ISSN: 2641-1911
DOI: 10.33552/ANN.2022.13.000812
Archives in Neurology & Neuroscience
Iris Publishers

Review Article

Is Autonomy Worth a Bother in Neuroscience?

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Received Date: November 04, 2022

Published Date: November 15, 2022

Abstracts

This is a sketch that reviews the range and ongoing limitations and lack of concern for certain anomalies confronting neurosciences generally. As such, while brief it extends beyond the application of strictly biomedical engineering applications. To wit the sketch brings to fore something of the range of neuroscience generally beginning with the work of Sir John Eccles, a friend who won the Nobel prize in Medicine and physiology and who himself had concerns that reach beyond the biomedical alone and yet were central to his thinking in the experimental work he completed leading to his award. In this sketch, Eccles work is honored by putting on the table concerns that a robust study of neurology can ill afford to ignore either in making further progress as an empirical science but especially in determining the role of concepts of autonomy in human action. If autonomy is not dispatched by determinist, neuroscience then it continues to matter in psychology and human management studies generally.

Keywords: Autonomy; Consciousness; Free will; Phenomenology; Decision-making; Amygdala; Pre-frontal cortex

Does the Concept of Autonomy Still Serve a Purpose in Brain Science?

Two events serendipitously came together to make consideration of autonomy a live issue for me professionally. The first was a relationship I was fortunate to begin with Nobel Laureate in Medicine and physiology, Sir John Eccles. Our friendship involved both dinner engagements and handwritten correspondence over a few years prior to his death. The second event was that during that same time I was teaching a course cross-listed in psychology and philosophy titled Neuro-philosophy. The textbook for the course was Patricia Churchland's landmark text of the time, Neuro-philosophy (1986) [13]. Less impactful but no doubt still relevant to my developing cognitive repertoire included materials I read and developed for several cross-listed courses as follows: Philosophy of Cognitive Science, Philosophy of Artificial Intelligence and Philosophy of Sex and Love. All of these intellectual adventures brought into high relief the increasing exhaustiveness of empirical results in psychology and most especially neuroscience (Blanke, et.al., 2002; Wagner, 1988b; Wagner, 1982) [4,50,48]. At the same time that these undertakings directed attention to the limits of empirical appraisal and explanation (Wagner, 1988a) [49]. Human action (as opposed to mere behavior) was discussed by increasing numbers of researchers and seemed to require continued focus on behavior and intention both (Russell, 2019; Wagner, 2003) [42,51].

Churchland and other of similar ilk (Damascio, 2021: Heisinger, 2021; Eagleman, 2015) [15,24,17] are convinced that there is no free will in the sense normally associated with Kant's originating notion of autonomy. In contrast to these deterministic – thinking authors, Eccles was equally convinced that autonomy existed (1980) [18]. In his hand-written letters to me accompanying a paper he presented to the Royal Society and again accompanying reprints of several articles, Eccles explained in these letter that his employment of Benjamin Libet's timing studies of neural processing were sufficient to demonstrate that something animating human action extended beyond the machinations of physiological response to physical

stimulation (Eccles, 1980) [18]. This additional something Eccles boldly claimed was soul in action or, as he wrote in his dialogic manuscript written with Sir Karl Popper, free will (Popper & Eccles, 1984) [39]. Eccles' notion of soul as he divulged to me on numerous occasions, was much in line with what any religious believer was likely to describe as soul across the centuries.

In contrast to Eccles interpretation of Libet's work, Libet himself thought of his own work as showing there is no need to postulate any non-material substance to account for human behavior. Libet argued that any postulation of non-material causative agency muddied the waters of empirical research (Libet, 2005) [29]. In this, Libet is right. On the other hand, if such non-material agency exists then to limit refence to it for the convenience of tidier empirical explanations is problematic as it defeats the purpose of truth-seeking about human action as individuals and in cooperative engagements (Smith, 2008; Wagner, 2003) [51]. In either case adding additional conceptual baggage or trimming conceptual baggage suggested that extraordinary claims about human action must demonstrate their utility by securing the obvious elements of ontology demanded by scientific naturalism (Libet, 2005: 131-152) [29].

