

# Physicalism's Self-Refutation Is as Implicit as Its Agent-Causation Denial (PSIAD)

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† Formatting: Small caps denote technical term introductions. Unless otherwise noted, all emphasis in quoted material is added. Appendix mentions are generally hyperlinked to the corresponding appendix, the title of which links back to the initial corresponding mention.

## Abstract

PSIAD's core is a two-part proof centered on the concept of GENUINE PERSONAL CONTROL (GPC)—a concept often referred to as AGENT-CAUSATION, VOLITION and CONSCIOUS WILL. Lemma 1 shows that GPC denialism is self-refuting, while Lemma 2 shows that physicalism/materialism necessitates GPC denialism. Thereby PSIAD at large shows physicalism to be self-refuting. I.e., It shows that GPC stems from a different foundation and that accepting any corresponding counter (by way of COMPATIBILISM, EPIPHENOMENALISM, QUANTUM INDETERMINACY, EMERGENTIST/NONREDUCTIVE PHYSICALISM, PROPERTY DUALISM, ARGUMENTS FROM INCREDULITY, etc.)—provably entails needlessly abandoning fundamental principles of both physics and logic. The appendices then survey the literature to underscore supplementary points such as the *long*-untenable state of contemporary physicalism and the great scientific cost of continuing to neglect FOUNDATIONAL DUALISM in favor thereof.

Keywords: Cartesian Substance Dualism, Compatibilism, Determinism, Emergentism, Libertarian Free Will, Materialism, Mind–Body Problem, Mystierianism, Panpsychism, Philosophy of Mind

No. I regard consciousness as fundamental. ... We cannot get behind consciousness.

—Max Planck, The Observer (Sullivan 1931b), in response to whether  
“consciousness can be explained in terms of matter and its laws”

Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else.

—Erwin Schrödinger, The Observer (Sullivan 1931a) <sup>2</sup>

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<sup>2</sup> The two Nobel laureates—renowned for originating (Planck) and formulating the central equation of (Schrödinger) what is widely regarded as humanity’s most successful scientific theory (see [Appendix O](#))—stated this conclusion nearly a century ago. A growing number of academics have since come to concur (see [Appendix A](#)).

## Introduction

Even with some slow corresponding change underway<sup>3</sup>, to target physicalism (as promised in abstract) still entails challenging a foundational premise of modern scientific discourse—leaving little that a paper like PSIAD<sup>4</sup> can take for granted. Hence, despite its rather concise<sup>5</sup> self-sufficient core argument, said core is supported by several layers of auxiliary backing. These include: several elaborative segments (providing further specificity), a 10,000 word appendix section (providing extensive supplementary citations) and the upcoming companion book (delving deeper yet into various adjacent proofs, potential counters thereto and suchlike).

It should also be clarified that a later volume of the overall corresponding *Two Natures* book-series—helps elucidate how the scientific approach to belief formation is nevertheless objectively superior to the religious one<sup>6</sup> and why none of this work elevates religious explanations above genuinely scientific ones. Despite its metaphysical implications.

## Further Disambiguation of “Genuine Personal Control” (GPC)

a. As meant here, GPC is synonymous with primary definitions of terms like VOLITION, AGENT-CAUSATION, SELF-CAUSAL DETERMINATION and [LIBERTARIAN] FREE WILL. E.g., OED aptly defines the latter as: “The power of an individual to make free choices, not determined by... *laws of physical causality*, fate, etc.” As distinct from:

- *Immaculately* free choice. Where on top of “not [being] determined by” preceding physical causes, choices are moreover *never even influenced* thereby.
- [PHYSICALIST] COMPATIBILISM. Where reconciliation of pure physics with free will is sought through the following redefinition/claim: *all* our motivations and behaviors are ultimately *preselected for us* by preceding physical causes, but while those preselected behaviors conform to those preselected motivations—we qualify as possessing genuine free will.<sup>7</sup>

<sup>3</sup> As exemplified in [Appendix A](#).

<sup>4</sup> [Appendix B](#) provides some additional context via its elaboration on this acronym choice.

<sup>5</sup> Its central contribution (Lemma 1) is 77 words long, while the core overall argument is <2,000 words.

<sup>6</sup> As also briefly covered in [Appendix C](#).

<sup>7</sup> [Appendix D](#) corroborates.

Instead, GPC would allow subjects who *are* regularly *influenced* by preceding physical causes, to substantively transcend being mere vetoless extensions/marionettes thereof.<sup>8</sup>

b. GPC can be further formalized/disambiguated via the following short alternative definition: the minimum requirement of reasonably resolving the TRANSCENDENTAL a priori paradox established in Lemma 1 (L1). Which is what ultimately keeps this term from being arbitrary.

### **Lemma 1. The Marionette-Scientist Paradox: GPC Denialism (i.e., the position that humans hold zero GPC) Is Self-Refuting**

S1. If humans indeed hold zero GPC, then we [are mere conscious *marionettes* who] possess *zero* capacity to *personally* verify the validity of *any* possibility whatsoever.

S2. Which would imply there being *zero* genuine human capacity to thus verify the zero-GPC possibility *itself*.

S3. *Any* claim of *any* such human zero-GPC verification, therefore proving *unavoidably self-refuting*.

S4. And when *any* verifiable reason for us to accept a possibility, proves unavoidably self-refuting—so, effectively, does that possibility itself.

### **Elaboration and Implications of Lemma 1**

#### ***Elaboration***

The above conclusion is so inescapable, because when a possibility inherently refutes *any* verifiable reason for us to believe therein—we are objectively left with *zero* verifiable reason to believe therein. The smallest possible amount thereof. This constitutes outright refutation by *any humanly-verifiable* measure; and as such, by any *scientific* measure.

I.e., GPC proves a brute, transcendental scientific fact—in the same sense that “brute facts of experience... do not need further justification” (Norton 2003, 668)—because:

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<sup>8</sup> On top of the key second GPC definition [Appendix E](#) supplementarily expands further yet—on what sort of criteria would help distinguish “substantive” from illusory in this case.

- a. GPC is the only coherent foundation (*sine qua non*) of genuine human verification and therefore of genuine human science (making it as empirically grounded as human science itself).
- b. Any human claim of having scientifically verified the reverse—proves necessarily self-refuting.

### ***Implication 1: ‘Compatibilist Free Will’ Insufficient to Resolve Paradox***

If all our motivations and behaviors are ultimately preselected for us by preceding causes<sup>9</sup>, then we still lack any “capacity to personally verify the validity of any possibility whatsoever.” At most, we are mere verification *instruments*; with corresponding accuracy hinging *entirely* on calibrations that we can never personally control. I.e., Our assessment will never be accurate, unless those preceding causes happen to calibrate us accordingly. Only genuine personal control offers any possibility of genuinely-personal such ‘calibration’/verification; and hence, of genuinely resolving the Marionette-Scientist Paradox (L1).

### ***Implication 2: Criterial Control***

L1 moreover implies<sup>10</sup> that we possess genuine personal ‘administrative’/‘building block’ type control over even the core selection criteria upon which our choices are based. Otherwise, ‘our choices’ would still be fully reliant upon those external precalibrations and L1 would remain unresolved.

### ***Implication 3: Incredulity Overruled***

As with Descartes’s COGITO, L1’s aforementioned *transcendental*, a priori nature—also overrules any incredulity-based counters (e.g., ‘how could this possibly work?’). Such counters were moreover likewise applied to quantum non-locality/superposition when it was first substantiated; stifling vital scientific progress had they been [illogically<sup>11</sup>] accepted.

<sup>9</sup> A definition corroborated in [Appendix D](#).

<sup>10</sup> As elaborated upon in L2.S1.1.1–2 below.

<sup>11</sup> Appendix [J.1.3](#) expands on said illogic.

*Segue*

Though it (of course) echoes previous work<sup>12</sup>, the proof contained in Lemma 1 above is apparently quite novel. The main contribution of Lemma 2 below however, is its *synthesis* of largely well-established arguments into a single unified proof. Its overall conclusion especially, certainly being nothing new.<sup>13</sup>

## **Lemma 2. Physicalism Necessitates GPC Denialism**

### **S1. GPC/Agent-Causation Is Fundamentally Incompatible with *Elemental* Physics**

Not only is this particular conclusion *deeply* uncontroversial<sup>14</sup>, but it can be substantiated on several key fronts.

#### ***S1.1. The Foundational/Ontological Front (Most Important)***

A cornerstone postulation of elemental physics (both classical and quantum) is:

No elemental physical entity can change its own dynamics (e.g., momentum, energy, path). In place of such AGENT-CAUSATION, all said dynamics are decided instead through EVENT-CAUSATION<sup>15</sup>. I.e., Through preceding physical causes which boil down to interactions from other such entities and the preset FUNDAMENTAL LAWS/PARAMETERS that dictate all<sup>16</sup> corresponding outcomes (including QUANTUM RANDOMNESS, uncertainty principle, etc.).

Not only is said postulation/preclusion a stark logical implication, but it has proven so ironclad over centuries of study as to itself have been buttressed into many of the most fundamental corresponding principles; all of which would be unprecedentedly<sup>17</sup> violated if pure elemental physics featured GPC. E.g., CONSERVATION OF ENERGY and THE FIRST LAW OF THERMODYNAMICS (energy cannot be created, only transferred), CONSERVATION OF MOMENTUM and NEWTON’S LAWS OF MOTION (momentum cannot be created, only transferred), UR-CONSERVATION LAW at large (*ex nihilo nihil fit*; ‘from nothing, nothing comes’), PHYSICAL CAUSAL COMPLETENESS and CAUSAL CLOSURE OF THE PHYSICAL (PHYSICAL[IST] CAUSALITY; all physical events are owed to fully-sufficient preceding physical causes).

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<sup>12</sup> From Epicurus’s CLINAMEN to Kant’s CONDITIONS FOR THE POSSIBILITY OF KNOWLEDGE to the ARGUMENT FROM REASON—all of which concern the tension between determinism and genuine deliberation.

<sup>13</sup> See [Appendix F](#).

<sup>14</sup> [Appendix G](#) expands.

<sup>15</sup> Ibid.

<sup>16</sup> See [Appendix H](#).

<sup>17</sup> [Appendix I](#) corroborates.

