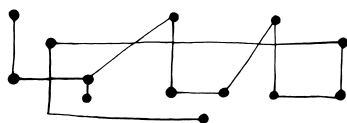# Wandering Loops and Drifting Repetition: Getting Lost in Bernhard Lang's *Monadologie IX: The Anatomy of Disaster*

Christine Dysers

> To lose yourself: a voluptuous surrender, lost in your arms, lost to the world, utterly immersed in what is present so that its surroundings fade away. . . . To be lost is to be fully present, and to be fully present is to be capable of being in uncertainty and mystery. And one does not get lost but loses oneself, with the implication that it is a conscious choice, a chosen surrender, a psychic state achievable through geography.
>
> —Rebecca Solnit (2005, 6)

BERNHARD LANG'S 2010 STRING QUARTET *Monadologie IX: The Anatomy of Disaster* sits on a strange plane between the familiar and the unknown. For one thing, the work is generated entirely out of samples[1] taken from Joseph Haydn's 1787 string quartet *Die Sieben letzten Worte unseres Erlösers am Kreuze* (Hob. XX/1B).[2] Closely mirroring the formal structure of Haydn's original, *Monadologie IX* consists of an introduction, seven "sonatas," and an epilogue—a

reinterpretation of Haydn's famous "terremoto." Each of these nine movements starts off with a distorted, yet highly recognizable quotation from Haydn's corresponding movement. Immediately locked into endless near-repetition, these quotations are reiterated over and over again, until they are brusquely abandoned in favor of yet another looped Haydn sample.[3]

As Haydn's original material locks into hiccuping and distorted repeats, the familiar quickly dissolves into the unknown. After only a few repetitions, the sampled material appears to be drifting off, deteriorating and eventually venturing into new and unfamiliar directions. Philip Clark (2014), for instance, describes *Monadologie IX* as "a journey to the centre of Haydn's world, taking a digressive walk around, and inside, his material." Referencing the cover art for the work's CD release on the Winter & Winter label—a photograph of *Fred the Frog Rings the Bell* (1990), an artwork by Martin Kippenberger portraying a crucified frog—Clark continues: "This most paradigmatic of Christian symbols is, like a frog on a scientist's worktable, probed and dissected." Similarly, Tim Rutherford-Johnson (2015) notes that:

> *The Anatomy of Disaster* . . . begins like a broken machine. Not one of György Ligeti's delicately collapsing clockworks or the softly glitching CDs of German electronica group Oval, but a fast, heavy, gunning engine, flailing wildly and dangerously.
>
> But not fatally, because the music quickly takes on a chaotic shape of its own. Fragments turn into components. A hiccuping, short–long rhythm metamorphoses into a motif. The thick texture turns out to be comprised of thinner, overlapping layers. And amongst all the dissonances there are sudden glimpses, baffling at first, of the harmonies of a much older language. . . . Somehow the music balances layers of looping and quasi-looping materials in unpredictable but still coherent relation.

In other words, the relentless repetition of Haydn's historical material in this work gives it an almost unfathomable quality. To listen through *Monadologie IX* is to experience a chaotic interplay between the old and the new; the original and its copy. It is to balance between that which is familiar, and that which is not; to be kept lingering between that which is the same, and that which seems different. As memory slips in and out of focus, the work invokes a curious experience of drift and disorientation; of wandering off from a stable territory, only to eventually find oneself being lost in a strange, complex, and unfamiliar musical landscape. But how can the structurally simple idea of repetition—a

notion which is so deeply rooted in ideas of sameness, similarity, and stability—induce the cognitive experiences of disorientation, of drift, and ultimately, of being lost in a strange musical landscape? And, more importantly, how might we account for these experiences analytically?

This article considers the distinct analytical complexities that surround the extended passages of musical repetition in the opening movement of Lang's *Monadologie IX*. Following Dora A. Hanninen in the argument that music analysis should primarily be "an inquiry into musical experience" (2004, 205), the article takes the cognitive experiences of drift, disorientation, and getting lost as a starting point for analytical inquiry. Rather than reducing the concept of repetition to notions of sameness or similarity, repetition is considered here as productive force of transformation; a means of discovery and experiment; a way of rendering out of focus, re-thinking, re-focusing, and eventually seeing differently. The work of visual artist Bridget Riley offers an interesting analogy here, as she states that "repetition acts as a sort of amplifier for visual events which, seen singly, would hardly be visible" (Riley, in Thompson 1979).

In evaluating how, where, and to what means musical repetition works as a mechanism of drift and disorientation in this movement, the article takes on a total of three distinct analytical vantage points. First, the relationship between Lang's *Monadologie IX* and its source material, Haydn's *Sieben letzten Worte*, is investigated. Are any particular tensions created by repeating this pre-existing material, in the sense of both re-producing it and putting it on loop? Second, the article zooms in on the musical surface of the thirty-five-bar passage that makes up the opening of Lang's *Monadologie IX*. Can any formal structure be found in this passage, that is characterized by pervasive near-repetition, and, if so, what pathway does it guide the listener along? Finally, the analytical focus shifts onto the events which are occurring on a loop-to-loop basis. Where are elements of repetition and variation situated, and what musical and cognitive mechanisms do they activate? How does the process of microvariation unfold here, and does it affirm or contradict the formal claims made previously? What dynamics transpire between memory, recollection, and anticipation? Ultimately, musical repetition is shown to effectuate radical instabilities as it unfolds across several different planes of *Monadologie IX: The Anatomy of Disaster*.

EXAMPLE 1: BERNHARD LANG'S *MONADOLOGIE IX: THE ANATOMY OF DISASTER* (2010), I: INTRODUZIONE, BARS 1–12

EXAMPLE 1 (CONT.)

GETTING LOST AS A FRAMEWORK FOR ANALYSIS

Commenting on the opening movement of his fourth string quartet, *Monadologie IX: The Anatomy of Disaster*, Lang claims that "to analyse it, is nearly an impossibility":

> The goal was complexity. The main achievement is to create the complex from the simple. . . . I was sometimes thinking—I didn't know you yet—I was thinking about the first person that would try to analyse this thing. I was thinking, who would ever analyse this? My god. Poor you. . . . [I]t's waltzing with chaos. (Lang 2017, in an interview with the author)

Tim Rutherford-Johnson (2014) expresses a similar sentiment, as he argues that the work's "mechanisms cannot easily be unravelled." But precisely what is it about this music that seems to resist analysis?

In the opening to *Monadologie IX* (bars 1–35), a single repeated cell is subjected to a continuous process of near-repetition or "microvariation." With every new iteration, microscopic, uncoordinated, and seemingly random alterations of pitch and rhythm take place (Example 1). As the looped material locks into a hiccuping and distorted repetition, each new iteration sounds more or less, but never *really*, the same. Dora A. Hanninen (2004) argues that such a continuously transforming musical landscape poses a "distinct cognitive challenge" to both the listener and the analyst. Commenting on a similar issue in the late works of Morton Feldman, she explains that:

> The real problem is not quantitative but qualitative: not duration or number of notes, but the identification of salient features that support memory and conceptualisation. . . . The proliferation of near repetitions frustrates attempts to prioritize events by distinctive features, and thereby to categorize, or even remember, individual instances. The result is a superabundance of nuance that eludes conceptualisation, leaves listeners with little to report, analysts with little to say. (Hanninen 2004, 227)

In other words, while it is certainly tempting to reduce this thirty-five-bar passage to a sequence of near-literal repetitions (A, A´, A´´, . . .), such an approach does not say anything about how this music plays the mind. For, to speak of this passage solely in terms of sameness and similarity stands in stark conflict with the more permeable and fluid ways in which these near-literal repetitions appear to the listener in experience—that is, as the experience of getting lost in a complex musical landscape.

