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How Oppenheimer Mistook Time for Death at Trinity (the A-bomb Test Site) and How the *Bhagavad-Gītā*, Read Properly, Resonates with the Block Universe of Einstein

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How Oppenheimer Mistook Time for Death at Trinity (the A-bomb Test Site) and How the *Bhagavad-Gītā*, Read Properly, Resonates with the BLOCK UNIVERSE of Einstein[1]

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1 A concept to be explained below, with help from Hossenfelder (2022).

OVERVIEW

In Part One of the essay, we review chapter 11 of the *Bhagavad-Gītā* and discuss its resonance with the BLOCK UNIVERSE. The BLOCK UNIVERSE is an interpretation of the cosmos that is inherent in the space-time continuum,[2] where we find that else-*when*[3] is no more fleeting and ephemeral than else-*where*. However, since the BLOCK UNIVERSE is only a metaphysical interpretation ***of*** physics, and since it denies *free will* outright, it happens that most physicists eschew it. In contrast, Hossenfelder (2022) is happy to explain its features and philosophical significance to a general audience. As for free will, with patience and delicacy she devotes nearly twenty pages to that thorny topic as well.[4]

In Part Two, we elaborate on Rabi's many-bright-splinters view of Oppenheimer, and the concomitant folly of either criticizing *or* praising "him" as if he were an integrated whole. In that context, we revisit the famed utterance "Now I am become Death" and trace it back to the Sanskrit original which says: "Time I am." The likely source of this Time/Death discrepancy is found to be a translation of the *Gītā* by A. Ryder.[5] Ryder's transmutation of the classic into a lullaby of rhyme and alliteration prevents all readers, even perspicacious RO,[6] from seeing the BLOCK UNIVERSE aspect of verses 11.32–11.33, as explored in Part One. A pity.

In Part Three, we go beyond the cartoon notion of a "tutor" upon whose desk Oppenheimer placed a poisoned apple in 1925 to reveal said tutor as the first ever to (accurately) identify *proton* tracks

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2 The space-time concept was introduced by Minkoski and developed by Einstein. Some trace the general notion of a block universe (though not the term) as far back as Laplace 1814, p. 3. To pursue the historical thread, see Hawking 2005, pp. 387, 391; von Mises 1981, p. 176; Hossenfelder 2022, pp. 2 and 12–13.

3 I revive the archaic term *elsewhen* as the natural partner of *elsewhere*. Price, similarly motivated, introduces the neologism *nowhen* as an extrapolation from Archimedes' "view from nowhere" (Price 1996, pp. 4, 12–16, 245 and 261). Instead of 'block universe,' some prefer to think of it this way: It's not that time flows 'past us'; rather, we are all flowing down time's river.

4 But *is* it really a topic? With a stunningly simple thought experiment, Wegner (2002, p. 322) cuts the Gordian knot on "free will," and makes us realize that it is just a comfortable sound we make in our throats without noticing its oxymoronic emptiness. Under Wegner's influence, I allot only a few words to it, in a coda of sorts to Part One.

5 Arthur Ryder (1877–1938) was the U.C. Berkeley professor who provided him with private Sanskrit instruction in 1931 (Monk 2012, p. 204). The title of Ryder's translation is: *Bhagavad-Gītā 1929*. We critique it in Appendix A.

6 Taking our cue from Monk 2012, p. 35, "RO" will be our usual way of referring to Dr. J. Robert Oppenheimer.

in a cloud chamber, likewise in 1925: P.M.S. Blackett. Finally, we ask: Was the point of Hiroshima to save lives by taking lives — a practicality? Was it an act of hot-blooded retribution — a War Crime? Or, following Blackett, was it a "diplomatic message"? That of a giggly old man (President Truman) delivered in cold blood: "*Know ye Soviets that never shall a Communist North Japan sully* my *game board*." The latter scenario would make Hiroshima a Crime Against Humanity.

PART ONE: HOW CHAPTER 11 OF THE *BHAGAVAD-GĪTĀ* ANTICIPATES THE BLOCK UNIVERSE

> Before the battle of Kurukṣetra begins, [Prince] Arjuna asks Kṛṣṇa to drive their chariot into the open space between the two armies, so that he may see the men he must fight. [There,] Arjuna recognizes many of his kinsmen and old friends among the ranks of the enemy. He is appalled by the realization that he is about to kill those whom he loves [....] In his despair, he exclaims: "I will not fight!" Kṛṣṇa's reply to Arjuna occupies the rest of the book. —Prabhavananda/Isherwood 1951, Appendix II, p. 137, with minor changes in orthography.

In verse 11.32, with his declaration, "Time I am,"[7] Kṛṣṇa indicates that his purview is cosmic, infinite — stretching so far backward and forward in time that *he* is master of the battle on the plain of Kurukṣetra, and in fact has already arranged it (11.33) such that all warriors on both sides are deceased "now" — although paradoxically also alive, "now."

As Kṛṣṇa speaks, he gazes upon the battlefield of the here and now, occupied by live warriors. Where, then, is the other battlefield — the one upon which he sees only dead warriors? There is a circumspect way and a straightforward way to address that question. First, the circumspect way, which is literary, psychological, allegorical: "Many commentaries say Kurukṣetra is not an external battlefield but one of our own making, within ourselves. It is the battlefield of life" (Prabhavananda 1979, p. 102). I

7 Prabhupāda 1986, p. 510: *kālo 'smi*, contracted from *kālaḥ* (Time) *asmi* (I am).

recommend the straightforward reading instead.[8] This approach advances the narrative of chapter 11 as it provides the very best rationale for Arjuna to launch his attack. Namely, that the warriors on both sides are (literally) deceased *already* — in some other region of the universe. Treated this way, in a literal reading, the dead-and-alive premise might suggest to us that ancient Indian seers anticipated, by millennia, the notion of a BLOCK UNIVERSE, worked out by an astonished west only recently:

> More than a century has passed since Einstein put forward his theories of special and general relativity. But here we are today, still struggling to understand what it really means. It sounds crazy, but the idea that the past and future exist in the same way as the present is compatible with all we currently know. —Hossenfelder 2022, p. 11.

Earlier, on pages 5–10, Hossenfelder has developed an example that involves birth and death dates (those of her reader, just to make it concrete), and the assumed date of a supernova explosion. From one viewpoint (somewhere in the universe), the supernova date and her reader's *birth* date are simultaneous. From another viewpoint (somewhere else in the universe), it is the same supernova date and reader's *death* date that are simultaneous. Conclusion: "[Y]our death exists at your birth" (p. 10).

In lieu of Hossenfelder's six-page semi-technical presentation, I've drawn an impressionistic Figure 1 for the general reader which I've based loosely on her Figure 3. My graphic employs two garden-variety time-lines. Taken together, these two axes provide a nontechnical grid to accommodate three events: a local BIRTH, a local DEATH, and a random, far-away SUPERNOVA EXPLOSION. I build one "simultaneous" pair of events upon the SUPERNOVA EXPLOSION and a birth date, 1201 — that of Tūsī.[9]

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8 Our face-value reading is supported by Prabhupāda (1986) in his Purport section for 11.33, on pp. 511–512. However, he takes it in a different direction than ours, as he speaks in terms of "the plan of the Supreme Lord." Somewhat related to 11.32–11.33 are verses 2.12–2.30, especially 2.20, for which Arnold (1934[1885]) provides a good translation, on page 17, starting with: "Never the spirit was born; the spirit shall cease to be never."

9 As a tribute to the Persian polymath Ṭūsī, I borrow his dates to create the labels that illustrate the relativity of simultaneity in Figure 1. Ṭūsī is known for his correction to Ptolemy, which found its way to Copernicus (Al-Khalili 2012, pp. 213–222). Interestingly, the correction, which is known as the *Ṭūsī Couple*, is thought to have reached the West, not by way of his publications, but by *intercultural transmission*; ibid. p. 219; Meisami 2019, pp. 70–71.

Another "simultaneous" pair of events is built upon the same SUPERNOVA EXPLOSION and a matching death date, 1274. Thus, it must be that Tūsī's BIRTH and DEATH occurred "at the same time," since both are seen synched to the same SUPERNOVA EXPLOSION. The cold logic of this observation obliterates one's commonsense notion of what-time-is.

For Tūsī, substitute the two armies lined up on the plain of Kurukṣetra, all members of which are somehow both dead and alive. Like Schrödinger's cat? No. The deliberate absurdity of a dead/alive cat was Schrödinger's way of kvetching about the incomplete state of quantum theory. In contrast, the BLOCK UNIVERSE is a serious, matter-of-fact interpretation of Einstein's relativity of simultaneity.

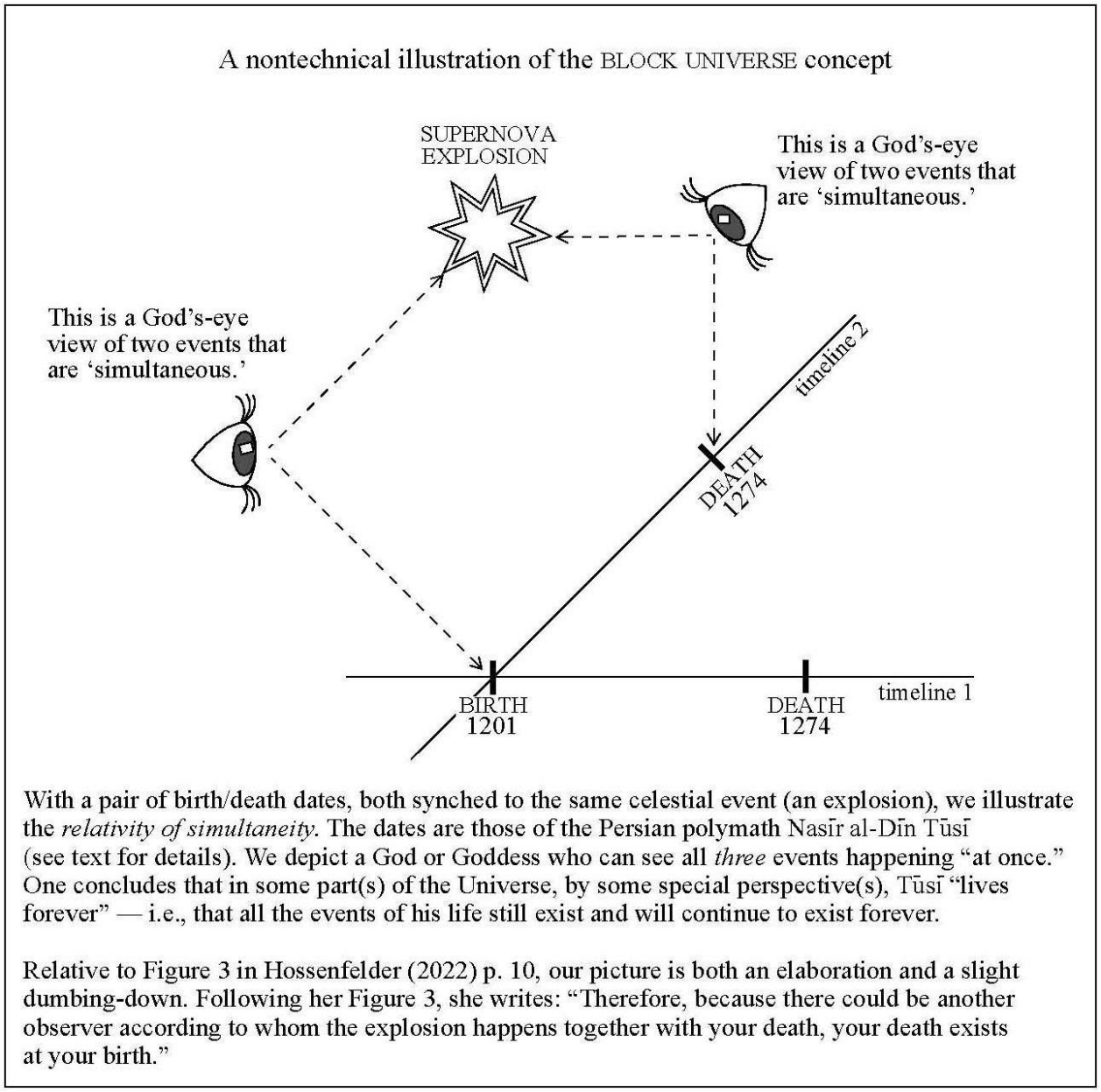

Figure 1. A nontechnical diagram illustrating the *relativity of simultaneity*, with intimations of a BLOCK UNIVERSE (after Hossenfelder 2022, pp. 5–11).