More precisely, the multiple levels on which GPC in pure elemental physics would unprecedentedly<sup>18</sup> violate each abovementioned principle, include:

#### *S1.1.1. Initial Self-Causal (Causa Sui) Thrust*

- a. Physical energy/momentum is required to *initiate* any change in a purely-physical elemental entity's [physical] dynamics.
- b. If all energy/momentum indeed long predates all current elemental dynamical changes and indeed only follows strict fixed rules, then (per *a* above) all said changes must be entirely attributable to preexisting physical causes; not said entity's own GPC. I.e., To event-causation, not [genuine] agent-causation.
- c. As such, the very initiation of any *purely-physical GPC* change in any such entity's dynamics, must entail said entity *self-generating* nonzero new *physical ENERGY–MOMENTUM*<sup>19</sup> from literal *nothingness*. (As, again, there is no other source/foundation it can come from in a *purely-physical* system.) Which would already clearly violate each<sup>20</sup> aforementioned fundamental principle.

#### *S1.1.2. Self-Determination Exacerbations*

If only done in a *blind/uncontrolled* way however, the self-generation of those INITIAL VOLITION THRUSTS alone—cannot constitute GPC. Said purely-physical elemental entity must also be capable:

- a. Of exercising *GPC* over how said thrusts are *directed*; i.e., over which *path* it subsequently takes. (Otherwise—instead of GPC—it is merely self-generating 'random dice rolls'.)
- b. Of moreover exercising such personal control over the *selection criteria* upon which said choices are based.
- c. And even of [re]assessing, modifying and creating new such criteria; down to the corresponding *building block* level; in a truly *personal*, meaningful way.

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<sup>18</sup> Ibid.

<sup>19</sup> The most straightforward confirmation of corresponding coupling is simply that GPC actualization requires momentum creation, which is impossible without energy creation ([Appendix J.4](#) confirms).

<sup>20</sup> Appendices [J.2–J.4](#) expand.



Otherwise said entity's behavior remains fully preselected by whatever prior causes determined said selection criteria; ultimately allowing said entity no more GPC than possessed by a complex RUBE GOLDBERG CONTRAPTION (i.e., none).

This compounds each violation established in S1.1.1 above, because these additional layers of control would—in turn—require those purely-physical elemental entities to self-generate far more energy–momentum yet.

### *S1.1.3. GPC 'Actualization Mechanism' Cannot Ultimately Be Physical*

Though this may already be clear from s1.1.1–2 above, listed below are two additional reasons why this conclusion is so particularly inescapable.

#### a. Physics: No Components, No Mechanism

i. Purely physical GPC actualization, would require some purely physical GPC-actualization *mechanism*.

ii. No mechanism [and certainly no *such* mechanism] can consist of a *singular* physical component.

iii. Yet an *elemental* physical entity must *itself* [by definition] consist of a singular component.

iv. Ergo, an elemental physical entity cannot possess a purely-physical GPC-actualization mechanism. And if it does possess GPC nonetheless, the corresponding actualization *must* be *nonphysical*<sup>21</sup> in nature.

#### b. Physics: No Criteria, No Meaning

Let us ignore the previous argument here and moreover (generously<sup>22</sup>) grant that both *PHYSICAL MEANING* and *PHYSICAL SELECTION CRITERIA* are feasible corresponding concepts to begin with. It is established via L1 (Implication 2) and L2.S1.1.2 above, that meaningful building-block-level (re)calibration of core personal selection criteria—is a requisite GPC capacity. This however, is logically impossible *under pure physics*:

<sup>21</sup> 'Nonphysical' need not necessarily be of entirely different composition than the physical, just radically/fundamentally so (Appendix J.1.3 expands).

<sup>22</sup> See [Appendix K](#).

i. Much as buildings cannot disassemble/reassemble their own foundations, purely physical entities cannot in principle perform *meaningful/personal* building-block-level reconfiguration of their own core physical selection criteria; because without core physical selection criteria physical meaning has no basis. I.e., Such [meaningful] purely-physical disassembly/reassembly of core selection criteria—requires said criteria. This INFINITE-REGRESS/HOMUNCULUS FALLACY precludes purely physical such entities from possessing said capacity and thus, from possessing GPC.

ii. The only hope of this criterial paradox being outmaneuvered, hinges on some innermost *nonphysical* ‘*x-factor*’ type component(s) providing additional corresponding degrees of freedom. I.e., On said entity possessing some *nonphysical* mind/consciousness which can manipulate *nonphysical* selection criteria—along with their building blocks—in ways that physical components/processes cannot in principle permit (again, per *i* directly above).

While any such nonphysical mechanism hailing-from and moving the physical, would implicitly violate each fundamental principle in question all over again.<sup>23</sup>

In sum of S1.1: And so, in *each* of those three cases (S1.1.1–3), *all* of those fundamental principles would be violated.<sup>24</sup>

### ***S1.2. The Empirical Front***

a. Nor, after many centuries of study, is there any [experimental or observational] evidence to the contrary. I.e., Of elemental physical entities possessing GPC.

b. All empirically-verified corresponding theories (in both classical and quantum domains) likewise leaving no room for GPC behavior in elemental physics.<sup>25</sup>

### ***S1.3. Even Precluded by the Very ‘Language Of Physics’***

The law/rule based mathematical ‘language of physics’<sup>26</sup> is *itself* fundamentally incapable of *computing/expressing* GPC. Because in order to be truly computable/expressible (rather than merely loosely-describable) via any fixed corresponding law(s)/rule(s), *x* must be strictly *governed* thereby. Even quantum randomness qualifies; as it is so strictly governed by

<sup>23</sup> Appendices J.2–J.4 expand.

<sup>24</sup> Appendix J.4 expands.

<sup>25</sup> Instead, leaving room for behavior dictated by preceding (deterministic and/or purely-random) causes only. (Appendix L expands.)

<sup>26</sup> Appendix M confirms.

underlying rules (e.g., physical causality, laws of chance<sup>27</sup>) as to allow quantum mechanics to be *the most* widely/accurately predictive physics theory of all time.<sup>28</sup> (And therefore also the most computable. Such predictiveness being impossible without computability.) If this were true of *x* however, *x* could not constitute GPC.<sup>29</sup>

In sum of S1: And so (per S1.1–3) the fundamental incompatibility between GPC and *elemental physics* is indeed profoundly verifiable on manifold such fronts.

## **S2. Physicalism: Elemental Physics = Sole Foundation**

A core postulation of truly scientific physicalism, is that elemental physics is the *sole* foundation of all existence; giving rise to everything else. (The alternative notion that existence arises from *two* distinct foundations—being the definition of physicalism’s primary rival: CARTESIAN SUBSTANCE DUALISM.)<sup>30</sup>

## **S3. Emergence of GPC/Agent-Causation Is Therefore Also Fundamentally Incompatible with Physicalism**

Given S1–2, scientific forms of physicalism bar themselves—in principle—from appealing to GPC *emergence*. I.e., Given that the sole corresponding foundation (elemental physics) is so steadfastly devoid:

- a. Not only of any feasible corresponding building blocks (S1.2.1).
- b. Nor only of any *proven* theoretical expression that would not aggressively exclude such emergence (S1.2.2.b).
- c. Nor of any experimental or observational corresponding evidence (S1.2.2.a).
- d. Nor even of so much as a language that would not fundamentally exclude this possibility (S1.3).
- e. But most importantly, of any way for said phenomenon to manifest without radically and continually violating many of its own foundation’s most quintessential laws/principles and basic logic alike (per S1.1).

Leaving any physicalist appeals to GPC *emergence*—intrinsically untenable. Whether they hinge on: QUANTUM RANDOMNESS/WEIRDNESS, the STRONG EMERGENCE and DOWNWARD

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<sup>27</sup> See [Appendix N](#).

<sup>28</sup> See [Appendix O](#).

<sup>29</sup> Because something so law-bound/formulaic is categorically insufficient to resolve L1.

<sup>30</sup> [Appendix P](#) corroborates.

CAUSATION speculations pertaining to NONREDUCTIVE/EMERGENTIST PHYSICALISM along with any corresponding PROPERTY DUALISM offshoot and so on.<sup>31</sup>

#### **S4. GPC Therefore Constitutes Utmost Physicalism Falsification**

And so, (per S1–2) GPC existence is staunchly incompatible with scientific physicalism’s sole foundation, while (per S3) GPC *emergence* is moreover just as staunchly incompatible with scientific physicalism at large. Which means that GPC would falsify *scientific* physicalism; while exposing any *remaining* physicalism iteration as *unfalsifiable/unscientific*. I.e., The highest degree of scientific falsification.

### **Results**

Lemma 1: GPC denialism proves self-refuting.

Lemma 2: Physicalism necessitates GPC denialism.

Therefore: Physicalism is self-refuting. Another foundation must also exist.

### **Discussion**

#### **Why PSIAD Demands Such Dualism Over Alternatives**

At most, PSIAD permits alternatives to partially complement this FOUNDATIONAL DUALISM (again, sometimes also referred to as Cartesian and/or substance dualism). Brief examples:

##### ***a. Milder Substance Dualism Forms: Insufficient***

Even forms where mind is acknowledged as a different substance from matter, but is posited to have arisen therefrom and/or to always be conjoined therewith (see [Appendix P](#))—fail to satisfy PSIAD’s separate foundation requirement.

##### ***b. Neutral/Russellian Monism: Would Only Add Dubious Monist Scaffolding***

PSIAD does not necessitate positing a speculative deeper common foundation to force the mental and physical foundations back into one. Doing so arbitrarily violates scientific

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<sup>31</sup> See [Appendix J](#) (e.g., J.2–J.3).

parsimony (Vodopyanov 2025), while failing to reasonably explain why the two prove so fundamentally distinct.

***c. Idealism: Overcorrection***

Similarly, it would be unfounded to claim that PSIAD demands a wholesale inversion from physicalism to the idealist view of physics as mere illusion or mental construct.

***d. Mysterialism: Defeatist Non Sequitur***

Nor does PSIAD prove GPC (and by extension, consciousness) to be too ‘unknowable’ for rigorous scientific study. Instead, it is such absolutist claims that prove self-negating in their own right. Scientific justification of the ‘unknowable’ label requiring utmost knowledge (about  $x$  and all corresponding possibilities), yet if anyone possesses such profound knowledge about  $x$ — $x$  is exceedingly unlikely to warrant said label.