The experience of being lost is often negatively valenced and intuitively thought of as a problematic situation: one that is highly unpleasant and potentially even dangerous. Nevertheless, in most of her literary work, although perhaps most explicitly in *Wanderlust* (2000) and *A Field Guide to Getting Lost* (2005), Rebecca Solnit argues for being lost as a positive and wondrous experience; an adventure that opens the mind up to possibility. Solnit claims that:

> There's [an] art of being at home in the unknown, so that being in its midst isn't cause for panic or suffering, of being at home with being lost. That ability may not be so far astray from Keats's capability "of being in uncertainties, mysteries, doubts." (Solnit 2005, 39)

For Solnit, one of the major perks of being lost is the mere fact of being surrounded by the unknown—that is, the state of not knowing what you will find along the way, or when and where you will stumble across it. In this sense, getting lost entices a certain sense of mystery, of wonder, or of curiosity, even. After an initial phase of disorientation and confusion, a sense of freedom emerges, which offers up a space for reflection as well as experimentation—a space in which nothing is impossible:

> Never to get lost is not to live, not to know how to get lost brings you to destruction, and somewhere in the terra incognita in between lies a life of discovery. (Solnit 2005, 10)

As such, Solnit's understanding of getting lost resonates strongly with Gilles Deleuze's philosophical model of ontological difference, in which being is understood as fluid and ever-changing. For, in its Solnitian sense, getting lost is a space that is perpetually changing; an unknown in which radical instabilities can occur; a productive force of transformation. It is this experience of "getting lost" in an unstable territory that leads to new discoveries, that guides the following analysis. Placing the focus on the opening movement to Lang's *Monadologie IX*, this analytical case-study assesses the multifaceted ways in which repetition here evokes the experiences of drift, disorientation, and getting lost. For, to paraphrase Hanninen: if one can hear or experience it, surely, one can find a way to "think" it (Hanninen 2004, 250).

EXAMPLE 2: PIANO REDUCTION OF JOSEPH HAYDN'S *SIEBEN LETZTEN WORTE*, I: INTRODUZIONE (1787), BARS 1–5

HAYDN, BUT DIFFERENT

The opening section to Lang's *Monadologie IX* (bars 1–35) was generated algorithmically from the very first bar of Haydn's *Sieben letzten Worte*.[4] Haydn's opening motif (bar 1 in Example 2) is primarily characterized by its melodic contour: the succession of a rising octave, a falling minor second, and a rising diminished seventh. Although the opening to Haydn's *Sieben letzten Worte* might not officially be funeral music, its musical characteristics and its extra-musical references to the death of Christ suggest and justify a link with the genre. The opening motif alone contains five distinct musical elements, which Maja Trochimczyk (2001) identifies as being specifically associated with ideas of death and suffering. Two of these are elements of pitch and melodic contour. Consider, for example, the two large melodic leaps in Haydn's opening motif: a rising octave (D–D) and a rising diminished seventh (C♯–B♭). Trochimczyk identifies such a large melodic leap as a "saltus duriusculus": a rhetoric musical figure from the Baroque era, which was primarily used to musically express an exclamation. Similarly, the descending minor second (D–C♯) wedged between those two melodic leaps can be thought of as a "sighing motif" (Ger: "Seufzermotiv"), which was commonly used to musically depict a sigh or to imitate the acts of moaning or weeping. Finally, the slow tempo in which the piece is written, the steady pulse of the duple meter, as well as the strong harmonic dissonance contained in the dramatic I–♭VII7 progression all explicitly connect the opening motif to ideas of death and suffering (Trochimczyk 2001, 102).

Clive McClelland (2012) explicitly associates Haydn's slow introduction with the eighteenth-century tradition of "ombra music": an umbrella term that encompasses an elaborate set of musical features which were commonly "used to depict mortal and funereal scenes, or more generally involve death, burial, the afterlife, the supernatural, ghosts, spirits, furies, and so forth" (Byros 2014, 393). Emphasizing the movement's D-minor key, its slow tempo and prominent dotted rhythms, and the "wide leaps in the two opening bars," McClelland points out that "ombra references are readily discernible" in Haydn's slow introduction (McClelland 2012, 204). Similar idioms of burial, death, and suffering can also be found in the opening movement to Beethoven's "Moonlight" sonata (1801) and in the Marche Funèbre from Chopin's second piano sonata in B♭ minor (1839). In both of these works, musical features such as a slow tempo, a minor key, a duple meter, and the use of dotted rhythms in the melodic line contribute to the creation of an overall solemn yet gloomy atmosphere, and a procession-like character.

EXAMPLE 3: GENERATIVE CELL FOR *MONADOLOGIE IX: THE ANATOMY OF DISASTER*, I: INTRODUZIONE, BARS 1–35

From the composer's personal archive. Reproduced with kind permission.

The musical cell Lang used to algorithmically generate the opening to *Monadologie IX* (Example 3) is, however, not a literal quotation of the motif in Haydn's first bar. Instead, Lang's generative cell is a distorted version of Haydn's original; a re-reading, or what Linda Hutcheon describes as "repetition with variation, . . . the comfort of the ritual combined with the piquancy of surprise" (2013, 4). Although both cells share more or less the same tempo and are identical in terms of orchestration, meter, key signature, rhythmic structure, register, and melodic contour, Lang's generative cell differs from Haydn's original in terms of harmonic configuration. More specifically, Lang's chords are filled up chromatically, creating heavily conflated harmonies that orbit around the tonic triad. As a result, Haydn's dramatic I→VII7 progression is ungrounded from its original tonal framework and transferred into a post-tonal context. Yet, due to the lingering presence of the tonic triad, Lang's dense tone clusters still maintain a distinctly tonal idiom. Although Haydn's half cadence has thus lost its original tonal function, Lang's cluster chord progression maintains a similar open-ended, "hanging" quality. Commenting on the alterations made to the original, Lang states that he has "filled it out with clusters," only to maintain "the gesture" (Lang 2017, in personal communication with the author).

By increasing the motif's harmonic dissonance, Lang intensifies the associations of death and suffering embedded in Haydn's original. According to the composer, this was intended as an explicit critique towards Haydn, whose *Sieben letzten Worte* is rather solemn and meditative in character. Lang comments:

> I used to blame [Haydn], as I did not understand him. . . . How can one paint human suffering and an execution with such ease, with such surtitles, without losing face? Of course, that was a misunderstanding —I understand that much better now. (Lang, in Günther 2010, 92 [translation by the author])

In other words, at the time of composing *The Anatomy of Disaster*, the composer did not deem Haydn's solemn opening gesture fit to depict ideas of death and suffering. Yet Lang's contemporary musical language of harsh dissonance and cluster chords was, of course, not available to Haydn at the time. As has been indicated previously, the tools used by Haydn—that is, the dotted rhythms, the minor key, the slow tempo of the duple meter, and the use of rhetorical figures—*did*, in fact, serve their historical functions of depicting notions of death and human suffering. Lang's triple forte dynamics, the aggressive bowing techniques and the allegretto to allegro tempo indication ($\quad = 106$) give the motif a much more aggressive and tormented connotation than Haydn's slow and stately adagio. The composer comments: "we live in a catastrophic age, an age of collapse, this is what I try to refer to here, too" (Lang 2019, in personal communication with the author).

