WHAT TO EXPECT:
CLASSICAL AND AMBIENT COLLISIONS WITHIN THIS BINARY UNIVERSE
WITH “SOFTER SHADOWS” (ORIGINAL MUSIC COMPOSITION)

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ABSTRACT

BT’s 2006 album, *This Binary Universe*, represents a major departure in compositional aims for someone whose career up to that point was rooted in EDM (electronic dance music). Here, BT states that he purposefully incorporates classical form within the album. This dissertation investigates the ways in which we might employ a classically oriented listening modality to address functional ambiguities that arise within the respective introductions. These ambiguities manifest from the inclusion of both classical and ambient-oriented processes and the tensions therein. An investigation into listener expectation provides a way to interact with the music, the processes that drive it, and our perception of these processes as we listen to the album.

Chapter I examines how the overall cohesion within *This Binary Universe* enables comparisons not only from point to point within tracks but also across tracks. Chapter II scrutinizes the traditional role of introductions within the classical style, introducing the language of formal function and “becoming.” Chapter III offers detailed analyses of the formal function ambiguity within the introductions of “All That Makes Us Human Continues,” “The Internal Locus,” “See You On The Other Side,” and “The Antikythera Mechanism,” discussing how the role of expectation within the listening process both engenders and responds to these functional frictions. Chapter IV reframes the specific findings of the four analyses within the context of the album as a whole, concluding with a survey of how the worlds of *This Binary Universe* continue to resonate in more recent projects by BT.

The composition component that completes this dissertation, “softer shadows,” incorporates a series of extended techniques that I’ve harvested slowly throughout my time in Princeton. *murmur* uses cardboard dowels standing in for more traditional mallets, creating a
blurring of pitch and noise and culminating in a ping pong ball chorale. The second movement, *fade to light*, goes deeper still into these delicate worlds. These two movements allow us access to a softer shadow world. The motivation behind many of the techniques explored in “softer shadows” is my attempt to create novel acoustic analogues for electronic production techniques found within the EDM vocabulary.
Acknowledgements

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I’m grateful for the love and support that I’ve received from friends and colleagues during my time here at Princeton. There are far too many people to thank on an individual basis, too many formative moments to begin encompassing within the specific confines of a section such as this. Rather than risk offending those few I am statistically bound to forget, I will chance offending everybody through the more general but very heartfelt thank you that I offer here.

I must, of course, mention with special gratitude my family, who has put up with me far longer than anyone else, and Carolina, now the most intimate member of my family, who puts up with far more from me than anyone else.

I’m extremely grateful to the staff and faculty at Princeton. I can’t overstate how much I appreciate the opportunity to interact with Barbara, Dan, Dmitri, Donnacha, Juri, Kofi, Paul, Scott, and Steve. Within the context of this dissertation, I’d like to thank Dan, my first reader, for his advice throughout the process and all of the extra help once the hard deadline became paramount. I likewise thank Steve for being my second reader and Dmitri for his for near-weekly guidance on navigating the job search after MUS 106 lectures.

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CHAPTER I: BEFORE-THE-BEFORE-THE-INTRODUCTIONS

This Binary Universe (released in 2006) is unique within Brian Transeau (BT)'s extensive and varied discography in its direct engagement with classical music. BT is, among numerous related roles, a multi-instrumentalist, singer, composer, producer, and DJ. He is perhaps best known for his incredibly exacting, cutting-edge production techniques within the electronic realm—his attention to detail often lauded and rarely matched by his peers. Although the majority of his output (personal tracks as well as remixes) falls under the broad rubric of EDM\(^1\) and dance culture, BT has continued to explore other musical interests. Most notable among these is his deep-rooted interest in classical music.

BT’s classical influences manifest most immediately in the music he’s composed for film, a medium typically more fertile for such genre overlapping than dance club music. Listeners point to similarities in style between This Binary Universe and its predecessor, BT's score for the film Monster.\(^2\) Yet, even within this medium the degree to which the classical world permeates BT's film scores remains limited. The probable reasons are understandable if lamentable—the specific needs of a typical Hollywood project don’t necessarily align with one’s personal projects for artistic expression. Especially early in his film career, BT was sought after

\(^1\) EDM is a catch-all term for electronic dance music, and like “rock” or “pop” encompasses a great number of diverse subgenres. BT first made a name for himself in trance but has since moved on to explore numerous other EDM subgenres.

\(^2\) Both were composed in 5.1 surround sound and have more of an acoustic orientation, as opposed to the dance records, which tend to feature more of an emphasis on synthesizers. Both are likewise sharp departures from the club-friendly productions that make up the majority of BT's output to that point (including other film scores). However, while there certainly are some aesthetic alliances between these two albums, BT to my knowledge has never referenced classical form when talking about the compositions for Monster. For the purposes of this study then, I restrict my approach of using a classical listening orientation to This Binary Universe, leaving a similar analysis of Monster for future research.
precisely *because* of his reputation and experience in the EDM world. Directors seeking authentic dance music for their films afforded BT sparse opportunities to explore his classical interests. As a result, a project like *This Binary Universe* represented a creative boon, an unmarked world to contour musically in whatever manner BT desired. Thus *This Binary Universe* marks a liminal point within BT’s musical development, a concise encapsulation of his creative progress up to that point while simultaneously illuminating the musical directions in which his artistic endeavors would continue to expand.

*This Binary Universe* was self-produced and, initially, not intended for commercial release. BT’s first explorations with what would eventually become the material for the album began organically, at home and for an audience of one. BT described “Dynamic Symmetry,” the first track to materialize out of the primordial material for what would become *This Binary Universe*, as “the strangest thing I’d written in my whole life—I didn’t know if it would make sense to anyone, but I loved it.” At this point, BT had no thoughts of making and releasing an album of this material.

Because *This Binary Universe* began as and remained a personal project throughout its composition, BT worked on his own timeline, using the opportunity to explore a multitude of musical interests that hadn't yet found suitable outlets in his output. Although he had occasionally entered a close orbit to the classical world through some of his film scores, only in *This Binary Universe* does BT actually touch down. It is in this album that BT synthesizes many of the musical interests that have subsequently become defining elements of his musical language.