***e. Panpsychism: As Complementary Redundancy Only***

PSIAD supports panpsychism’s view of GPC/consciousness as fundamental, but disproves *physical[ist]* panpsychism’s view of GPC/consciousness as fundamental *to physics*. The former alone however, merely echoes a key aspect of Foundational *Dualism*.

## **Conclusion**

Only one reasonable<sup>32</sup> conclusion remains. A foundation other than physics not only exists, but plays an intimate role in our conscious decision-making.

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<sup>32</sup> Appendix [J.1](#) elaborates further.

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## Appendices

This appendix section contains apropos citations and some supplementary arguments. Said arguments are mostly light elaboration on what is already implied in the main text. Whereas—aside from corroborating less-than-obvious basics—said citations serve supplementary reference and reinforcement purposes only. Hence its disproportionate use of consensus-based sources like encyclopedias and textbooks. As mentioned earlier, PSIAD’s core strength is intended to be self-contained (rather than reliant on either such secondary arguments or appeals to authority<sup>1</sup>).

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<sup>1</sup> [Appendix C](#) elaborates.

## Appendix A: Schrödinger and Planck Certainly Not Alone

a. The current point—along with various corresponding nuances—is covered at more length in Appendices J and K. E.g., J.2.4.1.e.ii (Churchland 2011, 17; 2014, 37): “We have here a gathering *consensus* that the... conscious... is something that the *physical* sciences... will *never* explain.”

b. Or per the *Royal Institute of Philosophy* (McHenry 2010, 16):

“We have come a long way in that the number of philosophers who no longer regard [the view that ‘consciousness [i]s something not explicable in physical terms’] as incredible has increased significantly. Given the stalemate in explaining consciousness in contemporary philosophy of mind, even panpsychism has been re-introduced into mainstream by the likes of David Chalmers, Galen Strawson, David Skrbina, and William Seager.”

c. As is further echoed in *Psychology Today*, by the cognitive scientist best known for discovering the SUBLIMINAL SENSORY BUFFER STORE (Pang, 2024):

“[Enough] scholars have suggested that [consciousness] is a fundamental aspect of the universe[ that] this view, [sometimes referred to as conscious] fundamentalism is no longer just a fringe theory but has some respected supporters (Hoffman et al., 2022; Schurger & Graziano, 2022).”

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## Appendix B: PSIAD Acronym Elaboration

The acronym of this proof's title—PSIAD—is pronounced “psy add” or just “sad.”

Which is apropos because:

- a. This proof addresses the question of whether or not certain irrefutable facets of our *psyches* necessitate lifting the longstanding ban on open, large-scale scientific inquiry into an entire *additional* foundation.
- b. And if such a straightforward proof cannot be reasonably refuted, is it not indeed ‘an objectively *sad* thing’ that an entire domain—with its untold scientific potential—remains so thoroughly<sup>1</sup> overlooked?

After all, philosophy of mind *is* science. E.g., Per *Stanford Encyclopedia of Philosophy* (SEP): “*Philosophy*, in particular philosophy of mind, is part of cognitive *science*” (Thagard 2003).

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<sup>1</sup> [Appendix D](#) elaborates.

## Appendix C: Authority and Science

The core reason why claims from mainstream academic sources are cited here for “reference and reinforcement... *only*,” is the same reason why (as mentioned at the outset) scientific belief is demonstrably superior to the religious. Said reason boils down to the latter exalting authority above underlying evidence, whereas the former is meant to constitute the reverse approach. The following five citations—particularly the last—best illustrate the rationale guiding this paper’s reference use.

a. Per Galileo (Galilei 1957, 134): “For in the sciences the authority of thousands... is not worth as much as one tiny spark of reason in a[ single] individual.”

b. As is further corroborated by the fact that: “the Royal Society's motto [*nullius in verba*] means ‘Accept nothing on authority’” (Knight 2015).

c. Another famed astronomer, Carl Sagan (1995, 31), elaborating:

“One of the great commandments of science is, ‘Mistrust arguments from authority’. (Scientists, being primates, and thus given to dominance hierarchies, of course do not always follow this commandment.) Too many such arguments have proved too painfully wrong. Authorities must prove their contentions like everybody else. This independence of science, its occasional unwillingness to accept conventional wisdom, makes it dangerous to doctrines... Because science carries us toward an understanding of how the world is, rather than how we would wish it to be, its findings may not in all cases be immediately comprehensible or satisfying.”

d. Encyclopedia Britannica (Rescher and Schagrin 2025) corroborating the *textbook fallacy* status of the reverse approach (under “correct and defective argument forms”: “kinds of fallacies”: “material fallacies”): “Fallacies of relevance... include... the argument *ad verecundiam*... which seeks to secure acceptance of the conclusion on the grounds of its endorsement by persons whose views are held in general respect.”

e. As does the following Cambridge University Press textbook by founding editor of *The Journal of Experimental Psychology*:

“*Argumentum ad verecundiam* (appeal to authority). The defense of a belief or opinion on the basis of its being held by someone who is recognized to be an authority on the subject” (Nickerson 2020, 175).

“The idea that appealing to authority *can be* legitimate and useful, under *some* circumstances, is widely acknowledged. ...Ferguson (1994) argues that even in *science*, where *objective evidence is... the ultimate arbiter* of what to believe, appeal to authority is common: ‘The opinions and *prejudices* of the

acknowledged experts of our generation strongly influence which theories other scientists take seriously, which they scoff at, and what avenues of inquiry they follow' (p. 66). ...Appeal to authority becomes... *abused* when one uses it *in lieu* of appealing to more direct relevant *evidence*... One is giving *authority more than its due* when one fails to recognize the possibility that authorities can be wrong even in their areas of expertise" (Nickerson 2020, 294).

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## Appendix D: Compatibilism

a. SEP clarifies: “Compatibilism is the thesis that *free will* is compatible with *determinism*” (McKenna and Coates, 2025).

b. A University of Chicago monograph elaborates:

“*Most philosophers* today maintain a ‘*compatibilist*’ idea of the person, a view of moral agency in which freedom of the will is seen to be compatible with natural determination. For compatibilists, one can view the natural world as *entirely determined* and predictable, according to the natural [i.e., physicalist] laws of cause and effect, and consistently maintain that rational beings are, as such, free and thereby morally responsible for their actions” (Sharp 2011, 2).

c. The opening line above is further corroborated by the 2020 PhilPapers Survey, conducted by renowned philosopher David Chalmers and David Bourget (director of Western University Centre for Digital Philosophy). The study (Bourget and Chalmers 2020, 2023) reveals that only 12.81% of philosophers (out of the thousands surveyed) “accept or lean towards” libertarian-free-will/GPC. Leaving >87% who do not. 62.81% of them, on explicitly compatibilist grounds. These results are even starker when filtered by subfield. E.g., Among respondents specializing in “Philosophy of Cognitive Science,” only 8.22% “accept or lean towards” GPC. Meaning that >90% do not. 75.34% of them, on compatibilist grounds; the latter figure having gone up by a whopping 25.34% from the previous such survey conducted in 2009. “General Philosophy of Science” and “Philosophy of Physical Science” subfields marking similar trends—with only 6.15% and 7.41% respectively, favoring GPC.

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## Appendix E: Nagel's GPC Elaboration

Thomas Nagel—whose honors include what's known as the closest thing to a Nobel Prize in Philosophy—elaborates in his seminal *Mind And Cosmos* (2012, 84) thus:

“If we hope to include the human mind in the natural order, we have to explain not only *consciousness* as it enters into perception, emotion, desire, and aversion, but also the *conscious control* of belief and conduct in response to the awareness of reasons -- the avoidance of inconsistency, the subsumption of particular cases under general principles, the confirmation or disconfirmation of general principles by particular observations, and so forth. This is what it is to allow oneself to be guided by the objective truth, rather than just by one's impressions. It is a kind of freedom -- the freedom that *reflective consciousness* gives us from the rule of innate perceptual and motivational dispositions together with conditioning. Rational creatures can *step back* from these influences and try to *make up their own minds*. ...this kind of freedom... does seem to be something that cannot be given a purely physical analysis and therefore, like the more passive forms of consciousness, *cannot be given a purely physical explanation* either.”

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## **Appendix F. Is It Really so Well-Established That Physicalism Leaves No Room for GPC? (Yes.)**

[J.2.2](#) in particular corroborates this point, while [Appendix J](#) at large elaborates on some of the various reasons why this is so.

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## **Appendix G: The Deeply Uncontroversial Nature of the Statement That GPC Is Incompatible with Elemental Physics**

Though some of these citations comment on human choice as well, each also covers the elemental-physics-specific preclusion in question.

a. Famed physicist, physicalist and atheist Sean Carroll (2017, 378–379), puts it most bluntly while presenting the “straightforward,” “usual” anti-free-will argument (which he ultimately agrees with):

“We are made of atoms, and those atoms follow the patterns we refer to as the laws of physics. These laws serve to completely describe the evolution of a system, without any influences from outside the atomic description. [I.e., Under physicalism. T]he entire future of the universe is already written, even if we don’t know it yet. Quantum mechanics predicts our future in terms of probabilities rather than certainties, but *those probabilities themselves are absolutely fixed* by the state of the universe right now. ... There is no room for human choice, so there is no such thing as free will. We are just material objects who obey the laws of nature. ... Of course *there is no such notion as free will when we are choosing to describe human beings as collections of atoms or as a quantum wave function.*”

b. In his earlier “Dysteleological [i.e., goalless] Physicalism” article (originally published on *Edge* and later republished in *Discover Magazine* and *Preposterous Universe*), Carroll (2011) phrased this conclusion thus:

“Physicalism holds that all that really exists are physical things. [While] all any object ever does is obey rules - the laws of physics. ... (Quantum mechanics introduces a stochastic [i.e., randomness] component to the prediction, but the underlying idea remains the same.) The ‘reason’ something [i.e., anything] happens is because it was the inevitable outcome of the state of the universe at an earlier time.”

c. University of Dublin (2023) confirms: “Fundamental laws of nature [i.e., ‘preceding physical causes’, not GPC] govern the behaviour of *all* physical objects in the universe from the very large... to the very small.”

d. Another famed physicist, physicalist and atheist also repeatedly concludes:

“The state of the universe and its contents, like ourselves, are completely determined by the laws of physics... *So much for free will*” (Hawking 2007, 63).