Nonetheless, Lang's *Anatomy of Disaster* is more than a mere contemporary interpretation of Haydn's *Sieben letzten Worte*. For Haydn's original is not only distorted, it is also de- and re-contextualized. The very idea of reproducing a pre-existing artifact articulates "the very act of critique: to think twice and more deeply (or at least differently) about an experience" (Westrup and Laderman 2014, 247). In other words, the fact that this historical material is being sampled—that is, being lifted from its original context and inserted into a different one —opens it up to new readings:

> Sampling, by its very nature, establishes sites for variance and divergence of meaning. . . . Sampling always seems to break the integrity of an original "whole" that is posited as a totality of meaning and creative vision. The sample thereby introduces a threat of difference—a different author, a different market, a different meaning, a different value—that is understood to alienate the original creator from his or her expression. (Zeilinger 2014, 157–58)

According to Laurel Westrup, "sampling practices put the sample into conversation with its new context, creating a synthesis that exceeds the sum of its parts" (2014, 236). Lang's reading of Haydn's original thus forms a union of opposites—a paradoxical situation in which the material is at the same time both past and present; both original and copy, both Haydn's and Lang's, yet at the same time,

neither one nor the other. This is what Hutcheon calls "the adaptive faculty"—that is, "the ability to repeat without copying, to embed difference in similarity, to be at once both self and Other [sic]" (2013, 174). Gilles Deleuze, commenting on his own habit of reading and appropriating the ideas of other philosophers, describes a similar situation, in which seemingly fixed ideas such as "the original" and "the author" have become fluid:

> But I suppose the main way I coped with it at the time was to see the history of philosophy as a sort of buggery or (it comes to the same thing) immaculate conception. I saw myself as taking an author from behind and giving him a child that would be his own offspring, yet monstrous. It was really important for it to be his own child, because the author had to actually say all I had him saying. But the child was bound to be monstrous too, because it resulted from all sorts of shifting, slipping, dislocations, and hidden emissions that I really enjoyed. (Deleuze 1995, 6)

Remarkably, Lang describes his reading of Haydn's original in terms that are similar to those used by Deleuze, as he states that "in some ways, I felt like I was talking to Haydn by overwriting his text. A number of subtexts slipped in too, which came to the surface" (Lang, in Günther 2010, 90 [translation by the author]). More than a mere *reading* or an *interpretation* of Haydn's original, Lang's generative cell is thus more of a creative appropriation, which consists of a paradoxical union between sameness and difference. As such, the repetition of Haydn's historical material is not merely a re-presentation of its original identity (that is, a re-discovery of the same; of its original cultural and historical meaning), but also a re-production (that is, the creation and exhibition) of the difference that lies at its very core.

Of course, the degree to which an audience is or is not familiar with Haydn's *Sieben letzten Worte* cannot be measured. Commenting on this issue, Lang confirms:

> I realized, while writing the forty-something *Monadologies*, that Bourdieu is absolutely right in his thesis that the very cultural knowledge which is claimed by the middle-class is not identical with its actual, truly reproducible knowledge. Most people don't know *Parsifal* at all. This is one of the failed concepts in the *Monadologie* series. (Lang 2019, in personal communication with the author)

Linda Hutcheon provides a more positive outlook on what happens if an audience is not familiar with a pre-existing work of art that is being referenced in an intertextual context, or in case it simply does not pick

up on the fact that the work they are encountering actually involves a borrowing of sorts:

> In these instances, we simply experience the work without the palimpsestic doubleness that comes with knowing. From one perspective, this is a loss. From another, it is simply experiencing the work for itself, and all agree that even adaptations must stand on their own. (Hutcheon and O'Flynn 2013, 127)

In other words, the effect of this type of repetition on the listener's experience is to be considered as volatile and unknown. This reveals a fascinating limitation to the operability of repetition as it is understood here, in terms of the re-presentation and the re-production of archival materials. However, Lang's *Monadologie IX* is characterized not only by repetition in the sense of the re-presentation and re-production of a cultural and historical artifact; but also by the incessant looping of that artifact. Regardless of whether or not the listener is familiar with Haydn's historical material, the persistent repetition of the near-same here invites the listener to continuously re-assess and re-interpret. Faced with endless repetition, the listening brain gets increasingly tired of the whole and starts to zoom in on the particular; focussing instead on the differing timbres and articulations with each reiteration.[5] As every re-statement of the same finally presents itself as a unique set of sonic qualities, every sense of sameness or repeated identity that was initially experienced, withdraws. The result is an illusion of perceptual transformation, a phenomenon described by Judy Lochhead as "a musical flow of perpetual alteration, a flow of differing" (2016, 123).

   In the opening bars of Lang's *Anatomy of Disaster*, repetition thus functions as a profoundly destabilizing phenomenon on two distinctly different musical planes. First, by repeating Haydn's historical material in the sense of re-presenting and re-producing it, this material is radically decentered and re-thought. Reading Haydn's *Sieben letzten Worte* through the lens of repetition creates what Slavoj Žižek (2006, ix) refers to as a "short circuit": a critical reading which leads to "the inherent decentering of the interpreted text, which brings to light its 'unthought,' its disavowed presuppositions and consequences." According to Žižek, "such a procedure can lead to insights which completely shatter and undermine our common perceptions" (ibid). In its ability to deconstruct seemingly fixed notions of "the author" and "the original," repetition, understood here as the re-production and the re-presentation of archival materials, thus allows for new layers of meaning to be added to those already existing; for new associations to be made; for new interpretations to arise. Repetition, as such, becomes a portal of (re-)discovery.

Second, by incessantly repeating this sampled material, Haydn's original is gradually stripped of the layers of meaning it carries. As the listener's attentional focus begins to shift onto the rhythmic build, the timbral features, and the harmonic qualities of the repeated cell, repetition erodes Haydn's solemn opening motif to a seemingly ever-changing set of sonic qualities. Any initial sense of recognition hence turns out to be brief and fleeting, as what started out as a confident familiarity with Haydn's solemn opening gesture quickly shifts into the realisation of being lost in Lang's strange musical landscape.

By consecutively sampling and looping Haydn's historical artifact, *Monadologie IX* thus welcomes the listener into an unstable terrain from its very outset. However, as has been indicated, the strength and effect of these two planes of disorientation are for a large part contingent on whether or not the listener is familiar with Haydn's original. The following investigation, therefore, marks a shift in analytical focus. Instead of concentrating on the nature and content of extra-musical meanings associated with the repeated material, the analysis zooms in on the opening of *Monadologie IX* in terms of its sounding material.

TOPOGRAPHIES OF DRIFT

The thirty-five bars of music that make up the opening of Lang's *Monadologie IX* seem to resist formal analysis. As a single repeated cell is subjected to a continuous process of microscopic variation, the passage is best described as what Dora Hanninen defines as a "fluid sonic surface": "something like a single line, tenuously held together by the semblance of repetition" (2004, 227). Ultimately, micro-variations are nuances in musical syntax, defined here as minor variations in musical events occurring at the level of the repeated pattern. As such, microvariation could be identified as what Bob Snyder (2000) calls a "low-information strategy" for "memory sabotage." For, by keeping change to a bare minimum, microvariation disrupts "recognition and expectation by frustrating recollection and anticipation, thereby intensifying the local order of the present" (2000, 236–237). Snyder explains:

> Usually, low-information strategies at the melodic/rhythmic level involve gestures that are very similar, but not necessarily identical. Because they tend to interfere with each other, such gestures . . . are *difficult* to separately identify and remember. Being within-category distinctions, they are perceptible but not well remembered. Such nuances often give us the sense that the present is

somehow "varying" in relation to the past, but we cannot
remember exactly how. (Snyder 2000, 236)

In other words, although a precise moment of change is unlikely to
stand out, a series of tacit transformations is still unfolding, however
delicately, over time. In the act of listening, the audience is thus kept
restlessly lingering in the in-between, only gradually becoming aware
that the repeated material is no longer the same as it was at the start.
Experientially, the effect is one of spinning out and away; of losing
one's way and eventually getting lost in a strange and complex landscape.
Lang's subtly varying repetitions seem to be drifting, as they aimlessly
wander about without any particular goal or destination in mind. In
his own work, Morton Feldman refers to a similar phenomenon as "a
disorientation of memory," whereby "there is a suggestion that what
we hear is functional and directional, but we soon realise that this is an
illusion; a bit like walking the streets of Berlin—where all the buildings
look alike, even if they're not" (Feldman, in Friedman 2000, 138).

