future of society is beyond this world. Well I'll tell you this, the future isn't on Europa, Callisto, or Ganymede. The future is here and now within our own minds! We have the ability to shape our reality despite inheriting a dying world. The solution shouldn't be to abandon our home for a new one – it should be to fix what we already have. This is perhaps one of God's greatest gifts to us and what did we do with it? WE DESTOYED IT! All in the name of PROFIT!" spat Dr. Callowell in disgust as the echoes of his last statement hung momentarily on the filtered, sterile air.

"Let's not reduce our carbon emission so we can save money on energy, let's fish the oceans until the ecosystems collapse, and let's not enact any population regulations until we are too far gone TO DO ANYTHING ABOUT IT! Despite having the most advanced brain in the animal kingdom, we are perhaps the most idiotic species to roam the planet! So what if we have to trim the human population back to a sustainable level. Plus, with this project, we don't even have to kill anyone! We just put them to sleep to live out the rest of their lives in a fantasy of their choice. Who cares if it isn't real – it's real enough to them! Heck, we deserve far worse for our crimes against this magnificent planet. So yes, I'm bitter that you asked me to alter our project to help the Exodus program. That pitiful excuse for a solution is draining our resources faster by using millions of tons of raw material. We are stripping our planet in order to help the rich escape it. What, do you think that they will be able to accommodate all 90 billion of us? WAKE UP Luke, the only people

that the Exodus program will save are those with deep pockets! THE SAME PEOPLE THAT GOT US INTO THIS DAMN MESS! Why should they be the first off the boat that they poked holes in?"

The doctor looked away from the window and attempted to regain his composure. He returned to his desk where he touched the delicate snow-white petals of an orchid that was sitting in a pot on his desk.

"You know Luke this little fellow is called *Dendrophylax lindenii* or the American ghost orchid. It's a remarkable little plant whose flowers smell like fresh cut Honeycrisp apples.

Unfortunately, they can no longer be found in the wild because their only pollinator, the giant sphinx month, is extinct. How easy was it for something so delicate and beautiful to be destroyed by something so ugly and selfish? So, I keep this plant to marvel at its beauty and to remind myself of the damage I must help remedy. Now, imagine my sadness when you came to me proposing that we use our project to help advance the Exodus program – the same program that helped destroy the habitat for this flower. I tried to convince you to stick with our original plan, but you were stubborn and persistent."

Dr. Callowell shifted his gaze from the orchid back to Luke.

"But then you asked me to test your new protocol on yourself. You thought you had solved it, and you knew that standard procedure would delay your research for months. So you thought you would try it out first to speed things along."

The doctor's face relaxed and a malicious smile tugged at the sides of his lips.

"So you know what I did? I told myself that I would be doing us both a favor. I would go along with your experiment in order to ease your conscious about killing your girlfriend, and I would get rid of the last obstacle standing between me and the true potential of our research. The ironic thing is that your idea actually worked. Under your revised protocols, your brain didn't decay despite being put under for a month. The only side effects were a little amnesia and confusion, which subsides after being off the 'dream drugs' for about ten hours."

The doctor walked around and sat on the front of his desk smiling broadly at Luke.

"Do you know what the best part is? You have been off of these drugs for about four hours.

Even though you're regaining your memory, one of the drugs in the cocktail prevents you from being able to differentiate the real memories from the fake ones. I actually take full credit for that little development. We can't have our patients realizing that their fantasies are fake right?

Otherwise, they would go to sleep and not enjoy themselves. So my question is, how badly do you want the truth? Is it worth losing Cassadee all over again? Does reality matter when one world is suffering and one is bliss?"

Luke looked into the eyes of the smug doctor.

How did I ever put up with this sociopathic lunatic for all these years?

"Well this has indeed been fun, but if you wouldn't mind I would like to be taken to my office as quickly as possible."