“Though we feel that we can choose what we do, our... biological processes are governed by the laws of physics and chemistry and therefore are as determined as the orbits of the planets. ... Our physical brain, following the known laws of science, determines our actions, and not some agency that

exists outside those laws ... We are no more than biological machines[,] free will is just an illusion” (Hawking 2010, 31–32).

e. As later echoed by yet another famed physicist, physicalist and atheist Lawrence Krauss (2012, 1:59:06): “Everything I know about the world tells me there’s *no such thing as free will*. [Humans are] just like... *particles*[—]they behave *as if* they can do things that they’re not being forced to do...and we behave *as if* we have free will, because we live in a very complex world” whose complexity sires said free will illusion.

f. And as is likewise echoed by the other participant in that same presentation—famed biologist, physicalist and atheist Richard Dawkins (2012, 1:58:12):

“I have a materialist view of the world. I think that things are determined in a rational way by *antecedent events*. And so that *commits* me to the view that, when I think I have *free will*, when I think that I’m exercising *free choice*—I’m *deluding* myself. That my brain states are *determined* by *physical events*.” I.e., By event-causation, not agent-causation.

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## Appendix H. All Physics Controlled by Laws/Rules

Excerpts from the first four citations pertaining to [Appendix G](#) above, should amply suffice here:

Per G.a: “The laws of physics... *completely* describe... the entire future of the universe[.] There is no room for human choice, so there is no such thing as free will.”

Per G.b: “*All* any object ever does is obey... the laws of physics. ...The ‘reason’ [anything] happens is because it was the *inevitable* outcome of the state of the universe at an earlier time.”

Per G.c: “Fundamental laws of nature... govern the behaviour of *all* physical objects in the universe.”

Per G.d: “The state of the universe and its contents, like ourselves, are *completely* determined by the laws of physics”... “as determined as the orbits of the planets.”

### Caveat: Singlehandedly Substantiating Lemma 2

While even this point *alone*, is sufficient to substantiate Lemma 2 (per *ex nihilo nihil fit*). I.e., If such immutable lawfulness were indeed the sole foundation of all existence —GPC’s quintessential law-transcendence would have to arise from literal nothingness (i.e., *ex nihilo*; from the utter absence thereof). Thus violating all<sup>1</sup> the fundamental principles in question.

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<sup>1</sup> An exceptionlessness confirmed throughout [Appendix J](#) (e.g., J.4).

## **Appendix I. Has Quantum Mechanics (QM) or Any Other Aspect of Elemental Physics Been Proven to Violate Any of These Laws/Principles? (No.)**

### **Caveat: Not a PSIAD Must, but Happens to Be So**

*Must* this be the case for PSIAD to work? Not unless there is a reasonable, purely-physicalist delineation of the corresponding mechanism which can also account for GPC. In lieu thereof, other such violations would only grow the list of phenomena that physicalism cannot explain. Constituting only more corresponding problems; rather than reasonable solutions with which to counter PSIAD. That said, the fact that these principles have no other proven exceptions [much less purely physicalist ones]—does strengthen PSIAD further yet.

### **I.1. Energy–Momentum Conservation**

a. Per the college physics textbook by Dallas University Physics Department chair, R. Olenick and Caltech’s F. Gilloon Distinguished Professor of Physics, D. Goodstein et al.:

“The law of *conservation of energy* is one of the most fundamental laws of physics. No matter what you do, energy is *always* conserved” (2008, 219).  
 “The law of *conservation of momentum* [is] like that of conservation of energy[—]a vast and powerful principle. It makes an overall statement about nature without fussing over the details of the force involved. ...The word *interact* [emphasis original] in physics means that some force is applied between the objects. We may not know the details of the force, and we may not know whether the objects have touched or [per ‘quantum nonlocality’] interacted at a distance without direct contact, but we can conclude that for a brief time the particles have *exerted forces* on each other from the fact that the motion of each object is changed. By using the laws of conservation of energy and momentum, we can predict much about the subsequent motion of particles in this type of encounter” (2008, 275).

b. “Physics does not allow *any* exceptions. The principle of energy conservation has been tested again and again and always comes out a winner” (Koch 2009, 41).

c. “The law of conservation of energy states that energy can not be created or destroyed... The law of conservation of energy *applies always, everywhere, in any situation*” (Duffy, 1998).

d. “If a system is isolated (NOT influenced by external forces) *Conservation of Momentum is always valid*” (Velissaris and Efthimiou 2015).

e. See also J.2.4.2.c below (Churchland 2011, 45; 2014, 55): “*momentum* in any closed system is *always conserved*.”

In sum of I.1: No proven physicalist exceptions to energy or momentum conservation exist.

## I.2. Something from Nothing

The closest that modern elemental/fundamental physics comes to a genuine *ex nihilo nihil fit* violation—i.e., to something arising from truly nothing—is what’s known as the QUANTUM VACUUM FLUCTUATION phenomenon. Said vacuum having sometimes been misleadingly equated with ‘nothingness’ in popular science books such as Lawrence Krauss’s *A Universe from Nothing: Why There Is Something Rather than Nothing* (2012).

a. Among his famed critiques of this Krauss book/claim, Director of the MA Program in The Philosophical Foundations of Physics at Columbia University, David Albert (2012), wrote:

“Krauss... apparently means to announce... that the laws of quantum mechanics have in them the makings of a thoroughly scientific... explanation of why there is something rather than nothing. ...I kid you not. Look at the subtitle. Look at how Richard Dawkins sums it up in his afterword... [But] where, for starters, are the laws of quantum mechanics themselves supposed to have come from? Krauss is more or less upfront.. about not having a clue[. Moreover] the fundamental physical laws that Krauss is talking about[—]the laws of relativistic quantum *field* theories[—]have nothing whatsoever to say on the subject of where [their] *fields* came from... [Yet those] relativistic-quantum-field-theoretical vacuum states—no less than giraffes or refrigerators or solar systems—are particular *arrangements of elementary physical stuff*. The true relativistic-quantum-field-theoretical equivalent to there not being any physical stuff at all *isn’t this* [as Krauss defines it, but] the simple absence of... fields.”

b. Even over a decade earlier, physicist John D. Barrow (Dirac Prize, Gold Medal of the Royal Astronomical Society) made it clear that the quantum vacuum was by then already long established as far from true nothingness:

“The quantum revolution showed us why the old picture of a vacuum as an empty box was *untenable*. [Its] state was *by no means empty*. ...A vacuum

energy... *permeated every fibre of the Universe*. [Said energy] was *detected* and shown to have a tangible *physical presence*" (2000, 10).

c. The above conclusions were then only further reinforced via multiple studies (Choi 2013; Lähteenmäki et al. 2013):

"The scientists detailed their findings online... in Proceedings of the National Academy of Sciences. 'This work and a *number* of other recent works *demonstrate* that the *vacuum* is *not empty* but *full* of virtual photons,' says theoretical physicist Steven Girvin at Yale."

d. Sean Carroll, in his own *direct response* to Krauss's book/claim, likewise wrote (2012):

"Do advances in modern physics and cosmology help us address these underlying questions, of why there is *something* called the universe at all, and why there are things called 'the laws of physics,' and why those laws seem to take the form of quantum mechanics...? In a word: *no*. I don't see how they could. Sometimes physicists *pretend* that they are addressing these questions, which is too bad, because they are just being lazy and not thinking carefully about the problem."

e. A decade later, Carroll's disbelief in the *very corresponding possibility* was formalized via *The Routledge Companion to the Philosophy of Physics* (2021, 703): "Every attempt to answer the question 'Why is there something rather than nothing?' ultimately grounds in a brute fact [with] no further explanation."

See also part I.3 below.

In sum of I.2: There exist no proven physicalist violations of *ex nihilo nihil fit*.

### **I.3. Physical[ist]: Causal Closure, Completeness, Causality**

Given how closely these principles are related, the information below also further confirms I.2 above. I.e., If *ex nihilo nihil fit* is violated in pure elemental physics, then something physical must have come from literal nothingness, which would in turn mean that said new physical phenomenon was *causeless* and thus violates physical[ist] closure/completeness/causality. And therefore, conversely, the confirmations below as to the lack of any proven *such* violations in elemental physics—also reaffirm the (I.2 corroborated) lack of any *ex nihilo nihil fit* violations.

a. Bradford Emeritus Philosophy of Science Professor, Friedel Weinert (1998), not only confirms that QM does not violate physical causality, but emphasizes the

importance of careful corresponding distinction: “Despite popular impressions that quantum mechanics has spelt the end of causality, *quantum mechanics does not abandon causality*. [Instead, q]uantum mechanical evidence led to a careful distinction between determinism and causality.”

b. Unsurprisingly then, it was further confirmed (Vilasini and Renner 2024) that, as phrased by Searle (2025): “Quantum processes are constrained by classical causality.”

c. Just as QM’s central equation has been repeatedly confirmed to describe causal processes. E.g.:

- i. “The central equation of quantum mechanics [is] the Schrödinger equation” (Schomerus, n.d.).
- ii. “The Schrödinger equation has all the features of a *causal* connection” (London and Bauer 1983, 232).

d. Nor is the above surprising given that even in his seminal work on QM, physicist John von Neumann (1956 Enrico Fermi Award and National Medal of Freedom) wrote: “[The Schrödinger equation] describes how the system changes continuously and *causally*” (1955, 229).

e. SEP also bluntly states (O’Connor 2025): “Physicalism[’s] thesis is standardly understood to entail ‘the causal closure of the physical’... accounts [that violate causal closure] are *inconsistent with physicalism*.”

f. In the seminal collaboration between Nobel laureate neurophysiologist (Eccles) and preeminent philosopher of science best known as ‘the father of FALSIFIABILITY’ (Popper), the authors likewise state: “The physicalist principle of the closedness of the physical world... is of decisive importance [i.e.,] the characteristic principle of physicalism or materialism” (1977, 51).

In sum of I.3: There exist no proven physicalist violations of physical[ist]: causal closure, completeness, causality.

In sum of Appendix I: Any physicalist violation of the fundamental physical principles listed in L2.S.1.1, would indeed be scientifically “unprecedented”.

