

Einstein and the Triumph of Truth as the Metaphor of Choice in Modern Times

Mailyn Fidler
Stanford University

Introduction

Zurich, 1919: A crowd of 1,500 reacted in a frenzy to a modernist performance led by the artist Tristan Tzara. The crowd deteriorated into hysteria, chased performers, and destroyed props (Richter, 1997). They were responding to the inhumanity and emptiness they perceived in the incomprehensible art (Friedman, 1985). In the same time period, on the other hand, cheering masses welcomed Einstein, purveyor of incomprehensible science. Indeed, as Charlie Chaplin famously noted, they greeted him exactly *because* they did not understand his new conception of physical reality (Isaacson, 2008). Many consider Einstein and modernism as part of the same cultural conversation. The disparate reactions of these crowds to work they did not understand, then, seems paradoxical. Most scholars agree that popularized forms of Einstein's work influenced modernism but more accurate interpretations had little sway. I agree with this argument, but extend it by offering an alternate suggestion for Einstein's major influence on modern cultural works. Instead of modernism, with its fracturing of reality, multiple perspectives, and altering of time, Einstein's work contributed to the reinvigoration and re-legitimization of absolute truth as a valid concept in modern cultural expression.

Illicit Appropriations: The Perils of Linking Science to Culture
Before I embark on my analysis, I wish to present a few viewpoints from the larger literature about establishing links between scientific currents and cultural movements, which can be a perilous game. One must deal with causality, popularization, and personalities of scientists. One must balance the words of scientists, artists, and critics. Michael Whitworth, author of *Einstein's Wake: Relativity, Metaphor, and Modernist Literature*, and who will receive more attention later in the paper, takes the position that "no matter how peculiar the institution of science, there will be a degree of continuity with the outside world. Metaphors abstracted from science are no longer wholly identical to science, nor are they wholly divorced from it" (2001). Whitworth makes the case for a reciprocal conversation between science and other fields. This position is less severe

than some of the opinions of artists. A member of the Park Place group, 1960s adherents of modernist tradition, proclaimed, “space-time is the only way you can think since Einstein” (Galison, 2008). This artist leaves no room for space-time being “no longer wholly identical to science,” but proclaims its triumph over the creative spirit (Whitworth, 2001). At the other end of the spectrum is literary critic Lionel Trilling, who in 1972 pronounced that, regarding the post-Einstein era, “the operative conceptions [of science] are alien to the mass of educated persons. They generate no cosmic speculation, they do not engage emotion or challenge imagination. Our poets are indifferent to them” (Holton, 1995). Some poets obviously disagree, embodying the difficulty of establishing rigorous connections between science and cultural expression.

Complicating this interpretation issue with Einstein is the transformation of his ideas in the popular realm. Popular conceptions of Einstein were typically “enthusiastic misapplications, usually achieved by an illicit shortcut of meaning” (Holton, 1995). Unfortunately, it was these misapplications “that became profoundly influential in the development of the arts during Einstein’s lifetime” (Galison, 2008). Added to the problems of analysis is the choice of whether we distinguish between the incorrect and correct interpretations of Einstein’s theory when examining its cultural impact. My claim about Einstein and truth may seem more plausible if considered in the context of direct, rather than popularized, interpretations of his work. For instance, Einstein’s work conceived of only space and time as relative, but considered the laws of nature, such as the speed of light, universal; he originally named his relativity theory the “invariance theory.” I will demonstrate, however, that my claim about Einstein and the primacy of truth is viable even when working under his popularized theory.

Conflating Chaos and Relativity: Crowning Einstein as Modernist Monarch

Understanding how Einstein became lauded as a patron saint of modernism is a necessary piece of arguing that he was, in fact, no such figure. First, complicating the investigation of Einstein and cultural expression is the phenomenon of modernist artists combining different strands of Einstein’s work in their appropriation of his ideas. His work on the photoelectric effect and on relativity set the seeds for 20th century physics to validate “two new world views, relativity theory and quantum theory, which differed from the conventional so fundamentally that philosophers and artists were encouraged to assimilate similar revolutionary views into their own disciplines,” but these revolutionary views also fundamentally differed from each other (Friedman, 1985). Discerning which of Einstein’s worldviews these artists incorporate proves difficult, as the artists often combine both worldviews in their work. From his photoelectric work, and the subsequent ideas it spawned, artists took the “idea that reality is, in itself, chaotic” and used this as the “basis for