   At first glance, the topography of this thirty-five-bar passage is thus
foggy and opaque. Nonetheless, even though an underlying formal
structure might not be readily perceptible from the musical surface, it
may well still be there, hidden underneath the guise of repetition. In
her theory of segmentation and associative organization, Hanninen
(2012) identifies two perceptual strategies for segmenting a musical
work into musically and analytically meaningful objects: (1) disjunction
and (2) association.[6] These are two distinctly different analytical orien-
tations towards musical experience, which, according to Hanninen,
represent "basic and complementary strategies in human cognition" (8).

   Taking a disjunctive orientation towards a musical work, for instance,
requires the listener or analyst to focus on the perceptual salience of
difference. In other words, a disjunctive orientation focuses on "edge
detection" or marking boundaries between analytically meaningful
objects by distinguishing "significant disjunctions in sonic dimensions
such as pitch, duration, loudness, and timbre" (Hanninen 2012, 19). A
disjunctive analytical strategy is thus one of individuating discrete
objects; of creating boundaries between perceptual points of contrast.

   Conversely, taking an associative orientation towards the musical
surface requires the listener or analyst to focus on relational properties
—that is, to focus on notions of sameness and similarity that connect
groupings of musical notes with one another. Association is primarily a
cognitive act of dividing the musical surface into both individual
segments and higher levels of organization. Hanninen argues that
"association is the orientation a composer or performer adopts when she
asks: 'How can I link this moment with that one?'" (2012, 20).

FINDING DIFFERENCE

To take a disjunctive orientation to Lang's opening material is essentially to scan the musical surface for moments of sonic difference; to look for perceptual shifts in psycho-acoustic dimensions such as "pitch, attack-point, duration, dynamic (loudness), timbre, and articulation" (Hanninen 2012, 23). Using these sonic criteria as a rationale for segmentation, it is possible to discern five structural sections in the opening to *Monadologie IX: The Anatomy of Disaster* (Example 8).

On the third beat of bar 22, the sudden shift to a *staccato sul ponticello* articulation marks a first segment boundary motivated by sonic disjunction (Example 4). Although this abrupt change in articulation and timbre had already been prefigured in bars 3, 5, 8, 13, 15, and 16, the second half of bar 22 marks the first instance in which all four string parts simultaneously share the same *sul ponticello* articulation and maintain it over a time span that is longer than a mere two sixteenth notes.

A second and perhaps more perceptually salient instance of sonic disjunction is found at the end of bar 26^3. Here, a sudden turn to pressured bowing marks a rupture in the musical surface. As such, bar 26^3 provides the location for a second segment boundary based on disruptive shifts in timbre and articulation (Example 5).

A third segment boundary is located shortly after the second, in bar 27^3. Here, the pressured bowing that was just introduced is abandoned altogether, marking yet another shift in both timbre and articulation. At the same time, the dynamic volume of the music also drops to a *piano* dynamic. In a passage that had been characterized by an aggressive *triple forte* since bar 1—the only exception being a passing *mezzo forte* in bar 27^2—this creates a strong perceptual contrast (Example 6).

This section, the beginning of which is marked in bar 27^3 by a sonic disjunction in terms of timbre, articulation, and dynamics, is characterized by a gradual return to *fortissimo* dynamics—the arrival of which marks a fourth and final segment boundary in bar 30. The sonic disjunction in bar 30 is not only marked by a change to *fortissimo* dynamics, but also by the return of pressured bowing (Example 7).

No other sonic disjunctions are found until the end of the opening section in bar 35. Adapting a disjunctive orientation towards this passage, it is thus possible to determine a total of four segment boundaries and five resultant structural sections (Example 8).

EXAMPLE 4: SONIC DISJUNCTION IN TERMS OF
TIMBRE AND ARTICULATION, BAR 22

EXAMPLE 5: SONIC DISJUNCTION IN TERMS OF TIMBRE AND ARTICULATION, BAR 26

EXAMPLE 6: SONIC DISJUNCTION IN TERMS OF TIMBRE AND ARTICULATION, BAR 27

EXAMPLE 7: SONIC DISJUNCTION IN TERMS OF TIMBRE AND ARTICULATION, BAR 30

EXAMPLE 8: SEGMENT BOUNDARIES MOTIVATED BY SONIC DISJUNCTION AND RESULTANT STRUCTURAL SECTIONS

Nonetheless, not all four of these segment boundaries are equally convincing. In perception, the sudden drop to *piano* dynamics in bar 27³, as well as the return to *fortissimo* dynamics in bar 30, both create relatively strong sonic disjunctions. The significant sonic contrasts created at these two moments are prone to grab the listener's attention. Hanninen confirms this intuitive finding when she argues that "larger intervals create stronger boundaries" (Hanninen 2012, 31). Somewhat less convincing are the two segment boundaries situated in bars 22 and 26, which are based solely on changes in articulation and timbre—two sonic criteria that are not affiliated with linear, intervallic, and therefore measurable spaces (as opposed to pitch, duration, and dynamics). Hanninen, too, admits that the relative strength of these criteria in creating sonic boundaries is more difficult to weigh and largely depends on musical context (Hanninen 2012, 31). Given that the specific musical context of this passage is one of prolonged repetition, it is, notwithstanding, reasonable to argue that the sudden changes to a *staccato sul ponticello* articulation in bar 22³, and to pressured bowing in bar 26³, do, in fact, leave a significant impact on the way the musical surface is parsed in perception, or, in the very least, on the route along which the listener's attention and expectations are directed. Research by David Huron, for instance, suggests that sudden changes in playing technique can indeed form an element of surprise, which in turn leads to a heightened sense of attention and, as such, grabs hold of the listener's attentional focus (Huron 2006, 19–21). In other words, the specific nature of the musical context here suggests that these two changes in articulation and timbre make for two relatively strong sonic boundaries.

At the same time, however, the relative strength of these four sonic boundaries is heavily clouded and contested by the similarity of the musical material contained both *within* and *between* the five formal sections they create. If anything, the opening to Lang's *Anatomy of Disaster* is characterized by the persistent repetition of the same musical cell. The following rationale, therefore, adopts an associative analytical orientation, which Hanninen claims is "essential to work in post-structural and intertextual music analysis that challenges unity as an analytical premise" (Hanninen 2012, 20). Instead of scanning the musical surface for perceptual difference, the following section takes "repetition, equivalence, or similarity between two (or more) groupings of notes within a specific musical context" as the starting point for object formation (Hanninen 2012, 32).

FINDING SAMENESS

To take an associative orientation to Lang's opening material is to scan the musical surface not for moments of sonic difference, but of sameness or similarity; to look for associations between "contextual criteria," such as "pitch contour, pitch content, pitch-class set, scale degree, set class, and rhythm" (Hanninen 2012, 32). Hanninen comments:

> Rather than fix one's analytical gaze on individual objects within musical contexts, the associative orientation that underlies contextual criteria asks analysts to think of objects as constituted not only, or even primarily, in and of themselves, but largely by their contexts. (Hanninen 2012, 33–34)

When adopting an associative orientation towards the opening of Lang's *Anatomy of Disaster*, it is possible to discern either one or five structural sections. The argument for considering bars 1 to 35 as one single musical segment is self-evident, as it considers all successive loop iterations to be in a relationship of sameness or similarity to their "mother" cell. This mother cell, then, can be thought of as being either Lang's generative cell (Example 3) or the first statement of the repeated material in bar 1.

More convincing, however, is to conceive of bars 1 to 35 as comprising five distinct structural segments (Example 9). As Lang's looped material is continuously being altered by subtle microvariations, the musical properties or relational criteria that group these loops together are not criteria of pitch-class set or rhythm. Rather, what binds the repeats within these five structural segments together, is the "loop window" or the segment of Lang's generative cell (Example 3) which is being looped. In the opening section (bars 1–22³) for instance, the distorted Haydn sample is repeated in its entirety, albeit erratically. Although the passage starts off by showcasing only the first half of the sample, the looping window grows incrementally. This leads to a first full statement of the sample in bar 3 (Example 10).