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## **Appendix J: Can ‘Physicalist GPC’ Avoid Violating Any of These Otherwise-Immutable<sup>1</sup> Principles? (No.) Is Foundational Dualism Really a Significant Improvement? (Yes.)**

The two main points mentioned in the title above, are elaborated upon via parts [J.1](#) and [J.2](#) (in reverse order). Part [J.3](#) confirms that STRONG EMERGENCE is purely speculative<sup>2</sup>. While part [J.4](#) is a light elaboration on why Lemma 2’s “In Sum of S1.1” correctly states that *all* of those fundamental principles are violated in *each* of those three cases (described in L2 S1.1.1–3).

### **J.1. Is Foundational Dualism Really a Significant Improvement?**

#### ***J.1.1. Are These Principles Not Equally Violated Under Foundational Dualism? (No.)***

It merits reemphasis that attempting to fit GPC into *physicalism*—is what makes corresponding violations so inescapable and extreme. Something changed dramatically under a *dualist* scenario where GPC stems instead from a *separate, nonphysical foundation*. For starters: *ex nihilo nihil fit* and physical[ist] completeness/closure/causality violations—would all no longer apply in the latter case. As GPC would then have a distinct (NON NOTHING) source and physics could no longer be considered a CLOSED/ISOLATED SYSTEM; where all causes are strictly internal/physical. Said dualism could well also prove key to resolving the remaining two violations, because (i) energy and momentum conservation laws were likewise conceived under those CLOSED/ISOLATED PHYSICALIST SYSTEM assumptions and (ii) said laws state that while energy–momentum cannot be *created*, it *can* be *converted* from other corresponding forms. Something perfectly allowable under the dualist GPC scenario (unlike its purely physicalist counterpart).

a. Per *World Almanac and Book of Facts 2023*:

“Conservation of Momentum: All moving objects have momentum, and in a *closed system*, total momentum is always conserved. ...Conservation of Energy: The total amount of energy in a *closed system* will not change except when *converted*” (Janssen 2022, p. 2027).

<sup>1</sup> As established in [Appendix I](#).

<sup>2</sup> As must therefore be all below-established corresponding *corollaries* like nonreductive/emergentist physicalism, its DOWNWARD CAUSATION, any ensuing property dualism, etc.

b. See also:

- J.2.4.2.c below: “momentum in any *closed system* is always conserved” (Churchland 2011, 45; 2014, 55).
- I.1.d above: “The principle of conservation of momentum... is valid only if the net external force acting on the system is zero... [I.e.,] If a system is *isolated* (not influenced by *external forces*) Conservation of Momentum is always valid” (Velissaris 2015).

I.e., Foundational dualism would:

- Entirely remove those various, otherwise-inescapable violations of fundamental logic.
- Entirely remove the most severe corresponding violations of fundamental physics.
- Supply a distinct (and otherwise distinctly-absent) possibility of those two remaining fundamental physics violations being resolved.
- And even if some form of those latter two violations ultimately remains, [under Foundational Dualism] this would not only cease to be logic-breaking, but even to be unexpected.

In sum of J.1.1.1: Recasting GPC in said dualist terms deescalates an otherwise-unavoidable breakdown of fundamental logic and physics alike, down to the sort of anomalies *expected* if an entire foundation—so extensively dismissed and excluded in mainstream academia—indeed exists and interacts with the physical. Via some *unsurprisingly* still-undiscovered nexus.

### ***J.1.2. “Dismissed And Excluded”***

a. As observed by Library of Congress Distinguished Scholar Chair Susan Schneider (2012, 62): “Substance dualism is all too often dismissed as ‘*fringe*’ by mainstream philosophy of mind[ and therefore by mainstream cognitive science,<sup>3</sup> due to a] *presumption* in favor of substance *physicalism*.”

b. As echoed by SEP (Robinson 2024):

“Although dualism has been *out of fashion*... the argument is by no means over. Some distinguished neurologists, such as... Eccles (Popper and Eccles 1977) have continued to defend dualism as the only theory that can preserve the data of consciousness.”

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<sup>3</sup> As corroborated in [Appendix B](#).

c. And by Research Associate at Oxford's Ian Ramsey Centre (Weir 2024, 21):  
 “According to a *widely* held view in the philosophy of mind... substance dualism need not be taken seriously.”

### ***J.1.3. Does Some Other Drawback Override The Merits Covered in J.1.1? (No.)***

Renowned President of American Philosophical Association Jaegwon Kim observes:

“The reason standardly offered for the supposed incoherence of Cartesian interactionist dualism is that it is difficult to ‘conceive’ how two substances with such radically diverse natures... could exercise causal influence on each other. ...Anthony Kenny, a philosopher well known for his philosophical acuity as well as historical erudition, writes: ‘On Descartes’[s] principles it is *difficult to see* how an unextended thinking substance can cause motion in an extended unthinking substance and how the extended unthinking substance can cause sensations in the unextended thinking substance. The properties of the two kinds of substance *seem* to place them in such diverse categories that it is impossible for them to interact.’<sup>7</sup> The trouble is that this is all that Kenny has to say about Descartes’s difficulties with mind–body causation—and, as far as I know, that is pretty much *all we get from Descartes’s critics* and commentators. But as an argument this is incomplete... As it stands, it is *not much of an argument*; rather, it only expresses a vague, inchoate dissatisfaction... Why is it incoherent to think that there can be causal interaction between things in ‘diverse categories’? Why is it ‘impossible’ for things with diverse natures to enter into causal relations with one another?” (2005, 73-74).

Some of the more obvious corresponding refutations include:

#### *a. Non Sequitur*

As mentioned briefly in footnote 18, just because there are two separate foundations—does not mean that the phenomena they sire must lack *any* common properties; either of which can serve as a nexus of their interaction.

#### *b. Sailed Ship*

The non sequitur nature of said “vague... dissatisfaction,” is only further highlighted by the reality that the most dominant/mainstream corresponding positions (compatibilism and nonreductive/emergentist physicalism) *already accept* that irreducibly/inexplicably distinct mental properties interact with their physical counterparts. As covered in [Appendix D](#) above and [J.2](#) below.

#### *c. Textbook Incredulity Fallacy*

Not to mention the inherent illogic of such incredulity appeals:



i. “Argument from personal incredulity [is] the *fallacy* of inferring that because you... find something improbable or hard to believe, it is therefore untrue, and instead your preferred explanation is true” (Bebbington 2011, 27).

ii. A Springer logic textbook’s “Fallacies” chapter elaborates (Swart 2018, 499):

“Incredulity

...In the history of science there have been numerous occasions where scientists have been collectively mistaken in their rejection of a new idea: often the mistake then stems from this [i.e., ‘incredulity’] fallacy... some historical examples that are based on this fallacy [include :]

‘Heavier-than-air flying machines are impossible.’ (Lord Kelvin, president Royal Society, 1895)...

‘All a trick. ...Absolute swindler.’ (members of Britain’s Royal Society, 1926, after a demonstration of television)

‘Space travel is bunk.’ (Sir Harold Spencer Jones, Astronomer Royal of Britain, 1957, two weeks before the launch of Sputnik).”

In sum of J.1 and segue to J.2: (i) It should now be clear that—despite being “out of fashion” [and corresponding mechanisms therefore unsurprisingly remaining poorly understood]—Lemma 1 indeed exposes such dualism as the far more reasonable option. (ii) It moreover merits emphasis that the scientific cost of shifting away from physicalism and toward such dualism proves far lower yet, given what remains of mainstream physicalism today.

## **J.2. Mainstream (i.e., nonreductive/emergentist) Physicalism**

As substantiated shortly, the existence of the nonphysical (namely of “irreducibly distinct” consciousness) has *already* proven *so* undeniable, that it is now accepted under even the most mainstream physicalism iterations. [Appendix D](#) has moreover already demonstrated that epiphenomenalism (i.e., the view that mental causation is altogether illusory) has likewise become a minority view. The most mainstream corresponding scientific view now already being that the nonphysical genuinely *exists* and *impacts* physics, but also that it stemmed from physics in some inexplicable/irreducible way and that its impact is limited to event-causation.

While this view excludes GPC and is therefore refuted in Lemma 1 without posing a challenge to Lemma 2, a brief further look at corresponding details is nevertheless helpful; revealing that the violations in question have been found even by mainstream scholars to apply even to such mainstream-accepted/deterministic mental causation.

Not only reinforcing conclusions of Lemma 2 further yet, but also underscoring just how low that J.1-mentioned “scientific cost” has long been.

### ***J.2.1. Is Nonreductive/Emergentist Physicalism Really so Mainstream? (Yes.)***

a. As repeatedly affirmed via *Encyclopedia of Science and Religion* (ESR):

“Nonreductive physicalism,... more or less became the *received view* in the philosophy of mind of the last quarter of the *twentieth century*” (“Downward Causation,” 2025).

“Nonreductive physicalism has generally *replaced* reductive physicalism in the philosophy of mind” and therefore also in *cognitive science*<sup>4</sup> (“Physicalism, Reductive and Nonreductive,” 2025).

b. Indeed, by 1992 academics like Distinguished Professor of Philosophy at Rutgers University (Paull and Sider, 1), were making unequivocal statements like:

“Nonreductive materialism is *the dominant position* in the philosophy of mind.”

c. Or, per University of Notre Dame Press' *After Physicalism*:

“Since the middle of the last century, the default... has been the physicalist [thesis that] everything is physical. ...For reasons *well known*, *reductive physicalism failed*. ‘...The thesis that mental states ‘just are’ (identical with) physical states is simply unintelligible’ (Lowe 2008: 23).<sup>4</sup> *Nonreductive physicalism* is the only other *prima facie* plausible version of physicalism” (Göcke 2012, 1–2).

d. “Materialists invoke something they call *emergentism* to explain how consciousness can... emerge” (Koch 2014).

### ***J.2.2. Yet Mainstream Physicalism Excludes GPC/Agent-Causation? (Yes.)***

a. Per SEP:

“Non-reductive physicalists deny that there is any explanation of mentality in purely physical terms, but do *not* deny that the mental is *entirely determined by* and constituted out of underlying physical structures” (Seager 2010; (Seager, Goff, and Allen-Hermanson 2022).

b. Moore’s (2019, 479) *Dialectica* paper illustrates:

”Nonreductive physicalists endorse the principle of mental causation, according to which some events have *mental causes*: Sid climbs the hill because he wants to. Nonreductive physicalists also endorse the principle of *physical causal completeness*, according to which physical events have *sufficient*<sup>[5]</sup> *physical causes*: Sid climbs the hill because a complex neural process in his brain triggered his climbing.”

<sup>4</sup> As established in [Appendix B](#).