If notions of free will can be abandoned can dismissal of autonomy be Far Behind?

Eccles never proposed a bodily location for soul. No pituitary gland localization, nor any other proposed localization as Descartes famously proposed. Instead, Eccles believed the soul was present throughout a human body (personal communication, 1985) [19]. Eccles opined that following amputation for example, a patient's experience of the amputated limb's presence was likely a resonance of the soul's sense of diminished extended identity. Eccles believed when limbs are removed full embodiment of soulfulness was compromised. While soulfulness was compromised it did not eliminate the soul's potency in the exercise of free will nor lack of familiarity of its previous extension through a larger body according to Eccles (Popper & Eccles,1984) [39].

A Review of the Concept of Autonomy is about More than Making Room for Metaphysical Agency in a Science of Mind and Action

In relaxed informal dialogue, free will for Eccles was cast in traditional Kantian terms as the capacity to make decisions based on good reason. Unsophisticated readers may jump at the opportunity to cast dispersion on the term "good reason." After all, the dribble about what may be good reason for one person may not be accepted as good reason to another has become so wildly ubiquitous in a recklessly expanding set of contexts, it seems to now be somewhat an article of faith in a nearly universal religion (Larsen, 2022) [28]. However, to many philosophers and psychologists good reason is evidenced by cautiously identifying assumptions, aggregating data and other observations managing all through valid strategies of inference and statistical approximations. These defenders of normative cogitation explain that what makes a reason good is that it implies implicitly or otherwise the most apt path to fulfillment of some goal (Pinker, 2022) [37].

Whether in empirical science, applied social engineering or, philosophy, every reasoner's purpose aims towards investigation and decision-making whose utility is evidenced by its truth approximating promise. Consequently, good reason can be, is and, will continue to be well-studied and differentiated from incompetent inferencing. Epistemic strategies favored by fiat and in the absence of truth-seeking purpose are unstable and all too often self-defeating in the end. Indeed, chaos and complexity theory both suggest the swirls of noise in any inferential system is self-destructive just as swirls are to uniform material processes. Self -correcting approximations are normatively designed to minimize the effect of noise and these approximating strategies are selected by autonomous decision-makers (Palmer, 2022) [38].

Submitting to the claim that every person has their own "good" reasons would imperil scientists identifying some accounts of experiment and theory as necessarily inconsequential. Such reckless dismissal of the normative nature of autonomous reasoning would silence all scientific discovery and prudent behavior in daily life. Much of psychology embraces the guiding heuristic of autonomy in human behavior. And, even as neurology leads increasingly to determinate constructions of human nature neither of the sciences license the recklessness of relativists disemboweling the normative value of "good" reason with their claims that all reasons have equal value.

Willful initiative, designated here as action refers to behavior and intention as functionally responsive to each other. Functional responsiveness demonstrates what for all practical purposes looks like an ability to act autonomously. Action is also responsive to environmental and epigenetic contaminates. Action can be both compromised and improved upon. Human mental, physiological and social systems are necessarily complex and chaotic. Analogous to weather prediction, human nature can be studied and render probabilistic tendencies but as the Lorenz equations show that the role of noise in any complex system can never be eliminated even in the most predictive of models (Palmer, 2022) [38].

Approximation is the best that can be achieved even in the most determinate but complex systems. For example, weather prediction is neither haphazard guess nor amenable to full explanation through a determinate set of equations. The same holds true for human nature. Human neurological and psychological nature comprise two complementary complex systems that deliberate and skilled investigation can make more predictable but never fully revealing (Palmer,2022) [38]. Consequently, reference to willful initiative is intuitively responsible in the work of psychologists but perhaps less so in the limited frame of reference neurologists and other neuroscientists identify as their domain of professional interest (Bratman, et.al, 2015; Perez, Carreiras, Dunabeitia, 2012: Stone, Baron-Cohen, & Knight, 1998; Chalmers, 1997) [5,36,44,11].