18 – John

Dr. John McGreer had worked alongside Lucas Shepard for years. John had been involved with the Morpheus Project since its onset roughly 10 years ago. He had worked under Dr. Shepard administering doses, collecting data, and even helping the renowned doctor design the complex protocols. So, when John had heard that Dr. Shepard had taken a leave of absence, he was happy that his boss had finally decided to take a prolonged vacation with his girlfriend. While he was glad his trusted advisor was spending some alone time with his significant other, he was also rather upset when he learned that he was left under the supervision of Dr. Callowell. It certainly was one of the longest two months of his life.

Since then, John had organized the data, drawn up the necessary statistical analyses, and cleaned his boss's office. He did anything that would allow him to keep busy and retain his sanity.

Thus, it was a shock when Dr. Callowell burst in to the office followed by a rather ragged looking Dr. Shepard.

"Luke, welcome back. I trust that your vacation was time well spent?" Luke looked at the young man and tried to put a name with the face. "Uh...Dr. McGreer?" asked Luke.

"Why yes Luke, don't you remember me?"

"It has been a rather hectic couple of months. Look, I have a couple of things to ask of you before I leave."

"Why, yes of course. Anything you need sir."

"Wonderful, first of all you need to put in a request for a transfer. I believe that my research is about to conclude and I want you to get into a facility of your own where you can conduct your own research. I've already written a letter for you so you shouldn't have any problems. It's been a pleasure my friend, and I'm glad you've been here to help me," commented Luke truthfully as he walked around to his computer.

"Uh, thank you Luke. Are you going somewhere?"

"Let's just say that I think I'm going to be able to retire after we send out the results from the last batch of data. Now here is what I need you to do."

19 – Cassadee

After several hours the sleeping pills appeared to wear off as Luke slowly began to regain consciousness.

"Hey sleepy head were you able to find your answers?" Cassadee asked as she sat Luke's head down in her soft lap.

Luke looked up at her. He basked in the last ringing notes of her voice as the afternoon sun warmed his face.

"I was able to get enough," was all he managed to say.

"So are we good? Can we move on without having to wonder whether this is a dream?" asked Cassadee as she gave him a smile that could have melted a heart of stone.

"Yeah, we're good," replied Luke as he got up and hugged her for what seemed like forever.

As they held each other tight, Luke could feel her heart reverberations as her hair brushed gently against his face. They may be insignificant details, but Luke cherished every bit of their connection together. It is the connection between them that made Luke feel truly alive.

"Hey, I think I finally realized the reason why we are out here."

"Now is that so?" inquired Cassadee curiously. "What is the reason for me falling into an icy river in the middle of Colorado?"

"It's a long story. Well...actually, it's not that long, but it made me realize that you and I can help each other with our projects."

Cassadee grinned and rolled her eyes.

Now he listens to me. Men, why don't they ever listen the first time we bring up the obvious?

"Okay Luke, let's hear what you have to say."

20 Years Later

After a three year journey, a middle-aged man stepped off the shuttle transporting the 141st wave of settlers to the Galilean moon of Europa. The man walked down the gangplank and marveled at the beauty of the foliage that the lush planet had to offer.

This must have been what Earth looked like at one point. At least this time we have a second chance to get it right.

Beside him walked a dark-haired woman of roughly the same age holding a baby boy in her arms. The boy held a small toy Brachiosaurus, occasionally nibbling at one of its feet. The man looked back at the shuttle with its numerous Shepherd Pods that had carried them across the vast expanse of space. Above them loomed the massive red, tan, and orange bands of the immense gas giant that Galileo Galilei had once observed through his telescope over 365 million miles away. As the shuttle departed, the couple looked across the vast expanse of wilderness and continued toward what would be the beginning of their new home together.

ABOUT THE AUTHOR

Ryan Eller, Ph.D. is a lecturer at Indiana University Purdue University Indianapolis, IN. His research focuses primarily on utilizing increasingly powerful computational tools to extract and analyze genetic information from human DNA. Questions I'm currently studying range from the medical field to forensics to population genetics.