

Research Article



Josef Haydn and Thomas Nagel on Continuity in Nature and the Nature of Continuity

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Abstract | According to Thomas Nagel, neo-Darwinians do not recognize the radical discontinuity between subjective experience and materially conceived reality. He calls for a new understanding of preconscious matter such that genuine continuity between it and subjectivity may become intelligible. According to Monroe Beardsley, music presents modes of continuation. An analysis of modes of continuation in Haydn's "*The Creation*" shows that the continuity within the humankind aria and between it and the preceding arias models what Nagel is seeking: Both a fresh grasp on the discontinuity between humankind and other moments of natural history and a new kind of continuity.

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Thomas Nagel's *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False* calls for a complete overhaul of basic aspects of Darwinian evolution—the nature of continuity, of time, matter, causality, beginnings—in order to overcome shortcomings in its accounts of the origin of consciousness. The implications of his challenge are sweeping. At stake are the nature of consciousness itself and, with it, the reality of cognition, responsibility, and values. For, Nagel argues, when consciousness is understood in terms of its origin and its origin is understood in materialist, mechanistic terms, it is “almost certainly” impossible either to comprehend or explain subjective experience. From his summary:

The physical sciences can describe organisms like ourselves as parts of the objective spatio-temporal order ... but they cannot describe the subjective experiences of such organisms ... There can be

a purely physical description of the neurophysiological processes that give rise to an experience, and also of the physical behavior that is typically associated with it, but such a description, however complete, will leave out the subjective essence of the experience—how it is from the point of view of its subject—without which it would not be a conscious experience at all. ...

Further, since the mental arises through the development of animal organisms, the nature of those organisms cannot be fully understood through the physical sciences alone. Finally, since the long process of biological evolution is responsible for the existence of conscious organisms, and since a purely physical process cannot explain their existence, it follows that biological evolution must be more than just a physical process, and the theory of evolution, if it is to explain the existence of conscious life, must become more than just a physical theory.

This means that the scientific outlook, if it aspires to a more complete understanding of nature, must expand to include ... theories of a different type from any we have seen so far. (2013)

Nagel has two issues with neo-Darwinians: they underappreciate the radical difference between subjective experience and bio-chemical-physical processes, and their concept of natural history preceding human consciousness cannot explain human consciousness properly understood. To address these concerns, he suggests that biologists might investigate whether matter may be inherently teleological or incipiently mental, but, he says, this proposal is more to indicate a possible change of guiding presuppositions for research than to state anything like a conclusion. Reviews by some biologists indicate either that he seems not to be proposing anything very different from what they are already doing or that they simply cannot imagine what he might be meaning by a theory of evolution that is “more than just a physical theory.”

A third issue is the nature of the connection between human consciousness and prior stages of evolution. No less than neo-Darwinians, Nagel is a naturalist; he is as opposed to creationism as they. Like them, he wants to see the rise of human species, including the origin of consciousness, as a process continuous with prior stages of natural history. Nagel does not address the nature of this continuity, but it seems it would have to be fundamentally different from the mechanistic connectedness of materialism. And that is precisely what neo-Darwinians cannot do without.

This paper focuses on this third area. It will offer a concrete example of re-thinking the nature of the connection between pre-human creatures and human consciousness. It will not argue that this model of getting beyond mechanical continuity is in fact applicable to natural history (though it might be), but only that it fits with Nagel's vision of both human and pre-human reality. Its very existence may heighten awareness that a mechanistic connection has been uncritically presupposed and that other models may be possible. A concrete model of a different process of continuation may help evolutionary biologists to imagine what Nagel is talking about. The hope is that even if the particular example offered here turns out not to suggest a fruitful line of investigation, it may stimulate new thinking about the nature of the connection between pre-human and human reality.

If biologists become open to different models of the connection, they may become open to reconceiving both pre-human reality and human reality itself. The example comes from Franz Josef Haydn's oratorio, *The Creation*.

Monroe Beardsley was the first to argue explicitly that an important role of music is to model “modes of continuation” (1981, 68-72). That is, music presents various ways in which past, present, and future events are interconnected. He observes that musical events, like quotidian events, can follow one another as an effect follows a cause, or as an enactment realizes a decision, or as an obstacle blocks a goal, or as very little comes from whimsy. When a passage of music is repeated, for example, the repetition can stress the immediate past, thereby intensifying the drive toward what is coming; it can dwell on what has just happened, thereby stopping the passing of time; it can model the meaninglessness of passing from past to future; it can model the past as an obstacle to actualizing its own outcome, and more. Many pieces model several modes of continuation, and so a critic must also clarify how a piece's various modes of continuation fit together and what exactly “fitting together” means in that piece—what, in short, the underlying continuity is.

The texts of [Haydn's *The Creation* \(1798\)](#) deal with natural events (the coming to be of mountains, plants, and so on). Each event is set by a separate musical number, and these numbers are interrelated in a way that is complex and unprecedented. The musical relations among the numbers invite listeners to hear the texts related to one another in the same way. That is not to say that the music mirrors the relationship that the texts already have; rather it constructs new relations among texts and give them a new force and meaning. (That musical relationships between passages connect in a particular way the texts they set and thus affect the specific meaning of those texts is elaborated in [Clark 2011](#), 90-91, and [Greene 2012](#), 2-8, among many other places.) It may be that the nature of continuation from one musical event to another may be like the continuation from one event to another in natural history and that the musically defined meanings of the oratorio's texts suggest a new way of thinking about the rise of human consciousness as a natural process.