BT’s musical training began early and encompassed various phases. Having started with piano studies at the age of four, BT began receiving composition lessons four years later at the Washington Conservatory of Music under Setiros Valahopoulos. At Berklee College of Music, he studied harmony, counterpoint, and arrangement as part of the school’s core curriculum to supplement his increasing fascination with electronic music. This would prove to be a formative time in establishing BT’s interest in a wide variety of music. Berklee’s renowned jazz culture and melting pot approach helped to nurture important seeds at this early stage that would flourish later in his career.

After a stint in California during which he pursued a singer-songwriter career, BT returned to Maryland disillusioned and ready to focus exclusively on producing and performing EDM. His first two singles from this time, “The Moment of Truth” and “Relativity” were both released on the newly formed Deep Dish Records. These early tracks make evident his advanced abilities using the available technology and his knowledge of, and desire to push beyond, stylistic conventions.

“Embracing the Future,” BT’s third single (released on Musicnow Records), brought him to the attention of Sasha, a famous British DJ who began featuring BT’s music prominently within his own sets. Sasha flew BT to England, where he encountered a thriving dance culture that at the time was very much lacking in the US. Through Sasha, he met Paul Oakenfold, a pivotal figure in the UK dance scene and a producer and DJ in his own right. Oakenfold would go on to champion BT’s work, releasing *Ima*, BT’s debut album, on his own label, Perfecto. Thus, with this trip to England, BT's international career began in earnest. Four studio releases later, BT with *This Binary Universe* returned to his classical origins.

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4 The following biographical information is drawn from the liner notes to BT’s album, *BT: 10 Years in the Life*, released by Reprise Records in 2002.
When reflecting upon *This Binary Universe*, BT identifies several compositional territories that he intentionally sets out to explore on this album. These range from the aforementioned classical influence to soft Americana to glitch-based IDM, among others.\(^5\) This study focuses specifically on the influence of classical music and how it manifests on *This Binary Universe*. Although this classical influence is evinced in many ways and on multiple levels throughout the album, BT is explicit about his use of classical form on the album. He elaborates, saying that “this is the first time where I actually sat down and I said I'm going to follow classical music—a sort of classical music form.”\(^6\) The bulk of this study will be spent investigating what such a claim might mean and how it factors into our listening experience. Classical music for us will mean music from the classical period, for reasons to be discussed.

Focusing on the track introductions on *This Binary Universe*, I examine the ways in which BT manipulates our expectations regarding form and formal function. His deliberate invocation of classical music form engenders a very particular set of expectations for those with classically trained ears. The album’s strong ambient leanings complicate the formal functioning of the introductions. In this way, before we hear even a single note of the album, we already sense some genre tension, the presence of friction that make a straightforward listening within a classical framework unlikely. We’ll investigate some of the ways in which BT’s ambient influence works at cross-purposes to the classical influence.

\(^5\) The origins of the term IDM (intelligent dance music) are most commonly attributed to the 1992 *Artificial Intelligence* compilation album by Warp Records and the subsequent emergence of the *Intelligent Dance Music* mailing list in 1993. This list focused on discussing the music of Aphex Twin and similar artists, some of whom appeared on the aforementioned Warp record.

\(^6\) Interview by Stage6. [https://www.youtube.com/watch?v=iiiuCuBDyLg](https://www.youtube.com/watch?v=iiiuCuBDyLg)
This Binary Universe cannot be considered a traditional classical album. Nor can we situate it as new music or as contemporary classical. Instead, This Binary Universe very much comes out of EDM, and yet aesthetically and philosophically it doesn’t feel much at home there either. The album does, on the other hand, exhibit a profound resonance with ambient music. Yet the compositional aims and aspirations of ambient music seem very much at odds with those of the goal-oriented, form-functionally driven tonal canon. It would seem then that the mixing of these two genres would engender a friction between their compositional elements. This friction manifesting as form functional ambiguity comprises part of our discussion within this dissertation.

This choice by BT first to include and then to announce the inclusion and use of classical form on an ambient-leaning electronic album has profound implications on the way in which we might engage with the record as a whole. He effectively invites us to approach This Binary Universe with classically oriented ears and a corresponding set of expectations regarding formal processes and procedures. We then at turns have our expectations confirmed and denied through formal ambiguities and functional breakdowns. Ultimately, although this is not classical music, it uses recognizable classical idioms to make this type of listening endeavor a productive one.

Indeed, BT actively colors our listening experience through these formal ambiguities resulting from genre tensions. We may attempt to redress any formal disorientations or dislocations we experience by hearing these compositions from multiple temporal vantage

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7 Although a sub-genre of EDM, ambient differs significantly in that it intended for chill-out rooms or personal/home consumption.
8 Chapter II deals with these ideas at length.
points. Doing so requires that we assume the role of active participants both in and out of time as the music unfolds. We remain actively engaged and sufficiently off-balance as we progress through the album.

This study discusses ways in which we might employ a classically oriented listening modality to address functional ambiguities that arise within the respective introductions. By invoking a classical influence, BT opens the door for us to employ a deep and careful critical listening oriented with specific expectations about how formal functions work. We would do well to use these tools even if their application to music outside of the high Viennese classical style is unconventional.

In this study, I refrain from developing a taxonomical catalogue of the forms used on This Binary Universe. Nor am I interested in their derivation from and relationship to canonic forms of the classical style. Rather, I focus on how we hear the forms unfold in time and the process by which we continuously interpret and revise our formal expectations accordingly. I use modalities of formal thought developed from classical music theorists William Caplin and Janet Schmalfeldt as base points for my own investigations. Approaching This Binary Universe in such a manner furnishes us with a richer, more nuanced listening experience than might a straight listen. Doing so helps to illuminate connections spanning the album that might otherwise be inaccessible.