EXAMPLE 9: SEGMENT BOUNDARIES MOTIVATED BY CONTEXTUAL CRITERIA AND RESULTANT STRUCTURAL SECTIONS

Excerpts from *Monadologie IX: The Anatomy of Disaster*. Music by Bernhard Lang.
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D (mm. 28³ - 33)

E (mm. 33 - 35)

EXAMPLE 9 (CONT.)

EXAMPLE 10: SAMPLE LOOP WINDOW INCREMENTALLY GROWING, BARS 1–3

Speaking metaphorically, even though the needle may be stuck in a groove and is, as a result, continuously skipping back to the same starting point, the groove is erratically increasing and decreasing in length with each new attempt. Keeping up with this analogy, the needle suddenly skips to an entirely different place in the groove and gets stuck there, marking a second structural section that spans bars 22^3–26^3. Here, the emphasis is placed on the end of the distorted Haydn sample (Example 11). The solemn melodic gesture of Haydn's falling minor second and rising diminished seventh (D—C♯—B♭) has here transformed into a falling minor second followed by a rising major sixth (E—E♭—C). As the focal point of Lang's insistent looping, the motif is transformed into an almost aggressive stutter.

The following two sections, respectively spanning bars 26–28 and bars 28–33, zoom in on the end of the sample even further. More particularly, the third section (bars 26–27) places a strong emphasis on Haydn's final "high note"—originally a B♭5, yet a C in Lang's case (Example 12). Combined with the pressured bowing, the music here seems to stutter and to collapse into a total standstill.

From bar 28 onward, the loop window is moved slightly backwards, eventually to re-include the falling minor second progression (F—E; previously E—E♭ in section 2 and D—C♯ in section 1) that leads up to a minor sixth (E—C; previously a major sixth progression E♭—C in section 2, and a diminished seventh interval C♯—B♭ in section 1). With this backwards shift in loop window, bar 28^3 marks yet another segment boundary (Example 13). Remarkably, the material looped here is virtually the same as that in the second structural section (spanning bars 22^3–26^3).

Finally, in bar 33, the needle of the metaphorical record player skips once more, this time hopping back to the beginning of the sample. Between bars 33 and 35, we can vaguely distinguish four full—albeit heavily distorted—iterations of the entire sample (Example 14).

Like the first structural section (spanning bars 1–22^3), this fifth and final section (spanning bars 33–35) loops the sample in its entirety. As such, it is possible to discern a formal circularity to the opening of *Monadologie IX*. Stronger even: in addition to sections 1 and 5, sections 2 and 4 are also characterized by the repetition of the same loop window. The middle section was described as marking a moment of extreme stuttering; of blockage; of standstill. This middle section therefore functions as the central axis over which the other four sections are mirrored. Taking an associative orientation towards the musical surface, it is, in other words, possible to discern a formal hyper-symmetry; a nested structure which leans towards self-similarity (Example 15).

EXAMPLE 11: LOOPING THE END OF THE DISTORTED HAYDN SAMPLE (FRAGMENT, BARS 22³-23)

EXAMPLE 12: THIRD SEGMENT, MARKING A MOMENT OF STANDSTILL (FRAGMENT: BARS 26^3–27)

EXAMPLE 13: FOURTH SEGMENT, MARKED BY A BACKWARDS SHIFT IN LOOP WINDOW, BARS 28–32

EXAMPLE 13 (CONT.)

EXAMPLE 14: FIFTH SEGMENT, CONTAINING FOUR HEAVILY DISTORTED ITERATIONS OF THE FULL SAMPLE, BARS 33–35

Section 1
bars 1-22^3

Section 5
bars 33-35

Section 2
bars 22^3-26^3

Section 4
bars 28^3-33

Section 3
bars 26^3-28^3

EXAMPLE 15: HYPER-SYMMETRY BETWEEN ASSOCIATIVE SECTIONS

EXAMPLE 16: OVERLAPS AND DISCREPANCIES BETWEEN SEGMENTATION
MOTIVATED BY DISJUNCTION (D) AND ASSOCIATION (A)

OVERLAPPING ROUTES

Interestingly, the five segments that were identified by adapting an associative approach to the musical surface do not entirely correspond to the five structural sections which were distinguished previously, when taking a disjunctive orientation. While three out of five segment boundaries do correspond, two differ (Example 16). There is, in other words, a discrepancy between a segmentation motivated by sonic difference, and one that is based on associative sameness or similarity.

Depending on their orientation towards the musical surface, the listeners' attention is guided across two distinct formal pathways. Along the way, the listener is presented with several opportunities for wandering off, venturing into side-tracks, and, as such, getting lost in Lang's complex musical landscape. Listeners focusing on the similarity between repeated cells might, for example, find themselves surprised by an element of sonic disjunction, causing them to shift their analytical orientation. Similarly, listeners searching for elements of difference or sonic disjunction amidst an endless repetition of the same, might, along the way, get drawn in by the music's shimmering nuance of near-literal repetition. In the opening to Lang's *Anatomy of Disaster*, pervasive repetition thus affords multiple, overlapping segmentations, rather than one definitive one.

WANDERING LOOPS

In composing *The Anatomy of Disaster*, Lang relied heavily on algorithmic processing in order to introduce random and chaotic elements of change and transformation into a repeated musical cell.[7] Although a predetermined set of rules thus guides the movement of the repeated cell, it outwardly seems to be developing freely and in its own time, displaying intricate patterns that "appear to evolve, grow, invade new territories, or decay and die out" (Hayles 2005, 173). The cell's route is unexpected, chaotic, and complex, as if it were wandering around without any specific itinerary or destination in mind. To put it in the words of Gilles Deleuze and Félix Guattari, the repeated cell behaves like "a schizophrenic out for a walk," as it is continuously shedding and shifting identities, continuously triggered by random impulses from the outside, so that eventually "the self and the non-self, outside and inside, no longer have any meaning whatsoever" (Deleuze and Guattari 2013, 11). In other words, Lang's algorithmic processing here provides a mathematical framework for what Rebecca Solnit describes as "calculating the unforeseen":

How do you calculate upon the unforeseen? It seems to be an art of recognizing the role of the unforeseen, of keeping your balance amid surprises, of collaborating with chance, of recognizing that there are some essential mysteries in the world and thereby a limit to calculation, to plan, to control. (Solnit 2005, 6–7)

Whereas the previous analysis focused on the musical surface and its underlying formal structures, the third and final line of analytical inquiry zooms in on the transformational nature of the surface articulations. More specifically, the following analysis investigates the process of subtle yet continuous transformation that unfolds on a loop-to-loop basis over the first thirty-five bars of *Monadologie XI*. Where are elements of repetition and variation situated, and what musical and cognitive mechanisms do they activate? How does the process of microvariation unfold here, and does it affirm or contradict the formal claims made previously? What dynamics transpire between memory, recollection, and anticipation? From the outset, the analysis distinguishes between two drifting landscapes—that is, two distinct musical domains in which elements of change and transformation are situated on a loop-to-loop basis, and which in their own right contribute to the cognitive sensations of disorientation, drifting off, and getting lost: (1) pitch constellation and (2) metric placement.

TEXTURAL FLUIDITY

Looking closely at the score for bars 1–35 of *Monadologie IX*, it is possible to distinguish minor changes in pitch constellation with each new loop iteration. Example 17 is a stylized representation of the pitches contained in the first twenty loop iterations—i.e., a short fragment spanning bars 1–11[3]. It shows that, in addition to generating subtle changes within the existing pitch constellation of the generative cell (Example 3), Lang's algorithms randomly introduce so-called "emergent" pitches, which were not previously included in the distorted Haydn sample.

Furthermore, Example 17 suggests a high degree of similarity in pitch constellation between one loop iteration and the next. The process of transformation that is unfolding here is one of micro-variation, in that the repeated pitch constellation is subjected to but a microscopic, and therefore almost imperceptible degree of variation from one repetition to the next. The process unfolding here is a "slow burn" and effectuates a creeping, gradual, and more importantly, a

subliminal sense of textural drift. As the repeated cell drifts further and further away from its original identity, it gradually grows into something else completely.

