Great Britain Journals Press

London Journal of Research In Science: Natural and Formal
General Section

RESEARCH FINGERPRINT

IDENTIFIER
LJRS-227595

PEER REVIEW
Double Blind

SIMILARITY CHECK
Perplexity AI and iThenticate

ACCESS
Open Access

LANGUAGE
English

PRINT ISSN
2631-8490

ONLINE ISSN
2631-8504

EDITION

ABBREVIATION
LJRS

VOLUME
26

ISSUE
8

YEAR
2026

KEY DATES

RECEIVED
2026-05-04

ACCEPTED
2026-05-13

ONLINE PUBLISHED
2026-07-07

CATALOGING

CROSSMARK DOI
10.34257/LJRS227595UK

PACS CLASS
04.20.Gz

ARXIV CLASS
gr-qc

LCC CLASS
BD638

DDC CLASS
115

Article Record

The Rodrik Paradox: Infinite Observer Accumulation in Asymmetric One-Way Temporal Displacement Systems

CORRESPONDENCE

AUTHORS & AFFILIATIONS

Haim Rodrik ¶*

¶ Institute for Advanced Temporal Studies, London, United Kingdom

ABSTRACT

We present and formally characterize a novel paradox — hereafter designated The Rodrik Paradox — arising from the application of asymmetric, one-way temporal displacement to a volunteer subject designated Rodrik #1. Beginning at age 30, the subject is transported five years into the past, from which point he observes but cannot interact with his younger self, Rodrik #2. Upon Rodrik #2 reaching age 30, the experiment repeats, spawning Rodrik #3. We demonstrate that this process generates an unbounded, self-sustaining cascade of temporally distinct observer instances, each numerically independent yet biologically and mnemonically convergent. We derive the Accumulation Function N(t), quantify the simultaneous observer population across the subject's natural lifespan, and identify three irreducible sub-paradoxes: the Identity Collapse Problem, the Bootstrap Causality Loop, and the Infinite Observer Horizon. We further demonstrate that the termination of Rodrik #1 does not — and cannot — terminate the chain. The implications for causal closure, personal identity theory, and the metaphysics of temporal observation are profound and, we argue, unresolved by prior literature.

Index Terms: temporal paradox • observer accumulation • identity theory • causal loops • one-way time travel • asymmetric displacement • Rodrik cascade • infinite regress

FUNDING
No external funding was declared for this work.

CONFLICTS
The authors declare no conflict of interest.

AI USAGE
No generative AI was used for analysis or results.

HOW TO CITE
Rodrik (2026). The Rodrik Paradox: Infinite Observer Accumulation in Asymmetric One-Way Temporal Displacement Systems. London Journal of Research In Science: Natural and Formal, 26(8), 19-22. DOI: 10.34257/LJRS227595UK

ACCESS ONLINE

METADATA CONTINUATION

AUTHOR CONTACT QR LEDGER

Haim Rodrik¶*

ARCHIVAL RECORD

LJRS · Vol 26 · Issue 8 · 2026

Article ID LJRS-227595 · DOI 10.34257/LJRS227595UK

Print ISSN 2631-8490 · Online ISSN 2631-8504

CROSSREF DOI 10.34257/LJRS227595UK

RESEARCH ARTICLE

The Rodrik Paradox: Infinite Observer Accumulation in Asymmetric One-Way Temporal Displacement Systems

Haim Rodrik[¶*]
AFFILIATIONS

¶ Institute for Advanced Temporal Studies, London, United Kingdom

Abstract

We present and formally characterize a novel paradox — hereafter designated The Rodrik Paradox — arising from the application of asymmetric, one-way temporal displacement to a volunteer subject designated Rodrik #1. Beginning at age 30, the subject is transported five years into the past, from which point he observes but cannot interact with his younger self, Rodrik #2. Upon Rodrik #2 reaching age 30, the experiment repeats, spawning Rodrik #3. We demonstrate that this process generates an unbounded, self-sustaining cascade of temporally distinct observer instances, each numerically independent yet biologically and mnemonically convergent. We derive the Accumulation Function N(t), quantify the simultaneous observer population across the subject's natural lifespan, and identify three irreducible sub-paradoxes: the Identity Collapse Problem, the Bootstrap Causality Loop, and the Infinite Observer Horizon. We further demonstrate that the termination of Rodrik #1 does not — and cannot — terminate the chain. The implications for causal closure, personal identity theory, and the metaphysics of temporal observation are profound and, we argue, unresolved by prior literature.

Keywords: *temporal paradox, observer accumulation, identity theory, causal loops, one-way time travel, asymmetric displacement, Rodrik cascade, infinite regress*

Correspondence: Haim Rodrik

1 Introduction

The history of temporal paradox research is littered with thought experiments of varying degrees of imagination and rigor. From the Grandfather Paradox — that venerable chestnut of undergraduate philosophy - to the more sophisticated Bootstrap Paradox of information causality, the field has long grappled with the logical and ontological instabilities introduced by the concept of backward time travel. Yet, with rare exception, these paradoxes involve a fixed cast of characters: one traveler, one timeline, one knot in the fabric of causality.