The Big Bang: “Dynamic Symmetry”

This Binary Universe presents a very carefully cultivated, unified aesthetic. Much of our understanding and resolution of formal ambiguity at specific moments within track introductions depends on our ability to understand how This Binary Universe functions in a more holistic
sense. A consideration of the origin of the album and how it fits within BT’s discography provides us a context for understanding the compositional goals that guided its construction. These goals, the three “big bangs” that BT claims are behind the genesis of *This Binary Universe*, enable us to contextualize BT’s use of classical form on the album. Having a better sense of the operational whole, we can then hear particular connections between tracks on the album and shape our listening expectations accordingly.

Initially, *This Binary Universe* coalesced around “Dynamic Symmetry,” the first finished track for what would soon become the album. Written as a personal exploration of musical elements he found intriguing but had yet to incorporate in a meaningful way within his music, “Dynamic Symmetry” afforded BT a testing ground on which to work through his more esoteric compositional ideas. Upon completing the track, BT played it for Patty Jenkins, a director for whom he’d recently completed a film score. According to BT,

She listened to it and said, “Honey, this is a whole album. You need to make an album like that.” And literally Patty was the person that said that to me. I said, “I think this is music for crazy people, I don't know that this makes any sense.” She was like, “No no no, you need to make an album.” So, I sat down and sketched up a couple things, 'The Antikythera Mechanism' and '1.618', and instantly it was like, “Oh my God this really is an album”…But literally, the catalyst for doing it was that one piece of music.⁹

When planning and gathering the material for “Dynamic Symmetry,” BT identified three musical focal points around which he built the track. These three elements take the following forms:

Thought “A” is I wanted to take the classical music I’ve studied and write a piece of music that has an overt classical influence. Thought “B” is that I wanted to write a bunch of classical music in the style of the jazz music I’ve studied, which involves a lot of asymmetrical meter and iso-rhythms, and things outside the realm of 4/4. Thought “C” is I’m building these instruments that are capable of making unbelievable sounds that people have literally never heard before and I wanted a stage to put them on.\textsuperscript{10}

“Dynamic Symmetry” thus becomes for BT his proof of concept that he could successfully incorporate what he considered disparate elements into viable music. With Patty’s encouragement sounding in his ears, BT soon expanded his initial conception of what this music could be. \textit{This Binary Universe} thus grows organically from a one-off experimental track into nearly seventy-five minutes of music. The album consists of seven tracks, all composed for 5.1 surround sound, and features seven short films written specifically to accompany the music.\textsuperscript{11}

\textbf{A Unified Universe: Seven Lullabies}

We are able to consider \textit{This Binary Universe} in terms of specific moments within individual tracks and then relate these moments to comparable ones in other tracks and indeed to album-wide trends because the album is purposefully unified on many levels. It's this deliberate cohesion in structure and design that enables this analytic bridge building. This unification is engendered through both the emotional and the technical domain.

\textsuperscript{10} Pearson-Adams
\textsuperscript{11} The album contains a stereo mix as well. I used this mix during my analyses.
From an emotional standpoint, *This Binary Universe* supports a sustained sense of what BT describes as “an extreme sort of hopefulness” that spreads throughout its tracks.\(^{12}\) This stems from the complex interplay of a multitude of compositional parameters. BT composed the album soon after becoming a father, and his newborn daughter Kaia exerts a palpable presence throughout the album. Her impact takes many forms, ranging from the very literal (her sampled cries on “Dynamic Symmetry”) to the more esoteric (the title of the powerful album-ender, “Good Morning, Kaia,” towards which the entire album builds). Indeed, BT is frank about Kaia's influence on the overall aesthetic of the album, stating, “At the root of *[This Binary Universe]* is really just like seven very simple lullabies that I wrote with my daughter sitting on my lap, you know, and that was a huge influence in making this record.”\(^{13}\)

This lullaby quality presides over even the most aggressive moments of the album, keeping them gently constrained and the course of the album writ large in concord with this gentler aesthetic. While the tracks do diverge wildly from one another at points, none strays too far from this lullaby conceit. The numerous shared characteristics, from sonic to structural, work together to engender an overall emotional state throughout the album that is consistent with BT’s stated affective goals. This situation occurs despite the individual natures of the compositions and the clear divisions between each track.

In addition to the strictly musical material, this unified emotional quality is complemented by the film component of the album. *This Binary Universe* operates not only in the auditory domain but also in the visual one, taking advantage of the synthesis of the two. Having finished the audio for *This Binary Universe*, BT reached out to filmmakers, directors,

\(^{12}\) Progressive-Sounds

\(^{13}\) Interview with M-Audio. [https://youtu.be/GGG6T-e0B30](https://youtu.be/GGG6T-e0B30)
and animators with the intention that here, in contrast to the usual method of working when sound and visuals collide, “the music would drive the visuals.”

After composing the music and finding visual artists whose aesthetics he felt matched his own, BT wrote mini-manifestos about what each composition meant to him. He then compared his relationship to the tracks with what the various artists had experienced, afterwards storyboarding the films collaboratively before finally turning over artistic control. His involvement in and commitment to This Binary Universe as a total package is itself total, from the micro-details of the sound sculpting to the design of the packaging in which the CD was sold.

The unified emotional quality presiding over This Binary Universe is perhaps best demonstrated in the final composition of the album, “Good Morning, Kaia.” This track arrives as the endpoint of a long and slow-climbing dramatic through-line that transverses This Binary Universe such that the net energy accumulated finally bursts forth, carrying us to new emotional heights. The joining of the piano with bass, drums, and electronics is truly a cathartic moment for the entire album, the closest to a straight-ahead rocker, the ever-climbing melody a musical depiction of the rise of our elation.