Sabine Hossenfelder covers this topic early in her book. And although she provides a generous amount of technical detail (with six space-time graphs[10] to my single, impressionistic graphic), she manages to keep the section reasonably short *and* reader-friendly — all in all a remarkable feat. For a very different

10 In 1, 2a, 2b, 2c, 2d, and 3, on pp. 6–10.

experience, one might try Price (1966), where the same topic is stretched out languorously over 306 pages. From Price's title, *Time's Arrow and Archimedes' Point*, one might not expect this, but the book is in fact devoted to our very topic: "[T]he aim of [my] book is to explore the consequences of *the block universe view in physics and philosophy*" (Price 1966, p. 15; see also pp. 12–14, 245, 261). In *Readable Relativity*, authored a hundred years ago, the section on Four-Dimensional Space-Time is pertinent, although Durell does not use the term BLOCK UNIVERSE. He concludes the section on this note: "[A]ll events, past, present, and future as we call them, are present in our four-dimensional space-time continuum, a universe without past or present, *as static as a pile of films* which can be formed into a reel for the cinematograph"; 1926, p. 86. Kip Thorne speaks of a "*preexisting*, four-dimensional 'surface' or 'fabric' [which] has an *absolute reality*"; 1994, pp. 90 and 92; this too is an evocation of the BLOCK UNIVERSE. (Emphasis added in the three passages above.)

For yet another perspective on the BLOCK UNIVERSE, consider the poem 將進酒 Jiāngjìnjiǔ ("Bring on the Wine"), a *carpe diem* exhortation by 李白 Lǐ Bái. Here are its first four lines (of 28 total),[11] followed by a translation:

君不見,黃河之水天上來，奔流到海不復回。
君不見,高堂明鏡悲白髮，朝如青絲暮成雪。

Jūn bù jiàn, Huáng Hé zhī shuǐ tiān shàng lái, bēn liú dào hǎi bù fù huí
Jūn bù jiàn, gāo táng míng jìng bēi bái fǎ, zhāo rú qīng sī mù chéng xuě

Do you not see how waters of the Yellow River flow down from the heavens,
How they hurtle seawards never to return?
Do you not see how the baron in his mansion has only white locks to mourn in the mirror,
At dawn black silk, at dusk turned to snow?

11 Source: *Táng Shī Sān-bǎi Shǒu xiángxī*, 1965, p. 112. Or, simply do an Internet search on "JiangJinJiu" and the poem will appear.

As indicated by the subtitle that I've appended, the overall tone of the poem is plain *carpe diem*. However, as I read it, the tone differs slightly at 朝如青絲暮成雪 (literally "dawn like black silk, dusk become snow"). Here we have a glimpse of the BLOCK UNIVERSE, I think, as the "dawn" of one's life is placed side-by-side with its "dusk" — the two juxtaposed, as it were, in the mirror of the previous line. Recite this as a youth, and you might have a glimpse of your future self in Old Age; recite it (or better yet *re*-read it) at an advanced age, and it might bring back a glimpse of one's Youth. At least that is how the poem has worked for me. I encountered it first at age nineteen, in "Chinese 101" at Los Angeles City College, and I revisit it now at age eighty-one. The line works in both directions at once.

On punctuation of the translated lines above: Literary Chinese has no punctuation. As for English renditions of the poem, most would place question marks at the end of lines 1 and 3 (as shown in Obata 2020[1922], p. 84, for example). In my application of question marks, to lines 2 and 4 instead, I was influenced by Tchang Fou-jouei (Demiéville ed. 1962, p. 256), who places his question marks on lines 2 and 3. I.e., I took Tchang's idea and pushed it slightly further in the same direction.

CUTTING THE GORDIAN KNOT ON *FREE WILL*

As noted earlier, many nonphysicists recoil instinctively from the BLOCK UNIVERSE concept because of its implication that free will does not exist — nor do most physicists like to entertain the BLOCK UNIVERSE *as* a philosophy since it is easily dismissed it as "just metaphysics," a dirty word in their field. But true to the title of her book, *Existential Physics*, not only does Hossenfelder treat the mechanism and philosophical implications of the BLOCK UNIVERSE in depth, but she devotes pp. xvii–xviii and 125–141 to free will, with close attention paid to the associated issues of morality, sin, and criminal acts.[12] Meanwhile, for one who is lucky enough to have read just *one* certain page in Wegner (2002), there is a way to cut the Gordian Knot on this. On page 322, Wegner points out that we don't really know what we mean when we say "free will." To prove it, he invites the reader to imagine that his/her brain contains a special unit (recently discovered or implanted) called the *Free Willer*. What activities might this *Free Willer* choose to pursue? A surprisingly narrow set. My *Free Willer* unit will choose only activities that

12 Price (1996) devotes chapter 9 to free will, but he does so in a manner that is needlessly abstruse as he entwines the whole discussion with Bell's notoriously difficult theorem.

appeal to *me*, based on every miniscule detail of *my* life from the moment of *my* birth till now — per a vast web of purely *deterministic influences*, concocted by *me* to act upon *myself*. Thus, while it is named the *Free Willer*, this hypothetical unit in my brain will find itself incapable of exercising one iota of actual freedom. And if *it* has no such freedom, then can one's native illusion of "free will" possess it? Even something seemingly mad and impetuous ("And now let's play a round of Russian Roulette, shall we?") can be chosen only thanks to some factor *X* in one's past that led one, atom by atom down the decades, *to* this moment of seemingly out-of-the-blue impetuousness.

Glancing back at the nineteenth century for a moment, Wegner's *Free Willer* discussion comports well with remarks on the "illusion of free will" found in Schopenhauer 2008[1859], I:152, 581, and 2011[1859], II:363. It resonates also with Nietzsche, as cited in Hossenfelder 2022 (pp. 127 and 139), which notes that the very term itself is oxymoronic. In sum, life is too short for us to spill oceans of ink over a mere pseudo-topic.

PART TWO: OPPENHEIMER AS A COLLECTION OF "BRIGHT SHINING SPLINTERS" AND THE CONCOMITANT FOLLY OF OFFERING CRITICISM *OR* PRAISE IN HIS DIRECTION

To set the stage, here is a potpourri of remarks that are disapproving of RO:

RO's extensive knowledge of ethics reflects his own lack of character, observed F. Osborn. He seems to be a Sanskrit dilettante, a poseur, observed Molly Lawrence. (The source for both of these remarks is Herken 2002, p. 15.) RO's conviction that ambition and worldly success are vulgar was "bolstered nicely by trust fund earnings to the extent of ten thousand dollars a year [...] His elegant physics [was] a physics of bank shots" (Rhodes 1986, p. 149). According to Kempton, he achieved a kind of moral weightlessness as he drifted on the currents of other men's decisions; the Government — not Krishna, not even science — had turned out to be God for him (cited in Hijiya 2000, p. 139).[13]

But *who* exactly is being criticized in all the above remarks? The physicist I.I. Rabi once remarked that his friend Oppenheimer was a man put together of many *bright shining splinters* that never formed an integrated personality. For Monk, this observation of Rabi's was so important that he

13 For propriety's sake, I defer the worst criticism of RO, pointedly articulated by Rhodes (1986), to Appendix C.

cited it in the *first* sentence on the *first* page of his 825-page book entitled *Robert Oppenheimer*. Inherent in Rabi's observation is what I shall call the *bright splinters admonition*: a warning to all of us to resist any urge to criticize or praise RO, or to sympathize with his plight. With that admonition in mind, let's review RO's most famous utterance — the nine words italicized below:

> We knew the world would not be the same. A few people laughed, a few people cried. Most people were silent. I remembered the line from the Hindu scripture, the Bhagavad-Gītā; Viṣṇu is trying to persuade [with his knuckle, he wipes a tear from his right eye] the prince that he should do his duty, and to impress him, he takes on his multi-armed form and says, "*Now I am become Death, the destroyer of worlds*." I suppose we all thought that, one way or another.[14] —my transcription, from the 1965 NBC documentary entitled "NBC White Paper: The Decision to Drop the Bomb," @1:04:17–1:05:10.[15]

On the Internet, RO's words are identified simply as "verse 11.32 of the *Bhagavad-Gītā*." But that is a classic factoid;[16] the actual 11.32, as previewed in Part One above, differs in its purport and in every detail.

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14 Due to the indelible iconography associated with "Now I am...," it is easy to imagine that these words were spoken in 1945 when in fact they were first uttered in 1965. Twenty years on, he was only *recalling a thought* from the day the bomb was tested. In contrast, the record of what he *said* that day at the White Sands Proving Ground is simply this: "It worked" (Bird/Sherwin 2006, p. 308; Rhodes 1986, p. 675). And as he arrived back at Base Camp, "his walk was like 'High Noon' [the 1952 Western], this kind of strut"; Rabi, as recounted in Rhodes 1986, p. 676. On the one hand, a "high-noon strut" (Herken 2002, p. 139), on the other hand, an eye-wiping bow to "Hindu scripture" — two of Rabi's disconnected "splinters" indeed.

15 Bird and Sherwin match the 1965 audio exactly (2006, p. 309). A slightly longer version of the statement appears in Rhodes 1986, p. 676. In Monk 2012, p. 455, a slightly shorter version appears. Bird/Sherwin and Monk show "death" without capitalization; in Rhodes it is capitalized. Note that the capitalization variants mentioned here (and in the previous note) are not textual matters but *judgment calls* on what is heard in the 1965 audio track.

16 The word "factoid" has two definitions. Definition 1: an untruth repeated so many times that it becomes widely accepted and even fervently "defended" as a truth. Definition 2: a miniature fact, an amusing bit of trivia. Definition 2 came about by virtue of the process given in Definition 1. In other words, Definition 2 is *itself a factoid*, per the true definition of the word. This recursive property of the word "factoid" makes it perhaps unique?