Resiliency in the literature of free will and autonomy: Heuristic or plausible source of causation?

Defenders of free will continue today (Campbell, Mickelson & White, 2023: Wagner & Siegel, 1988) [7,46]. In contrast, the use

of language referring to autonomy may be cautiously employed in the folk psychology humans use to understand their affairs and ordinary engagements with one another. Such use of the heuristics of folk psychology prove heuristical for the time being but does not eliminate the need for the more technical and exacting language of neuroscientists (Dennett, 1991) [16]. Dennett and others astutely distinguish themselves and their investigatory processes from the informally but heuristically valuable language of folk psychology for coordinating and managing much day-to-day human engagement. Dennett (1991) [16] describes free will as unpredictability of action. In short, Dennett anticipated free will as system noise and nothing more mysterious.

To Dennett, (1991), Eagleman,(2015); Damasio, (2020) [16,17,2] and many others the fact that free will advocates such as Eccles, Descartes, and Kant were each theologically committed to soulfulness cannot be ignored when evaluating the latter's insistence on the existence of non-material free will. Nonetheless, the possibility of an animating free will has not yet been forfeited (Chalmers, 1997) [11]. Alfred Mele for example, has diligently defended the vitality of free will from oppression. His defense of free will in the face of neurological evidence to the contrary and vigorous attacks on the idea of free will are extensive. Mele assembles arguments exposing the flaws in deterministic theories and has also amassed much empirical evidence supporting the causative role of autonomous initiative. This data deserves respectful review (Mele, 2015) [31].

There is no intention in the remarks in this review to either defend or to promote a grand concept of free will. However, the literature referred to above does set the stage for re-evaluating the concept of autonomy in technical brain science (Goff, 2022: Gunther, 2022) [20,21]. In social theory, the concept of autonomy continues to play a vital role and the bio-medical sciences autonomy is central to theorizing about professional ethics. For example, reference to autonomy is often pivotal in deciding when, how and what patients and their families should be told regarding patient treatment or its cessation. Practical concerns of ethics at every level of social engagement demand appropriation of something like autonomy to coordinate cooperative engagement (Bratman, et.al. 2015) [5]. The concept of autonomy is established not for identifying "good" reason in any metaphysical sense but rather the more modest ambition of aligning action initiative pragmatically with decision-maker purpose (Larsen, 2022; Seth, 2021) [28].

The concept of autonomy does not explain but does accommodates much of the descriptive literature on action in the neurological and psychological literature both (Mele, 2015) [31]. The literature suggests that in the neurosciences autonomy deserves attention to explain the capacity of an agent to override an unwise decision. Again, Mele recounts an abundance of empirical literature that seem to suggest that while conscious awareness of decisions to act follow brain mechanisms already animating an act. This something Mele calls autonomy enables the actor to override neural mechanisms leading to actions in standardized predictable cases (Mele, 2015) [31].

Most notably, decisions overriding standard patterns of brain initiative are exhibited by demonstrating timing sequence irregularities demonstrated in Libet-like experiments. For example, experiments based on Iowa Gambling Task show that the brain seems to sense disconfirming patterns of utility in a card selection challenge forty plays before the conscious awareness of the player becomes suspicious of certain obvious trends. It takes another thirty rounds of play for players to then decide to change their pattern of behavior (Wang, Xu & Zhou, 2014) [53]. In addition, laboratory research has shown that while the actor's response to a cue is often subsequent to the cue presented, the timing differential in actions wherein the actor is challenged to override a decision is consistently faster than current statistical approximations predict (Mele, 2015) [31] If in split-second laboratory conditions an animative initiative can be stopped in its tracks within the brain then there seems to be more to command center executive activity than more determinate models acknowledge (Mele, 2015) [31]. The interruption of neural initiative should not be mocked as the action of some homunculi but rather accepted merely for what it indicates given the evidence at hand (Mele, 2015) [31]namely, an ill-defined capacity to interrupt standard brain-processing activity - autonomy. Beyond that there is not much more anyone can say about the existence or non-existence of autonomy. These murky waters of conceptualization bring to mind Ludwig Wittgenstein's famous quip "What cannot be said cannot be whistled either." Of some things we must remain silent…for the present.