The audio-visual synthesis is especially strong on this final track. The film contains a deeply personal message from BT to Kaia, presented through subtitles and accompanied by scenes of Kaia’s infancy, home footage captured during the making of the album. The film accompaniment to “Good Morning, Kaia” functions as a visual instantiation of BT’s lullaby aesthetic. BT comments on this unified emotion that each of the tracks contributes to, stating,

\[\text{\textsuperscript{14}}\text{ Mark Small “Berklee Today: Twenty-First-Century Prototype.” }\textit{Berklee}. \texttt{https://www.berklee.edu/berklee-today-28} \]

\[\text{\textsuperscript{15}}\text{ Stage6} \]
I want to make records that have like, a range of feeling. So you're kind of in the same place the whole time. To me This Binary Universe has an extreme sort of hopefulness to it, and it also has this underlined sadness or nostalgia that's all wrapped in this feeling of hope. And my favorite music is what that feels like to me. This kind of sad hopefulness. So I really wanted that to be the feeling of the whole album.\textsuperscript{16}

This, then, is the stated emotional intent for This Binary Universe. BT does not offer a specific reading of the album. Instead, he trusts us to find our own way through, recognizing that we have the potential to discover a deeper, more personal resonance by doing so. Still, he emphasizes the importance of approaching the album as a whole, a singular experience that surpasses the simple amalgamation of its tracks, declaring,

I really would like to encourage people who are interested in [the album] to sit down, like maybe with friends, whatever, and to enjoy from the beginning to the end without distraction, you know. It's not the sort of thing that you put on in the backg—[cuts off]—it would be confusing if you put this on in the background you'd be like 'wha' it would like spin you out if you were checking into it every once in a while, you know it's the sort of thing that attention—it requires a commitment, it's an hour and a half of your life and if you're willing to do that I think that it's something that's really hopeful, and evocative, and by the end of it will put you in a better place than you were when you started [listening to] it.\textsuperscript{17}

As a result, it behooves us to remember during our analysis of specific moments within the introductions to certain tracks that we are also dealing with a whole. An album-wide lens enables

\textsuperscript{16} Progressive-Sounds
\textsuperscript{17} M-Audio
us to consider large-scale parameters such as the sequential ordering of tracks or the relative durations of introductions. We can then investigate how the smaller components (tracks, particular moments of tracks, etc.) relate to and are influenced by these large-scale elements of the composition. Although we consider only a small fraction of these possibilities within this current project, we can take comfort in knowing that subsequent work would allow us to follow these threads, tracing how the impact of ambiguity on form functional expectation reverberates on multiple levels throughout the album.

**Constructing the Universe**

How does BT build his universe, and how exactly does this intended cohesion arise? Actually, in this case we have neither a universe nor a binary universe but rather a triverse of elements from which BT draws his material. BT explains that he came up with three pools and allowed one or two things from each pool per song. One was keyboards, soft synths, and stuff I'd find on KVR [kvraudio.com], as well as the plug-in [BreakTweaker]. The second pool was organic and found sounds: cello, melodica, hammer dulcimer, my daughter Kaia's toy piano. The third was academia-level sound-design stuff like Kyma, Supercollider, and Csound. On each composition, there's no more than a half a dozen elements from which I'm building everything.  

This composing with minimal means allows him to carve sharply focused sound-worlds into being, creating a global community through these shared commonalities.

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Regarding the first pool of elements, the most notable sound on *This Binary Universe* is certainly the proliferation of stutters and glitches that span the album. In order to facilitate this type of digital editing within the rhythmic realm, BT and his company, Sonik Architects, prototyped their own drum machine, BreakTweaker. This software was subsequently acquired by iZotope and made available to the public in 2014. BreakTweaker, describes BT, is responsible for all of the beats, micro-rhythms, isorhythms, and all of the asymmetrical meter[s] used on *This Binary Universe*. It's the first surround-sound drum machine, and it enables you to have 1,024th notes splining down [smoothly interpolating or ritarding] to an eighth-note triplet over a dotted quarter note exponentially or logarithmically. Plus, every time one of those micro-rhythmic notes plays, you can have the sound jump to different speakers. I used to have to do all of the mathematical computations to get these effects. It's insane what this drum machine is capable of.\(^1^9\)

In addition to the facility with which BT could now program the various stutter-laden beats so inherent to his sound, BreakTweaker also enabled BT to explore rhythmic independence and asymmetric isorhythms within the beats found throughout the album.

A departure from the conventional drum machine, BreakTweaker allows the user to customize the meter of each sample being used within the beat. In other words, we can now have a 7/8 pattern in the hi-hat over a steady 4/4 kick, for instance. This is a non-standard feature of most conventional drum machines and as well as many software standalones or emulations. Although workarounds are possible in certain DAWs, like Ableton, the facility with which

\(^{19}\) Small
BreakTweaker allows these different meters to be set up and run against each other makes its easy versatility all the more appreciated.

Rhythm is a big part of BT’s musical language, and not just in the stutter-laden sense. Within the context of *This Binary Universe*, BT sets out to incorporate odd meters and isorhythms in a more deliberate and consistent manner than on earlier works. It’s interesting that he views these ideas as being influenced by jazz, given his expressed affinity for composers like Bartók and Stravinsky, both of whom have no shortage of rhythmic activity that lives outside the 4/4 grid. The EDM world lives and breathes 4/4, so BT’s decision to bring in odd meters stands in sharp contrast to the work of most of his contemporaries in 2006.

The second pool consists of found sounds. In the EDM world, where the majority of music is software and hardware-based, the use of acoustic instruments easily distinguishes *This Binary Universe* from other EDM albums. BT’s choice to focus on more esoteric instruments like the melodica or hammer dulcimer pushes his productions even further afield from those of other artists. In 2006, samples of a hammered dulcimer, for instance, would have certainly been much harder to procure than those for strings, whose samples have peppered EDM productions more or less since the beginning. In the case of the dulcimer and many other sounds, BT actually plays these various instruments, building his own sample libraries in the process.

Circuit bending also plays a major role in developing the sounds heard on *This Binary Universe*. BT expresses an appreciation for the randomness inherent within aleatoric music and that he considers circuit bending a way to introduce non-deterministic elements into the mix. This album is the first of his to feature this type of sound production.