There, the speaker is Kṛṣṇa, and he calls himself Time; in contrast, RO gives us Viṣṇu,[17] who calls himself Death. And instead of influencing the Prince by a line of *reasoning* about Cosmic Time, the speaker according to RO wows the Prince with a terrifying multi-armed *display*.[18]

What induced RO to make so many substitutions that one can just barely identify his words as a take-off on verse 11.32? As we cast about for an explanation, it might occur to us that a personification of Time would be too abstract for an American TV audience of the mid-1960s (not yet the Hip Sixties), so he substituted Death in hopes of building a better bridge between this exotic "Hindu scripture" and his white-bread audience. But a closer look at the situation leads us, rather, to Arthur Ryder's translation of 11.32, where the word *kālaḥ* (Time) is rendered as Death (Ryder 1929, p. 88).[19] Of the dozen or more translations that we cite in Appendix A, Ryder's alone renders *kālaḥ* as Death, yet *it* is the one (with minor changes) that would be immortalized by RO. It is easy enough to decry this as the birth of a factoid, thinking, "It is a perverse God indeed who would permit a sub-par translation to effectively *change the Gītā itself*, as it is now and forever known to millions of Anglophones all around the globe." But recalling the *bright splinters admonition*, let's stand back for a broader perspective from which the montage of pork pie hat, Dunhill pipe, and mushroom cloud simply IS — beyond the approval or disapproval of any mortal. Continue a bit further on this path, and one might even see the Hand of Fate at work. From this perspective, one notes that "Time I am..." would not have filled the bill. RO "needed" Ryder's uniquely skewed rendition (with its misplaced suggestion of *Śiva*-esque calamity) to fit the

17 This Viṣṇu-for-Kṛṣṇa substitution is noted also by Hijiya (2000), p. 123*n*2.

18 This is Viṣṇu in his true form, i.e., not as his *avatār* Kṛṣṇa. True, such imagery is found in verses 11.24–11.30, but it has no bearing on 11.32–11.33. And there is yet another layer to this onion, for which neither RO nor Ryder (to be mentioned in a moment) can be blamed: According to the cosmography, Viṣṇu is the one in charge of *preserving* worlds, yet here (in 11.24–11.30) he is carrying on like Śiva, the one in charge of *destroying* worlds. Cf. "Hinduism is its own worst enemy" in Appendix B.

19 "[Oppenheimer] studied Sanskrit with Professor Arthur W. Ryder at Berkeley. The *Gita*, Oppenheimer excitedly wrote to the brother, was 'very easy and quite marvelous'"; Hijiya 2000, p. 130. "[A]t Berkeley he had learned Sanskrit from the scholar Arthur Ryder [...] and thereafter a worn pink copy [of the *BG* in Sanskrit we assume] occupied an honored place on the bookshelf closest to his desk"; Rhodes 1986, p. 662. See also Monk 2012, pp. 204–209 and 676, regarding RO's Sanskrit lessons with Ryder in 1931 and the *various* Indian classics to which he was thus exposed — not just the *BG*.

circumstance, wherein the speaker can ride the coattails of the pronoun "I" as if to lift *himself* to demigod status for a moment etched in time: *I* am become Death. The BLOCK UNIVERSE speaks, and we listen. Since the universe is deterministic.

Under the protection of our *bright splinters admonition*, RO comes through unscathed, but this does not let Ryder off the hook for his poor translation. When he swaps Time for Death for the sake of a '**D**eath/**D**estruction' alliteration in verse 11:32, this muddies the waters of the higher-level narrative of 11:32/11:33 as a unit, and ultimately of chapter 11 overall. (For further observations on his translation style, see Appendix A.) Now RO, having swum like a dolphin through General Relativity, went on to posit, in 1939, a black-hole model so bizarre and challenging that most other physicists maintained a mental block about it all the way through the 1950s.[20] Given such mental prowess, imagine how readily he *would* have grasped the space-time continuum implications of chapter 11, if only Ryder had not let his poetic aspirations for 11.32 undercut the meaning of 11.33, thus destroying the narrative. As for the Kṛṣṇa/Viṣṇu/Śiva cock-up — that was not entirely the fault of Ryder/Oppenheimer. To pursue that thread, see HINDUISM IS ITS OWN WORST ENEMY in Appendix B.

Here is Pais's reaction to RO's famous statement:

> One of Robert's friends, Abraham Pais, once suggested that the quote [from the *BG*] sounded like one of Oppie's "priestly exaggerations." — Bird/Sherwin 2006, p. 309.

> Pais was struck by Oppenheimer's "priestly style" when speaking before an audience. "It was as if he were aiming at initiating his audience into Nature's divine mysteries." — Bird/Sherwin 2006, p. 373. (This is consistent with Pais himself: 1986, p. 369.)

Taken in isolation, the "priestly exaggeration" remark might sound critical, even harsh. But if we read it alongside the second remark (likewise Pais's), it seems matter-of-fact; it has been defused. And this neutral reading would accord with our bright splinters admonition. Here is another critique of RO to consider, one that is widely quoted:

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20 Thorne 1994, pp. 218–219, 244. The relevant publications are Oppenheimer/Snyder (1939) and Oppenheimer/Volkoff (1939).

> [I]t seems to me that in some respects Oppenheimer was over-educated [in fields outside of science, and this] resulted in a feeling for the mystery of the universe that surrounded him almost like a fog. [Consequently,] he tended to feel that there was much more of the mysterious and novel [in physics] than there actually was [and this held him back in his career as a scientist]. —I.I. Rabi, cited in Thorne 1994, p. 208; also in Rhodes 1986, p. 149, and in Monk 2012, p. 207.

Since this is Rabi himself, we should read it more as a detached observation than as a personal criticism — given his own "bright splinters" concept of RO. Similarly, my remark in Table 1, row 2, that RO was Janus-faced should be taken as a mere observation, a statement of fact.

We turn now to a historian, Hijiya,[21] who is keen to sympathetically "understand" RO as he paints a psychohistoric portrait of him. Hijiya is a *sansei* [third-generation] Japanese-American whose parents had been sent to separate Japanese "relocation centers" by Governor Earl Warren of California[22] just a few years before he himself was born, in 1949.[23] This family background suggests a delicate,

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21 James Hijiya, "The Gita of J. Robert Oppenheimer" (2000). At the end of their section on RO's Sanskrit studies (pp. 99–102), Bird and Sherwin provide this brief reference to the article: "As the historian James Hijiya has suggested, the Gita provided an answer to this psychological dilemma [of Oppie's]: celebrate work, duty and discipline — worry little as to the consequences" (p. 102). The main sections of Hijiya's article are: Duty [or *dharma*], pp. 132–142; Fate, pp. 142–155; and Faith, pp. 156–166.

22 Earl Warren, a Democrat, is known best as the one who, in 1954, announced the Supreme Court's unanimous decision that the tradition of "separate but equal" schools (for blacks and whites) was unconstitutional. Thus did a cynical advocate of camps for Japanese in California become Chief Justice of the Supreme Court, and forever after the poster boy for desegregation. (Cynical because the FBI would have informed him that none of *these* Japanese was in the least bit dangerous. *All* Japanese Americans had long since been surveilled.)

23 For background on Professor Hijiya, a good source is "Asia-Pacific American Heritage Month, Dr. Jim Hijiya," lecture, available on Youtube, ID Ux-ExovbpsE. @20:36 *sansei* Japanese-American born on the west coast. @35:09 all four of his grandparents came from Okayama Prefecture, the one next to Hiroshima Prefecture. @1:03:49 a few years before his birth, his mother was taken out of high school and sent to a "relocation center" [i.e., to one of Governor Earl Warren's concentration camps for "Japs."] Also, for his date of birth (1949) and copious details of his academic career at Cornell and UMass, see the Author's Note in Hijiya (1989), *J.W. Deforest and the Rise of American Gentility*.

complicated stance when it comes to Oppenheimer, Hiroshima, and especially Nagasaki, where he had relatives. In an effort to avoid rancor and to remain neutral and scholarly, Hijiya seems to have overcompensated, to the extent that he comes across, at times, as an RO apologist. Thus, he proposes that RO's knowledge of the *BG* might have helped him come to terms with the obliteration of Hiroshima: "Viewed in context, the 'I am become death' quotation reveals how Oppenheimer used philosophy as an anodyne for the pangs of conscience" (p. 125). But this notion of the *BG* as guiding light for RO is at odds with numerous statements in Hijiya's own article. And it conflicts with our *bright splinters admonition*, of course. To paraphrase Rabi, with help from Gertrude Stein: "There is no there there" (in RO) against which any of us should ever feel compelled to express either criticism *or* praise. Through him, the BLOCK UNIVERSE has spoken. And we listen, that's all.

PART THREE: BLACKETT AND OPPENHEIMER AT THE CAVENDISH, 1925; THE EVENTS OF MARCH–JULY 1945 IN THE RUN-UP TO HIROSHIMA

"While studying abroad in 1925, Oppenheimer became so distressed that he left a poisoned apple on his tutor's desk." It is customary in the literature to leave it at that. In contrast, Monk leads with fourteen pages of background material, focused on technical details of the Cavendish Laboratory culture, and only then introduces the unsavory Snow White moment. This allows it to appear in a slightly more sympathetic[24] light. From Monk we learn how the drama was rooted partly in one's awakening to the profound difference between a theoretical physicist and an experimental physicist,[25] and concurrently, to the stunning superiority of one's Cambridge classmates over students one had known so recently at Harvard:

24 Here I remind the reader of our admonition in Part Two based on Rabi's "bright shining splinters." I intend *sympathetic* to be part of a coolly objective view of RO, not one that is warm, subjective and personal.

25 A rare few excel at both, notably Enrico Fermi. One possibility to consider: RO had assumed he was on track to become the next Fermi, and now found the dream shattered?

> [H]e felt, for the first time in his life, unequal to the academic demands made on him. "The academic standard here would depeople Harvard over night," he told Fergusson. All the scientists at Cambridge were "uncommonly skillful at blowing glass *and* solving differential equations." —Monk 2012, p. 97, emphasis added.

For a full appreciation of Monk's Cambridge-related material, spanning pp. 87–100, first read the chapter entitled "Harvard" on pp. 58–86. The context of RO having arrived at Cambridge *as* a "Harvard man" is important. Now the experimental physicist "is a Jack-of-All-Trades, a versatile but amateur craftsman [...] He must blow glass and turn metal [...] he must carpenter, photograph, wire electric circuits and be a master of gadgets of all kinds [...] The combination of these abilities in one individual with the right temperament to use them is rare."[26] Here Monk is quoting from an essay entitled "The Craft of Experimental Physics" whose author is none other than P.M.S. Blackett himself. In the Oppenheimer Legend, Blackett is known simply as "Oppie's tutor" — which, to American readers, might suggest an anonymous Teaching Assistant — a TA? But this person who was a "tutor" happens also to be the one who brought the seven-year *discovery-of-the-proton* saga to its conclusion — *in that very year* of the poisoned apple, as it happens. Some details. Using his cloud chamber to "photograph eight cases of alpha-nitrogen disintegration out of a total of 23,000 photographs with about 420,000 tracks of alpha particles," he was able to correctly interpret Rutherford's 1919 "Anomalous Effect in Nitrogen" (Kragh 2012, p. 25; Galison 1997, pp. 117–119). In that same year, 1925, Blackett was also the first person ever to witness a genuine *alchemical* event. True, Rutherford thought he had observed alchemy in 1919, but his example was invalid, based on a disintegration chain that he had interpreted incorrectly as: ${}_{7}N^{14} + {}_{2}He^{4} \rightarrow {}_{6}C^{13} + {}_{2}He^{4} + {}_{1}H^{1}$ (after Kragh 2012, p. 24). The false assumption of that sequence (nitrogen becomes carbon) would be corrected by Blackett in 1925, as follows: ${}_{7}N^{14} + {}_{2}He^{4} \rightarrow {}_{8}O^{17} + {}_{1}H^{1}$ (after Kragh 2012, p. 25; Gamow 1988, pp. 177–178 and 178*n*14). Here, nitrogen becomes oxygen; or, as we would write it in today's notation: $\alpha + {}^{14}N \rightarrow {}^{17}O + p$.