<sup>5</sup> In the CAUSAL COMPLETENESS sense, “sufficient” unmistakably means ‘*determinant*.’

c. Though sometimes obscured by murkily (re)defined terminology, this reality should also be clear from citations provided in Appendices D, G and H above, as well as J.2.4.1.b below. (While even any rare iteration of nonreductive/emergentist physicalism that purports to encompass GPC—is still subject to PSIAD at large as well as J.2.4 through J.4 below.)

***J.2.3. Does Mainstream Physicalism Really Accept the Mental As [Explanatorily] Irreducible Nonphysical Phenomena/Causes? (Yes.)***

a. Again, per the SEP excerpt cited in J.2.2.a. above: “Non-reductive physicalists deny that there is *any explanation* of mentality in *purely physical* terms.”

b. University of Tennessee’s *Internet Encyclopedia of Philosophy* (IEP) elaborates:

“The emergentist view [is that] the whole cannot *in principle* be deduced from knowledge of the parts and their arrangement. [I.e.,] The basic tenet of *strong emergen[ce]* is that at a certain level of physical complexity *novel* properties appear that are... ontologically *irreducible to* the more *fundamental matter* from which they emerge and that contribute causally to the world. That is, emergent properties have *new* downward *causal* powers that are *irreducible to* the causal powers of the properties of their [‘fundamental matter’] base.” I.e., This is what “ontologically irreducible” means, while “both *non-reductive physicalism* and emergentism deny ontological reduction” (Vintiadis, 2021).

c. “Properties [being] *explanatorily irreducible* despite being ontologically reducible,... satisf[ies] the two conditions for *strong emergence*” (Keršys 2022, 39). Strong emergence and its relevance is further elaborated upon in J.2.3.g below.

d. ESR confirms:

“Nonreductive physicalism... may be seen as nothing but a modern application of classical emergentism within the philosophy of mind. Although it holds that, ontologically speaking, all there is are physical entities and... aggregates thereof, it argues that *psychological* properties are *irreducibly distinct* from the underlying *physical* and biological properties” (“Downward Causation,” 2025).

“The reductive physicalist affirms, while the *nonreductive* physicalist *denies*, that *mental* properties are ‘nothing but’ the physical. [I.e.,] Nonreductive physicalism... conjoins the irreducibility of *nonphysical* properties (property dualism) to ontological physicalism” (“Physicalism, Reductive and Nonreductive,” 2025).

e. Schmiljun (2018, 50) rephrases this twofold commitment as:

“*Non-reductive physicalism* claims that [firstly] everything existing in the world is physical (and a part of a *monistic system*) bound by ‘trans-ordinal laws’ (Broad 1925, 77-78)<sup>10</sup>. [While] secondly, although we fully might know

all about microstructures of a system, the appearance of its macro properties like... *mental states cannot be derived* [there]from... (Beckermann 2001, 221) which demands a 'property dualism' (Kallestrup 2006, 459)."

f. See also ESR via J.2.4.1.a below: "[physically] emergent mental properties [being] irreducibly distinct from physical properties [i]s maintained in emergentism and non-reductive physicalism alike."

g. Strong Emergence = Nonreductive (i.e., "relevant"), Ontological, Inexplicable, Speculative;

Weak Emergence = Reductive (i.e., irrelevant), Epistemological, Explicable, Proven

i. Per IEP, unlike "strong emergence": "*Weak emergence is compatible with reduction*" because "weak emergence is defined in terms of... unexpectedness, it is an epistemological rather than a metaphysical/[ontological] notion" (Vintiadis 2021).

ii. I.e., Per Oxford's 2006 *The Re-Emergence of Emergence: The Emergentist Hypothesis from Science to Religion*:

"*'Strong emergence' ... implies a dissociation from the physics relevant to the parts and their relationships. It is contrasted with 'weak emergence' that does not entail [this]*" (Deacon, 122).

"Strong emergence has *much more radical* consequences than weak emergence. If there are phenomena that are strongly emergent with respect to the domain of physics, then... there are phenomena whose existence is not deducible from the facts about the exact distribution of particles and fields throughout space and time (along with the laws of physics), then this suggests that new fundamental laws of nature are needed to explain these phenomena. The existence of phenomena that are merely weakly emergent with respect to the domain of physics does not have such radical consequences [i.e.,] does not on its own threaten the completeness of the catalogue of fundamental laws found in physics. As long as the existence of these phenomena is deducible in principle from a physical specification of the world... then no new fundamental laws or properties are needed... So if we want to use emergence to draw conclusions about the structure of nature at the most fundamental level, it is *not weak emergence but strong emergence that is relevant*. ... In [this] way, the philosophical morals of strong emergence and weak emergence are *diametrically opposed*. Strong emergence, if it exists, can be used to *reject the [reductive] physicalist picture* of the world as fundamentally incomplete. By contrast, weak emergence can be used to *support the physicalist picture* of the world, by showing how all sorts of phenomena that might *seem* novel and irreducible at first sight can nevertheless be grounded in underlying simple laws" (Chalmers, 245–246).

In Sum of J.2.3.g: Given the distinctions established above, it is key to remember that, unlike reduction-compatible *weak* emergence, only *strong* emergence is “relevant” here. That is, only strong emergence is postulated to have caused otherwise-*reductive* physicalism to become *nonreductive*—via its “in principle” inexplicable transformation of physical properties into their mental counterparts; along with their categorically “new downward causal powers that are irreducible to the causal powers of the properties of their [purely physical] base” (J.2.3.b). As such, while weak and strong emergence are sometimes conflated, their relevance to topics like this could indeed hardly be more “diametric.” While, unsurprisingly, it is *weak* emergence that is arguably well-evidenced (e.g., the infamous ‘wetness of water’). Whereas *strong* emergence remains *purely speculative* (J.3).

In sum of J.2.3: Mainstream physicalism really does accept the mental as [explanatorily] irreducible nonphysical phenomena/causes.

#### ***J.2.4. Mainstream Confirmation of the Untenable Violations Implicit Even in ‘Physicalist Mental-Causation’ (However Deterministic)***

##### *J.2.4.1. Violating: Explanatory Reducibility, Physical[ist] Completeness/Closure/Causality, and Hence—Physicalism Itself*

Though the corresponding implications listed in the title here are likely already clear from J.2.3 above, the following citations should help ‘drive home’ the corresponding realities.

a. ESR (“Downward Causation,” 2025) further corroborates and elaborates-upon it thus:

“If [physically] emergent mental properties are irreducibly distinct from physical properties (*as maintained in emergentism and non-reductive physicalism alike*), and if instances of these mental properties may be independent higher-level *causes* and effects of lower-level physical (e.g., bodily) events, then some physical events cannot be fully explained in terms of physical antecedents and laws alone. [I.e., Are, again, “explanatorily irreducible.”] This result, however, would *violate* two highly respected and important philosophical principles: the principle of the *causal closure* of the physical domain and the closely related principle of the *completeness of physics*. That is to say, assuming causal interaction between higher-level processes on the one hand and processes at the basic level of physics on the other (as presupposed in [again, ‘*emergentism and non-reductive physicalism alike*’]), there can no longer be a complete physical theory of physical phenomena.” I.e., Mental causation (much less GPC) refutes physicalism.

b. As echoed via the expanded version of the SEP excerpt cited in I.3.e above:

“*Physicalism* [emphasis original], understood as the thesis that all natural phenomena are wholly constituted and completely metaphysically determined by fundamental physical phenomena[,] is standardly understood to entail ‘the causal closure of the physical’, according to which (roughly) any fundamental-level physical effect has a purely fundamental physical cause. ‘*Strong*’ emergence accounts are *inconsistent with physicalism and causal closure*” (O’Connor 2025).

c. And—long before then—by Kim (1989, 43; 1993, 280); via his tellingly-titled “The *Myth of Nonreductive Materialism*,” published as part of *Cambridge Studies in Philosophy*:

“ ‘The causal closure of the physical domain’ [roughly states] that if we trace the causal ancestry of a physical event, we need never go outside the physical domain. To deny this [as, per above, mainstream ‘nonreductive materialism’ does] *is to accept the Cartesian* idea that some physical events have only nonphysical causes, and if this is true there can *in principle* be no complete and self-sufficient physical theory of the physical domain. [I.e., Again, no physicalism, even ‘in principle’.] If the causal closure failed, our physics would *need* to refer in an *essential* way to nonphysical causal agents [like *Cartesian souls*.] I.e., To Cartesian/Foundational Dualism.

d. And per SEP:

“Non-reductive physicalists deny that there is any explanation of mentality in purely physical terms, but do not deny that the mental is entirely determined by and constituted out of underlying physical structures. There are *important issues about the stability* of such a view which teeters on the edge of explanatory reductionism on the one side and *dualism* on the other (see Kim 1998)” (Seager 2010; Seager et al., 2022).

e. Caveat: Irreducible yet Explainable? (No.)

It has occasionally been proposed that ontological *irreducibility* may be compatible with explanatory *reducibility* (Crane 2001; 2010). However, as well established (e.g., via what is known as EXPLANATORY GAP OF QUALIA) if a property’s emergence from its constituents can be adequately *explained*, then it is in fact *reducible/reductive* and cannot serve as a basis for *nonreductive* physicalism; whereas nonreductive physicalism’s acceptance of consciousness’ “ontologically *irreducible*” nature—*necessarily* likewise implies its *explanatory* irreducibility.

i. SEP elaborates via the “Qualia and the Explanatory Gap” segment of its “Qualia” entry:

“For no matter how deeply we probe into the physical structure of neurons and the chemical transactions which occur when they fire, no matter how much objective information we come to acquire, we still seem to be left with something that we *cannot explain*, namely, why and how such-and-such objective, *physical changes, whatever they might be*, generate so-and-so subjective feeling, or any subjective feeling at all. This is the *famous ‘explanatory gap’ for qualia* (Levine 1983, 2000)” (Tye 2021).

ii. Even the aforementioned Paul Churchland (Endowed Chair of California University’s Philosophy Department and fellow of the American Academy of Arts and Sciences), after his long career as a leading proponent of eliminative materialism, had to acknowledge by 2011:

“Altogether, we have here a gathering *consensus* that the qualitative dimension of our *conscious* experience is something that the *physical* sciences, such as modern neuroscience, will *never explain*.” (Churchland 2011, 17; 2014, 37)

iii. Which, in turn, further corroborates statements like (Stephan 1997, 310): “To the emergentist ‘irreducible’ *always* means ‘*explanatorily* irreducible’.”<sup>6</sup>

In sum of J.2.4.1: It is indeed already widely acknowledged in mainstream academia that (however deterministic) what remains of mainstream physicalism indeed violates explanatory reducibility, physical[ist] completeness/closure/causality, and hence—physicalism itself.