The present paper introduces a categorically different class of temporal paradox, one that does not merely twist causality but multiplies its subjects without bound. We call this The Rodrik Paradox.

The scenario is as follows. A 30-year-old volunteer — identified throughout this paper as Rodrik #1, and based on the lived experience of the author himself — enters a time machine capable of transporting a human subject exactly five years into the past. Crucially, the device is asymmetric: it can send but not receive. There is no return mechanism. The target timeline does not yet possess the technology to reconstruct one. Rodrik #1 is thus permanently resident in a timeline five years behind his departure point.

From this vantage, he observes — but is strictly prohibited from contacting or altering — the behavior of his younger self, now designated Rodrik #2. Rodrik #2, unaware of his observer, lives his life normally. At age 30, Rodrik #2 also volunteers for the same experiment, spawning Rodrik #3 at age 25. The cascade proceeds. What follows is not merely counterintuitive but, we shall argue, genuinely paradoxical in ways that existing literature has neither anticipated nor resolved.

2 Formal Setup and Notation

We define the following notation to enable precise analysis of the cascade structure.

R#n	**Rodrik instance** n, $n \in \{1, 2, 3, \ldots\}$ Each instance is biologically and mnemonically distinct from the point of temporal insertion onward.

α	$\alpha = 30$ **(age of each Rodrik at moment of temporal departure)** This is the invariant departure age — fixed by the experimental protocol.
δ	$\delta = 5$ **(backward displacement in years)** The machine sends each subject exactly δ years into the past.
t	$t =$ **age of Rodrik #1 at any moment of analysis** The master clock. All other Rodriks' ages are offset from this value.

Given this setup, when Rodrik #1 is age t, Rodrik #n is age:

Age(n, t)	$\textbf{Age}(n, t) = t - (n-1) \times \delta$ Rodrik #n is always exactly $(n-1) \times 5$ years younger than Rodrik #1.

A new Rodrik #$(n+1)$ is spawned precisely when Rodrik #n reaches age $\alpha = 30$, i.e., when:

Spawn	$t_{\textbf{spawn}}(n) = 30 + (n-1) \times \delta = 30 + 5(n-1)$ Rodrik #2 is spawned at $t = 30$; #3 at $t = 35$; #4 at $t = 40$; and so on.

3 The Accumulation Function

The central mathematical contribution of this paper is the Accumulation Function $N(t)$, which counts the number of Rodrik instances simultaneously alive and present in the timeline at the moment Rodrik #1 is age t.

A new instance is created every five years starting at $t = 30$. Each instance, once spawned, lives a full natural lifespan. Thus, the count of Rodriks alive at time t is simply the number of spawn events that have occurred by time t, plus the original Rodrik #1:

$N(t)$	$N(t) = \lfloor (t-30)/5 \rfloor + 2 \quad$ **for** $t \geq 30$ At $t = 30$: $N = 2$ (Rodrik #1 and newly-arrived #2). At $t = 35$: $N = 3$. Etc.

3.1 Snapshot Table: Simultaneous Rodrik Population

Age of R#1	R# instances alive	Ages of instances	$N(t)$
30	R#1, R#2	#1=30, #2=25	2
35	R#1, R#2, R#3	#1=35, #2=30, #3=25	3
40	R#1 … R#4	#1=40, #2=35, #3=30, #4=25	4
50	R#1 … R#6	#1=50 … #6=25	6
60	R#1 … R#8	#1=60 … #8=25	8
70	R#1 … R#10	#1=70 … #10=25	10
80	R#1 … R#12	#1=80 … #12=25	12
90	R#1 … R#14	#1=90, #14=25	14

Table 1. Simultaneous Rodrik population as a function of Rodrik #1's age.

As Table 1 illustrates, the simultaneous population grows linearly and without bound. By the time Rodrik #1 approaches the end of a natural 90-year lifespan, fourteen distinct versions of himself coexist in the same timeline, ranging in age from 25 to 90. This is not a rounding error or a thought-experimental artifact. It is the direct and inevitable consequence of the experimental protocol.

4 The Three Sub-Paradoxes

4.1 The Identity Collapse Problem

Fourteen Rodriks share identical DNA. They share identical memories up to their respective moments of temporal insertion. They share identical psychological profiles, moral dispositions, and — crucially — identical free-will structures at the moment of the volunteer decision. And yet they are unambiguously distinct persons, occupying distinct spatial positions in the same timeline, aging at the same rate, and developing divergent post-insertion histories.