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26 Monk 2012, p. 99. This is not a reference to the Fermi phenomenon mentioned in the previous note. Rather, it refers to the combination of abilities needed to be ("just") an *experimental* physicist. Thus, wheels within wheels of potential discouragement for the neophyte not yet sure of his path.

In short, "Oppie's tutor" happened also to be the person who, in collaboration with Rutherford, photographically documented two of the most important moments in all of human history: the discovery of the proton, and the first genuine alchemy.[27] For another account of these events, see Monk p. 98.

In trying to decide which date best marks the proton's debut, I am reminded of this line of Abraham Pais's: "No hammer in the Horologe of Time pealed through the universe when the nuclear age in science arrived" (1986, pp. 129, 192). Aided by an allusion to Carlyle, Pais is commenting on the (initial) lack of response to Rutherford's discovery of the nucleus in 1911. Nor did the hammer peal for the discovery of the proton, drawn out so thinly as it was across the years 1919–1925.[28] Only when it came to the *splitting* of the nucleus at 0530 on July 16, 1945, did the hammer finally strike.

Now back to the poisoned-apple story. Here are Bird and Sherwin endeavoring to wrap it up:

> Over the decades, the truth of the poisoned-apple story has been muddied by conflicting accounts. [It is now clear that] the incident occurred in the late autumn of 1925, and *not in the spring of 1926* [...] 'His father then had to engineer the authorities of Cambridge about Robert's attempted murder' [said Fergusson in his 1979 interview with Sherwin]. —Bird/Sherwin 2006, p. 50, emphasis added.

Why do they allude to something in 1926? Because earlier, on the same page, they have recounted the story of RO hallucinating about the 1925 incident, *in the spring of 1926*: "Edsall and Wyman asked Oppenheimer why he was rushing back [to London] earlier than planned. 'I've done a terrible thing. I've put a poisoned apple on Blackett's desk and I've got to go back and see what happened.' [A]s Edsall put

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27 Somehow an alchemy that takes us "up" from nitrogen to oxygen (i.e., from seven to eight protons) rather than "down" from nitrogen to carbon (as Rutherford had misinterpreted a closely related experiment in 1919) is especially exciting. Accordingly, in commenting on Blackett's experiment in a new edition of *Atombau*, Sommerfeld felt compelled to use an uncharacteristic exclamation mark: *Aufbau durch Einlagerung*! (Building-up by storage!); Sommerfeld 1944[1919,1929], p. 178.

28 Granted, the proton was first "noted" in 1919, but not fully understood. And yes, it was Rutherford who proposed the name "proton" in 1920 (Pais 1986, p. 296). Still, it is "Blackett in 1925" that I've long regarded as *the* landmark (and aware only recently that this was also the year of the poisoned apple).

it later, 'he spoke of it with a sense of reality [that made one feel it must have been a] hallucination'"; Bird/Sherwin 2006, p. 50. Thus we see that the phrase "not in the spring of 1926" just chases its own tail and clarifies nothing.[29]

One of Monk's primary aims in writing his biography of RO was to fill in large pieces of the picture that are missing even from *American Prometheus*, the seemingly exhaustive biography, 721 pages long, that had been a "quarter-century in the making" according to its authors Bird and Sherwin (p. xii). In particular, Monk wished to portray RO's life *in physics* (pp. xi–xii), as distinct from his managerial activities at Los Alamos and his attempts to become a D.C. insider. In chapters 4 through 8, Monk achieves fine results in this endeavor (e.g., with his unique coverage of the Cavendish episode, as noted earlier).

But in chapter 9, with his coverage of the Oppenheimer/Volkoff collaboration "On Massive Neutron Cores" (1939), Monk misses out on the very best opportunity to portray RO the astrophysicist. On p. 256, he gives us a vignette of those two "on the lawn of the old faculty club at Berkeley," but that vignette he has borrowed from the tail end of an astonishing section in Thorne (1994), where it serves merely as coda to the story itself, which is highly technical and yet approachable by the general reader — a gift given to us by someone who is a theoretical physicist in his own right, with a Nobel Prize in gravitational physics (2017). In Thorne's book, the reader is taken plausibly *inside the head of Oppenheimer* as he prepares to write "one of the great [sic] astrophysics articles of all time" (Thorne 1994, p. 208). All told, Thorne provides twenty-five pages of detailed insights into Oppenheimer's mind, working style and very special strengths as a theoretician. In those pages, Thorne provides a unique insider's appreciation of RO (tempered by an unvarnished account of how petty and vile RO was toward Zwicky). But from the faculty club vignette that Monk cites, the reader will have no idea that s/he should now pause to read pages 187–197 and 206–219 in Thorne 1994, its source.[30]

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29 Monk proposes a rationale for RO's odd departure from Corsica (2012, pp. 114–116), but it seems contrived and half-hearted. The approach adopted by Rhodes (1986) turns out to be the wisest: he feigns ignorance of the whole poisoned-apple business. I've searched in vain for any hint of it in his otherwise encyclopedic classic of 886 pages.

30 In "Preface and Acknowledgements" Monk does mention Thorne, the person, as a resource, but then cites his book only fleetingly as discussed above (by way of a note buried on p. 727). Granted, one would balk at citing all 1,500 words of Box 5.3 (= Thorne, pp. 193–196) even with ellipses, but in a book entitled *Robert Oppenheimer* one must at least note the existence of

Onward to our A-bomb program: Was it juggernaut-smooth and untouchable, or as clunky and fallible as an immense Rube Goldberg machine?

> [Truman took] full responsibility for introducing the atomic bomb as a [military weapon]. But his decision was not so much a positive act as a *choice not to halt* the enormous, multifaceted effort which he had found well advanced three months earlier [in April, 1945, when Roosevelt died]. To have called such a halt [...] would have required an almost inconceivable exercise of individual initiative. —Alice Kimball Smith 1965, p. 65, italics added.

No doubt, that *was* Truman's perception of the program. But was it an accurate perception — this notion that the Manhattan Project was something as untouchable by an outsider as, say, the process for manufacturing an oil rig or an ocean liner? Or, did it possess lingering aspects of a kitchen-table project — albeit scaled up to a wartime pitch of mass psychosis? After all, the Calutrons at Oak Ridge had their genesis literally on a tabletop where Lawrence had cobbled together his four-inch gadget that was the cyclotron's prototype.[31] At Los Alamos, in "a bravado metonymy," the Trinity bomb itself would be nicknamed "the gadget" (Rhodes 1986, p. 461; Herken 2002, p. 84). And, swaddled in dozens of criss-crossing strips of household masking tape,[32] it did look the part.

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such an astonishing sui generis portrait of one's famously elusive subject. Conversely, it strikes me that Monk allots too much space (pp. 259–305) to A-bomb/H-bomb construction puzzles — topics that feel tangential in his book, topics that have been covered better by others, notably Rhodes (1986).

31 For twenty-five dollars, Lawrence built a tabletop model which he debuted in 1930 on a clothes hanger attached to a kitchen chair (Herken 2002, pp. 3–5). After being scaled up and retooled as a Calutron (its name derived from University of California + cyclo-tron), this device became a mass spectrometer for separating isotopes of uranium. What does "scaled up" mean? From the Treasury, $300,000,000 worth of silver was borrowed to make the electromagnet windings for the Calutrons at Oak Ridge (Rhodes 1986, p. 490).

[32] To hold pieces in place? No, the tape's purpose was to keep sand and dirt out of the holes that allowed the detonators and diagnostic wires to penetrate the casing. This is per Wellerstein at blog.nuclearsecrecy.com/2014/11/10/fat-mans-uranium, accessed 23 November 2024.

For the "masking tape" photograph, see Los Alamos National Laboratory Archives, TR-229.

As a first step in challenging the juggernaut image of the Manhattan Project, let's acknowledge the following two events that occurred in the same month:

1. On a report dated July 3, 1943, Soviet agent Kurchatov blue-pencilled the names *Seaborg* and *Segrè*, indicating to its author, agent Pervukhin, that details were now needed regarding the recent *fissioning of plutonium* by these two physicists (Herken 2002, pp. 119, 129, 361*n*.).
2. Traveling the 1,200 miles from Santa Fe to Chicago by train, likewise in the month of July, 1943, we find Seaborg himself — unescorted — carrying a 200 mg piece of plutonium *in his pocket*. According to Rhodes (pp. 476–477) that "speck of plutonium [was] most of the world's supply" of Pu-239 at the time.[33]

No *visible* escort, yes; that would have been a good plan. But no escort at all? Perhaps it was considered clever, but many would regard it as foolhardy. After all, Herken (2002) devotes all of chapters 5, 6, and 10 (plus parts of chapters 7, 8, 9 and 12) to the Soviet espionage activity and the "divided loyalties" in evidence from Day One all across the United States, where the intelligentsia of that era were intoxicated by romantic notions of Communism. Could Seaborg have been innocent of all that? Or was he the absent-minded professor type (as suggested by photographs)? Or, as the one who had "discovered and named plutonium,"[34] did he feel, perhaps only subconsciously, that the gods must now protect him during his thirty-hour train ride to Chicago? A little of all three?

With such examples, the popular image of the Manhattan Project begins to erode, and what one sees instead might resemble a transcontinental Rube Goldberg contraption with way stations in Massachusetts, New York, New Jersey, Pennsylvania, Tennessee, Missouri, Illinois, Minnesota, Kansas, New Mexico, California, and Washington State (and of course Washington D.C.) At each way station, there were vulnerabilities to sabotage or espionage by anyone from Oppenheimer (obdurate in his vaguely Communist flirtations) or Seaborg (careless?) down to the janitors and the "uncleared

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33 The density of plutonium is 19,840 kg/m^3 (Emsley 2000, p. 156). Thus, the volume of Seaborg's 200 mg sample would have been about 10 mm^3 — slightly below the size of a sugar cube or bouillon cube, that is.