The analysis that follows tries to help listeners hear

the musical relations and become sensitive to music-and-text as an integrated entity. A decisive aspect of the musical and therefore also textual interrelations is that there are moments when a musical event is summoned into being by a prior event and not only fulfills what the prior music was evoking but overfulfills it. That is, the prior event underdetermines the event that, in other respects, it leads to.

Overfulfillment is important in connection with Nagel's project for two reasons: it occurs in the aria dealing with the coming to be of conscious human beings, and it characterizes the relation of this aria to the prior arias. The Humankind aria differs radically from the arias preceding it, though hints of that difference in earlier arias partly (but only partly) lead up to the Humankind aria.

This hearing of the oratorio departs from the standard way of hearing it by more fully appreciating how radically the aria for the advent of humankind differs from the arias preceding it. The musical relation of the Humankind aria to the rest of the oratorio connects humankind to the advent of other creatures and relates their texts to one another in a specific way. Hearing these musically projected connections, one hears a story of natural history in which the advent of human beings is a product of its past but also an overfulfillment of what prepared it. As a product, human consciousness is part of a process that is mechanistically describable; as overfulfillment it is also more and other than that. It must be stressed that the musically projected interrelation of the texts must be heard; the analysis that follows points to what is there to be heard, but is no substitute for hearing the musically determined meanings themselves. Having heard them, one can ask to what extent this story of natural history aligns with Nagel's vision.

Gottfried van Swieten, a Viennese arts patron in the 1790s, put together the text for *The Creation*. He worked from an English text that, drawing on Genesis 1 and Milton's *Paradise Lost*, was offered to Haydn when he was in London (1794-95). Like Handel's *Messiah*, Haydn's *Creation* has three parts. The "Representation of Chaos" opens Part One. Parts One and Two consist mostly of tripartite units patterned after those in the first part of *Messiah* (Greene 2012, 17): recitative (short, not very tuneful declamation of a text), aria (solo), and ensemble (duet, trio, or chorus,

some of them preceded by an additional recitative). Part Three consists of recitatives, duets, choruses, and no arias.

As Figure 1 indicates, six times a recitative opens into an aria sung by one of the archangels: Gabriel (soprano), Uriel (tenor), and Raphael (bass). These recitatives narrate the coming into being of six entities: light, mountains and seas, plants, birds, animals, and humankind. Each of the six arias sings an archangel's delighted wonder at the new thing.

The flow from recitative to aria to ensemble is the same all six times. The continuation within each of the first five arias is also basically the same, though it is occasionally troubled by hints of a counter mode of continuation (to be detailed below). In the final aria, this counter mode pushes to front and center, crowding out the earlier mode.

Each ensemble that comprises the third member of the tripartite pattern sings that the preceding act of creation is *per se* a praise of God. As the oratorio goes along, the texture of the ensembles becomes more complex and exciting. This growth becomes their mode of continuation, whose culmination is Part Three as a whole.

Continuity by steady growth characterizes the succession of ensembles in many eighteenth-century oratorios. By contrast, the counter mode of continuation hinted in the first five arias and its latent tendency toward the sixth aria, the contrast between the continuation prevailing in the first five arias and that in the sixth, and the overfulfillment of the movement toward the new continuity—all these working together establish a highly original mode of continuation that lies at the heart of Haydn's project. And it is what directly addresses the issue that Nagel addresses.

The nature of this continuity is easiest to see by looking at its beginning and end points, Nos. 2 and 24. Both are sung by the archangel Uriel, whose name means "God is light"; he sings his amazement vis-à-vis physical light in No. 2 and the light of human reason and love in No. 24.

No. 24 begins with a tune that is as close to eighteenth-century Austrian folksong as to oratorio aria, and initially the organization of phrases resembles folksong structure as well. A useful term for this structure

<u>Recitative</u>	<u>Aria</u>	<u>Chorus, trio, or duet</u>
<i>Part One</i>		
No. 1 God divided the Light from the darkness	No. 2 Light	Nos. 3, 4
No. 5 And God called the dry land Earth, and the gathering of waters called he seas, ...	No. 6 Seas and mountains	
No. 7 And God said, Let the earth bring forth grass, the herb yielding seed and the fruit delightful to the ravished sense, by flowers	No. 8 Plants	Nos. 9-13
<i>Part Two</i>		
No. 14 ... and fowl that may fly above the earth in the open firmament of heaven	No. 15 Birds	Nos. 16-19
Nos. 20, 21 Let the earth bring forth the living creature after his kind: cattle and creeping ...	No. 22 Animals	
No. 23 And God created man in his own image	No. 24 Humans	Nos. 25-28

Figure 1: *The Tripartite Structure of “The Creation”*

is “paired phrases.” The aural phenomenon itself is very familiar to listeners of Western music, whether or not they know this term for it. The aural apprehension is, of course, vastly more important than the verbal description of it. For this reason, the argument that follows presupposes a familiarity with the music of Nos. 2 and 24. It is readily available on YouTube.com, which has at least three videos of performances sung in English.

“Pairing” depends on the interaction of four musical components. Only the first two are clearly present in No. 2, while all four at work in No. 24. First, the musical flow is articulated, and each joint marks the end of a unit (for example, in No. 24 at the word, “clad”), thereby making it into a unit. But, second, at the point of articulation forward mobility pushes beyond the joint toward the next unit (one knows the piece is not over). Third, in the case of paired phrases, the second unit ends more stably than the first unit, and since it does the closing of the second serves as the closing for the two together; that is why the two units pair up. Fourth, the first unit calls up a future and is fairly specific about what that future may be. Listeners are led to expect something very close to what actually happens, namely the second unit. In sum: what is heard is not merely a *succession* of units, but instead a dynamic *progression* from a summons to a response.