philosophical, scientific, linguistic, and aesthetic theories in this period” (Whitworth, 2001). The second prevalent trend in modernism was that “relationships between objects became more important than objects themselves,” which, if applied to physics, is somewhat similar to Einstein’s relativity investigations (Friedman, 1985). When the idea of relationships is the only major idea extracted from the relativity debate and is incorporated with chaotic reality, an inaccurate interpretation of Einstein’s work emerges. It is worth mentioning, however, that this conflation phenomenon is not unique to Einstein – the nature of art means artists often transform theories for their own goals.

Perhaps the best way to understand the links between the popularized Einstein and modernism is to examine the complaints of one of his critics, Sir Oliver Lodge, known for his work on wireless telegraphy and the length contraction hypothesis. Lodge represents the British response to Einstein—criticism and dismissal with a touch of xenophobia (Whitworth, 2001). Lodge’s commentary is perhaps also influenced by the death of his son in WWI and his subsequent interest in “Psychical Research” and an all-encompassing, transcendent “force” (Whitworth, 2001). Lodge outlines his criticisms most notably in a 1921 article, “Einstein’s Real Achievement,” in the *Fortnightly Review*, an influential magazine in Britain at the time (Rowlands, 1990). Lodge argues against an Einsteinian viewpoint that supposedly replaces human-established morality with complex, mechanistic, moral relativism. Lodge “writes nostalgically about the ‘old simplicities’ that have been ‘replaced by complex mechanical machinery’” (Whitworth, 2001). Lodge’s criticisms are unusual, given that he himself approached theories “not through its equations but, characteristically through a semimechanical model” (Hunt, 1991). His own models, however, left the rules of human and physical realms unchallenged (Hunt, 1991; Whitworth, 2001).

Lodge’s main problem with Einstein’s model was that it seemingly discredited the Newtonian cause-and-effect conception of gravity, replacing it with, as Lodge described, “a modified geometry; as if the earth sailed along, not so much obedient to all the forces acting on it, as free of any compulsion whatsoever... [following the] line of least resistance” (Whitworth, 2001). Einstein’s “removal” of cause and effect let Lodge “project his sense of the relativists’ moral evasiveness onto the Einsteinian universe” (Whitworth, 2001). Whitworth comments that Lodge’s criticisms of Einstein “could be transposed directly into a conservative view of modernist poetry” (2001). Einstein’s seeming resonance with modernism provided a convenient line of attack for critics. Through misunderstandings and deliberate omissions of some parts of Einstein’s theories, he became the poster child for all things culturally relative.

Give Us Gods: Einstein’s Conception of Truth Provides a Modernist “Solution”

After modernism's prolonged reveling in chaos, and the riots and rage it engendered, signs of desire for reconciliation with mad reality began to manifest themselves in certain works. I credit Einstein—both his theories and his persona—as key to the emergence of a concept of truth acceptable to the modernists. Using D. H. Lawrence, I will introduce this idea of the modernist “solution” and then perform a more detailed analysis of its manifestation in Philip Glass' opera *Einstein on the Beach*.

D. H. Lawrence energetically incorporated Einstein's thoughts into his work. As discussed in the previous section, however, his “enthusiastic response” rests on a misconception: “he liked Einstein for ‘taking out the pin which tied down our fluttering little physical universe!’ ... [Einstein's] theory supported his denial ‘of any one absolute principle’ and his belief that life ‘was always a matter of relationships’” (Whitworth, 2001). Lawrence is correct in his description of the radical nature of Einstein's work. In some respects, it did take out the pin from the universe that had been conceived. Einstein, however, was attempting to pin it down again. Unlike Lawrence, who accepts this first unseating of the universe, Einstein went past the upheaval, past the revelation about the importance of the relationships between objects in determining reality, to try to access what he thought was “a complete explanation of the universe” as a “‘general principle wrested from nature’” (Isaacson, 2008). Einstein made no secret of believing that an underlying reality could be found in the universe. He made no attempt to reject a foundation of truth. He simply attempted to suggest a different, deeper truth. Lastly, Whitworth states that Lawrence liked Einstein because his theory “supported his denial” of certain principles (2001). Lawrence, it seems, already held these ideas, and turned to an interpretation of Einstein as validation. Einstein held no primacy for Lawrence. For Lawrence, his own truth reigned.