There is sufficient evidence that neural processing activities as presently framed in laboratory conditions are subject to overriding even in well-structured experimental cases (Gunther, 2023) [21]. Is this because of some unidentified agency or, is it to be expected as simply experimental or statistical Lorentz-noise interrupting a signal and nothing more?

Failure to investigate the role and sources of such intervention leaves too much to be accounted for lingering in the shadows (Wagner, 1986) [45]. There are issues neuroscience cannot explain …yet. (Wagner, 1982) [48]. For example, the concept of consciousness related to EKG activity as a definition of brain death has been challenged considering some patient recoveries who had met the criteria of brain death and yet survived. Moreover, such events underscore that consciousness and free will may be conceptually independent of one another for good reason.

Are there Physicalist Grounds for Uniquely Phenomenological Experience?

In philosophy of mind, there is the famed case of Mary (Jackson, 1981) [26]. Mary is proposed as a genius who knows all there is to know about brain activity. She can produce an equation for each and every brain process. All her life Mary lives in a world of blacks, greys and whites. On her twenty-first birthday she leaves the premises for the first time and confronts all the colors most people take for granted. In seeing colors for the first time is she experiencing a phenomenological experience constitutive of new knowledge? Mary's brain processes the new stimulation of visual input as all animal brains do. She knows every step happens and

how it happens. But is there a residue beyond brain activity playing a role in her new experience?

In short, if is there something beyond brain processing that affects Mary's direct encounter with colors then the experience extends beyond the purview of neurology and relies on psychology and perhaps something more to make sense of the experience. Mary's phenomenology of experience beyond the range of neurology and the best of scientific psychology?.

Imagine Mary's first romantic kiss after experiencing the phenomenology of a colorful world. While she was raised in a place of black, white and greys the people surrounding her exhibit those colors as well and no others. Presumably, the thought experiment can be extended to Mary's kissing and being kissed by parents. Maybe in her teen-age years when visited by another teen, Mary experiences a kiss or two but nothing zippy as people expect when in the throes of romance. Mary takes all this into stride. Imagine trying to account for the experience of a kiss following her experience of a colorful world from someone who dazzles her in some unexpected and weirdly thrilling way. Remember, there is nothing about brain processing that Mary does not know. The exhilaration could be tracked through her brain. Imagine limbic system stimulation, frontal and prefrontal lobe activity, cortex routes seeming bringing message together in the community of Mary's brain. But does Mary have more before her mind now in a phenomenological sense than brain processing can account?

As a result of the phenomenology of special romantic kissing Mary may find herself stumbling about intellectually in the realm of folk psychology to make sense of it all. Every romantic kiss is an instance of tactile and kinetic stimulation accompanied by neural processing of context but there seems to be more. (Caccioppo 2022: Wagner, 2018) [9,52]. Is there?

Add to the "Mary examples" the differing experiences of people when encountering the same products of fine and performing arts in ostensibly the same or highly similar contexts. In all these cases there are nearly identical brain process. Perhaps all of these phenomena can be explained in physicalist approaches to the brain sciences but, any claim that the route to full explanation is inevitable is premature. The continued explanations of folk psychology found in popular psychology magazines or in more esoteric philosophy journals continue to reveal much about daily human action (Chalmers, 1997) [11].