This assertion can be checked by re-hearing No. 24

while looking at Figure 2. The first part of the aria consists of seven units, labeled in Figure 2 as *a* through *g*. As even a quick hearing confirms, adjacent units form pairs: *a* with *b*; *c* with *d*; *e* with *f*. The first paired units comprise a *subphrase*, and units *c* and *d*, likewise paired (*c* progresses to *d*), form a second subphrase. Then it turns out that *a+b* forms a pair with *c+d*. One pair of units forms a pair with another pair of units. (Again, this assertion should be verified by a re-hearing.) This nesting of paired units within paired units is common in European folk music.

On the word “stands” in unit *d*, the aria departs decisively from folksong. Among the possibilities that are predictable, one that is less probable—though not really surprising either—comes about. The *c+d* subphrase does not end at this point (that is, at the point corresponding to the end of the summoning subphrase), but instead continues until its length is twice that of *a+b*. The lengthening may have been somewhat less expected, but, if the response is to be longer than its summons, the 2:1 proportion is a likely one. The grandeur of being human joins together the less predictable (an extension) and the more predictable (the proportion).

Then, as Figure 2 indicates, the nesting continues to a third level of the musical organization: these two subphrases (*a+b* and *c+d*) comprise a phrase that progresses to the second phrase (whose subphrases are *e+f* and *g*).

The italicized letters refer to units of text:

<i>a</i> In native worth and honor clad	<i>e</i> The large and arched front [forehead]
<i>b</i> with beauty, courage, strength adorned	sublime
<i>c</i> to heaven erect and tall	<i>f</i> of wisdom deep declares the seat
<i>d</i> he stands a man, the lord and king of	<i>g</i> and in his eyes with brightness shines
nature all.	the soul, the breath and image of his God.

1) $\frac{a \rightarrow b}{\quad} \mid \frac{c \rightarrow d}{\quad} \mid \frac{e \rightarrow f}{\quad} \mid g$	<i>a</i> progresses to <i>b</i> , <i>c</i> to <i>d</i> , and <i>e</i> to <i>f</i>
2) $\frac{\quad \rightarrow \quad}{\quad} \mid \frac{\quad \rightarrow \quad}{\quad}$	<i>ab</i> progresses to <i>cd</i> , <i>ef</i> to <i>g</i>
3) $\frac{\quad \rightarrow \quad}{\quad}$	<i>abcd</i> progresses to <i>efg</i>

Figure 2: *The Dynamic Structure of the Humankind Aria*

An orchestral interlude brings listeners a reprise of the opening music. The reprise exults woman's coming to be. Not unexpectedly, the extension of the melody of the second phrase (that is, at the point corresponding to *g*, "image of his God") moves into new territory, for it celebrates "love" and its attributes of happiness, joy, and bliss. By repeating, then changing the music in the second part, the aria both identifies "love" with the "image of God" and differentiates them from each other. The music treats them as two sides of one reality, each needing and complementing the other.

Unequivocally paired phrases and humankind appear together in *The Creation*. This convergence is brilliantly fitting, for the joining of genuine responsiveness to genuine novelty replicates a crucial aspect of humanity—namely, its capacity for making and enacting decisions, which are likewise responsive to without being fully determined by their past. Burnham (1995, 119) argues convincingly that the congruence of this musical process with the human process of carrying out decisions makes it plausible that the countless paired phrases of even untexted, instrumental music of the Classical period be identified with a human protagonist (usually unnamed and unspecified spatially). The text of the Humankind aria makes this identification explicit. Precisely what makes for a dynamic musical continuation is what presents humankind metaphorically.

The metaphor requires some unpacking. Like decision-making, responsive answering phrases are more like products of moral necessity than results of mechanical or logical necessity. Humans are always in a particular situation, which summons them to determine and carry out an appropriate response. The de-

cision also has to be appropriate to who they are. Because there are frequently several choices all of which seem appropriate to some degree, to select one of them contributes to defining who the decision-maker is. Although the situation itself and the range of choices may be largely or perhaps even entirely explicable in terms of cause and effect, the decision itself usually is not. The impact on one's identity is especially important when one chooses a less obvious alternative. Random accidents, involuntary actions, and thoughtless choices among similar options do not have this kind of impact on who the decision-maker is. Music is similarly structured when a responding phrase is summoned but not controlled by its past, and it determines what it was that the past was actually summoning.

It is often the case that decisions that are original and unique are the most admired because they address the given situation in more comprehensive or profound ways than do more conventional responses. Similarly, responding phrases in excellent music are often original, unique, surprising in some way. They go beyond the predictable and the reasonable to the unusual and innovative without becoming inapt. Being more deeply appropriate to their past than predictable responses would have been, they resemble the self-condemning decision made at the very end of Kurosawa's "The Scandal." The plaintiff in a libel suit says of his lawyer, who has just sacrificed any future he might have had to a revelation that damns himself but wins the case, "We just saw a star form in the sky. ... For the first time in my life, I saw a star come into existence. Compared to that feeling, our victory was nothing." The lawyer's astonishing actions are not unprepared, but, for the plaintiff, what the lawyer did

so overfulfilled the preparations that he could only be seen as an entirely new light in the heavens.