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21 Stage6
The third pool consists of more academically oriented programming languages. We hear these most directly in BT's use of Csound, notably on “All That Makes Us Human Continues,” the first track on *This Binary Universe*. In an effort to push himself compositionally, BT foregoes the use of instruments on this track, instead sitting and writing “The whole thing...straight from code.”\(^2\) Richard Boulanger, whom BT met through his Berklee connections, introduced BT to Csound, soon after assuming a mentor role in BT's coding ventures. BT has a strong background in coding, stating that he “grew up coding as a kid in Basic A, Cobalt and eventually Pascal, so what I’ve been doing is prototyping all my own instruments in C- Sound [sic] and then with my team building them in Command Line and Xcode.”\(^3\) Boulanger remarks with pride that, *This Binary Universe*, is a crossover from groove-based electronica and songwriting toward electronic symphonic composition. He's pushing toward the academic. The first track, 'All That Makes Us Human Continues,' would be at home at the International Computer Music Conference. It features abstract video with sound triggering the video spectrum. It's a masterpiece of audio art.\(^4\)

Whether or not such claims are justified in their scope is beyond the focus of our efforts here.

**This Classical Universe**

With the breadth of *This Binary Universe* more fully filled in, we turn now to BT’s conceit that a classical influence presides over the album. *This Binary Universe* grows out of the compositional seeds planted and cultivated within “Dynamic Symmetry.” Given the lack of external label pressures associated with the project, BT initially felt free to treat this track “as an experiment”

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\(^3\) Pearson-Adams

\(^4\) Small
and leave it simply at that.\textsuperscript{25} We’ve seen how odd meters and home-brewed sounds function as two of the three unifying elements at work in \textit{This Binary Universe}. According to BT, his classical influence, the third of these unifying elements, appears most prominently in terms of orchestration, harmony, and form.

Orchestral instrumentation serves in many ways as a marker for classical music. BT is quite explicit in his identification of orchestras with classical music. When asked during an interview why he DJ's rather than playing live all the time, BT responded,

Honest answer—it’s cost-prohibited. I’ve studied classical music all my life and the only time I can really utilize my classical skills—to an extent, I use harmony and theory, etc., when I’m writing—but the only time I really utilize it is when I’m conducting and writing for an orchestra.\textsuperscript{26}

Nor is BT alone in upholding this connection. The average EDM festivalgoer and, for that matter, the general fan of music probably share this conceit that orchestral writing equates to classical music.

In support of the album release, BT took \textit{This Binary Universe} on tour. For the obvious reason that bringing the Seattle Symphony with him on tour would be far too expensive, BT instead relied on a core group of three musicians, supplemented when possible by guest classical musicians on select gigs.\textsuperscript{27} When speaking of his plans prior to the tour, BT explained that this trio consisted of himself and also:

\begin{quote}

\end{quote}

\textsuperscript{25} M-Audio
\textsuperscript{26} Dan Olbrych “BT on New Production Tech: ‘Holy S**t!’” \textit{DJ Times Magazine}. http://djtimes.com/emotional-technology/
\textsuperscript{27} BT recorded the orchestral parts for \textit{This Binary Universe} from leftover session time with the Seattle Symphony during recordings for his film score to \textit{Stealth}.
Brian Trifon that works at my studio—he's going to be playing a ton of different string instruments—and Ben Grossman—who played the vielle à roue on Monster—he's going to be playing the hurdy gurdy, hammered dulcimer, live percussion and drums. All of us are just going to be playing a myriad of instruments depending on the track.  

For BT, the inclusion of orchestral forces on *This Binary Universe* thus incorporates a classical influence. Doing so sets the album apart not only from vast majority of BT's personal catalogue, but also from EDM more generally.

BT brings his classical background to the forefront through the choices he makes regarding the harmonic language found within *This Binary Universe*. In reference to the album, he talks about the incorporation of “a lot of intense, beautiful classical harmonies.” These harmonies seem to come most directly from the French Impressionists. Indeed, when discussing the classical composers who influenced his music, BT enthuses, “Debussy—anyone who gets kicked out of the French Conservatory for having warped harmonic sensibilities…that's my motherfucker right there!—and Rachmaninoff definitely.” The overall harmonic focus in *This Binary Universe* isn’t strictly classical harmonies as much as it is richer, more complex harmonies relative to those typically utilized in rock, pop, or (more germane here) EDM. “All That Makes Us Human Continues,” for instance, opens with a stack of fifths—a non-tertian voicing found in jazz but more unusual in rock and pop and certainly uncommon within the classical style. A full analysis of the introduction to this track follows in Chapter III.

28 Progressive-Sounds  
29 Progressive-Sounds  
30 Specifically Debussy—compare the opening of “The Internal Locus” to “Sunken Cathedral.”  
31 From the liner notes to *BT: 10 Years in the Life*. 
Again, it’s important to emphasize that *This Binary Universe* is not strictly a classical album. The genre-hopping on something like “Dynamic Symmetry” alone precludes us from easily separating the musical material along a strict classical/non-classical binary.\(^{32}\) Over the course of its seventy-five minutes, *This Binary Universe* seems more concerned with the development and propagation of a richer harmonic language overall as opposed to a genre-specific (classical) one. BT is explicit, for instance, about his desire to “explore more jazz harmonies” here, along with incorporating ambient/drone-based music and more minimally influenced music.\(^{33}\)

Most pertinent to our research here, BT’s interest in classical music also manifests through his use of classically influenced forms on *This Binary Universe*. He elaborates on his approach to incorporating this sensibility of form, remarking that a number of the pieces use “classical music form where you have a statement of a theme, a variant of a theme, and then a recapitulation of the theme. There's three distinct movements to most of the pieces.”\(^{34}\)

This pithy encapsulation notwithstanding, we can read BT’s use of classical form as far more nuanced than his explanation might at first suggest. He elaborates in another interview, describing a subtler, more flexible formal approach. Here, he states that nested within a large-scale three-movement framework exists the potential for:

> more micro-movements, some [of the compositions] with five movements, but they really are following more classical forms than the pieces that I typically

\(^{32}\) This track contains sections that focus stylistically on ambient music, on rock/funk, and on jazz styles.  
\(^{33}\) Fortner 189  
\(^{34}\) M-Audio
 compose do…this is the first time where I actually sat down and I said I'm going to follow classical music—a sort of classical music form.$^{35}$

The idea of form in classical music became highly codified within the classical period. Although new forms continued to develop subsequently, this particular moment within classical music marks the development and refinement of some of the major large-scale formal types, such as sonata and concerto form. BT explicitly references these two formal types when elaborating on what he means by classical form.$^{36}$ As a result of this and other suggestive comments by BT, I’m contextualizing his reference to classical form as being rooted within the classical style. While BT is very aware of contemporary composers such as Steve Reich or Phillip Glass, his classical manifestations within This Binary Universe, form functionally speaking, harkens back to this earlier time.