Despite the conflation of Einstein's theories by modernist artists in support of the chaos of their works, evidence also exists that Einstein's ideas influenced a shift in modernism towards a redefinition and reacceptance of absolute truth. Lawrence, even after his delight with Einstein's “denial” of absolute truth, demonstrated such a shift in his “Swan” series of poems. In “Swan,” Lawrence still “conflates a wide range of theories, presenting them as ‘a mist of atoms/electrons and energies, quantum and relativities’” (Whitworth, 2001). Shockingly, in this mist, the swan, “‘the Father of all things’, the new god, swims.” (Whitworth, 2001). Into the murky uncertainty of mixed theories, Lawrence introduces a godlike creature. Lawrence's presentation of this god figure in the poems is also mixed: the swan dwells “within vast chaos,” intimately connected to the laws of the new physics, but also seeming “more solid, more alive, and... more crudely masculine” as they “furlow our featherless women with unknown shocks” (Lawrence, 1929b; Whitworth, 2001; Lawrence, 1929b). This powerful figure is, however, combined with some of the new, unpinned confusion through its “unknown shocks” (Lawrence, 1929b). Lawrence does not directly

address the impetus for why the swan “no longer swims calmly” and instead disrupts the human world, but the imagery of a swan arising from behind the reeds seems to evoke the concept of hidden truth being revealed (Lawrence, 1929b). Lawrence acknowledges this truth may not be calming, but the fact that “time beats and goes still,” courtesy of Einstein, has thrust truth from its tranquil banishment (1929b). Lawrence demonstrates here ambivalence about the consequences of truth—truth may incite more chaos than reconciliation—but he recognizes its existence.

In the poem that follows “Swan,” called “Give Us Gods,” Lawrence reanimates this concept of a godlike swan dwelling among marshes of murky scientific truths. Lawrence cries, “Give us gods. We are so tired of men and motor power,” an interesting request from a man who denies absolutes (1929a). Yet, as this god arrives, he warns that the offspring of man will be more cygnet than human. Mankind cries for gods, searches for them in science, and finds them, but these gods will meddle meticulously in human affairs, perhaps destroying the peace found by having these deities. Lawrence’s poems, with their intertwined presentation of truth and its consequences, “indicate a need to return to some form of absolute, but it must be the absolute of a relativistic science which has unpinned the universe, or the absolute of plural gods rather than a single God” (Whitworth, 2001). Einstein’s search for “reality beyond our ability to observe things,” and his presentation of a new world order provided Lawrence and other writers an acceptable framework within which they could explore the search for and validity of truth in modern times (Isaacson, 2008).

Whitworth advances a general model for this synthesis that Einstein provided for modernist writers: “non-Euclidean humanity” (2001). Whitworth demonstrates that modernist artists were “caught between two possibilities, a ‘human’ or ‘humane’ outlook which is too indebted to romanticism and Victorian sentimentalism to be useful, and a modernist outlook which, at the time...can [be] describe[d] only as ‘inhuman’” (Whitworth, 2001). The desolation of modernism’s wastelands, interpersonal distance, and sparse, linear prose, to which kind of space “Euclidean geometry ascribes the quality of infinity,” began to tremble with the rioters’ and poets’ increasing calls to “give us gods” (Whitworth, 2001). These artists could not, however, return to the model in which “romanticism ascribes [infinity] to man” (Whitworth, 2001).

Einstein’s ideas – the unification of space and time, his confidence that humans could unearth new, more correct absolutes – helped modernists discuss, if not resolve, this conundrum. They applied Einstein’s conceptions to the human, and unearthed an alternate model to the “flat surface of the consumerist self” whom the modernists so disdained (Whitworth, 2001). Whitworth argues that modernist writers established, in their characters, a concept “of a humanity which is neither deeply human nor inhumanly superficial, but ‘non-Euclidean humanity’” (2001). This new human had intricate, but absolute, qualities within

himself, rendering him strong against the forces of chaos the modernists had already so aptly identified in the world.