34 Actually, co-discovered. Plutonium was the first of a whole series of elements that would be "discovered" (i.e., created) over the period 1940–1958 by teams comprised always of Seaborg et al. or Seaborg inter alia. See Emsley 2000, pp. 20–21 (Am), 32–33 (Bk), 50–51 (Cf), 64–65 (Cm), 126–127 (Md), 144–145 (No), and 156–157 (Pu).

construction workers [who] were still crawling around in the ceiling" during the five orientation talks that Robert Serber delivered at Los Alamos in April of 1943 (Herken 2002, pp. 83–84).[35]

And once we've dared challenge the notion that the Manhattan Project was a hermetically sealed juggernaut, we might feel emboldened to question the very premise that engendered it, namely that the vaguest notion of a German bomb dictates the creation of an American bomb. Here is a different response: Instead of rushing headlong toward the Age of Possible Nuclear Holocaust, what a reasonable nation might have done with its two billion dollars (Sherwin 1975, p. 42) was fund a fleet of bombers to keep the uranium ore at Shinkolobwe and Jáchymov[36] inaccessible to the enemy. An isolated example of this commonsense approach was the Allies' sabotage of Norsk Hydro (Rhodes 1986, pp. 513–517) to curtail the Germans' supply of heavy water. But let us not forget that the heavy water was being used in a misbegotten reactor project, *not* in a nuclear ordnance project.

How, really, could the latter have existed?[37] But for our game to play out satisfactorily, we Americans must have *wanted* Heisenberg to make an atom bomb, so long as we could "shock and awe" his team by producing ours faster. Whether pursued consciously or subconsciously, that would have

35 At Oak Ridge, Tennessee, there were 4,800 employees in 268 buildings, working around the clock. The largest of the K-25 diffusion tanks was "42.6 acres under [one] roof, some 2 million square feet" (Rhodes 1986, pp. 490, 494). See especially pp. 552–553 re "harnessing the processes together," which, in a "terrible scientific blunder," had hitherto been treated as "competing horses in a race." And the Last Word: "You see, I told you it couldn't be done without turning the whole country into a factory. You have done just that" (Bohr to Teller, as quoted in Rhodes, p. 500; see also Rhodes p. 294; Monk 2012, p. 270). Stepping back for the grand total: "[U]p to 125,000 people were employed in the factories [...] built for the program" (Monk p. 469). All perfectly loyal or perfectly in the dark?

36 If paratroopers of the Czech Resistance, trained in Scotland on a shoestring, were able to penetrate the air space three times, resulting in the 1942 assassination of Obergruppenführer Heydrich in Prague (Wiener 2012, pp. 41, 44, 45, 62, 83), then wouldn't we, with billions to spend on conventional bombers (in lieu of the Manhattan Project), have been capable of harassing the miners at Jáchymov? (For all uranium locations, see Sherwin 1975, pp. 26–27; Monk 2012, p. 270; Rhodes 1986, p. 343.)

37 After all, it could not possibly have been a fair competition since the Germans had chased "*Jewish science*" out of Germany to the United States (Monk 2012, p. 237). Indeed, this truth was revealed at the war's conclusion: The mighty *deutsche Physik* had fumbled for five years without even figuring out how to make a useful reactor, much less a bomb. Witness Heisenberg and Hahn, neither of whom, in August 1945, believed Hiroshima could have been destroyed by a fission bomb (Monk p. 468; Sherwin 1975, p. 18).

been the psychology among both the D.C. honchos and the Los Alamos physicists, each for his own slightly different flavors of boyish excitement (see Figure 2: Truman's silent giggling fit). Accordingly, ideas suggesting the approach that I call commonsensical would not have been seriously pursued. (Discussion of the commonsense approach continues in Appendix C.)

Also pertinent to the psychology question are the reactions of Fermi and Rabi to the activities and mood at Los Alamos. In 1943 these two had been invited there to serve intermittently as senior consultants, aged 42 and 45 respectively, in a population of physicists whose average age was 25. Thus, they were able to see certain facets of the project with an outsider's objectivity or freshness.

> For [Fermi] the war work was duty [...] and the eager conviction he found [at Los Alamos] puzzled him. "After he had sat in on one of his first conferences here," Oppenheimer recalls, "he turned to me and said, 'I believe your people actually *want* to make a bomb.' I remember his voice sounded surprised." —Rhodes 1986, p. 468. For context see pp. 453, 460 and 465. (At first blush, Fermi's surprise might seem to imply disapproval. But people are complicated. For a surprisingly ugly side of Fermi, one that was cheered on by RO, see pp. 510–511.)

And then there was Rabi who stood back even further from the project: "Oppenheimer knew that in some fundamental sense the Manhattan Project had achieved exactly what Rabi had feared it would achieve — it had made a weapon of mass destruction 'the culmination of three centuries of physics.'" The passage I quote is from Bird/Sherwin 2006, p. 322. These same words of Rabi's are found also in Sherwin 1975, p. 56, where they are given more context.

Table 1. Some key events of the period March–August, 1945

1945	Item	Sources/Comments
March 25	***Szilárd memorandum***, intended for Roosevelt. But he died on April 12. Cf. June 11, July 17 below.	Blackett 1948, 89. Smith 1965, 28. Rhodes 1986, 635–636.
May 31	With colleagues at Los Alamos, RO counseled that scientists should never interact with D.C. officials but remain quietly at the "***children's table***" (as I call it), keeping opinions to themselves. However, regarding himself as the exception to his own rule, he seated himself eagerly at the "***adults' table***" for the May 31 ***Interim Committee*** meeting. He "would not for the world have missed the chance to advise at so high a level"; Rhodes 641–642; Bird/Sherwin 293.	Here is RO at the meeting: "We find ourselves closer to these latter [hawkish] views." Sherwin 1975, 295–305. Herken notes the artful word *closer* (134). The word *We* is likewise manipulative as it implies that he speaks for those left back at the "children's table." RO could exhibit this Janus-faced behavior even *within* a single meeting. Bird/Sherwin 2006, 327.
June 11	***Franck Report***, with seven signatures, notably that of ***Szilárd***. In D.C., it was finessed by War Secretary Stimson into oblivion, thus never seen by Truman.	Blackett 1948, 114–115 (excerpt). Smith 1965, 41–48, and *560–572*: *full text*. Sherwin 1975, 210–215. Herken 133–134.
Monday July 16 5:30 a.m.	***Trinity***: the A-bomb test at White Sands. In contrast to his "high-noon strut" following the test itself in 1945, when reliving that day for a documentary in 1965, RO wipes a tear and cites Hindu scripture (see transcription in text).	Bird/Sherwin 308; Rhodes 676. "The kind of person I admire most would be [...] extraordinarily good at [many] things but still [maintain] a tear-stained countenance," RO cited in Herken p. 12; see also p. 139.
July 17	***Szilárd petition***, intended for Truman to read. Drafted July 3; final version, July 17. Per Bird/Sherwin, it garnered 155 signatures, but RO chose to send it up "through *normal* Army channels" so that it would "arrive too late"; 302–303, my italics. Meanwhile, he also countered the petition with his accustomed "children's table" argument. (See row 2.)	Another source says the number of signatures collected was 88, at which point the military authorities stopped its circulation because it revealed the state of progress on the bomb; Smith 1965, 55. See also 55*n*77 re wide disagreement on "number of signatures obtained."

1945	Item	Sources/Comments
August 6 ***Hiroshima***	As Ernest and Molly Lawrence hear the news on their radio at home in the Berkeley Hills, he tells her: "Now we will have no more war and the most backward countries will be able to start catching up" (Herken 2002, 139). Thus the	Why did it happen? It was an *act of diplomacy* to deprive the Soviets of postwar spoils and preclude a "Communist North Japan"; thus, it was the first act of the Cold War. Paraphrase of Bird/Sherwin 389, after Blackett 135, 139–140. In other words, far from being
August 9 ***Nagasaki***	obscenity of corn-fed innocence. RO abandons that pipe dream and concerns himself instead with "international control." But he ruins his October 25 interview with Truman by lamenting the "blood on my hands" (Bird/Sherwin 331–333; Monk 493–494). That non sequitur of his is both a grotesque trivialization of Hiroshima and a revelation that he still has no clue, two months on, about *why* Hiroshima happened. See column 3 →	about "lives saved"; far from being an act of retribution (a War Crime); far from being a plan "to end all wars" by showing something horrific to the world; it had instead been a *chessboard move*, made in cold blood by a giggly old fellow. See Figure 2.

Comments on Table 1: During his awkward meeting with Truman, RO begins to realize that *he* is effectively "at the children's table," having imagined for all those months that he alone of all the physicists had been privileged to sit "at the adults' table."

> Oppenheimer left Washington a chastened man. His attempts to insinuate himself into the top levels of U.S. politics had failed, and in making them he had alienated the politically active scientists whom he had hoped to lead. —Monk 2012, pp. 494–495.

In column 3 of this row I allude to an *act of diplomacy*. Truman's diplomatic message to the Soviets, delivered in the form of the Hiroshima bomb detonation, was this: "The U.S. has full control of the Japanese theater; we do not need your help; therefore you will have no place at the treaty table, where you would have endeavored to create Communist North Japan." Also in this part of Table 1, thanks to Blackett we have the irony of "Cold" occurring in the context of a fire-ball hellscape.

Note how the famous *Szilárd petition* makes its appearance in Table 1. It is preceded by the

Franck Report (where Szilárd is one of the seven signatories), which is preceded by the *Szilárd memorandum*, wherein Szilárd frantically tries to correct the error of the 1939 letter he had drafted for Einstein's signature.[38] There are several take-aways from the Szilárd thread in Table 1: The main point is that the well-known *Szilárd petition* was not an isolated event but the last gasp in a whole series of such efforts to prevent something terrible from happening (each accompanied by yet another letter that Szilárd would draft for Einstein's signature). Unhappily, the second thing to notice is that these documents suffered from over-abstraction (to borrow Blackett's apt term) and boring prolixity, never mind how dire the underlying issue was.[39] The third take-away: At the end of the day, Szilárd emerges as a figure who is everywhere at once, a slightly crazed-seeming busybody, obsessed for years with the idea of "saving the world" by taking out a patent on the A-bomb (Rhodes 1986, pp. 221, 224, 239, 254, 271, 504, 505, 508.) And in a letter to Vannever Bush, he manages to articulate *the* most stealth-obscene idea that had flickered in and out of the heads of various physicists during the war years:

> [T]here can be no peace if [the A-bomb] is simultaneously in the possession of any two powers unless these two powers are bound by an indissoluble political union. [And it] will hardly be possible to get political action along that line unless high efficiency atomic bombs have actually been used in this war and the fact of their destructive power has deeply penetrated the mind of the public. —Rhodes 1986, p. 509, cited from Szilárd's January 14, 1944, letter to to Vannever Bush, Chair of the National Defense Research Committee.

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38 "I made one great mistake in my life," said Einstein in an interview, referring to the Szilárd letter he signed in 1939, urging Roosevelt to inaugurate an atomic-bomb project. Sherwin 1975, p. 27; Monk 2012, pp. 270–271.

39 The full text of the *Franck Report* is found in Alice Kimball Smith 1965, pp. 560–572. Here is a random sentence from it: "We now consider the second of the two suggestions made at the beginning of this section, and ask whether we could not feel ourselves safe in a race of nuclear armaments by virtue of our greater industrial potential, including greater diffusion of scientific and technical knowledge, greater volume and efficiency of our skilled labor corps, and greater experience of our management — all the factors whose importance has been so strikingly demonstrated in the conversion of this country into an arsenal of the Allied Nations in the present war" (p. 563).