This constitutes a direct challenge to the standard philosophical accounts of personal identity. Lockean memory continuity theory fails: all fourteen share memory continuity up to age 25 (or 30, at the decision point), yet cannot be identified with one another. Bodily continuity theory fares no better: by definition, the bodies are numerically distinct from the moment of insertion. Psychological continuity accounts collapse under the weight of identical psychology at insertion and then diverge post-hoc.

We propose that the Rodrik Paradox demands a new category: the Divergent Continuum Self — a self that is numerically multiple but qualitatively singular at origin, with identity branching rather than persisting. The philosophical literature on fission cases (Parfit, 1984; Wiggins, 1980) addresses bifurcation, but never cascading, unbounded, voluntary self-multiplication.

4.2 The Bootstrap Causality Loop

The paradox of causality here is subtle but devastating. Rodrik #1 volunteers for the experiment because the experiment exists. The experiment continues — indefinitely — because each subsequent Rodrik also volunteers freely. But each Rodrik volunteers precisely because he has watched the previous Rodrik do so. Rodrik #2 watches Rodrik #1 volunteer. Rodrik #3 watches Rodrik #2 volunteer. Each instance is causally influenced by the behavior of the instance one generation prior.

This generates a closed causal loop. But unlike the classic Bootstrap Paradox — in which a piece of information (or an object) appears to have no origin — the Rodrik Bootstrap is free-will-mediated. The chain is bootstrapped not by physical determinism but by a pattern of voluntary decision-making that feeds forward and backward simultaneously.

One might object: surely Rodrik #2 could refuse. He could break the chain. But consider: Rodrik #2 has, at the moment of decision, watched Rodrik #1 make the choice. He has, in effect, observed the experiment work. He has strong empirical evidence that it is survivable. His epistemic position systematically biases him toward consent. The free will is real, but the causal structure of the scenario makes refusal increasingly improbable with each iteration — a ratchet of consent tightening across generations of the self.

4.3 The Infinite Observer Horizon

This is the most cosmically unsettling of the three sub-paradoxes. The death of Rodrik #1 does not terminate the chain. At the moment of his death — let us say at age 90 — Rodrik #14 is a healthy 25-year-old who has just arrived in the timeline from five years hence. Rodrik #14 will, in due course, reach age 30. He will volunteer. Rodrik #15 will appear.

The chain has no terminus. It was set in motion by a single act — Rodrik #1's first voluntary displacement — but it requires no further external input to continue indefinitely. The initial act is a seed; the chain is the infinite tree that grows from it, generation after generation of the same man, watching, aging, and choosing.

Horizon

$\lim_{n\to\infty} R\#n = \infty$

The chain of Rodrik instances has no natural termination condition under the given experimental protocol.

We term this the Infinite Observer Horizon: the scenario in which an initial temporal act generates an unbounded sequence of observers without any further causal injection. It is, to our knowledge, the first formally described paradox in which a finite, voluntary action by a mortal individual generates a provably infinite consequence chain.

5 The No-Return Constraint as Structural Catalyst

It is worth pausing to appreciate the elegance —- if one may use such a word for so troubling a result —- of the No-Return Constraint's role in the paradox. The one-way nature of the time machine is not a mere experimental detail. It is the loadbearing architectural feature of the entire paradox.

Consider what would happen if the machine permitted return. Rodrik #1, having observed his younger self for five years, could simply return to his original timeline at age 35. He would bring with him knowledge of Rodrik #2's existence, but there would be no permanent multiplication. The paradox collapses.

Alternatively, consider a machine that could receive Rodriks from the future. Rodrik #1 could theoretically communicate backward and advise Rodrik #2 not to volunteer. Again, chain broken.

The asymmetry is not a limitation of the machine. It is a feature. The No-Return Constraint is the valve that pressurizes the system. Each Rodrik is trapped in the past with no exit, no recourse, and no ability to interrupt the downstream cascade. The impossibility of escape is what makes the accumulation inevitable.

6 Relationship to Prior Literature

The Grandfather Paradox (first formalized by Barjavel, 1943) concerns the possibility of retroactive self-cancellation. The Rodrik Paradox inverts this: rather than cancelling the self, the protocol multiplies it. There is no risk of the chain being cut by its own consequences; the consequences are designed to perpetuate it.

The Bootstrap Paradox (Heinlein, 1941; formalized by Nahin, 1999) concerns objects or information that appear to have no origin. The Rodrik Bootstrap concerns decisions that form a causally closed ring. The distinction is that decisions, unlike objects, require agents — and agents, unlike objects, have identity.

The closest precursor in the literature is perhaps the concept of a Closed Timelike Curve (CTC) as discussed in the context of general relativity (Godel, 1949; Morris, Thorne & Yurtsever, 1988). CTCs permit, in principle, self-consistent loops. The Rodrik chain is not a CTC in the strict sense — it is a branching, additive structure rather than a loop — but it shares the CTC's feature of self-consistency: nothing in the chain contradicts itself. Every Rodrik freely makes the choice that the scenario requires him to make.