Einstein as Muse and Subject: The Triumph of the “Metaphor” of Truth

Einstein on the Beach (EOB) is a 1976 work of modernist theater by Philip Glass and Robert Wilson, which takes Einstein as its subject. The inclusion of Einstein in the opera provides a case study through which we can elucidate Einstein’s influence on modernism. Craig Owens argues in his 1977 article, “Einstein on the Beach: The Primacy of Metaphor,” that the opera participates in the glorification of fractured metaphor. I argue, however, that the creators’ stylistic choices about how to portray Einsteinian motifs demonstrate that Einstein’s real message to the creative community was one of unity and truth rather than chaos.

Despite its publication in the 1970s, scholars still consider *EoB* a work of modernist theater. Modernist theater is characterized by mixed performance mediums, a shift away from the traditional performer-watcher dichotomy, and the undermining of the authority of the spoken word (Owens, 1977). As Owens notes, Robert Wilson’s “recent spectacle *Einstein on the Beach* (in collaboration with composer Philip Glass) resists assimilation to any of the conventional genres of performance” (1977). It mixes Glass’ unconventional, un-categorical music, with Wilson’s artfully planned, meaningful sets. The opera also reveals definite roots in the symbolist tradition, also associated with modernist theater. To give a brief description, the opera is plot-less, moving through a series of symbolic portrayals of different objects relating to Einstein’s image and legacy (Wilson, 1990). The three main scenes of the opera pertain to a train, a trial, and a field/spacehip. The opera has nine scenes, each connected by a short interlude termed a “knee play.” The cast is small and requires an assembly of unusual instruments, including an electric organ. The figure of Einstein with a violin remains onstage throughout the performance.

Glass published a paper explaining his approach to *EoB*, in which he presents the work as part of an ongoing musical project of his called “Another Look at Harmony.” This project in turn had roots in his 1974 “Music in 12 Parts” in which he “developed a vocabulary of techniques (additive processes, cyclic structure, and combinations of the two) to apply to problems of rhythmic structure” (Glass, 1978). With *EoB*, Glass turns his attention to “structural harmony... where the evolution of the material can become the basis of an overall formal structure intrinsic to the music itself” (Glass, 1978). *EoB* was, then, part of a larger intellectual project regarding musical unity and integration.

Glass accomplished this aim in *EoB* by “link[ing] harmonic structure directly to rhythmic structure, using the latter as a base” (Glass, 1978). For instance, the first theme of the piece is “based on the superimposition of two shifting rhythmic patterns, one changing and one fixed” (Glass, 1978). This motif of a fixed-changing duo provides the inspiration and structure

for the harmony. In order to ensure the “clarity of this relationship,” Glass employs throughout the piece “easily perceptible “root movement” (chords or “changes)” (1978). The piece has an underlying, simplistic structure, designed to highlight the unity between the rhythm and the melody. In addition, the “text is not secondary or supplementary but is a description of the music itself” (Glass, 1978). The text has no words – it is comprised of the scale degrees of the notes the performers sing. Suiting the scientific nature of their subject, this device also provided further unity with the already coupled rhythm and harmony.

Glass sought an integrated whole. He attempted a “reintegration of rhythm, harmony and melody into an idiom which is, hopefully, accessible to a general public, although, admittedly, somewhat unusual at first hearing” (Glass, 1978). Glass’s statement carries echoes of the provocative nature and newness that provoked riots against modernist pieces, but evoked cheers for Einstein. The opera itself experienced a sold-out premier, enthusiastic public reception, and critical acclaim from liberal and conservative voices alike (Shevtsova, 2007). In contrast with other modernist artists, Glass and Einstein both seek unification in simplicity. Glass’ evolving musical pursuits, from integrating rhythm with harmony and text, mirror Einstein’s path from simple to general relativity to a unified field theory. His musical tactics throughout the piece seek to join typically separate elements of music into related ones. His approach is fairly mathematical, creating “repeated figures from simple arithmetic progressions” (Glass, 1978). At points, Glass allows these established connections to become “lost in an overall texture of harmonies and meters” (Glass, 1978). This devolution into complexity based on Glass’s “units” of truth, harmony and rhythm, also echo Einstein’s foray towards a unified theory, where he employed his established truths as a searchlight in the remaining complexity of the universe. One might argue that Glass uses these tactics only because he is representing Einstein, but his statements about his musical evolution towards *EoB* demonstrate that these tactics existed prior to *EoB* itself. Given that Einstein eventually became the subject of one of his operas, and the resonance of Glass’s approach with Einstein’s belief in an underlying reality and simplicity, I argue that Glass’s composition embodies Einstein’s true cultural influence: an urge towards a higher form of truth.