Do thinking models of cognitive science and artificial intelligence provide a sufficient range of models for understanding human nature while all wait for the neurosciences to catch up? At present, AI researchers are struggling with the creation of driverless cars. Getting cars to navigate highway and recognize standardized sign is easy enough but what keeps such cars off the highways is the inability of programmers to instill the "right-minded" phenomenological responses in computing brains when unexpected matters prompt reliance on phenomenological concerns of right/ wrong, good/bad and other stitching that holds together the fabric of phenomenological experience (Burns & Shulgad, 2022) [6]. The phenomenology of experience along with each driver's sense of folk psychology that preserves reasonable coordination among travelers on highways and by-ways. Note too even the term well-being is itself a bit of folk psychology and not a computational terminal for managing behavior (Lightman, 2023; Rovelli, 2022) [30,41].

Constructing right-minded rules for driverless cars is a Herculean task. When moral choices are added to the machines decision-making protocols, responsible modeling comes to an abrupt halt. Herein the need to preserve folk psychology for prudent human cooperation is apparently unavoidable.

There is something called the Trolly problem conjured by philosophers but which has fascinated psychologists as they try to sort out why humans chose certain moral directives rather than others. It shows at the very least that people do not simply rely on their numerical sense to decide issues that are conspicuously moral. In the trolly problem most people from around the world show sensitivity to things such as the difference between killing someone – for any reason, and letting others die in the absence of the individual's intervention.

The neurosciences have proven utility in vast stretches of biomedical interest but scope of the sciences physicalist ambitions accounting for free will, autonomous reflection and so on, are far from being addressed at this point (Russell, 2021) [42]. Most people address the trolley problem by doing something other than mere calculation. The Trolly problem is well researched and there is not room here to lay out the problem and the date it has recovered other than to make the claim it shows most people do more than calculate solutions to moral problems.

If the Concept of Free Will is Unnecessary is there Any Reason for Defending the Concept of autonomy?

In neurology as in other sciences, the quest to reduce one science to another and capturing evidence that enables scientists to reduce detail to more encompassing albeit simpler formal models model is common (Churchland, 2013) [14]. Can folk psychology be reduced to scientific psychology? Can scientific psychology then be reduced to neurology?

Many readers probably remember psychologist Howard Gardner's audacious claim in his book on cognitive science in the 1980's, wherein he predicted psychology as a science would disappear and be replaced by cognitive science by the year 2000 (Gardner, 1985) [19]. The year 2000 is long past and there has been no reduction of psychology to cognitive science nor cognitive science to neurological modeling. No gates of research have been closed in any of these areas. Robust reductivism remains an intractable goal at present. As a consequence, it is difficult in this context, to resist Douglas Hofstadler's opining years before Gardner's prediction that reductionist modeling of human mental life is akin to "...the hand grabbing itself (Hofstader, 1979) [25]. The village – like architecture of the brain make securing a selective model for human creativity and autonomy better than the heuristical models folk psychology utilizes. In particular, there are many who study human collective behavior who are especially disparaging of attempts to circumvent sticky issues such as free will and autonomy (Mele, 2014) [31].

Brain sciences have a long way to go to account for the brain-to-brain entanglement models that could replace the heuristical models of folk psychology.

For those engaged in public policy theorizing seldom attempt to dismiss the role of autonomy in many decisions despite the apparent role of culture to account for group behavior and the allure of group interaction in actual decision-making. In short, culture matters but it is not all that matters. People singularly do things for reasons and not just as the result of causes. If all human action can be explained in determinate fashion or by probabilistic laws then two consequences for the concept of autonomy follow. The first is that the very idea of ethics as ordinarily understood is an illusion. There are no capacities that people are duty – bound to preserve or exercise.