In plain English: We must use a well-functioning A-bomb once on all the women and children of a large metropolis, because this will *prove to the world* that: Wars. Can. Never. Be. Fought. Again!

On hearing the actual Hiroshima and Nagasaki news, Szilárd switched back to his usual viewpoint: "Using the atomic bombs against Japan is one of the greatest blunders in history" (Rhodes 1986, p. 735). But on hearing the same news on the radio, Lawrence doubled down on his fantasy, in a mode that might be called *innocent*-obscene [40] to distinguish it from Szilárd's mastery of the *stealth*-obscene mode of discourse.

As for the D.C. insiders, many acquiesced in the narrative that Hiroshima had been "necessary for saving soldiers' lives," all the while knowing that the real reason for the rush to drop bombs on Hiroshima and Nagasaki had been to preclude a place for the Soviets at the treaty table,[41] and prevent the specter of a Communist North Japan. Thus, Hiroshima was not Lawrence's asylum-worthy fantasy, nor was it a hot-blooded act of retribution, a "mere" War Crime; rather, it was a cold-blooded *act of diplomacy*, which is to say: a Crime Against Humanity. Viewed in moral terms, this would have been "too much" for the public to handle, so it was dysfunctionally denied by those few who knew the truth. Blackett's recommendation: The D.C. insiders must set aside this problem of moral repugnance and tell the American public the truth about Hiroshima and Nagasaki, because, otherwise, there would continue to be "a breeding ground for hysteria" as members of the public conjured many new situations which might be equally in need of an A-bomb. What the American public needed to understand, wrote Blackett, was that the Soviet context had been ultra-*special* and extremely *rare* and thus extremely *unlikely* to recur (1948, pp. 142–143, my italics). At this juncture, doesn't Blackett himself start to sound a bit unhinged?

Bird and Sherwin devote pages 293–297 to the Interim Committee meeting of May 31. (See our Table 1, row 2.) The following passage is especially noteworthy:

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40 As he explained Hiroshima to Molly; see Table 1. In Herken 2002, p. 201, we find a vignette that further defines his brand of corn-fed innocence: when RO told an MIT audience that physicists had "known sin," Lawrence "bristled at the suggestion, [declaring that physics had never] caused *him* to know sin."

41 Bird/Sherwin 2009, p. 389, after Blackett 1948, pp. 135, 139–140. Context: At Potsdam, Stalin had announced August 8 as the date he would enter the war against Japan, with implications of a place at the treaty table soon thereafter.

> [T]hen Secretary Stimson summarized what seemed to be a general agreement: "...that we could not give the Japanese any warning; that we could *not* concentrate on a civilian area; *but* that we should seek to make a profound psychological impression on as many of the *inhabitants* as possible." Stimson said he agreed with James Conant's suggestion "that the most desirable target would be a vital war plant employing a large number of workers and closely surrounded by workers' houses." *Thus, with such delicate euphemisms, did the president of Harvard University select civilians as the target of the world's first atomic bomb*. —Bird/Sherwin 2006, p. 296, my emphasis.

Figure 2. Truman's silent giggling fit over the destruction of Hiroshima, and recovery from same.

Here is an excerpt from Truman's Hiroshima announcement: "[M]ore power than twenty thousand tons of T! N! T! [after six seconds of radio silence he resumes with:] We have spent more than two billion dollars [on the project]." From the parallel MovieTone footage, we can see that the six-second silence was occupied by a fit of silent laughter and giggles. The four screen shots in Figure 2 show him [a] during the silent laughter attack; [b] and [c] giggling as he recovers from it; and [d] bugging his eyes, as if to demonstrate that he is now in control.[42]

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42 I happened upon this rare footage in "The Ant Walkers of Hiroshima," on Youtube channel "Shrouded Hand," ID lK19NTfWvNM, posted September 2024, duration 25:39. Part of Harry Truman's announcement of the Hiroshima bombing is seen and heard @1:11 through 1:40. In the text above, I have transcribed the portions of the statement that occur @1:22–1:25

In all the world, is there a sight more ennobling than that of the Golden Gate, especially when viewed from afar in the twilight or dawn? (So many adjectives have been applied to the bridge over the years, it would be easier to enumerate those that have *not* been tried than those that have, never quite satisfying the journalist: *so dutifully magnificent, so stoically radiant*...) But had a naïve resident of Berkeley gazed westward from the Big C[43] on the morning of July 16, 1945, the speck she saw under the Golden Gate Bridge would have been a ship carrying the U235 "bullet" for Little Boy, to be assembled on Tinian and exploded over Hiroshima.

CONCLUDING REMARKS

"[A]ll our past selves — and grandparents — are alive [...] [T]he universe keeps a faithful record of the information about all you have ever said, thought, and done"; Hossenfelder 2022, pp. 11 and 14. Thus, the concept has emotional appeal on top of cerebral appeal and the imprimatur of Minkowski/Einstein. But how exactly would it fit into Hinduism? True, the *Bhagavad-Gītā* has much to say about the eternal individual soul, not just in verses 11.32–11.33, on which we focused in Parts One and Two, but all through the classic, e.g. in verses 2.12–2.30.

But here's the rub: The *Bhagavad-Gītā* is *not* Śruti — not revealed scripture. Rather, it is Smṛti, the kind of teaching that is based on fables, epochs or history, as it provides advice for daily living.[44] Thus, one Vedic scholar places the *Gītā* carefully in context as follows: "Without fear of contradiction it may be said to be the Holy Bible of India, though, unlike the Upaniṣads, it is not regarded as Śruti, or revealed scripture, but only as Smṛti"; Prabhavananda 1979, p. 95; see also p. 79.

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and 1:32–1:34. In Figure 2, I show screen shots taken from the intervening period of silence @1:26–1:31, during which he struggles to bring his mirth under control.

43 This paragraph I've based indirectly on Rhodes 1986, pp. 655, 678, 702. Chronology notes: from the Rad Lab (or Lawrence Berkeley National Laboratory), the same view *would* have existed, except that those facilities were not relocated from the campus to the Berkeley Hills until the following year, 1946. Just two hundred feet south of the Cyclotron's (eventual) location is the Big C, dating back to 1905. So I place my observer there; it is 0836 Pacific War Time, just four hours after Trinity.

44 Śruti is literally "that which is heard" [from on-high], while Smṛti is literally "that which is remembered"; Viswanathan 1993, p. 41. Śruti teachings are "actually revealed by God," while Smṛti teachings come from "divine incarnations, sages or prophets"; Prabhavananda/Isherwood 1951, pp. 27–28.

With that in mind, consider what the same author has to say about the notion of an immortal soul in the context of a religion that is centered on *mokṣa*:[45]

> Immortality as taught in the Upaniṣads does *not* imply a survival to all eternity of the individual self, of what we know in this world as an individual [person]. This self has no absolute reality, and can therefore have no absolute or permanent existence. When mokṣa is achieved, [the individual self] altogether disappears [...] As a matter of fact, *the very word time*[!], as well as the word eternity, is, strictly speaking, out of place in the present context [viz., in his chapter devoted to the Upaniṣads]. —Prabhavananda 1979, p. 62, emphasis added.

Thus, it seems that while the BLOCK UNIVERSE comports well with the *Bhagavad-Gītā*, its attempted reconciliation with Vedānta (the more serious kind of Hinduism) might be a fool's errand. Which leads to a desperate idea: Suppose we said that the box labeled "Māyā" in Figure B-1 (in Appendix B) simply *is*, by fiat, part of the BLOCK UNIVERSE? That way, at least all of our illusory[46] selves would be eternal, never mind that in some cases the corresponding True Self (Ātman) would have been absorbed, via *mokṣa*, back into Brahman.

Returning for a moment to the Part One discussion, if we accept the BLOCK UNIVERSE concept, then Hiroshima is not a *distant* nightmare, softened by the passage of some eighty-odd years;[47] rather, the Hiroshima moment of 1945 still exists, as concretely as a butterfly pinned to a corkboard. In every detail; see note 41. But might the horror and shame of this "act of diplomacy" (played out by aging

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45 The term *mokṣa* is another name for *Brahma*[*n*]*-nirvāṇa*, two versions of which I symbolize by the vertical downward arrows on the right-hand side of Figure B-1 in Appendix B. The $a \rightarrow b$ path is during life; the $x \rightarrow y$ path is at death. This is "liberation" or "enlightenment," meaning the return (hence *loss*) of one's soul, back to *impersonal* infinite Brahman. Think of a raindrop falling (back) into the ocean, or Roy Batty in the 1982 film *Blade Runner*: "All those moments. Will be lost in time. Like tears in rain." Cf. Prabhavananda 1979, pp. 62 and 109.

46 Recall that phenomena up here in Māyā are not illusions; they are only illusory.

47 The author was born on December 5, 1943, so he and the bomb have been "growing old together" all this time.

WASPS on their US-Soviet chessboard) be mitigated, then, by the wisdom of verses 11.32–11.33, whereby their act had "already" occurred elsewhere and elsewhen, in the BLOCK UNIVERSE?

APPENDIX A

Bhagavad-Gītā, verses 11.32 and 11.33, Prabhupāda 1986[1972], p. 509-511:

श्रीभगवानुवाच
कालोऽस्मि लोकक्षयकृत्प्रवृद्धो
लोकान्समाहर्तुमिह प्रवृत्तः ।
ऋतेऽपि त्वां न भविष्यन्ति सर्वे
येऽवस्थिताः प्रत्यनीकेषु योधाः ॥३२॥

śrī-bhagavān uvāca
kālo 'smi loka-kṣaya-kṛt pravṛddho
lokān samāhartum iha pravṛttaḥ
ṛte 'pi tvāṁ na bhaviṣyanti sarve
ye 'vasthitāḥ pratyanīkeṣu yodhāḥ

तस्मात्त्वमुत्तिष्ठ यशो लभस्व
जित्वा शत्रून्भुंक्ष्व राज्यं समृद्धम् ।
मयैवैते निहताः पूर्वमेव
निमित्तमात्रं भव सव्यसाचिन् ॥३३॥

tasmāt tvam uttiṣṭha yaśo labhasva
jitvā śatrūn bhuṅkṣva rājyaṁ samṛddham
mayaivaite nihatāḥ pūrvam eva
nimitta-mātraṁ bhava savya-sācin

Bhagavad-Gītā, verse 11.12, Prabhupāda 1986[1972], p. 497:

दिवि सूर्यसहस्रस्य भवेद्युगपदुत्थिता ।
यदि भाः सदृशी सा स्याद्भासस्तस्य महात्मनः ॥१२॥

divi sūrya-sahasrasya bhaved yugapad utthitā
yadi bhāḥ sadṛśī sā syād bhāsas tasya mahātmanaḥ

Figure A-1. Sanskrit text and romanization for *Bhagavad-Gītā* 11.32–11.33 and 11.12. Source: Prabhupāda (1986[1972]) pp. 509–511 and 497.

Phrases to note:

- At the beginning of 11.32, *kālo 'smi* [from *kālaḥ asmi*] "Time I am."
- In 11.33, [*ete*] *nihatāḥ pūrvam eva* "[all these already] killed by previous arrangement."