The fact that BT makes a claim about classical form being present in This Binary Universe is in many ways just as important as any actual incorporation of it. Once told that there are classical form functional parameters at work, our method of interacting with the album has the potential to change. It feels as though a door has been revealed and then unlocked. Thus primed, we can incorporate a specific, classically oriented framework of expectations when we listen to This Binary Universe. Our ensuing listening experience is consequently informed by the ways in which the album does and does not conform to our classically informed expectations.

**Analyzing the Universe**

Formal ambiguities are particularly prevalent within the introductions of This Binary Universe. In dealing with form and formal function, I look to the form functional work by Caplin, who in

$^{35}$ Stage6  
$^{36}$ Stage6
turn positions his own work on the foundations established by the teachings of Arnold Schoenberg and Erwin Ratz. Caplin's studies in the field of formal functions focus most extensively on the instrumental repertoire of Haydn, Mozart, and Beethoven, the defining musical aesthetic of the First Viennese School. I, on the other hand, am writing on the electronic music. How might we reconcile these potentially vast stylistic differences?

The harmonic, rhythmic, and rhetorical language of the classical period with which Caplin concerns himself is a well-established lexicon. Consequently, when we interact with works in this style, we do so already bringing with us a set of well-defined expectations. In other words, we listen with a particular and context-dependent framework in mind. The music either adheres closely to these expectations or diverges from them to varying degrees. Indeed, Caplin notes that an integral facet of an enjoyable experience when listening to these pieces arises from “the interaction of our (often unconscious) understanding of functional norms with their particular manifestations in a given work.”

Considered as ideal, classically oriented listeners, we are fluent in the musical syntax of this period. Moreover, because we understand the genre norms, we are equipped with an extensive collection of knowledge with which to hear this music. Warren Darcy and James Hepokoski, pioneers of Sonata Theory, one of the contemporary rivals to Caplin’s Theory of Formal Function, propound the similar idea of a dialogic method of hearing. Within this scenario, a composition, through the concatenation of choices made by the composer during the writing process, enters into a dialogue with its historic and contemporary companions. Darcy and Hepokoski claim that we could better comprehend this process by “seek[ing] to understand the backdrop of normative procedures within the different zones or action-spaces of the late-

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eighteenth-century sonata.”\(^{38}\) Within these circumstances, any willfully disruptive deviations (deformations, in their words) are understood in a context set against the generic background norms as foils.

In both analytical scenarios, we start with the claim that we as listeners use a set of pre-formed expectations about the appearance and correct behavior of compositional elements when we listen to a piece. These expectations create a framing device or a backdrop against which we locate ourselves in the work under question. Caplin on the one hand and Darcy and Hepokoski on the other disagree as to some of the particularly nuanced characteristics that these informed expectations should embrace. In a general sense, however, both parties agree about the form that our mode of interaction with the music should take. We obtain a richer listening experience through our ability to interrogate intelligently what sorts of structural and organizational mechanisms are at work at any particular moment in the piece, how they are organized, and what roles they are (or are not) fulfilling, etc.

In the analyses found throughout this dissertation, I import Caplin's ideas into the electronic realm. I abstract the idea of formal functionality and our ability to hear it from the very specific definitions pertaining to the classical period. On *This Binary Universe*, BT is not trying to write music that adheres strictly to the compositional norms of the late 18th century. Instead, the music therein demonstrates an awareness of these norms, at times affirming them while at other times subverting them. Caplin’s work contains a strong sense of temporality, which I find to be an important consideration when discussing the listening experience. The work of Darcy and Hepokoski, on the other hand, is less suited to our purposes here.

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Caplin defines formal function as:

[the] specific role played by a particular musical passage in the formal organization of the work. It generally expresses a temporal sense of beginning, middle, end, before-the-beginning, or after-the-end. More specifically, it can express a wide variety of formal characteristics and relationships.\(^{39}\)

While Caplin then claims an alliance between harmonic function and formal function, I instead look at the ways in which rhetoric can evince formal function, especially in its multivalent temporal sense. I observe a deliberate ambiguity at work within the introductions and claim that it results from a breakdown in the expected and proper behavior of formal function.

Schmalfeldt and Caplin worked together at McGill, where Schmalfeldt was an invaluable contributor to Caplin’s theories of formal function. Perhaps her most influential refinement of the general research on formal functions to date has been “the special case whereby the formal function initially suggested by a musical idea, phrase, or section invites retrospective reinterpretation within the larger formal context.”\(^{40}\) It is this idea of becoming that I use in my own research here. The music on *This Binary Universe* presents form functional ambiguities that occur at the points where formal functions appear to break down.

In reality, we experience a denial rather than a fulfillment of expectation at these moments. Redress comes through a reevaluation of our sense of formal function, of where we are in the piece, and of where we might be going. We thus experience the music on multiple levels and temporalities. We hear retrospectively, taking into account the resultant ramifications that

\(^{39}\) Caplin, 254-5

spring up from any revisions. In the same breath, we push forward, the music continuing to unfold all the while.
CHAPTER II: 
BEFORE-THE-INTRODUCTION

The introductions of the tracks on *This Binary Universe* contain varying modes of form functional ambiguity whose impact on our listening experience depends in part on the framework with which we approach the album. Given the invitation by BT to listen for classical form and with a classical orientation, we engage with *This Binary Universe* using a set of specific expectations on what should happen. These expectations are at times at odds with what we actually encounter in the music. Such discrepancies arise from formal functions behaving in ways other than how we expect them to. In order to reconcile these instances, we may revise our expectations when it is prudent to do so. These reinterpretations can happen either in time, as the musical material unfolds, or retrospectively, with insight gained from subsequent events.