A more visually striking image of how the repeated cell gradually but certainly drifts out of focus in terms of pitch constellation is found in Example 18. In this figure, MIDI note 60 equals middle C. Time is measured in seconds, and vertical lines connect simultaneous pitch onsets or chords. The figure shows how the repeated cell incrementally moves into new registral territories over time. As such, the sense of textural stability once suggested by the notion of repetition gradually starts to waver. For, although these textural changes might not be the most salient on a loop-to-loop basis, they are objectively happening and work on a subliminal level. The effect is one of a continually and erratically unfolding textural field, without a centre or a goal. In that respect, the sense of textural or sonorous drift created here is not dissimilar to the perception of a Shepard tone, in that it is always moving but never arriving; perceptually suggesting harmonic stasis but effectuating intense textural unrest and instability over time.

METRIC DRIFT

In addition to subjecting the repeated cell in bars 1–35 to a series of microscopic shifts in terms of its pitch constellation, each new iteration also brings along minute changes to the cell's rhythmic structure and its metric placement. When listening to the opening of *Monadologie IX*, it is remarkably difficult to keep track of time. Starting from a position of metric stability, the repeated cell almost immediately starts wandering off and directing the listener into unstable metric territories. But how can the phenomenon of repetition, which is usually associated with periodicity and metric stability, induce the experience of wandering and of finally losing track of time, which, according to Rebecca Solnit, is to become "lost in that other way that isn't about dislocation but about the immersion where everything else falls away" (Solnit 2005, 37)?
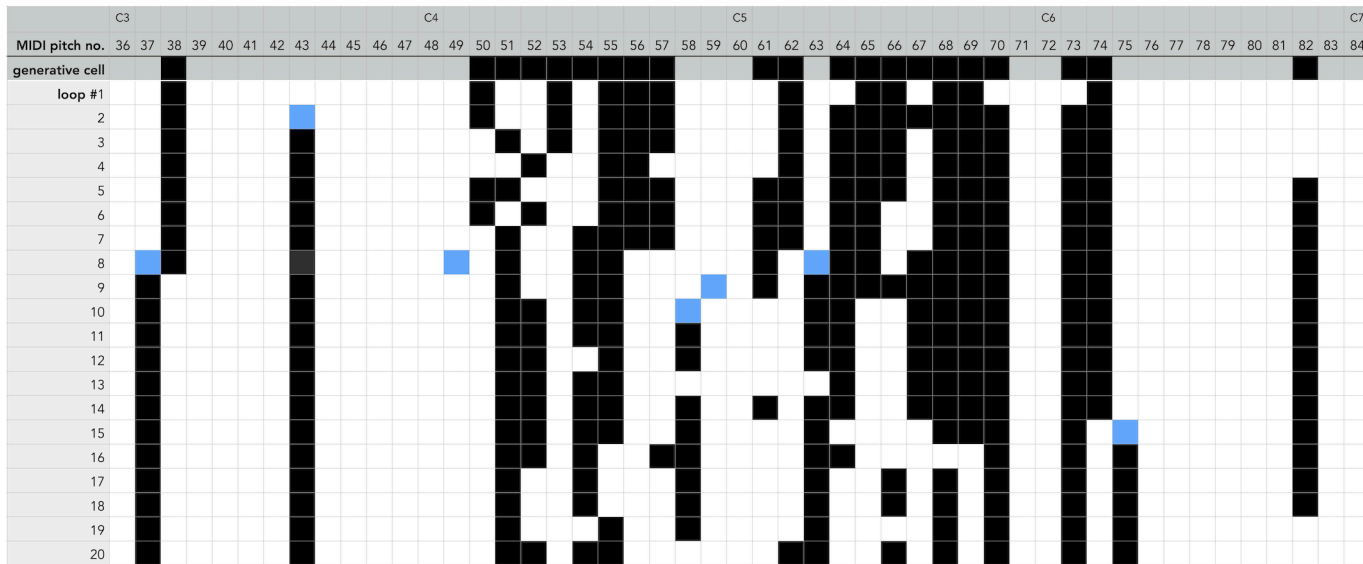
EXAMPLE 17 : CHANGING PITCH CONSTELLATIONS FOR LOOPS 1–20 (BARS 1–11³). EMERGENT PITCHES, WHICH ARE NOT PART OF THE ORIGINAL PITCH CONSTELLATION OF THE GENERATIVE CELL, ARE MARKED IN BLUE
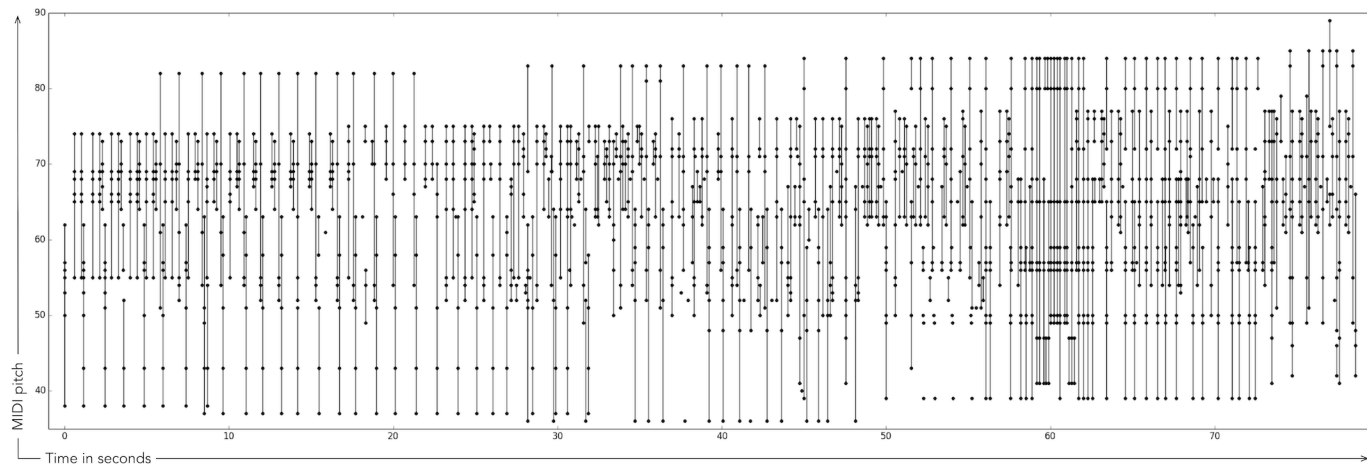
EXAMPLE 18: DRIFTING PITCH CONSTELLATION (BARS 1–35)

Appearing to start as well as conclude *in medias res* and, along the way, seeming to drift and wander without any underlying sense of direction, the opening to Lang's ninth *Monadologie* is the very antithesis of a teleological experience of time. On the contrary: as the distorted Haydn sample is locked in pervasive repetition and scratched backwards and forwards with an endless momentum, Lang's erratic loops give rise to a nagging, jarring sense of being "stuck" and unable to progress. Yet, while the experience of time is ateleological in this example, it is not entirely suspended. In fact, the experience of time in this passage is close to what Jonathan Kramer identifies as a "nondirected linearity," which he describes as being "in constant motion, but the goals of this motion are not unequivocal" (Kramer 1988, 40). Drawing a visual analogy to a "meandering line," Kramer argues that "in nondirected linear time there is no clearly implied goal, despite the directed continuity of motion" (ibid). In other words, although a clear sense of forward motion can be distinguished in bars 1–35, this movement is not directed towards any well-defined end or goal. Instead, the experience of time in this passage is one of wandering; of strolling about without any clear goal or direction in mind. While every new loop iteration provides the listener with a fleeting moment of gestural directedness, the cell's linear development is continually disrupted, and a sense of closure is never found.