Haydn's instrumental music is replete with paired phrases, as are the works of Mozart, Beethoven, Schubert, Brahms, Johann Strauss II, Richard Rodgers, Frederick Loewe, and Carl Davis. This way of organizing music evidently has its beginning in Renaissance dance music, and regular four-bar or eight-bar phrases are common in Baroque dance music, where predictably recurring cadences correspond to changes in dance steps. During the last quarter of the eighteenth century, Haydn and other composers increasingly nest pairs within pairs and extend the second phrase—also called the “consequent” to an “antecedent”—in a pair, and as they do the structure becomes more supple and complex, leaving dance music behind. Extensions, like those in the Humankind aria, take on a number of different meanings, such as struggle, determination, and perseverance.

The aptness of terms like “moral necessity” and “perseverance” is heightened by cases where a composer uses paired phrases contrarily: the consequent phrase does exactly what is expected and nothing more—no extension, no complication, no deepening. The responding phrase is more like a mechanical effect than the enactment of a human decision. Verdi, for example, uses this kind of continuation for the courtiers in *Rigoletto*, and it nicely characterizes them as puppet-like quasi-humans. Wagner's *Die Meistersinger* indicts pedants who write music using a recipe for paired phrases. Sometimes the result is musical, but it stales and molds quickly. Sometimes the consequent fits the antecedent so mechanically that human decision-making seems to have gone badly awry.

In *The Creation*, none of the arias preceding the Humankind aria have any unequivocal paired phrases. Their continuity resembles that of Handelian arias much more than the continuity modeled in Haydn's instrumental music. As in the Humankind aria, cadences articulate phrases in these arias, but the four-bar phrase is not established as a standard. Consequently, longer phrases are not heard as extended, nor shorter ones as abbreviated. Second phrases do not begin with the same melody as their predecessors.

While in the Humankind aria phrases make pairs, in the Light aria (No. 2) they do not because no phrase closes both itself and the preceding phrase, even when the stability at the ends of phrases differ in degree. There being no paired units, there also can be no pyramiding of paired units (as shown in Figure 2 and 3). In common with arias in most eighteenth-century oratorios, the style of continuation is successive: phrases follow one after another like links in a chain without progressing from one to the next and without forming nested pairs.

In successive units, forward-directed energy drives not from one unit as a whole to the next unit as a whole but from each beat or each measure to the next. Each successive phrase responds not to the previous phrase but to the same thing that the previous phrase responded to—usually the impetus of this background rhythm. The rhythm makes the *fact* of a next phrase predictable, and the aria's fund of motives and harmonic relationships sets limits on the next phrase's melody, but the particular motifs in one phrase (unlike those in the first phrase in paired phrases) do not shape or push toward the particular melodic motifs in the next phrase. That there will be a future seems certain; what its specific content will be is uncertain. Figure 3 contrasts the mode of continuation in a chain of successive units to that of nested progressive units. For listeners who hear the contrast of the Humankind aria to its predecessors, the shape of the oratorio is transformed from one shaped by the increasingly exciting choruses into something quite different.

Many listeners to *The Creation*, however, either do not notice or do not make much of the contrast between successive and progressive continuation. For the more or less standard way of hearing the oratorio, the recitatives retell the story of God creating the world, and the role of each aria is to depict musically the creature whose advent is narrated in the preceding recitative. These illustrations in sound, or “word paintings,” are musical gestures that point to a word's referent by corresponding to it in some way. For example, the abrupt shift from A major to C minor in No. 2 corresponds to the change from appreciating light to enjoying the downfall of darkness. Maynard Solomon praises Haydn's word paintings for their “virtuoso display of

successive phrases
a + b + c + d + e

paired units, subphrases, phrases
{(a+b) + (c+d)} + { e }

Figure 3: Continuation in Successive and Progressive Units

the manifold varieties of musical representation” (2006, 123). They invariably please audiences—rather too easily for some critics. Enjoying them seems to have pulled attention away from Haydn’s originality in contrasting the phrase structure of the Humankind aria to that of the other arias.

Likewise unnoticed are some structurally peculiar moments in the first five arias. Referred to above as hints of a counter mode of continuation, these are times when phrase pairing almost takes place. “Quasi-paired phrasing” occurs. Some phrases begin as though they might summon an answering phrase, yet by the end of the phrase the sense of a progression has slipped away. Already in the Light aria, it is as though there were fleetingly a slight bend toward the continuity of progressive units, but nothing comes of it (for an example, listen to the passage beginning shortly before Uriel sings, “Disorder yields ... fair the place”). In later arias quasi-progressive phrases appear more often, and the tendency toward pairing becomes somewhat firmer (for example, the orchestra introduction to No. 8, which almost forms a pair with Gabriel’s first phrase, “With verdant clad...”). If the phrases in the angelic arias are progressively more nearly progressive as the oratorio goes along, and if paired phrases are a metaphor for human decision-enacting, the question arises, for what is this progression of arias a metaphor?

The answer seems likely to bear on Nagel’s concern to rethink the “existence of conscious organisms” and explain it as “more than just a physical process.” In order to spell out that bearing, a prior question needs attention: What about the Introduction and its depiction of chaos: does it in some sense set up the quasi-progressive phrases and the possibility that they be progressively progressive? Does it unleash a force that might impel and shape a progression toward progressive phrases?

In the standard way of hearing *The Creation* it does not, and the question that might attract Nagel’s attention cannot come up. The Introduction enacts the transformation either of emptiness (Tovey [1937, 117-18], Solomon [2006, 122-23]) or of radical disorder (Schenker [(1926) 1996, 97-103]) into fullness and order. It is a closed set piece; there is only succession, not progression from the Introduction to the rest of the oratorio, just as there is only succession from one aria to the next. The standard way to hear Chaos is not, however, the only way, so dealing with Nagel’s

concern needs to be interrupted by a few paragraphs on ways of hearing the Introduction.