We previously noted in the text that RO's most famous utterance ("Now I am become Death") occurs nowhere in the *BG* itself. We speculated that it probably traces back to these lines in his teacher's translation of verse 11.32 (Ryder 1929, p. 88):

> **D**eath am I, and my present task
> **D**estruction. View in *me*
> The active slayer of these men;
> For though you fail and *flee*,
> These captains of the **h**ostile **h**osts
> Shall die, shall cease to *be*.

So keen is Ryder to showcase the alliteration of **D**eath and **D**estruction (to be musically answered in a moment by **h**ostile **h**osts) that he is willing to *change the topic itself* from Time to Death. For comparison, here are three renditions of verses 11.32–11.33 by other translators (with slight abridgements):

> [Kṛṣṇa said:] I am ***Time***,[48] the destroyer of mankind [...] [Now,] defeat the foe, and enjoy the full-grown kingdom! They [the warriors on both sides] are already, as it were, destroyed by me. Be thou alone the immediate agent [of their *apparent* demise, here in the illusory realm of Māyā]. —Wilkins (**1785**) p. 68.

> Śri Bhagavān said: I am mighty Kāla, the eternal ***Time***-spirit [...] [Now,] do arise and win glory; conquering foes, enjoy the affluent kingdom. These warriors stand already slain

48 Emphasis added to Time in the three cited passages.

> by Me; be you only an instrument, Arjuna. —*Śrīmad Bhagavadgītā* (**2023**), p. 142, repunctuated.

> [Kṛṣṇa said:] ***Time*** I am, the great destroyer of the worlds [...] [Now,] conquer your enemies and enjoy a flourishing kingdom. They [the warriors on both sides] are already put to death by My arrangement, and you [Arjuna] can be but an instrument in the fight. —Prabhupāda 1986, pp. 510–511.

In all of these translations, we see that the speaker identifies himself as Time, not Death.[49] Not that Ryder's word-choice is an out-and-out *mis*translation, but in choosing to fiddle with *kālaḥ*, he is the odd-man-out among a dozen or more native and foreign translators who preceded and followed him.[50] Since Ryder was the U.C. Berkeley professor who is said to have given RO private Sanskrit lessons, it might seem safe to assume that RO's version of 11.32 is somehow rooted *in* Ryder's translation (1929, p. 88). Except...nothing is ever so simple with RO: In Hijiya 2000 (pp. 131 and 148) we find references to RO being in the midst of doing his *own* translation of the *Gītā*. And if he was working that closely with the urtext, it seems odd that he would have accepted, so easily, Ryder's rendering of *kālaḥ* as Death, which can be accommodated only by finagling.[51] To what degree? Here I cite a dictionary entry for कालः (*kālaḥ*) which could rationalize, just barely, Ryder's glossing the word as "death":

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49 Here are snippets of three more translations, to help round out the picture: "Thou seest Me as *Time* who kills"; Arnold (1885) p. 54. "I am come as *Time*"; Prabhavananda/Isherwood (1951), p. 94. "I am *Time*, the law of the destruction of [the] universe"; God's Grace Distributions (anonymous undated vest-pocket edition), p. 202, my italics. Again, in all cases the speaker identifies himself as Time, not Death.

50 In addition to the half-dozen translators cited already, in Hijiya 2000 we find the names of five more translators who render *kālaḥ* as *Time* (i.e., as *expected*): Besant [2015], Radhakrishnan 1948, Easwaran 1985, Miller 1986, and Goodall 1996 (Hijiya, p. 132*n*51). Finally, Hijiya cites a couple of cases, such as Edgerton 1944, where Death is tucked in parenthetically: "Time (Death)." With these latter examples, Hijiya means to justify Ryder's solitary "Death." His argument seems rather desperate.

51 In Bird/Sherwin 2006, the Time/Death discrepancy is mentioned in a note on p. 646: "Some Sanskrit scholars suggest..." (But this requires only a good dictionary, not a colloquy of experts.) Monk gives the discrepancy a slightly higher profile, on

1. black or dark-blue color
2. time
3. fit or opportune time
4. a period or portion of time
5. the weather
6. time as one of the nine *dravyas* [or "substances" of Jainism]
7. the supreme spirit regarded as the destroyer of the universe*
8. Yama, the God of death*
9. fate, destiny
10. the black part of the eye
11. the (Indian) cuckoo
12. the planet Saturn
13. name of Śiva [but see remark in Appendix A re Śiva the Destroyer vs. Viṣṇu the Preserver]*
14. a measure of time in music or prosody
15. a person who distills and sells spirituous liquor
16. a section, part [of something]

None of these sixteen definitions from Apte (1970, p. 146)[52] is literally "death," but three of them (the ones I've marked with an asterisk) are death-*related* or destruction-*related*, and this is what might allow one, if so inclined, to defend Ryder and say that he has not, in a legalistic sense, actually *mis*translated *kālaḥ* — which, by the way, he renders correctly as "time" in verse 10.30, on p. 79.

Not only alliteration but rhyme, too, is a preoccupation of Ryder's, as on *me/flee/be* for verse 11.32 and on *breath/death* in verse 7.6 (p. 56):

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pp. 455–456. Like us, Monk traces the problem to Ryder. However, he seems innocent of Ryder's odd-man-out aspect, relative to two hundred years of translations by others who preceded and followed him.

52 Not to be outdone, sanskritdictionary.com offers 55 definitions for कालः (*kālaḥ*). Their definition 41 is "time (as leading to events...)"; their definition 42 is "time (as destroying all things)." And for the curious: what happens if we ask Google Translate what कालः means? The response is simply "time." Likewise at learnsanskrit.cc, the response is simply "time."

Regard my nature as the womb
Of all that here draws *breath*;
To all the world of life, I am
Creation; I am *death*.

Here, for a second time, we find him adding *death* to the mix for the sake of an abstract grid. What follows is a sampling of how others handle the final two lines of verse 7.6. In each excerpt, I've emphasized the word chosen to translate *prahayaḥ*:[53]

> "I am the creation and the ***dissolution*** of the whole universe" (Wilkins 1785, p. 52).
>
> "I make and ***unmake*** this Universe" (Arnold 1885, p. 37).
>
> "I am the birth of this cosmos: Its ***dissolution*** also" (Prabhavananda/Isherwood 1944, p. 70).
>
> "I am both the origin and the ***dissolution***" (Prabhupāda 1986, p. 330).
>
> "I am the source of the entire creation, and into Me again it ***dissolves***"
> (*Śrīmad Bhagavadgītā* 2023, p. 92).

Once again, Ryder is the odd-man-out: only he finds a rationale for rendering *prahayaḥ* as "death." Gradually, a general problem with Ryder emerges: He seems to be at pains to make his *own* confections of prettified verse — quatrains that can be intoned straight through for enjoyment, as when one passively takes in the sights during a train ride without trying to identify or analyze details of the landscape. In Ryder's partial defense, it is true that the Sanskrit of the *BG* has metered rhythm, but there is no rhyme pattern (only the odd rhyme that might occur in passing). Why did he do it? No doubt Ryder's preoccupation with iambs, trochees, rhymes and the music of alliteration was meant to put the translated *Gīta* in the best possible light for a foreign audience whom he thought would need courting and persuading. But the idea backfires. Other translators give us substance to ponder; Ryder gives us shells of frosting with the cake generally missing.

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53 Here are the first three definitions of *prahayaḥ* per sanskritdictionary.com: 1. dissolution, reabsorption, destruction, annihilation; 2. death; 3. the destruction of the whole world, at the end of a *kalpa*.

A note regarding verse 11.12: In the body of the essay, we focus on 11.32, and its (indirect) connection to "Now I am become Death." Interviewed for a 1949 *Life* magazine article, RO mentions the phrase "a thousand suns":

> And when the great ball of fire rolled upward to the blinded stars, fragments of the Bhagavad-Gita flashed into [RO's] mind: "If the radiance of a thousand suns were to burst at once into the sky, that would be like the splendor of the Mighty One.... I am become Death, the shatterer of worlds." —*Life*, 1949. https://www.life.com/history/robert-oppenheimer-in-life/.

Since that alludes to verse 11.12, I show the Sanskrit for that verse too in Figure A-1. In this case, there is nothing objectionable about RO's translation or that of Ryder, who writes: "A thousand simultaneous suns" (1929, p. 84).

APPENDIX B

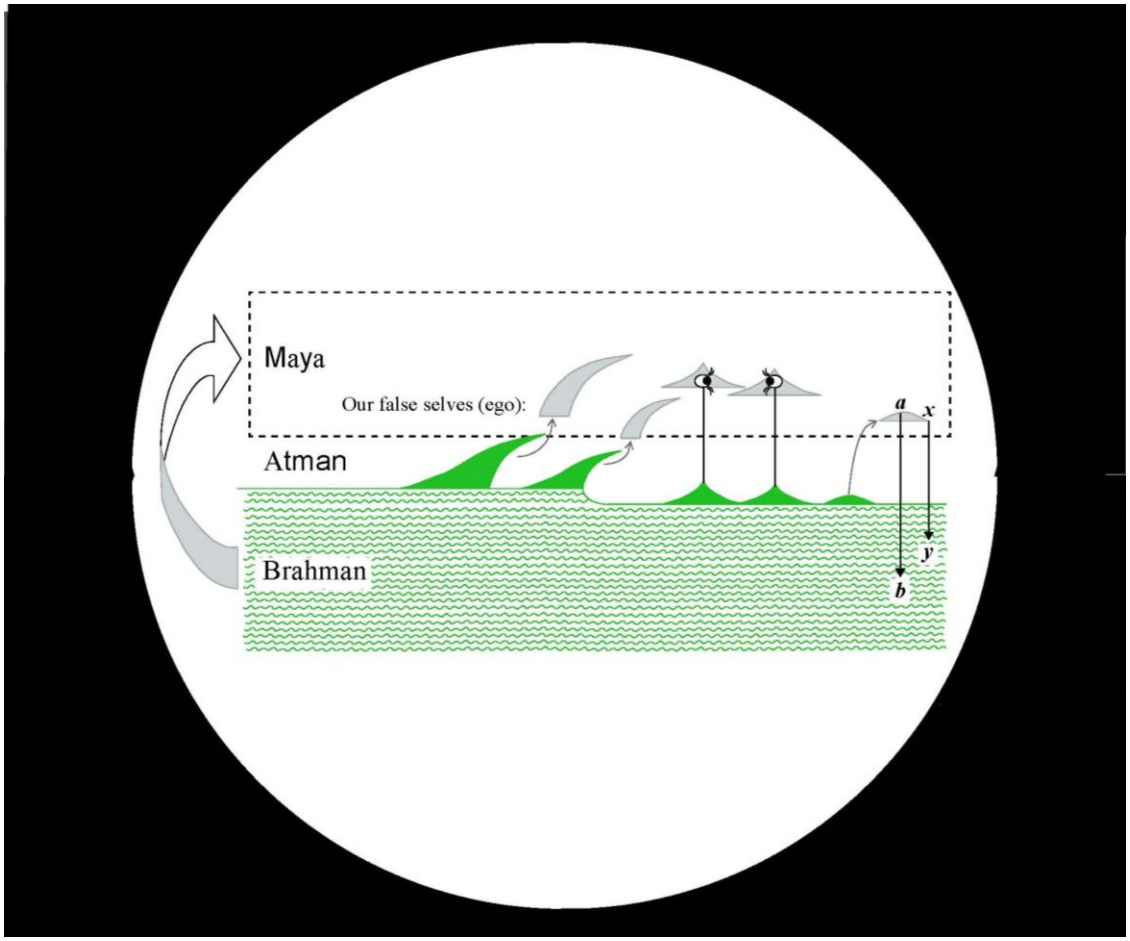

Figure B-1. Ocean/Wavelet Analogy for the Brahman-Ātman-Māyā Relation. Source: Boyce 2024, Figure 1.