It is a basic human instinct to try and understand how the music we listen to is organized in time. While we try to latch onto a stable beat or pulse to tap along with, we instinctively infer metric structures from the rhythmic events we perceive, prioritizing those beats we perceive as "strong" over those we perceive as "weak." In the act of listening, we thus intuitively direct our attention to those moments in time that we perceive to be most salient, as such constructing the structural hierarchies of time which we call metre. Victor Zuckerkandl argues that the construction of metre is not the result of a successive experience of discrete rhythmic instants, but rather that of a "wave-like motion" of intensifications and recessions of attentional energy:

> The equal portions into which musical meter appears to divide time turn out, upon closer examination, to be variously directed phases of wave motion; the moment of time at which a tone enters is not a point on a straight line but on a wave, the interval of time that tone fills in sounding is not a section of a straight line but a fractional phase of a wave. . . . This is what we *hear* when we hear music whose structure is metrical: the various directions of the successive wave phases. . . . The listener is caught by the motion,

drawn into it more and more, and finally carried irresistibly along with it. . . . We always sense it, in various degrees of intensity, when we hear music whose structure is metrical; it is a basic element of our experience of music; it can become the medium of the most powerful artistic effects. (Zuckerkandl 1956, 173–74)

Similarly, Mari Riess Jones has argued that human attention in listening is not directed equally at all moments in time, but that it is most acute at onsets and strong metric positions (Jones 1987; 2019; see also: Large and Jones 1999; London 2004). In her theory of "dynamic attending," Jones stresses the dynamic processes by which listeners focus their attention to the music's temporal organization, claiming that listeners tend to attune themselves with the music's most salient events. Moreover, Jones claims that such a dynamic targeting of the attention helps listeners to anticipate the location of future events. Building on Zuckerkandl's idea of metric perception as a wave-like ebb and flow of attentional energy, Jones maintains that:

A self-sustaining oscillation has two important features that make it appropriate for modelling the basic process of attentional dynamics. First, it generates periodic activity, an activity that we can refer to as an *expectation*. Expectations are similar to the ticks of a clock, with the important exception that an expectation is an active temporal anticipation, not a grid point in a memory code. Second, when coupled to an external rhythm, a self-sustaining oscillation may entrain, or synchronise, to that rhythm. (Large and Jones 1999, 124)

Put differently, Jones' theory of dynamic attending suggests that meter may provide a time-based framework for temporal expectations, just as tonality may provide a pitch-based framework for melodic expectations (Palmer and Krumhansl 1990, 728).

Listening to the starting point for Lang's *Anatomy of Disaster*—that is, Haydn's opening motif—the listener's attention is guided down a very transparent and periodic grid of hierarchical beat saliences. More specifically, the listener's attentional energy and attendant modes of expectation are directed immediately onto the strong metric accent on the downbeat of every measure (Example 19).

It has been indicated previously that the generative cell used in the opening of Lang's *Anatomy of Disaster* bears a significant degree of resemblance to Haydn's original material. In terms of both rhythmic construct and the placement of metric accents, Lang's generative cell is

EXAMPLE 19: DYNAMIC ATTENDING IN HAYDN'S OPENING MOTIF,
WITH DOTS INDICATING HIERARCHICAL METRIC ACCENTS AND
ARROWS INDICATING THE DIRECTION IN WHICH PERCEPTION IS DIRECTED

identical to Haydn's opening motif. It is, therefore, safe to assume that the ways in which meter is experienced in Lang's work will be heavily colored by any prior knowledge of Haydn's original the listener might have; in recognizing the distorted Haydn motif, the listener will automatically try to induce a stable meter onto Lang's repeated musical cell; as such continuing the pattern of metric expectations set up by Haydn's original.

Beat induction is also likely to be triggered in those listeners who are not familiar with Haydn's original. For, not only is beat induction innate (Honing 2009); the composer also uses three distinct musical mechanisms to guide the listener's attention along the path of an illusionary stable meter. The first of those mechanisms is the accentuated *portato* bass notes in the cello part, which place a strong rhythmic emphasis on the "downbeat"—that is, on the start of every new loop iteration. As the opening note of each new loop iteration is made much more salient than the rest of the motif, it immediately

grabs the listener's attention with each new recurrence. Secondly, the fact that a tonal idiom still lingers in the distorted Haydn sample also triggers the listener to try and infer a stable meter. Research by Caroline Palmer and Carol Krumhansl (1990) suggests that a mere familiarity with Western tonality sets up the expectation that such music will behave regularly and symmetrically in terms of meter. In other words, the mere fact that Lang's looped material maintains a certain tonal idiom will cause the listener to automatically try and infer a stable meter. Finally, the use of repetition *in itself* also tricks the listener into the illusion of a stable meter. Research by Palmer and Krumhansl (1990) has indicated that listeners generally deem it likely for a repeated pattern to occur in the exact same metrical position on each of its different repetitions.

   In several different ways, the opening of Lang's *Anatomy of Disaster* thus sets the expectation of metric stability. However, such expectations are almost immediately thwarted, as the repeated rhythmic pattern quickly starts to wander off into a continuous metric displacement. For a large part, this sense of disorientation emerges from our intrinsic but ultimately futile tendency to try and place events on a periodic grid. In reality, the opening to Lang's *Anatomy of Disaster* holds no metric stability whatsoever. Although Lang's score is written in a 4/4 time signature, visually mirroring Haydn's original, this work is not at all written in a stable and simple duple meter. In fact, Lang's musical surface is highly aperiodic in nature, while the notated time signature is nothing but an abstract temporal framework. Although Lang's 4/4 time signature might be an aid in performance, it is perceptually opaque to the listener. The bowing techniques, which the composer has marked explicitly in the score, support this interpretation. Whereas a down-bow is usually stronger and more distinct, an up-bow is usually lighter, implying relatively less metrical importance. As such, the choice for these particular bowings, combined with the *marcato* and *portato* accents on stronger beats, and the *staccato* accents on weaker ones, suggest that Lang explicitly assigned a relative metric strength to each sounding event. Furthermore, a lot of weight is placed on the bass notes, which are in themselves perceptually more salient than the material contained in the higher registral bands. As such, although there is no actual downbeat in a strictly metrical sense, the low registered, down-bowed, and *marcato* notes at the beginning of the Haydn sample are likely to be perceived as downbeats. The performer's sense of meter is hence not congruent with that of the listener, as the piece does not pertain to a shared temporal perspective "from which melodic and rhythmic forms may be perceived" (Jones 1987, 164).

Rewriting the individual loop iterations in terms of perceived meter, then, reveals a continuously changing metric landscape (Example 20). Stronger even: the rewritten score reveals a total lack of metric hierarchy in this passage. In other words, the opening to Lang's *Anatomy of Disaster* is ametric in nature, in the sense that the placement of strong metric accents is entirely unpredictable.

Complicating matters even further is the frequent asynchronicity between the different string parts. The metrically strong "downbeat," which signifies the start of a new loop iteration and which is implied by the accentuated *portato* bass notes in the cello, often overlaps with the end of the previous loop iteration in the upper voices. In other words: at certain times, the boundaries between beginnings and endings are blurred. As the loop's endings and beginnings become fuzzy and intertwined, rather than clear and well-defined, the demarcation of perceived downbeats and upbeats, or metrically stronger and weaker events, is obscured.

As such, a major discrepancy arises between Lang's highly ametric material, and the stable meter that we, as listeners, automatically try to infer from it. Although we cognitively try to grasp onto the expected stable meter, it keeps slipping away, as strong beats continuously appear to arrive too early or too late (Example 21). The process that is unfolding here is remarkably similar to what Brent Yorgason (2009) describes as "metric drift"—i.e., a situation in which the listener's placement of the beat slightly drifts, as the attention is drawn towards a metric stream that pulls the listener away from the notated beat.

Yorgason's notion of metric drift complements that of "metric normalization," a concept developed earlier by William Rothstein (1990) to describe the moment in which displaced metric events are restored back to their initial and stable position. A brief moment of metric normalisation is created at the beginning of bar 11. More specifically, the first two beats of bar 11 are placed on the exact same metric position as those of the initial statement of the looped material, and, following from that, on the exact same metric position as the events in the original Haydn sample. The sense of metric stability that is created here by placing the start of the looped material on a downbeat is, however, fleeting as a new process of metric drift is initiated immediately on the following loop iteration (bar 11³, Example 22).