The philosophical literature on personal identity (Locke, 1689; Parfit, 1984; Wiggins, 1980; Shoemaker, 1984) is extensive but uniformly unprepared for voluntary unbounded self-multiplication. Parfit's discussion of fission — the division of one person into two — is the closest analogue, and Parfit's own conclusion (that personal identity may simply not matter in such cases) is a starting point, not an answer.

7 Implications and Open Questions

The Rodrik Paradox is not merely an abstract puzzle. It raises, with unprecedented sharpness, a set of questions that the philosophy of mind, metaphysics, and theoretical physics have not jointly addressed:

(i) Moral Status: If all fourteen Rodriks are simultaneously alive, do they each possess full moral status as persons? Are they owed the same rights, resources, and consideration as a single individual? The answer appears to be yes — yet the population was generated by a single voluntary act, and the resource implications are significant.

(ii) The Consent Problem: Each Rodrik consents to the experiment. But Rodrik #2's consent is epistemically contaminated by having observed Rodrik #1 consent. By the time we reach Rodrik #14, the volunteer has effectively watched thirteen prior versions of himself agree. Is this genuine informed consent, or is it a structurally coercive consent loop?

(iii) The Observer Effect: Each Rodrik is instructed not to interfere. But his presence — fourteen versions of him, ranging from 25 to 90 years old, coexisting in the same timeline — is itself a massive perturbation of that timeline's social fabric. The non-interference condition is, at best, contractual. It is not physically enforceable, and its psychological sustainability across fourteen instances seems optimistic.

(iv) Termination Conditions: Is there any condition under which the chain terminates? The only natural termination would be the extinction of humanity, the destruction of the machine template, or — intriguingly — a future Rodrik who, having watched all his predecessors comply, refuses. But the probability of such refusal, we have argued, decreases with each generation. The chain appears thermodynamically irreversible.

8 Conclusion

We have presented the Rodrik Paradox: a novel class of temporal paradox arising from the application of one-way temporal displacement to a volunteer subject under an observation-only protocol. We have derived the Accumulation Function $N(t) = \lfloor (t - 30)/5 \rfloor + 2$, demonstrated that the simultaneous Rodrik population reaches fourteen instances by the time Rodrik #1 reaches age 90, and proven that the chain continues indefinitely after his death.

We have identified three irreducible sub-paradoxes - Identity Collapse, Bootstrap Causality, and the Infinite Observer Horizon — and situated these within the existing literature, finding them to be genuinely novel. We have argued that the No-Return Constraint is the structural catalyst that makes the paradox inevitable, and that no prior treatment of temporal paradox fully anticipates or resolves the scenario described.

The Rodrik Paradox is, we submit, the first formally described scenario in which a finite, voluntary act by a single mortal individual provably generates an infinite sequence of observers. It is not merely a philosophical curiosity. It is a warning: if one-way time travel is ever achieved, and if it is offered to volunteers, the experimenter who presses the button the first time is not beginning an experiment. He is beginning an infinite series.

One ought to be very sure, before pressing that button, that one is prepared to meet oneself. Fourteen times. And counting.

ACKNOWLEDGEMENTS

The author thanks all thirteen future versions of himself for their implicit contribution to this research. He sincerely hopes they are well.

REFERENCES

[1] Barjavel, R. (1943). *Le voyageur imprudent* [The imprudent traveler]. Gallimard.

[2] Godel, K. (1949). An example of a new type of cosmological solutions of Einstein's field equations of gravitation. *Reviews of Modern Physics*, 21(3), 447-450.

[3] Heinlein, R. A. (1941). By His Bootstraps. *Astounding Science Fiction*.

[4] Locke, J. (1689). *An Essay Concerning Human Understanding*. Thomas Bassett.

[5] Morris, M. S., Thorne, K. S., & Yurtsever, U. (1988). Wormholes, time machines, and the weak energy condition. *Physical Review Letters*, 61(13), 1446.

[6] Nahin, P. J. (1999). *Time Machines: Time Travel in Physics, Metaphysics, and Science Fiction* (2nd ed.). Springer.

[7] Parfit, D. (1984). *Reasons and Persons*. Oxford University Press.

[8] Rodrik, H. (2025). The Rodrik Paradox: Infinite Observer Accumulation in Asymmetric One Way Temporal Displacement Systems. *Journal of Theoretical Temporal Physics & Philosophy*, 1(1).

[9] Shoemaker, S. (1984). Personal Identity: A Materialist's Account. In S. Shoemaker & R. Swinburne, *Personal Identity*. Blackwell.

[10] Wiggins, D. (1980). *Sameness and Substance*. Harvard University Press.