The neurosciences pulled back the curtain on much that once was considered unique to conscious, intentional reasoning. From social engagements to cooperative ventures of various sorts from teamwork in science to romantic connections the role of brain-processing has become more transparent (Harley, 2021) [23]. In addition, psychological patterns of association through PET scan monitoring of decisions accompanying neural activity is so much more precise and more exacting details of brain -processing are being revealed through fMRI tracking. Yet not all social scientists believe that so much of mental life can be explained mechanically. For example, Krebs cycle regulation as a template for biophysical energy utilization is more than enough to threaten most ordinary people's desire to imagine homo sapiens as grandly as they would like to imagine and as superior to other animals (Lane, 2022) [6]. Yet the very things that may intimidate lay person's desire and inclination to imagine human self-management as special is often the same scientific evidence that leads scientists to overestimate the exhaustiveness of data strongly suggestive but not yet determinate of the full spectrum of human mental life (Bilalic, M. 2017) [3]. For example, Karl Sigmund demonstrated there is a strong case to be made for the evolution of cooperativeness of animals ranging from bacteria and viruses through the eusocial insects to herd animals of all sorts and then homo sapiens as an especially cooperative herd animal due largely to the evolution of its richly textured language (Sigmund, 2010) [43]. Yet what explains an evolution of language that makes possible so much more than mere signaling? What makes human language capable of talking about quantum leaps, entanglement, infinities, trust, dignity, honor, praying, aesthetic evaluation of detail, respect or economic and civil rules for communal regulation?

It is not just that humans ponder abstractions but that their abstractions if even evidenced by electrical modulation within the brain have an "aboutness" far exceeding other strategies of non-computational cogitating. Regardless of how one might tolerate the ruminations of Eccles and Mele and other defenders of free will, there is the undeniable fact that humans act autonomously (Eccles, 1980) [18]. If the seemingly unexpected and unpredictable action of humans is caused by idiosyncratic, Lorenz-like fractal transactions leading from noisy coincidences to noticeable chaotic events, the disparate unregulated paths that appear in human behavior may not as Dennett and Churchland have always insisted represent willful or genuine deciding to act upon good reason (Mele, 2014) [31]. While all that may be so, when tweaked the folk psychological definition of autonomy just a bit, a more modest definition of autonomy leads to grander consideration of the irreducible nature of autonomy emerges. What if instead of defining autonomy as the capacity to make decisions based on good reason, autonomy defined instead as the capacity to override a decision?

Mele refers to several experimental protocols that seem to confirm brain activity can be willfully disrupted. This is not a matter of a Kahneman slip into a system of slow thinking as opposed to fast thinking (Kahneman, 2011) [27] but rather as an other- than – material choice to disrupt the brain's standard patterning so abruptly, on a moment's notice that there seems no grounds for insisting that some other neighborhood of brain processing has sent an alarm to the impacted brain processing centers.

If such disruptions are possible on the spur of the moment could there be other murky abstractions acting heuristically to force recursive regression to have another go at traits such as integrity, respect, honor, self-discipline and such are mere epiphenomena, heuristics evolved to track what no one has any choice over and hence no duty to attend in individual or communal preservation. Second, human action as that described in terms of autonomy and moral language is nothing more than brain networking that by evolutionary restrictive chance leads to some behavioral patterns that evolved as have all human traits. Humans avoid poisonous foods generally not because of conscientious hygiene but rather because humans learned about toxicity as they and other animals have learned to jump aside hearing a sudden nearby of a threatened snake. In short, the illusion of autonomy and all the moral apparatus associate are simply evolved folk psychological spandrels. These folk psychological concepts play no role in determining action (Churchland, 1986) [13].

Yet despite the ambitions of the reductionists, it is not clear that all human action can be explained by the unfolding technical apparatus of the evolving brain sciences. And of course, if all is evolutionarily evolving, so much for brain science since surely it reduces to no more than evolved habits, behaviors and signaling mannerisms of homos sapiens. Conspicuously however, there are mental events currently at least, seem intractable to explanation in formally articulated brain science.

If autonomy still can serve as an object of brain science study What about other slippery Concepts of folk psychology?