The opening sound is a single pitch—C, *forte*. Either it is the emptiness that creation will fill, or, being a sound with no context, no tendencies toward anything, it is radical disorder—chaos. The opening emptiness/disorder unfolds into roiling and seething: gestures point to a goal, but what they forecast does not come to be; there are stopping points and pausing points, but lingering dissonances undermine them, or they fall off so quickly that they seem not to be pauses after all, or unwarranted *fortissimi* ruin them by stomping on whatever form may have been taking shape. Hushes suggest mysterious, veiled forces that stay hidden, for the outbursts following the hushes are no less mysterious. According to Schenker, the foreground events articulate a structure looming in the background behind and imposing order on all this churning. This structure is a line that rises from the opening C unison through D (bar 8; 0’50” after the opening) to E-flat (in bar 9, 0’53”) and then falls back to D, then to C (bars 39-40, 4’24”). This line is replicated twenty times as a foreground motif, often sequentially, sometimes modified slightly. According to Tovey, the shape that emerges is a quasi-sonata form: as in sonatas, there is a move to the relative major (E-flat, 0’53”) and a return to the strong opening unison (C, 4’24”), alluding to the opening motif somewhat like a reprise.

The structures that Schenker and Tovey discern offer repose to the churning chaos. The near-sequences and near-cadences exhaust their meaning in expressing chaos and not-beginning. They do not point beyond themselves. The tension they generate is completely absorbed when the background line that Schenker stresses is complete, or when the sonata process that Tovey hears is accomplished. “The vision of Chaos is over, and Haydn makes no further allusion to it” (Tovey 1937, 118).

What follows—the recitation of Genesis 1:1-3, sung first by Raphael, then the chorus—confirms that cosmos has replaced chaos. The most celebrated moment in the oratorio, and one of the most notable in all of European music, is the non-transition from the *pianissimo*, unaccompanied choral declamation of “Let there be light, and there was ...” to the *fortissimo* shout of “...light” with a full orchestra accompaniment that rises in pitch and volume for two complete measures. The coming of light confirms the end of not-begin-

ning, although it does not make the victory over chaos any more complete. In sum, the Chaos-to-Cosmos introduction does not drive toward the Light aria or guide its unfolding, but is simply the first in a succession of pieces that do not progress from one to another.

Hearing *The Creation* as a succession of natural events corresponds to viewing natural history not as Nagel would see it, but as neo-Darwinians do. For them, the evolution of species results from the intersection of two mechanistically caused incidents, the one changing the bio-chemical makeup of a plant or animal and the other changing the environment in which it lives. An altered genetic structure persists when it allows the creature's descendants to interact more successfully, in some sense, with the changed environment than can its unchanged cousins and consequently survive if the latter die off or move away.

The way successive phrases in the first five *Creation* arias follow one another significantly resembles the way successive mutations of a given species do. The earlier version of the species sets the boundaries within which change can happen, but—and this is decisive—has within itself no tendencies toward the change. Change results entirely from factors mechanistically acting on the environment and from stresses modifying the genetic makeup of individual members of the species. Likewise, phrase A sets limits on the extent to which phrase B can differ from it, but has within itself no momentum that either evokes or shapes B; differences between A and B are accounted for by things external to A. A and B cohere with each other, as do successive mutations, because of the environment they share and contribute to.

Much the same is to be said about the continuation from one *Creation* aria to the next if they cohere neither because they all respond to the dynamic summons of the Introduction nor because there is a dynamic forward push from one aria to the next, but rather because of related tonal centers, similar phrase organization, and the context of a story line to which each contributes. The emergence of intelligence, cognition, self-awareness, and the capacity to apprehend values in the Humankind aria is not different from the coming-to-be of everything else: God says, "Let there be"

If *The Creation* does not go beyond this understanding

of the origin of cognition, it is irrelevant to Nagel's project. He explicitly rejects divine intention along with the materialist continuity taken for granted in neo-Darwinian science.

While it may be that many listeners hear the Introduction in the way Schenker and Tovey do, they pass over some salient features. For example, there are features (specifically, near sequences and aborted cadences) that drive at least ambiguously beyond the Introduction to the buds of progressive phrasing that appear in the first five arias. Lawrence Kramer comprehensively challenges the standard way of hearing by pointing to a complexity that has further-reaching implications than Solomon's and Schenker's analyses can accommodate. For Kramer, to hear Haydn's chaos is to experience the sublime as per Immanuel Kant's *Critique of the Power of Judgment* (1790). Not an image but a presentation of that which cannot be imaged, the Introduction "sets chaos before the listener by confounding the ear" (Kramer 2009, 46).

Everyone in Haydn's audience knew the biblical text, knew what was coming; the point of the music was to make them un-know it. The passage is astonishing not because we can imagine that we comprehend such greatness, but precisely because we cannot. For a moment we can imagine nothing at all; the sublime has rendered the imagination powerless. In other words, and whether Haydn was aware of it or not, his treatment of the creation of light aligns itself ... with Kant. (43)

Kramer draws from Kant that "the sublime arises from a state of blockage in which the thwarting of perception and imagination turns the mind back reflectively upon itself. The mind finds assurance of its own infinitude in that very turn" (43). Crossing the unimaginable gap between non-being and being numbs by terrifying the mind, but confronting the sublime also puts the mind in touch with its own otherwise unapproachable depths.