The ocean/wavelet imagery I've based loosely on passages in Prabhavananda 1979 (pp. 181, 289, 303 and 346) and Prabhavananda/Manchester 2017 (pp. 61 and 99). We borrow the figure here, stripped of its commentary, simply to provide a rough idea of what the realm of "serious" Hinduism might look like if contrasted with "popular" Hinduism.

HINDUISM IS ITS OWN WORST ENEMY

In at least two ways, Hinduism is its own worst enemy: [1] The Śruti (revealed scriptures) fail to present the Brahman-Ātman-Māyā triad *as the gestalt* that it is, as depicted in Figure B-1 above;[54] [2] side-by-side with the Śruti, there exists the hurly-burly of Smṛti (introduced in "Concluding Remarks," above). These problems bear on comprehensibility, image and spiritual advancement. For example, under a tacit tradition that might be called No Indian Left Behind, something such as the blue elephant-god, Ganesh,[55] or a sculpture-set of Brahmā/Viṣṇu/Śiva,[56] is regarded as a perfectly good starting point *instead* of the Brahman-Ātman-Māyā triad. Never mind that this approach leads one immediately into a mind-boggling quagmire:

Now Brahmā/Viṣṇu/Śiva are said to be the custodians of Creation, Preservation, and Dissolution of the world.[57] What a neat, logical pantheon. Except, really it is Viṣṇu (the ostensible Preservation-deity) who *creates* Brahmā (the ostensible Creator) by growing him (Brahmā) out of his (Viṣṇu's) own navel, whilst lounging on a cosmic ocean, thus establishing him (Viṣṇu) as "superior" to the other two, *and* more or less interchangeable with the one who plays his transverse flute for the Gopis, hailed as Kṛṣṇa.[58]

And so on, into a hall-of-mirrors, the giddy but useless complexities of which might well hold one's attention for years if not decades, with the consequence that the crucial Brahman-Ātman-Māyā

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54 I realize the assertion in [1] sounds odd. A large portion of Boyce 2024 is devoted to explaining and illustrating that surprising failure of the sacred canon.

55 Dangling from the rear-view mirror of a taxi. Why here? Because Ganesh is adept at "removing barriers," e.g., of a traffic jam. Cf. indiaodyssey2015.wordpress.com/2017/10/15/to-the-glory-of-ganesh/. Also, the "patron of businesspeople and scholars," per Hijiya 2000, p. 163.

56 Note the orthographical difference between Brah*mā* (the first of the three primary demigods) and Brah*man* (the absolute, *im*personal, infinite, eternal). Indic authors have no trouble honoring this Brahmā/Brahman distinction, but foreigners routinely stumble over it or do not even realize it exists, sometimes taking the two words to be synonymous. By the way, this is but the tip of an orthographical iceberg that requires an 18-cell table for its full description, as in Boyce 2024, Table 3.

57 Prabhavananda/Isherwood 1951, p. 132; Prabhavananda 1979, p. 136.

58 The whole business is so outlandish, I won't apologize for the sarcasm. But if you prefer a straightforward account of the genealogy, see the Purport sections in Prabhupāda 1986, pp. 471 and 515. For identification of the "Gopis" please refer to the section "Equal time," below.

triad is easily forgotten by the time one breathes his/her last, and perhaps requires it for spiritual salvation. Thus, the problem of popular versus serious Hinduism.

In the context of Kṛṣṇa/Viṣṇu/Śiva, let's return to RO's oblique reference to verse 11.32, and the question of who its narrator is. In the urtext, what we see at the start of 11.32 is neither the name Kṛṣṇa nor the name Viṣṇu but this: *śrī-bhagavān uvāca*. In Prabhupāda, p. 510, this is rendered as "The Supreme Personality of Godhead said: [...]" In the *Śrīmad Bhagavadgītā*, the translator prefers to represent the Sanskrit directly as: "Śrī Bhagavān" (p. 142). In Ryder 1929, p. 88, we have THE BLESSÈD ONE SAID. In Prabhavananda/Isherwood 1951, p. 94, the term is replaced by SRI KRISHNA; and in Wilkins 1785, p. 68, by KREESHNA; and in Arnold 1885, p. 54, by Krishna (all similar to my own replacement seen earlier, which was Kṛṣṇa).

Given all the above, how then can the narrator be *Viṣṇu*, as stated in RO's famous citation of Hindu scripture? This might be explained by turning back a few pages to 11.24 and 11.30, where we learn that the *avatār*, Kṛṣṇa, has in fact reverted to his true form, Viṣṇu, for the nonce.[59] Conceivably, RO is alluding to 11.24 and 11.30, in which case his choice of a narrator's name for 11.32 would not be wrong, just unusual (unique). But still, as mentioned in note 16, there is the matter of Viṣṇu in 11.24–11.30 carrying on not like the *Preserver* he is but like Śiva the *Destroyer*. At this point, the tangle within popular Hinduism itself becomes so absurd as to moot certain questions about RO or Ryder having been confused in their reading of the *Gītā*.

EQUAL TIME

Some might regard my purist, "anti-Ganesh" perspective as wrongheaded — a predictable symptom of Western intellectualism, pursued myopically in ignorance of the vastness of Indian mythology. Isn't the mythology of the subcontinent so rich that it could justify a person focusing on the "Personality of the Godhead, Lord Krishna" *in lieu of* studying the seven hundred verses of the *Bhagavad-Gītā*? Cf. Viswanathan 1993, pp. 89–90, where, to illustrate that argument, he speaks of Kṛṣṇa as the "colorful, versatile, playful idol of the Gopis." Gopis are wives of cowherds, entranced by Kṛṣṇa as he gyrates and plays his *bansuri* (transverse bamboo flute). See "Krishna and the Gopis" in Subramaniam 2023, pp. 472–

59 See Prabhavananda 1979, p. 337. For an enumeration of all ten *avatārs* of Viṣṇu, see Viswanathan 1993, pp. 111–113 and 207.

475 and 765. Cf. Prabhavananda 1979, pp. 141–142, where the Gopis are described instead as shepherdesses.

The point Viswanathan makes is that the fables and mythology are so extensive and rich that they eventually make up for any apparent deficit as they create, in their own way, messages to rival those known to the guru, bowed soberly over his revealed scripture.

APPENDIX C: FOLLOWING THE HEISENBERG TRAIL FOR THE PERIOD 1941–1944

In Part Three of the text, I outlined a commonsense approach to the German bomb threat that would have begun by bombarding uranium mines in Czechoslovakia and the Congo. In Table C-1, we find two additional items that could have contributed to an approach in that honored commonsense: An opportunity to kidnap Heisenberg and an opportunity to assassinate Heisenberg — both skipped over. Why?

Table C-1. Some Heisenberg bread-crumbs for 1941, 1942, 1943, 1944

Date/Tag	Event	Source
September 1941: A stroll in the brewery district	Heisenberg visited Bohr in Copenhagen, and they spoke while strolling in the brewery district. Both the specifics and subtext of their conversation remain "an enduring enigma [and] source of considerable controversy." But there was one concrete action: Putting his life at risk for treason, Heisenberg passed to Bohr "a drawing of the experimental heavy-water reactor he was working to build." Why? No one can say for sure.	Bird/Sherwin 2006, pp. 270–271. Rhodes 1986, pp. 384–385, 523–524. Monk 2012, pp. 407–409.
October 1942: The kidnap proposal	Based on information provided by Pauli, Weisskopf proposed that Heisenberg be kidnapped from a conference to be held in Switzerland. Oppenheimer rejected the proposal on this basis: It would alert the Germans "to the high priority the Allies assigned to nuclear research."	Bird/Sherwin p. 222.
December 1943: Did Heisenberg want to throw his heavy-water reactor down on London?	Visiting Los Alamos on 12/30/43, Bohr informed RO of his meeting with Heisenberg two years earlier. The next day, 12/31/43, RO convened a meeting of his top physicists to get their take on the Heisenberg/Bohr meeting. Bethe: "[O]ur conclusion was that *these Germans were totally crazy — did they want to throw a reactor down on London?*" Goudsmit: "[But perhaps] this meant simply that they had succeeded in keeping their real aims secret."	Bird/Sherwin pp. 270–272. Rhodes 1986, pp. 523–524, italics added.

Date/Tag	Event	Source
End of 1943: Oppenheimer's shrug	Groves told Oppenheimer that the Germans reportedly had abandoned their nuclear program. But he added that such intelligence was tricky to assess: The Germans might be passing disinformation. (Cf. Goudsmit immediately above.) "Oppenheimer just shrugged." I.e., either way, it was too late: His project had long since taken on a life of its own.	Bird/Sherwin p. 276.
December 1944: the assassination plan	There was a sequel to Weisskopf's 1942 kidnap proposal: In 1944, Groves "dispatched OSS agent Moe Berg to Switzerland [to stalk Heisenberg] but ultimately decided not to attempt [this relatively easy] assassination." Why?	Bird/Sherwin p. 222.

DISCUSSION

After all, in psychological terms at least, Heisenberg *was* the German threat. Never mind that a Nuclear Ordnance Program of the Nazis turned out to have been only a U.S. fantasy, but he was *it*, personified. Head of the serpent, the ideal target. How, then, did Oppenheimer and Grove, each in turn (in 1942 and 1944), rationalize leaving him untouched? In Part Three of the main text, I touched on the likely psychology behind such behavior. Taken at face value, RO's rationale for not kidnapping Heisenberg (Table C-1, row 2) is remarkably obtuse regarding Soviet awareness of "the high priority the Allies assigned to nuclear research" — which was already at the highest pitch imaginable. Perhaps, then, RO was being disingenuous: For the multibillion dollar game to continue to a satisfactory conclusion, he needed Heisenberg to be his worthy adversary, not his prisoner. Thus, kidnapping was "not an option."

Not yet covered is the idea of using reactor waste-products to poison an enemy population. This was presented by Teller at Los Alamos as a hedge — as an inelegant alternative in case of the abject failure of the bomb program per se. As such, it does not fit well into my commonsense category but must be mentioned for completeness' sake. For more about the idea of radioactive poisoning, see Herken, where the idea is traced back ultimately to a lecture given by two Princeton physicists in December of 1941. Sad to say, it was an "option" that Teller, Fermi and RO all enthused about at various times (Herken 2002, pp. 86–87; Rhodes 1986, p. 510).

There is no better evidence anywhere in the record of the increasing bloody-mindedness of the Second World War than that Robert Oppenheimer, a man who professed at various times in his life to be dedicated to *Ahiṁsā* ("the Sanskrit word that means doing no harm or hurt" [RO would explain]) could write with enthusiasm of preparations for the mass poisoning of [a half million men, women and children]. — Ibid. p. 511, with slight changes in orthography.

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