**Before-the-beginning**

Artistic maturation within the Classical Period coincided with the growth and codification of particular and deliberate musical forms, the most notable example being sonata form. Alongside the more fundamental sectional requirements for what constitutes each of these forms, there developed auxiliary sections like introductions and codas. The functional significance and compositional weight claimed by these new appendages accumulated slowly. Darcy and Hepokoski refer to introductions as “eventual accretions to the structure,” nicely encapsulating this gradual process of slow upward percolation out of a perceived artistic necessity.\(^{41}\) Ideas more consistently overflowed formal boundaries to the point where they now formed

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\(^{41}\) Hepokoski and Darcy, 16
independent sections. Caplin notes that “in some of [Haydn and Mozart's] late works, and in many by Beethoven, the slow introduction hints at ideas that are more fully realized later on,” a situation that grows all the more prevalent within the works of the Romantic composers. Expositions and development sections could now explore the ramifications of musical problems presented within these introductions. Largely in response to Beethoven’s epic explorations, introductions within large-scale instrumental music grew in stature until they could be considered more or less essential to the formal organization of the piece.

From a formal standpoint, introductions allow for the expansion of expressive potentials inherent within the musical vocabulary. Long or short, bombastic or barely audible, introductions can assume many guises. The characteristics encountered in each situation will of course depend in part on the nature of the material that follows.

In large-scale musical structures such as sonata form, for example, the introduction comes to embody a similar ‘anything's possible’ ethos more commonly associated with development sections. Composers could now spend more time in this initial section, exploring ideas without necessarily worrying about how this material immediately relates to that. Especially by the advent of Romanticism, these larger forms assume an artistically distinguished identity far removed from their more prosaic origins. The taking of such liberties within the introduction section of a small dance form, on the other hand, would result in a piece dismissed as ungainly, unidiomatic, and moreover hard to dance to. The expansion of proportions and greater range of artistic possibilities in these large forms thus opened the possibility for introductions to become vessels with less prescriptive formal responsibility and therefore viable avenues for artistic expression rather than perfunctory musical gambits.

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42 Caplin 206
Introductions need not have a close connection to the material that follows, capable of diverging in tone of expression, motivic material, or mood, among other parameters. The paradigm of a slow introduction that gives way to a fast 'movement proper' illustrates this phenomenon nicely—the former functionally anticipatory, the latter a responsive, resounding structural downbeat. The difference in tempo really emphasizes a sense of clear formal division between the two sections. While we might accelerate or decelerate at particular points within a large-scale form, these tend to be transient experiences. Once we lock in to a tempo, within the classical syntax at least, we tend to stay there. In other words, the introduction has the potential to function in many ways as a free agent within the context of the rest of the compositions.

Indeed, introductions at times fail even to establish the correct key at the outset. In a language vitally concerned with orderly, syntactically correct progressions within the tonal system, this seems in many ways like the ultimate affront. Beethoven famously features this phenomenon in his first symphony.

Here, the first movement opens with a loud C7, a chord both acoustically and structurally dissonant. The loud dynamic and prominently voiced tritone engender a feeling of disorientation that runs counter to the expectation that a movement should begin from a point of stability. The structural dissonance of starting with a dominant seventh chord is amplified through the immediate resolution suggesting the key of F major and not the expected C major. Only retrospectively do we understand the functional role of the opening chord as V₇/IV and not as V₇. This method of reinterpretation is intrinsic to the classical listening experience and depends on our learned expectations.

43 Late Beethoven really starts pushing against this sense of a single tempo that undergirds a movement. The late string quartets especially display this tension of tempi nicely.
44 This isn't to say of course that it always does so.
In a similar fashion, the opening to “All That Makes Us Human Continues” begins in a tonally ambiguous state. Here, we have a C with the G and a D stacked on top of it. This quintal harmony already signals a departure from the conventional tertian construction of tonality. This sonority fits within both C major and C minor. The lack of a third denies us a clear sense of what manner of C sonority we should expect. Like the Beethoven, this track will suggest multiple harmonic functions before we obtain a sense of clarification. It is this with modality of the experience of listening to music that we will apply to this and other introductions in Chapter III.

Because their function is to launch the movement proper, introductions tend to have clear formal boundaries. While there are cases where an introduction elides with the main thematic section, these should be understood as deviations from the standard formal function. As mentioned previously, the transition from the introduction to the main thematic section is typically accompanied by a shift to a faster tempo (if the introduction is slow). Other signaling mechanisms include a focus on tonic rather than dominant harmony, a clear projection of a main theme, a change in texture or in instrumentation, among others.

To be clear, introductions within the classical style play an undeniably important structural role when considered within the context of the larger composition. The specific surface details of a particular introductory section derive their meaning in part from the material that
follows. Are we setting the stage with common thematic material, or with a transformation of material to come? Perhaps we are instead providing points of contrast, introducing material *against* which we will hear our subsequent exposition themes. The purpose of the introduction could range from the more structurally oriented (e.g. providing a sense of symmetry on the scale of an entire composition, perhaps to balance a disproportionately large coda appearing at the end of the formal 'trunk') to the more musical ('setting the mood'), to the more prosaic (a musical announcement notifying audiences that the work will ‘officially’ be starting momentarily). In any event, it is the material that follows, the movement proper that provides the context by which we fully understand the introductory material. Our initial interpretation of the opening may at times need to undergo a reinterpretation in order to be consistent with information garnered from what follows.