The themes of unification and simplicity extend to Wilson’s visual portrayals of the themes. Glass wrote the most important musical material for solo violin, and the violinist appears dressed as Einstein, midway between the orchestra and the stage performers, emphasizing his role as an interpreter of the cosmos and of the music (Owens, 1977). Owens comments that this image, as well as Wilson’s other stage choices, follows a “mythopoeic impulse” towards emphasizing truth (1977). Additionally, Wilson’s images “resist falling into any meaningful linear sequence” relating to the “arbitrariness of Einstein’s temporal structure” (Owens, 1977). Owens takes this facet to support his portrayal of the piece as a

triumph of splintered metaphor, but I interpret it differently. In the text that Wilson's actors speak, "a single text is repeated again and again, its final word being nothing more than a cue to the speaker to begin again, until that linear time in which all narrative... is effectively suspended" (Owens, 1977). Rather than arbitrariness, I take Wilson to be emphasizing a non-linear sequence of time, much as Einstein's relativity provoked re-conceptualizations of time.

Despite the seemingly scattered imagery, Owens proclaims that Wilson "generates a unified field through visual means" and that Wilson had a desire "to synthesize those divergent modes of performance" (1977). Wilson accomplishes this aim, according to Owens, by restoring objects to "their original resonance or complication which logic and language had stripped from them" (Owens, 1977). Wilson's repetitive texts and his highly symbolic, sparse staging enable this restoration. This urge towards unification and restoration of meaning represents the emerging modernist impulse to create a synthesis, a new truth, to participate in "non-Euclidean humanity."

Owens would disagree with me. Owens's central argument is that the piece emphasizes the primacy of metaphor, of fracture, in modernist works. Owens supports his claim by describing the "frequent arbitrariness of the selection of the images, no detail being too insignificant for inclusion, as well as the freedom with which associations were made – organization was neither chronological nor thematic" as evidence for the scattered metaphors of *EoB* (1977). Owens undermines his argument with his next qualification. Because of the arbitrariness of the images, Owens states, the work has been compared to a dream. These images, however, "unlike those of dreams, are not open to interpretation. Dream-images are the mediated representations of dream-thoughts; hence, their interpretability. Wilson's images are, on the contrary, immediate, presentational, resistant to analysis" (Owens, 1977). The images, then, provide no access for the synthesis Owens claims Wilson's images provide.

Indeed, the author is contradicting his argument that the opera embodies the "primacy of metaphor" when he calls *EoB* un-interpretable. Owens defines metaphor as the "realization that an idea is naturally fractionized into several motifs of equal value which must be assembled" (1977). He establishes a conception of metaphor that involves a catalytic process, but one in which "reassembly and reintegration" of those fractured pieces "remains primary" to the existence of metaphor (Owens, 1977). Described another way, in a metaphor, the subset pieces of an idea are connected by "logical relations," allowing the metaphor as a whole to "reintegrate the first realm with the totality of the others, in spite of the fact that reflective thought struggles to separate them" (Owens, 1977). Metaphor is, then, the decomposition of an idea into pieces that are thematically or progressively related in such a way that the interpreter of the metaphor can reconstruct the whole, gaining a kind of synthesis in this reconstruction. *EoB*, according to Owens, fully participates in the

decomposition instinct of metaphor. *EoB* is, however, “not open to interpretation,” resisting the reintegration necessary for metaphor to reconstruct the truth of the idea it represents.

Owens makes his claim about the opera’s un-interpretability in relation to the opera’s lack of direct language and its emphasis on visual symbolism, connecting it to the modernist tradition steeped in metaphorical representation. Owens’s presentation of the opera as a series of “arbitrary images” and emphasis of the “freedom with which associations were made” does indeed make a case for a break from the logical, chronological bindings of language. This presentation supports the claim that the opera fits into the modernist urge to create “a spectacle which cannot be contained within verbal language” (1977).