#### J.2.4.2. Violating Energy–Momentum Conservation

It is just as thoroughly established that mainstream physicalism’s mental causation (however deterministic) likewise violates energy/momentum conservation.

a. Per SEP (Robinson 2024):

“Interactionism is the view that mind and body—or mental events and physical events—causally influence each other. [Yet] there appears to be a conflict between interactionism and some *basic principles of physical science*. For example, if causal power was flowing in and out of the physical system, *energy would not be conserved*, and the conservation of energy is a fundamental scientific law.”

b. Senior Cambridge University researcher and philosopher of physics J. Pitts, writes in his *Foundations of Science* journal paper (2021, 562–3):

“Newton in fact quite frequently affirmed strong views of *mental causation* (Dempsey 2006). He seems not to have been worried by the idea of conservation law failure due to mental force.<sup>3</sup> It is quite obvious that

*momentum conservation fails* due to lack of the action-reaction otherwise guaranteed by *Newton's third law of motion*. ...momentum is not conserved."

c. Churchland likewise makes it explicit:

"Any [physicalist] position that includes non-physical elements in the causal dynamics of the brain must violate both the law that *energy* is neither *created* nor destroyed, and the law that the total *momentum* in any *closed system* is always conserved" (2011, 45; 2014, 55).

d. Philosopher Mario Bunge (AAAS Science Hall of Fame) also confirms: "If immaterial *mind* could move matter, then it would create energy; and if matter were to act on immaterial mind, then energy would disappear. In either case *energy... would fail to be conserved*." (1980, 17).

In sum of J.2.4.2: It is indeed likewise widely acknowledged that (however deterministic) the mental causation pertaining to the most mainstream physicalism forms—indeed also violates energy/momentum conservation.

#### J.2.4.3. *Something from Nothing*

a. *The Oxford Handbook of Philosophy of Science* acknowledges the following objection without offering rebuttals (Humphreys 2016, 15):

"[One objection to such emergentism is the] general principle that the novel element required for emergence cannot come from a basis that lacks that feature, a variant of the '*never something from nothing*' principle."

b. Or as more bluntly stated by Editor-in-Chief of *Artificial Life* magazine and co-founder of the European Centre for Living Technology (Bedau 1997, 376–377):

"These examples highlight two... useful hallmarks of emergent phenomena: (1) Emergent phenomena are somehow constituted by, and generated from, underlying processes.

(2) Emergent phenomena are somehow autonomous from underlying processes.

... At worst, the two hallmarks seem to make emergent phenomena flat-out inconsistent. At best, they still raise the specter of illegitimately getting *something from nothing*. ...

Strong emergence [again, an essential component of mainstream physicalism] is uncomfortably like *magic*. How does an irreducible but supervenient downward causal power arise, since by definition it cannot be due to the aggregation of the micro-level potentialities? Such causal powers would be quite *unlike anything* within our scientific ken. This not only indicates how they will discomfort reasonable forms of materialism. Their mysteriousness will only heighten the traditional worry that [such] emergence entails illegitimately *getting something from nothing*."



c. And as *most* bluntly stated by renowned neuroscientist Christof Koch:

“The mental is too radically different for it to arise gradually from the physical. This emergence [of the mental itself, let alone mental causation or GPC] is at odds with a basic precept of physical thinking, the *Ur-conservation law—ex nihilo nihil fit*.” A statement followed by Koch’s conclusion that consciousness clearly “hails from a kingdom other than the physical and is subject to different laws” (2014).

In sum of J.2.4.3: It is indeed likewise widely acknowledged that (however deterministic) the mental causation pertaining to the most mainstream physicalism forms—indeed also violates *ex nihilo nihil fit*.

In Sum of J.2.4: The information covered here, is amply contextualized in the upcoming J.1–3 summary. Suffice it to reiterate here that (per I.3, *under physicalism*) just as *ex nihilo* violation implies that of physical[ist] completeness/closure/causality, the reverse is also true. Thus the backing provided in J.2.4.1 above—further bolsters J.2.4.3 and vice versa.

### **J.3. Utterly Speculative: Mainstream Physicalism “Starts Where Scientific Explanation Ends”**

The following should likewise not be much of a surprise given Appendix I.

a. Per IEP (Vintiadis, 2021): “We do not have actual empirical proof that [strongly] emergent properties exist.”

b. SEP (O’Connor 2025) confirms: “There is at present a lack of clear empirical evidence for strong emergence.”

c. As does *The Oxford Handbook of Philosophy of Science* (Humphreys 2016, 15): “The laws and other conditions that are present in our universe preclude, or just happen not to have produced, cases of [such] emergence.”

d. Bedau’s *Principia* article (2002, 5) rephrases it thus: “All the evidence today suggests that strong emergence is scientifically irrelevant. ...There is *no evidence* that strong emergence plays any role in contemporary science. ...*Strong emergence starts where scientific explanation ends.*”

### In Sum of J.1–3

Appendix J should now have substantiated that all those unprecedented<sup>6</sup> PSIAD-listed violations have indeed long been found, even by mainstream scholars, to apply even to such mainstream-accepted/deterministic mental causation. Not only indeed reinforcing conclusions of Lemma 2 further yet, but also underscoring just how low that J.1-described “scientific cost” [of a mainstream shift from physicalism to Foundational Dualism] has long become. I.e. In effect, despite the longstanding “presumption in favor” thereof, mainstream physicalism has already had so much of its substance eaten away by contrary evidence—that what remains is a mere scientific equivalent of a ‘shell corporation.’ A hollow facade. PSIAD only serving to help bring this already-untenable situation to a head.<sup>7</sup>

### J.4. All Said Principles Violated On Each Said Level? (Yes.)

Caveat: It should first be noted here that in order to corroborate L2.S1.1, we need prove only that elemental-physics-based GPC must violate just *one* said principle on but a *single* level. Ergo, proving such GPC to require *all* those various corresponding violations on *each* of those three levels—drives the corresponding point home in *deeply* overabundant, compounding fashion.

That said, further delineation of the main corresponding text should now be mostly redundant. I.e., It should by now be clear how/why *ex nihilo* energy or momentum creation (L1.S1.1.1–2) as well as *ex nihilo* creation of nonphysical mechanism(s) capable thereof (L1.S1.1.3) must violate: *ex nihilo nihil fit*, as well as physical completeness, causal closure and causality. The only point that could perhaps use more clarity is why the above would necessitate violating conservation of *both* energy *and* momentum.

Again, in a purely physicalist system all momentum must follow fixed rules only<sup>8</sup>. If that does not change, all actions are owed to preceding physical causes (i.e., event-causation); while GPC (i.e., agent-causation) would never be actualized. Whereas if GPC *is* actualized, that law-bound momentum must have been changed somewhere in the system. Which in turn means that new momentum must have been created. While the creation of new momentum is indeed impossible without the creation of new

<sup>6</sup> Per [Appendix I](#).

<sup>7</sup> Dualism and physicalism are revisited in [Appendix P](#).

<sup>8</sup> [Appendix H](#) expands.

energy: “Kinetic *energy* [is the] form of energy that an object or a particle has by reason of its *motion*” (Britannica, 2025). Whereas per *Essential University Physics* (Wolfson 2016, 62): “*Momentum* is the ‘quantity of motion’.”

And so, while GPC implies new physical momentum/motion, that new momentum indeed *implies* new physical (kinetic) *energy*.<sup>9</sup>

In sum of J.4: It is indeed the case that GPC *under physicalism*—entails violations of all the fundamental principles in question. From *ex nihilo nihil fit*, physical causal completeness and causal closure (i.e., physical[ist] causality) to conservation of both momentum and energy.

In sum of J: See “In Sum of J.1–3” above.

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<sup>9</sup> MOMENTUM–ENERGY COUPLING in particular, is further codified via what’s known as the WORK–ENERGY PRINCIPLE. While broader cross-coupling between energy and momentum is also corroborated by fundamental principles like ENERGY–MOMENTUM RELATION, LORENTZ COVARIANCE and NOETHER’S THEOREM.

## Appendix K: Why “Generously”?

This side-point is sufficiently corroborated here simply by reiterating the well-established fact that nonreductive/emergentist physicalism and the underlying EXPLANATORY GAP have become widely accepted in mainstream academia despite the longstanding overarching push toward the most reductive physicalism possible<sup>1</sup>. Ergo, this paper will not further scrutinize that particular aside, beyond briefly listing some famed corresponding arguments:

- Levine’s EXPLANATORY GAP (see J.2.4.1.e.i).
- Davidson’s IRREDUCIBILITY OF THE MENTAL (mental concepts (i) cannot be subsumed under strict physical laws (ii) are not reducible to physical properties).
- Nagel’s SUBJECTIVITY (first-person WHAT IT IS LIKE perspective cannot be captured by third-person physical accounts).
- Chalmers’s HARD PROBLEM (explaining all physical functions related to cognition does not resolve why these functions are accompanied by conscious experience).
- Brentano’s ABOUTNESS (mental phenomena possess INTENTIONALITY—they are directed toward or are about something—making them distinct-from/irreducible-to purely physical phenomena).

As Nagel put it in his seminal *Philosophical Review* article (1974, 435):

“Consciousness is what makes the mind–body problem really *intractable*.”

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<sup>1</sup> As established in [Appendix J](#).