The sudden *fortissimi* that undermine the Introduction's cadences are supreme instances of this blockage. Each one, however, compels listeners not only to confront but also to picture chaos, and so it begins the process of dispelling the sublime in favor of images and objectifications—the oft-remarked word paintings—that (in)famously characterize Nos. 2

through 22. The objectifications are necessary (Kramer 2009, 45). Against critics who regret the extent of word-painting, Kramer argues that precisely because “the production of a pictorial image depletes the immediacy that music otherwise seeks to sustain, ... [it] curbs the power of the sublime and fills the void left by the withdrawal of the sublime.”

Objectification by word painting, Kramer says, is withdrawn at the end of No. 22. Withdrawing the mode of withdrawal leaves another gap. This gap is filled by the Humankind aria, where fully paired phrases constitute a fundamentally new kind of image, a distinctively *musical*, non-visual image. Kramer is hearing the power of paired phrases to replicate the temporal process of human consciousness: “The referent of the image is ... something that has no form independent of the image, ... [namely,] the formation of Adam and Eve as subjects by virtue of their relationship both to God and to each other.” Only where the sublime is withdrawn (and word painting comes in) *and* where visual objectification is withdrawn (in favor of aural metaphor) can the human appear. In *The Creation* it appears in the form of the prototype of community—the domestic couple (53).

For Kramer, the story told by the recitatives is far less significant than the narrative that presents first the sublime, then withdrawal from the sublime by objectifying images, and finally withdrawal of the means of withdrawal by the non-visual image. Each stage carries within itself, though somewhat obscurely, an impetus toward the next stage. To hear this narrative is to hear clear breaks between the stages but also a musical progression from chaos to humankind and therefore also a dynamic within nature leading to human consciousness. The connection is not exclusively materialistic and merely successive. The structure of the narrative is isomorphic with what Nagel wants to see (although what lies outside the structure is not the same: in the case of the music, a composer outside the structure, in conjunction with contemporaneous musical practice and intellectual trends, brings the structure into being, while in the case of Nagel’s natural history there is nothing independent of the structure responsible for creating it).

The sudden *fortissimi* in the Chaos Introduction are vital to the narrative: they launch the double withdrawal and define the dynamic progression. The Schenker-Tovey analyses cannot accommodate these

violations of continuity. The first one—seven rude hammer blows—occurs about half way through Chaos (4’24”). Coming at the precise moment when an earned climax “should” occur, the jagged, ugly thrusts into the unknown overlap and ruin a moment of repose. Two subsequent *forti* as well as the *fortissimo* choral shout of “...light” re-do and augment the effect of the first one. The blast of light is harmonically the undisputed denouement of the tensions of chaos, but the high volume is so completely unprepared that, *pace* Schenker and Tovey, it adds to more than it resolves uncertainty. The appearance of light may be textually and harmonically prepared, but in terms of musical timbre, texture, and drama it simply suddenly, inexplicably happens. Like the other unprepared *fortissimi*, it contributes to both the sublime and the withdrawal from the sublime.

The treatment of “... light” contrasts instructively to the comically exaggerated exclamation point at the end of the first pair of phrases in the Andante of Haydn’s *Surprise* Symphony. The Andante’s phrases are so simple, the pairing so predictable that the unjustified *fortissimo* “surprise” is humorously incongruous. The surprise in *The Creation* takes place in the context of an unpredictability that is already radical, and is not comical at all. Coming so abruptly, “... light” ratchets unpredictability up to an entirely new level. Like the *fortissimo* it redoubles, it pushes into the future.

For the standard hearing, the Introduction is an internally resolved section, the first in a succession of closed groups. For the hearing that accords with Kramer’s insights, a powerful forward thrust dwells inside the repose, ready to spring out and connect Chaos-Light to the other events of Creation. So heard, Chaos not only points to but also calls up and guides the musical processes in the six arias where phrases precipitate out of the near-sequences of Chaos, and a few of these turn into quasi-paired phrases, and finally fully paired phrases emerge in No. 24.

The listening options begin to seem bewildering: does the oratorio begin with disorder or emptiness or the sublime? Are there progressions within the Introduction or only successions? And is the continuation from the Introduction to the rest of the oratorio successive or progressive? A further possibility complicates further: does one hear the Introduction only in the standard way or only in the way prompted by Kramer’s insights, or can one hear it both ways? It is

likely that some or many listeners hear now one and now the other, or perhaps both at once (the way some people look at duck-rabbit drawings and see now a duck and now a rabbit, and some manage to see both simultaneously). For them, the sound of "...light" is ambi-potent; it can dispatch both a succession and a progression of arias.

Both possible futures come about to some extent, and to that extent they validate hearing the Introduction simultaneously in both the standard and the non-standard ways. The former is carried forward in the first five arias, where the nearly paired phrases are not progressions, just as the near-sequences in Chaos turn out to be failed sequences, hence successions. The continuation from one aria to the next likewise is more successive than progressive. But as the oratorio goes along, the alternative future comes forward. The quasi-progressive phrases in the arias become part of a dynamic, launched by the unspent energy of Chaos-Light, quietly pressing toward culmination.

When this culmination turns out to be the Humankind aria, which many critics find to be the most beautiful and moving in the oratorio or even in Haydn's entire oeuvre (MacIntyre 1998, 122-24), listeners (again) have two possibilities. One possibility is to unhear successiveness, the retrospective reevaluation significantly qualifying the listening experience. The other possibility is to persist in hearing the first five arias both ways. In this case listeners do not believe themselves to have been mistaken in hearing the earlier arias as successive. They *were* successive and remain so even when they have, contradictorily, become part of a progression as well. Successive phrasing and successive arias persist as a remembered quality of the past. Likewise, continuation by progression is present all along as a quality of the vaguely anticipated future. Beginning with the double connection that Chaos-Light has with the series of arias, two contrasting modes of continuation overlap, first one dominating, then, rather suddenly in the sixth aria, the other. Thus, the mode of continuation changes: the first mode consists of two overlapping modes, one of which dominates the other, and the second mode consists of only one mode, namely the previously lesser one.