His claim about un-interpretability, even as a sub-argument, however, undermines his overall attempt to situate *EoB* as demonstrating the primacy of metaphor. Instead, his analysis of this aspect of the play supports viewing this work as another instance of the impulse that drove “non-Euclidean humanity” in the modernist writers. Einstein’s ideas, rather than encouraging a chaotic worldview, re-sanctified artistic pursuits for forms of absolute truth. Here, in *EoB*, the creators present an opera “resistant to analysis” (Owens, 1977). In this resistance, the artists can communicate through their artistic choices – the unity of rhythm and harmony, the images, the non-logical progressions, the numerical texts – a new picture of un-debatable truth. They present a new “swan” that answers the call to “give us gods.” Einstein’s ideas allowed modernist artists to find a synthesis that moved from the simplicity of presenting the world as chaos and reductive analysis to presenting a world in which the possibility of truth lived. These truths are still communicated through metaphor, but are, as Owens so conveniently demonstrates, “resistant to analysis,” reduction—and rioting.

Conclusion: Einstein as the New Gnostic God

Einstein’s works contributed to a re-establishment of truth as a valid concept in modern times. This impulse towards a new truth is evident not only in Einstein’s works but in his figure. Scholar Kjell Jonsson considers Einstein as fulfilling the role of a Gnostic god, deliverer of a new world order (1999). He argues that, with Einstein, “all the necessary Gnostic features are there, the unity of nature, the opportunity for a fundamental reduction of the world, a secret and a word, the idea that total knowledge can only be revealed once and for all, just like a lock that suddenly springs open after thousands of fruitless attempts” (Jonsson, 1999). The intractability of Einstein’s theories worked towards releasing secrets rather than denying the possibility of hidden knowledge, as many modernists did. At a time when both science and modernism were “being accused... of being too mechanistic, soul-destroying, and technologized, Einstein and relativity offered a counter-argument” (Jonsson, 1999). Einstein – his process, theories, and personality – offered an escape “from the noise of a

machinated universe” (Jonsson, 1999). Einstein offered up a new form of truth, truth not simply for modernist decomposition and derision, not for metaphor’s deconstruction and reintegration, but truth that stands on its own, as the reigning metaphor of modern times.

References

- Friedman, A.J. (1985). *Einstein as myth and muse*. New York, NY: Cambridge University Press.
- Galison, P.L., Holton, G.J, and Silvan S.S., eds. (2008). *Einstein for the 21st century: His legacy in art, science, and modern culture*. Princeton, NJ: Princeton University Press.
- Glass, P. (1978). Notes: Einstein on the beach. *Performing Arts Journal* 2(3), 63-70.
- Holton, G.J. (1995). *Einstein, History, and Other Passions*. New York NY: American Institute of Physics.
- Hunt, B.J. (1991). *The Maxwellians*. Ithaca: Cornell University Press.
- Isaacson, W. (2008). *Einstein: His life and universe*. New York, NY: Simon and Schuster.
- Jonsson, K. (1999). Einstein at the amusement park: The public story of relativity in Swedish culture. In *Mission to Abisko: Stories and myths of creation in scientific "truth"*. New York, NY: Perseus Books.
- Lawrence, D. H. (1929). "Give us Gods." *Pansies. Kalliope Archive of Poetry*.
- Lawrence, D. H. (1929). "Swan." *Pansies. Kalliope Archive of Poetry*.
- Owens, C. (1977). "Einstein on the beach: The primacy of metaphor." October 4, 21-32.
- Richter, H. (1997). *Dada: Art and anti-art*. New York, NY: Thames and Hudson Inc.
- Rowlands, P. (1990). *Oliver Lodge and the Liverpool physical society*. Liverpool, United Kingdom: Liverpool University Press.
- Shevtsova, M. (2007). *Robert Wilson*. New York, NY: Routledge.
- Whitworth, M. (2001). *Einstein's wake: Relativity, metaphor, and modernist literature*. New York, NY: Oxford University Press.
- Wilson, R., and Glass, P. (1990). *Einstein on the beach*. Philip Glass Ensemble. Cond. Michael Reisman. CBS Masterworks.