## Appendix L: Determinism And Randomness Only

This is an accurate corresponding binary given that in absence of true randomness—all such behavior in elemental physics (quantum probabilistic, stochastic, etc.) proves strictly deterministic.

a. *Routledge Philosophy Of Science* encyclopedia confirms (Sarkar and Pfeifer 2006, 566):

“Causal completeness of physics[ states]: Every physical effect that has a sufficient cause has a sufficient physical cause. (Physical events that are not causally determined may be said to have their objective *chances* of occurrence *determined by physical causes*.)” I.e., Events determined by quantum *randomness* (that are therefore not considered classically deterministic) are nevertheless still “*determined by physical causes*.”<sup>1</sup>

b. Vervoort’s *Entropy* paper elaborates:

“Physical events are either *deterministic or probabilistic*[, while] the hallmark of probabilistic or *random* systems is (1) unpredictability of individual outcomes, and more importantly, (2) ‘frequency stabilization’<sup>10,11,14–16</sup>. The genuine probabilistic nature of an event can, in the end, only be verified by the fact that its relative frequency, as it is measured in a repeated experiment, stabilizes towards a fixed number when the number of trials increases. All probabilistic systems, stemming from the enormous variety of probabilistic disciplines and sub-fields, show this frequency stabilization and satisfy the simple rules of probability theory” (2019, 848).

c. Hossenfelder and Palmer’s *Frontiers in Physics* paper moreover confirms *both* that randomness is the closest known thing to NONDETERMINISTIC ELEMENTAL PHYSICS *and* that this is insufficient to account for GPC:

“Deterministic theory implies that the outcome of any action or decision was in principle fixed at the beginning of the universe. [E]ven adding a *random* element (*as in quantum mechanics*) does not allow human beings to choose one of several future options, because in this case the only ambiguities about the future... are *entirely unaffected by anything to do with human thought*” (2020, 139).

d. Moreover (as alluded to in [Appendix O](#)) while QM is the most successful and predictive known theory—it is also among the most infamously ambiguous in what it reveals about the ultimate nature of physical reality. With several still-competing corresponding INTERPRETATIONS. One of which, though less favored, even challenges the idea that QM (and therefore empirically proven elemental physics) entails any genuine randomness to speak of. E.g., Per *Entropy*’s above-cited paper (Vervoort

<sup>1</sup> See Appendices [N](#) and [O](#).

2019, 848): “Probability theory points towards superdeterminism [over its] competitor, indeterminism[.] This suggests that [physicists] should... reject indeterminism.”

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## Appendix M: “Language of Physics”

a. Nobel laureate physicist Eugene Wigner, wrote in his seminal essay on the profound role of mathematics in physics (1960, 6): “The statement that the *laws of nature* are written in the *language of mathematics* was properly made three hundred years ago;<sup>(8)</sup> It is attributed to Galileo) it is *now more true than ever before*.”

b. As echoed by Pospiech et al in their *Nuovo Cimento C* paper: “Mathematics is the ‘language of physics’” (2016, 110).

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## Appendix N: “Laws of Chance”

As stated by physicist Paul Davies (Templeton Prize) and renowned astronomer John Gribbin:

“Quantum theory... totally transformed our image of matter. The old assumption that the microscopic world of atoms was simply a scaled-down version of the everyday world had to be abandoned. Newton’s deterministic machine was replaced by a shadowy and paradoxical conjunction of waves and particles, *governed by the laws of chance*” (2007, 14).

Or per another famed Royal Society Faraday Prize recipient (Cox and Forshaw 2012, 7): “Quantum [mechanics] deals with probabilities rather than certainties, not because we lack absolute knowledge, but because some aspects of Nature are, at their very heart, *governed by the laws of chance*.”

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## Appendix O: Is Quantum Mechanics The Most Successful/Predictive Known Theory? (Yes.)

a. Per 2023 Argonne National Laboratory lecture (Becker 2023):

“Quantum physics is arguably the most successful scientific theory ever devised. It explains an *enormous variety* of natural phenomena to an *extraordinary degree of accuracy* — everything from semiconductors to the Sun itself. Yet there is a problem: it’s unclear what this immensely fruitful theory says about reality.”

b. Per the Cambridge *Quantum Physics* (Rae 2004, 95):

“Quantum physics has been probably the most successful theory of modern science. Wherever it can be tested, be it in the exotic behaviour of fundamental particles or the operation of the silicon chip, quantum predictions have always been in complete agreement with experimental results.”

c. Per Oxford’s *The Quantum Story* (Baggott 2011, xiii):

“Almost everything we think we know about the nature of our world comes from one theory of physics. This theory... went on to become quite simply *the most successful theory of physics ever devised*. Its concepts underpin much of the twenty-first century technology... This is *quantum theory*.”

d. Per Quanta Magazine’s “What Is Quantum Field Theory and Why Is It Incomplete?”: “The theory of quantum fields is arguably the most successful scientific theory of *all time*. In some cases, it makes predictions that agree with experiments to an astonishing *12 decimal places*” (Strogatz 2022).

e. Or per Cambridge’s *Strange World of Quantum Mechanics* (Styer 2000, 3):

“Quantum mechanics is the most successful theory that humanity has ever developed; the brightest jewel in our intellectual crown.”

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## Appendix P: >1 Foundation ≠ Physicalism

### Caveat: Shifting Sands

As demonstrated above, well-established terms are often subjected to attempts at various obscurative redefinitions and *ad hoc* ‘riders’ in mainstream academia. Especially so when “fashion[able]” orthodoxies like physicalism are at stake. From attempted conflation of “detected[,] tangible physical” phenomena with “nothing” (I.2), to the now-prevailing compatibilist conflation of ‘free will’ with utter determinism<sup>1</sup>, to misleading use of weak emergence as proof of “diametric” strong emergence (J.2.3.g), to occasional attempts at redefining agent-causation into compatibility with event-causation (Nelkin 2011) and so on. Even attempts to redefine dualism into compatibility with physicalism (and vice versa) are now commonplace; despite physicalism’s inherent commitment to MONISM (P.1). Most commonly so via corresponding appeals to what is known as PROPERTY DUALISM, but as this increasingly proves insufficient—even SUBSTANCE DUALISM is not spared. E.g., Per SEP:

“Supposing that *strong emergence* does bring a *new substance* in its wake, [the physicalist i.e.,] emergentist commitment to substance *monism* is maintained by the weaker constraint that no ‘higher-level’ substances or subjects ‘float free’ ... from their dependence bases” (O’Connor 2025).

Prompting important corrective papers like “Why Property [Much Less Substance] Dualists Must Reject... Physicalism” (Schneider 2012) and “Physicalism and Property Pluralism: Why They Are Incompatible” (Francescotti 2000). As well as leading this paper to opt for more unmistakable terms like “GPC” and “Foundational Dualism” over mere use of better-known alternatives like free will, agent-causation and substance dualism. That said, the standard definitions cited below—elucidate only further why the term Foundational Dualism is so particularly unmistakable.

### P.1. Physicalism = Singular Foundation

a. Per IEP (Weisberg 2021): “A physicalist ontology [is] one consisting of just the basic elements of physics plus structural, dynamical, and functional combinations of those basic elements.”

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<sup>1</sup> See [Appendix D](#).

b. Per *Erkenntnis*' 2022 "Going Mental: Why Physicalism Should Not Posit Inscrutable Properties" (Ryan, sec. 2):

"When we take 'fundamental', 'depend', and 'ground' together, we have a clearer picture of what physicalism claims: the only fundamental properties in the universe are physical, and *all other properties depend on physical properties because they are ultimately and categorically grounded in them*. For instance, chemical properties depend on atomic properties of chemical-constituting atoms, which depend on subatomic properties of atom-constituting subatomic properties. If the subatomic properties cannot be decomposed into smaller parts, then subatomic properties are fundamental [i.e., elemental], and the other properties are grounded in them. What is common between... physicalist accounts is that the point of the theory is to explain *every* entity in terms of the physical sciences."

c. "Non-reductive physicalism claims that... everything existing in the world is physical (and a part of a *monistic* system)" (Schmiljun 2018, 50).

d. Or per *Synthese*'s "Physicalism, supervenience, and monism" (Alter and Howell 2022): "*Monism* is true *only* if all phenomena supervene on a certain fundamental type of phenomena. *Physicalism*, [being] a form of *monism*, specifies that these fundamental phenomena are physical."

## P.2. Two Foundations = Dualism

a. Per ESR ("Downward Causation," 2025): "Cartesian dualism envisaged a bifurcated world of *two metaphysically independent domains*, one containing... 'consciousness,' and the other containing physical 'stuff'."

b. Or per SEP (Robinson 2012, qtd. in Carmack 2016, 5–6): "The overall definition of substance dualism is: 'Mind and matter are fundamentally *distinct* kinds of *foundations*.'<sup>10</sup>"

c. Or per Springer Nature's *Interdisciplinary Foundations for the Science of Emotion* (Mun 2021, 119): "Descartes argued for... establishing the science of the mind and the science of the body on *metaphysically distinct foundations*. [Asserting] *ontological* division between the mind and the body."

d. As confirmed via World Congress of Philosophy (Monroy-Nasr 1998, 123):

"In effect, Cartesian dualism claims the independent existence of a non-corporeal realm and a physical realm. [I.e., The nonphysical foundation and the physical one.] But, at the same time, through his works, whenever Descartes presents the distinction between thought and matter, he mentions the

tight relation in the human beings between mind and body.” I.e., Two “independent realm[s]” = “Cartesian dualism” ≠ physicalism.

e. Or per Descartes himself (Ott and Dunn 2013, 31):

“How thought and extension may be *distinctly* known, as constituting, the one the *nature* of mind, the *other* that of body...

Thought and extension may be regarded as constituting the *natures* of intelligent and corporeal substance; and then they *must not* be otherwise conceived than... with the greatest clearness and *distinctness*.”

### **P.3. Pluralism Would Not Help**

The above makes it clear that adding *more* foundations yet (i.e., foundational PLURALISM), would only *further* any corresponding theory from [inherently “*monistic*”] physicalism.

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## Appendices Conclusion

Several apropos points have now been expanded upon via this appendix section.

Including:

- The overarching ethos by which these citations—as well as the paper at large—are presented ([C](#)).
- A cursory glance at the growing momentum of the general thesis that physicalism cannot explain consciousness ([A](#), [K](#)).
- A more detailed look at where the consensus has genuinely shifted in this regard and where certain contortionist maneuvers attemptedly insulate certain still-fashionable orthodoxies from certain contrary realities ([D](#), [J](#)). Which further pinpoints exactly where PSIAD is meant to intervene and demonstrate (among other things) the objective falsification of compatibilism/determinism and physicalist foundational monism (in favor of GPC and Foundational Dualism)—by the existence of the very scientific verification process claimed to vindicate them.
- A demonstration rendered only more inescapable by virtue of supporting appendices like [F](#), [G](#), [H](#), [I](#), [L](#), [M](#), [N](#), [O](#) and [P](#).