EXAMPLE 20: REWRITTEN SCORE FOR *MONADOLOGIE IX: THE ANATOMY OF DISASTER*, I: INTRODUZIONE, BARS 1–6; ASTERISKS INDICATE AN OVERLAP BETWEEN SUCCESSIVE LOOPS AND SHOW THE SOUNDING RHYTHMIC VALUE OF THE LOOP'S CLOSING NOTE

EXAMPLE 21: METRIC DRIFT IN BERNHARD LANG'S *MONADOLOGIE IX: THE ANATOMY OF DISASTER*, I: INTRODUZIONE, BARS 1–6

EXAMPLE 22: FLEETING MOMENT OF METRIC NORMALIZATION IN
MONADOLOGIE IX: THE ANATOMY OF DISASTER, I: INTRODUZIONE, BAR 11

INTO THE UNKNOWN

> Lost really has two disparate meanings. Losing things is about the familiar falling away, getting lost is about the unfamiliar appearing. . . . Imagine yourself streaming through time shedding gloves, umbrellas, wrenches, books, friends, homes, names. This is what the view looks like if you take a rear-facing seat on the train. Looking forward you constantly acquire moments of arrival, moments of realization, moments of discovery. The wind blows your hair back and you are greeted by what you have never seen before.
>
> —Rebecca Solnit (2005, 22–23)

The preceding analysis identified multiple different pathways for getting lost in the opening of Lang's *Monadologie IX: The Anatomy of Disaster*. Relentless near-repetition was shown to work as a radically destabilizing and disorienting mechanism on at least four different musical planes; those of (1) semiotics, (2) form, (3) harmonic texture, and (4) meter.

A first site of instability was found in the tensions created by repetition in the sense of re-producing and re-presenting a cultural and historical artifact—in this case, the opening motif to Joseph Haydn's *Sieben letzten Worte unseres Erlösers am Kreuze*. Repetition was shown to be an inherently critical instrument, which holds the enigmatic power to both reinforce and erode preconceived notions of authorship, originality, and even cultural or historical meaning.

Relentless near-repetition was also found to blur the topography of the musical surface. The analysis revealed that not one definite, but two distinct and overlapping formal pathways are hidden beneath the guise of repetition: one based on difference or sonic disjunction, the other based on sameness or similarity between repeated materials. Erratically providing the listener with points of both orientation and disorientation, these two formal pathways were found to create plenty of opportunities for the listener to freely wander between disjunctive and associative modes of listening.

Although the microscopic shifts in pitch and rhythm from one repetition to the next were described as being almost imperceptible on a loop-to-loop basis, near-repetition was found to have a radically destabilizing effect over a longer time span. The analysis revealed the thirty-five-bar passage to consist of an unstable and continually shifting textural field, which induces the sense of textural or sonorous drift. The repeated cell was shown to drift in terms of its placement on the metric grid. As metric expectations are continuously thwarted, ametricity and irregularity become the norm.

In other words, it appears as though the musical landscape of Lang's *Anatomy of Disaster* is specifically designed for getting lost. Although these four different planes of disorientation and drift unfold entirely autonomously, they operate simultaneously and in overlapping ways. In navigating between these different layers, the listener is left without any sense of stability to hold on to. As any notion of stability, sameness, or recognition is brief and fleeting, the work exists in a constant state of flux, lingering uneasily between the familiar and the unknown. As such, the work invites the listener onto a wavering path of uncertainty; to freely wander about in an ever-changing landscape; and finally, to get lost—an experience Rebecca Solnit so eloquently describes as "touching the edges of the unknown that sharpens the senses" (Solnit 2005, 12).

Notes

1. The use of the term "sampling" in this context is slightly problematic. While the term usually refers to the practice of transposing a recorded sound from one digital medium to another, Lang's musical borrowings are not at all digital. Instead, they are entirely score-based transcriptions of pre-existing music, which tend to stay relatively close to their original instrumentation and tempo, almost as if the composer cut out a fragment of the original score and pasted it into his own work. Nonetheless, the notion of sampling does remain valuable in the specific context of Lang's oeuvre, as it draws in the realms of DJ-culture and turntablism to which this body of work so frequently refers.

2. Haydn's *Sieben letzten Worte unseres Erlösers am Kreuze* was originally written as an orchestral work in 1786 and was subsequently arranged for both string quartet and piano solo one year later, in 1787. Documents found in Lang's personal archives, as well as the fact that the work was commissioned by Arditti Quartet, suggest that Lang took Haydn's version for string quartet as his primary inspiration for *Monadologie IX: The Anatomy of Disaster*, rather than that work's original, orchestral version.

3. *Monadologie IX: The Anatomy of Disaster* is not the first work in which Lang re-writes Haydn's *Sieben letzten Worte*. In the fifth iteration of his ongoing *Monadologie* series, *Monadologie V: Seven Last Words of Hasan* (2008–09), he reworked the 1787 piano solo version of Haydn's original. The work takes its subtitle from a text by William S. Burroughs, *The Last Words of Hassan Sabbah* (ca. 1960), and was written for and dedicated to pianist and conductor Marino Formenti. Just like *Monadologie IX*, *Monadologie V* is algorithmically generated from samples of Haydn's original. The work also mirrors the formal structure of Haydn's original, in that it consists of an introduction, seven "sonatas," and an epilogue.

4. The works contained in Lang's *Monadologie* series (2007–) are, for the most part, computer-generated. A substantial number of works in this series were generated from Computer-Aided Design for Musical Applications (CadMus). This inherently modular computer-assisted composition environment is programmed in C++ by the composer for his specific compositional needs and purposes.

5. Diana Deutsch's "speech-to-song illusion" vividly illustrates the transformational effect repetition can have on the human perception of a repeated object. In this auditory illusion, a sentence of ordinary speech is presented once, after which a single clause from the utterance is put on loop and repeated ten times in a row. Deutsch (2011) reports that for the vast majority of listeners, a radical change in perception occurs after a few repeats, as they gradually start to infer a melodic contour, as well as elements of pitch and rhythm. When the listeners are finally presented with the full sentence again at the end of the experiment, the majority of them report that the repeated clause now appears to be sung, rather than spoken. The effect is perhaps best explained in terms of attention: bored by the incessantly repeated same, the listener's attention eagerly shifts to any other available domain. In the case of the speech-to-song illusion, for example, the listener's attention shifts from the semantic meaning of the spoken utterance to the phrase's musical qualities. A similar attentional phenomenon, described earlier by Leon Jacobovits (1962), is that of "semantic satiation." In this psychological effect, the persistent repetition of a word or utterance causes it to temporarily lose all semantic meaning for the listener, who then begins to perceive it as a meaningless sound object.

6. Hanninen (2012) argues that the listener-analyst can also take a theoretical orientation towards the musical work as it is experienced. In such a case, the analytical attention is shifted "from perceptual salience to the interpretation and representation of musical meaning" (Hanninen 2012, 20). To adopt a theoretical orientation then, is to base the recognition, interpretation, and organization of significant musical units on a specific theory of musical structure, such as Schenkerian analysis or twelve-tone composition (Hanninen 2012, 20–23). While a theoretical orientation might "inform, shape, and . . . enrich the process of musical interpretation," it is also "not essential" (Hanninen 2012, 8). A theoretical orientation has hence not been taken here.

7. More specifically, in the case of *The Anatomy of Disaster*, CadMus has been programmed to run a set of cellular automata algorithms on a generative cell. Cellular automata (CA) are discrete, abstract, and dynamical computational systems, used to model complex— and often natural—phenomena. Although CA perform logical and deterministic iterative processes, the outcome thereof may appear perceptually indeterminate and chaotic.

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