It is fitting that the final and most moving aria be the one that both shifts the mode of continuity, bringing progressive progressiveness out of hiddenness and into light, and at the same time culminates the pro-

gression. Its firm, unambiguous C major conclusion decisively resolves the tensions within Chaos, which the shout of "...light" resolves only equivocally. After the Humankind aria come four numbers that form a composite Finale to Parts One and Two as a whole (and together with Chaos-Light bookend the two parts as an articulated whole). Since the progression has culminated with the Humankind aria, the "Finale" simply affirms the reality and viability of progressive continuity/Humankind.

In this hearing, the six numbers of Part Three (Nos. 29-34) comprise a composite Finale to the oratorio as a whole. It allows listeners to absorb the momentousness of Creation. Neither successive to Parts One and Two nor a progression beyond them, Part Three horizontalizes a point; listeners can sink down into a single moment.

This moment—progressive continuity culminating in humankind aligns with Nagel's view of continuity in natural history, but only if the oratorio is heard in what I have called a "non-standard way." In this hearing, the sharp difference between successive and progressive continuity corresponds to the difference between mechanistic continuity (from cause to effect) and human continuity (from natural and social events to the response of decision-enacting subjects). Listeners who hear both this difference and also the progression from the residual energies at the end of Chaos through the quasi-paired phrases in Nos. 2-22 toward the Humankind aria and who hear the music and text as a single integrated entity are hearing a structure that is isomorphic with what Nagel envisions: in all the stages of evolution a more than physical dynamic is almost unnoticeably pressing toward a future whose actualization turns out to be humankind and its degree of self-consciousness and capacity for cognition and values (2012, 89).

Listeners who hear both successive and progressive continuation up to No. 24 and then hear a change from a double to a single mode of continuation, however, raise another question: Is a natural history in which the basic mode of continuity changes compatible with what Nagel is calling for?

This question overlaps another question, which has to do with overfulfillments. Listeners hear continuity when No. 24 fulfills the forward-directed impulses from the Introduction and the quasi-paired phrases

in the arias. They also hear discontinuity—a change in basic continuity when the dynamic phrase progressions in No. 24 contrast starkly to the successive organization prevailing in Nos. 2–22. Not only fulfilling but also overfulfilling what led up to it, No. 24 models both the continuity of progression and the discontinuity of a jump.

Overfulfillment occurs on two levels. It takes place in the relation *between* No. 24 and Nos. 1–23, and that relation comes about only because there are overfulfillments *within* No. 24: paired phrases in which the responding phrase does more than respond to its summons and overfulfills its pair's dynamic tendencies. Double overfulfilling never characterizes successive phrasing or successions of arias.

Or the neo-Darwinian concept of materialist evolution. To the musical overfulfillment corresponds the appearance of a self-conscious creature that overfulfills what led up to it exactly because it itself has the power to overfulfill the forces moving it toward actions. Moreover, because the emergence of consciousness overfulfills its preparation, it is by no means inevitable or mechanistically necessary. It fits its past, but is not the only outcome that might have been appropriate. Other possible novel outcomes have now become less unlikely or impossible.

The question that overfulfillments raise for Nagel has to do with his desire to explain the existence of conscious organisms. What does “explain” mean in the context of overfulfillments? Does Nagel countenance outcomes that are greater than what generated them—in either nature or human decision-enacting? Can human consciousness be prepared by and yet overfulfill the incipiently mental aspects he suspects characterize pre-human reality? If the answer is affirmative, Nagel's project might be recast: in addition to overcoming the discontinuity he sees in the neo-Darwinian story of the origin of self-consciousness by identifying a new kind of continuity, a new science should develop a new discontinuity—the leap that occurs when the advent of conscious creatures not only genuinely responds to but also overfulfills what led up to it.

These questions go away if the non-standard way of hearing *The Creation* goes away. Some listeners may find it preposterous that a straightforwardly pious Roman Catholic composer would be envisioning such

a nuanced view of creation. They prefer the standard hearing of *The Creation*. Solomon speaks for them: “The opening of Haydn's *Creation* tells of the formation of the universe out of nothingness through the operation of a supernatural agency. It is not concerned with multiplying other kinds of significance... The oratorio is satisfied merely to confirm the account in ... Genesis, celebrating the glories of God and the wonders of his works” (123).

A rejoinder is that the most original aspects of Haydn's treatment—the tentative approaches toward paired phrases, the sudden, full-blown appearance of a contrasting phrase structure with the appearance of humans, and its overfulfilling response to a summons—are done with the care and precision of a deliberate compositional decision. The temporal process of paired phrases is so congruent with that of human decision-making that it is hard to think that the abrupt shift to fully paired phrases to sing the advent of humankind is accidental. By 1798 pairing phrases came effortlessly to Haydn, and it makes sense to say that he may have accidentally constructed some phrases that nearly summon an answering phrase in the Light aria and some that more nearly do so in the Plant aria, then noticed the musical possibilities of dimly forecasting and tending toward a new kind of continuation and coherence.