While most brain scientists are unsympathetic to any ghost in the machine explanations of human mental life, there are those like Andrew Newberg. Andrew Newberg is a neuroscientist at the University of Pennsylvania who studies prayer the exotic experience of prayer. Prayer, Newberg acknowledges can be successful or unsuccessful. In successful prayer there is cognitive activity in the pre-frontal lobe and activity in the limbic system especially the amygdala or so it seems based on Newberg's early studies using PET scans. In unsuccessful prayer the subjects studied exhibit activity in the prefrontal area but little detected on PET Scans in the limbic system. The subjects Newberg and other neuroscientists

use for such studies include Tibetan monks, cloistered nuns – people who live lives committed to prayer. The subjects for these studies all acknowledge there are times when their prayers seem successful and other times when their efforts seem inert- no sense of communion with something greater than self. It turns out that there is a distinct correlation reported between the PET Scan image and successful prayer and a different pattern in cases reported as unsuccessful. Newberg and other neuroscientists believe there is a standard footprint in PET scan imaging in cases of subject's report of successful prayer (Neuberg, 2018) [33]. Pet scans are tracing patterns of blood flow and are not exacting as studies that have more recently been done with fMRIs but which so far seem indecisive (Ochsner, Silvers & Bubble, 2012) [35]. The key point here is not whether or not there is some communication with the supernatural but only that there is evidence that when engaged in successful prayer subjects can apparently override natural tendencies to divert attention from the focus of sustained prayerful states of mind. In short, such studies lend support not so much to any theological commitment but do add credibility to the idea that humans have the capacity to override natural patterns to process information differently as an act of autonomous will (Lightman, 2023; Perez, Carreiras, & Dunabeitia; 2012; Cacioppo.2022) [30,36,9].

Other neuroscientists have studied aspects of romantic thought (Carsten, DeDreu, Baas & Boot,2015; Ortigu, 2007) [10,34]. Again, the studies are aimed at articulating what is afoot in such experiences which again seem to reflect human capacity to override a natural brain processing tendency (Cacioppo, 2013) [8]. As noted above, there is a difference between kissing that is disrupting of natural tendencies and kisses that seem no different in tactile and kinetic stimulation from other sorts of contact between bodies. In addition to brain elation evidenced in the limbic system, the phenomenology of successful romantic kisses is absent in unsuccessful, non-romantic kisses (Wagner, 2018) [52]. At the very least there seems to be the possibility that an energy not previously acknowledged in laboratories, accounts for the feel of successful kisses as opposed to unsuccessful kisses and that feel of autonomous command overrides natural tendencies of nerve stimulations in general (Goff, 2022; Blanke, et.al. 2002) [20,4]. The suggestions in this review are not intended as robust argument. But, when reviewing neuroscientific investigations of various sorts it is imperative to acknowledge that there could be phenomenological responsiveness currently inaccessible to investigatory strategies. Such acknowledgment does not constitute a prediction of ontological certainty. In fact, the phenomenological may remain impenetrable by science for the foreseeable future.

Conclusion

Summing Up: Researchers must Continue to Use Broad nets for identifying loci of Study

This cursory review of the neuroscientific literature is meant only to keep the door open for the study of uniquely human experience and prevent ruling out such studies by fiat. The ontology of human mental life must be allowed to unfold free of imposed naturalistic contrivances insisting humans are no more than many other animals in what the say, think and do. The richly textured speech of humans demonstrates extraordinary difference between humans and other species (Chomsky, 2016) [12]. In short, the folk psychology of human experience must continue to be utilized alongside scientific psychology for practical matters pertaining to human collective life spanning economic, scientific investigation, moral and programmatic political concerns and more, much more. As Nobel Laureate Kenneth Arrow pointed out long (1950) [1] ago even when acknowledging autonomy their may be decision processes that neither evolved brains nor autonomous psychologies can solve. Scientists must do what they can and respect and acknowledge what seems beyond access – for now.

Acknowledgement

None.

Conflict of Interest

No Conflict of interest.

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