In other words, he may well not have started out with an intention to establish two competing modes of continuation, but having begun, however accidentally, to do so he sees the emerging possibility and lets it guide him. Positing a combination of serendipity and purposefulness fits what is known about Haydn's compositional process: he improvised and experimented during the morning, then later in the day selected from what he had sketched and began to elaborate it rigorously (Geiringer and Marble 1932, 299–300; Oppermann 2012). It is not unusual for composers to express what they don't yet believe, or compose music to find out just what they do believe (for example, the *Credo* from Beethoven's Mass in D [Greene 2012, 78–79]). And, incidentally, the idea that the dominant principle of continuation might change is not necessarily atheistic: although it sits ill with most literal readings of Genesis 1, it does not deny that a deity may have launched the process that it characterizes. Besides, such a process itself might be intrinsically holy. Haydn's three archangels evidently thought so.

If it seems preposterous that Haydn consciously or unconsciously contrived a change in the nature of musical continuation, even more preposterous is the idea that there might be a corresponding change in the basic principle of continuity in nature. That the rules of continuity might be different for different creatures at different epochs contradicts the unity that science seeks. According to [Smolin \(2013 34, 107\)](#), contemporary scientists generally assume that the nature of time cannot change and that the nature of continuity at its deepest level must also be timeless. Furthermore, outcomes can only *appear* to overfulfill what brought them into being; if the present is not completely implicit in the past, the immutability of the nature of change is contradicted. If the nature of change does not change, it follows that the modes of continuity embedded in the non-standard way of hearing *The Creation* cannot unproblematically model the mode of continuation that underlies natural history.

Against the intuition that time is ultimately an illusion, Smolin argues vigorously that a preference for timelessness and mathematically expressible natural laws over what is time-bound makes for bad science:

Timelessness and mathematics are properties of representations of records of motion—and only that. They are not, and cannot be, properties of real motions. ... There's a simple reason that no mathematical object will ever provide a complete representation of the history of the universe, which is that the universe has one property no mathematical representation of it can have. Here in the real world, it is always some time, some present moment. No mathematical object can have this particularity, because, once constructed, mathematical objects are timeless. ([2013, 35-36](#))

Believing in timelessness also has deleterious consequences for ordinary folks in everyday circumstances. Thinking that time is unreal and that only what is not time-bound is pure leads one to see “the world as ugly and inhospitable” ([Smolin 2013, xii, xiv](#)), and causes us to misunderstand what it means for us to make decisions.

When we think outside time we imagine that the answer to whatever question we're pondering is out there in some eternal domain of timeless truth. Whether the issue is how to be a better parent or spouse or citizen, or what the opti-

mal organization of society might be, we believe there's something unalterably true out there for us to discover. (xv)

If Smolin is right and time is real, natural laws, including those of evolution, are themselves evolving. And it is the laws themselves that are changing, not just the human apprehension of them. The laws of nature do not “wait, mute, outside of time for the universe to begin. Rather the laws of nature emerge from inside the universe and evolve in time with the universe they describe” (xxvi). The implications are consequential:

If change changes, if the forms of connection and transformation evolve in the course of the history of the universe together with the states of affairs, then the real causal connections that bind nature together and that we describe in our theories may also undergo transformation. ([Smolin 2014, 34-35](#))

As already intimated, *The Creation*, heard in the non-standard way, exemplifies concretely what Smolin is proposing. On hearing the Humankind aria, listeners accept that the rules of musical continuity have evolved. The oratorio envisions or at least corresponds to a natural history whose principles of change themselves change, and not just the creatures whose changes the principles control and explain.

For Smolin, in order for time to be real, the givenness of each particular moment of time must be real. “What is real is real in the present moment.” Subtract the Now out of consciousness, and consciousness implodes: there is no contrast to not-Now, “here” and “there” have no meaning, and neither memory nor expectation is possible. Without remembering and anticipating, subjective experience is impossible. A science that seeks to be timeless is, per Smolin, a science that cannot conceptualize the crucial importance that awareness of the Now has for being human. It is a science that cannot give any special importance to that moment in natural history when there comes to be a creature for which the Now is decisive.

Haydn's quasi-paired phrases are among his most astonishing imaginings. In seeming to be summoning something particular but then failing to sustain the quality of a summons, each one creates a Now that faces a future both progressively and successively, or neither. Its Now is qualified by a faint expectation of a response that is hardly defined. The expectation in-

cludes vaguely anticipating a greater capacity for expecting—expecting more persistently and more specifically. Such a Now instantiates what Nagel is calling for, namely re-conceiving that which precedes human consciousness in natural history, recognizing that “mind and everything that goes with it is inherent in the universe” (Nagel 2012, 15). For listeners who hear the quasi-paired phrases, Haydn is modeling a kind of continuation that Nagel is asking scientists to locate empirically.

For these listeners the musical organization stamps its continuity onto the referents of the texts, so that the interconnected musical events connect their texts’ referents to one another. For them, to hear the musical progression from the Introduction-Chaos through the successive arias, with their quasi-paired phrases forecasting something that is not successive, to the Humankind aria is also to hear a dynamic connection in nature from chaos to plant and animal species to human consciousness, which is what Nagel is watching for. Crucial to this progression is the concrete experience of faint, vague expectation in the quasi-paired phrases, and then the concrete experience of what culminates the progression: fully paired phrases and the appearance of a new kind of creature. The creature is novel in being continuous with the past, which pressed toward it, and yet also discontinuous with this past, for it overfulfills it, and then recapitulates this very same continuity/discontinuity in the overfulfilling Now of its own identity-making decisions.

It is the concrete quality of this Now that Nagel is calling upon scientists to deal with. Re-hearing Haydn may make it just a little harder to ignore Nagel’s call.

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