Although the material that comes after an introduction section supplies a context in which to hear this opening (as a lead-in to this particular ‘something’), the introduction nevertheless retains some degree of autonomy or personal identity. It is true that, from a formal standpoint, its presence is never strictly required in the same way that those of more fundamental elements are. In other words, codas and introductions never ascend to quite the same pantheon of formal weight, and so their inclusion by the composer is a deliberate choice rather than a normative default.

There are certainly instances within the classical canon of pieces that exhibit severe formal deformations and so might *not* include one of the expected standard formal sections. The so-called “sonata form without development” illustrates this well.\(^4\) This term finds traction in

\(^4\) This formal type is usually found in slow movements. However, see the fourth movement of Brahms's Symphony No. 3 in F, op. 90 for an example of this form occurring in a fast movement.
the formal theoretical studies of both Caplin, who calls it a sonata form without development, and of Darcy and Hepokoski, who, in accordance with their highly specific analytic syntax, refer to it as a “Type 1 sonata.”\textsuperscript{46} This formal type is usually found in slow movements, where an extended development may become tedious. However, the fourth movement of Brahms’s Symphony No. 3 in F, op. 90, given its fast tempo, represents a deformation of this norm. When these deformations do arise, they are of course understood as drastic deviations from the established norms. After all, a sonata-allegro movement cannot be so drastically stretched beyond the inherited formal conventions that it loses all points of reference with its progenitors. Rather, a composer choosing to write within the strictures of an inherited historical form accepts at least some of the artistic constraints that define and differentiate the exposition of a sonata from a middle section of a rondo, for example. As a result, we may expect that the vast majority of sonata forms will have formal sections that behave like expositions, like developments, or like recapitulations.

Within the classical style, most introductions to large-scale forms are slower than the material that they precede. This plan makes good sense from a compositional standpoint. Consider the reversal of this situation, with faster introductory material giving way to a slower ‘movement proper.’ One would be hard-pressed not to feel a general slackening or abatement of tension with the easing of the tempo. Rhetorically, a change in tempo from slow to fast presents a more compelling way to start a piece than either of the two alternatives (moving from fast to slow or having no change at all).

Within \textit{This Binary Universe}, BT actively works against this norm and to great effect in the introduction to “The Internal Locus,” featuring a six second crescendo followed by fifty-

\textsuperscript{46} Hepokoski and Darcy, 345
seven seconds of stasis. We as listeners are left wondering how we can possibly reconcile this apparent form functional conundrum. The first six seconds project a clear sense of leading towards a goal, although this type of build within the EDM context tends to happen within the track and for a longer duration. Their placement at the beginning of the track as is the case here already complicates this opening material. Moreover, we never get an appropriate goal in the seventh second and so our build is undercut. The subsequent fifty-seven seconds do not in any way sound like a viable goal of the first six seconds, nor does this segment project a sense of its own goal in turn. It merely is. In light of the huge durational discrepancy, the opening six seconds become a short anacrusis that functions in tandem with the subsequent fifty-seven seconds, rather than independently. Chapter III explores these and related mechanisms in more detail.

Caplin’s analytic language decrees that slow introductions operate from a functional standpoint as “before-the-beginning.”47 It’s worth drawing the distinction between a slow introduction and a thematic introduction, for the latter too embodies before-the-beginning function. The divergence between these two categories of introduction type occurs in terms of their respective scopes. A thematic introduction functions as before-the-beginning on the level of a theme. This type of introduction therefore tends to be two to four measures in duration. Especially when preceding a main theme, thematic introductions usually prolong tonic harmony. They often lack a distinctive melodic identity, instead being characterized by a quick build of energy in order to launch the ensuing theme.48

On the other hand, slow introductions operate “on a level comparable to that of an exposition, development, recapitulation, and coda,” although like the coda, are of structurally

47 Caplin, 203
48 Caplin, 15
less import than the main trunk of a movement. Because of their larger scope, slow introductions can contain theme-like functional elements with thematic introductions, while the reverse situation obviously cannot occur. The generally looser organization of slow introductions makes developing a specific taxonomy of expectations nearly impossible. As a result of this ‘hard to pin down’ quality, slow introductions tend to evince an overall anticipatory quality on the macro-level. This befits their role as an extended upbeat to the ensuing structural downbeat that both marks and starts the main section of a composition. We anticipate being launched into a fast movement at some point. Our impending arrival at this liminal gateway may be projected ahead of time but then again it may not, being instead obscured or elided. We merely hold on and wait.

**BT’s Universe**

We now fast forward to 2006 and genre-jump into the electronic world of BT's *This Binary Universe*, considering the classically derived form functional role of the introduction in this modern context. In discussing the compositions that make up the album, BT states, “A lot of these pieces are written in thirds…sort of like a sonata or a concerto-type form.” Now, for the purposes of this dissertation, I am not interested in tracking how closely BT adheres to these invoked models of classical form. Rather, I wish to consider within a dialogic framework (in the Darcy/Hepokoski sense) how BT puts a particular spin on the expected function of the material that we find in his introductions. In the process of doing so, we discuss what these expectations

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49 Caplin, 203-5
50 Stage6
51 The Darcy/Hepokoski dialogic approach is nicely summarized in the following statement, found on page 10 of *Elements of Sonata Theory*: ”the composer generates a sonata—which we
are, how they are engendered, and the degree to which they are either confirmed or denied. The album’s overall cohesion depends in part on the functional ambivalence present within these introductions.

Six of the seven tracks on *This Binary Universe* feature introductions, all of them slow, and each of them uniquely structured relative to its fellows.\(^52\) We float in slow orbit above the album's undulating surface, each track a starting over. Our progressive rotations and formal interrogations over the course of the entire album expose new facets of *This Binary Universe*. Each successive re-beginning brings the opportunity to hear a different aspect of the overall emotionally optimistic aesthetic that runs throughout the album.

The introductions themselves share certain commonalities. Each tends to start with either a drone-based opening or a nature-derived sound (or some combination of the two). These nature-based sounds are typically associated in some way with water, and the quick associations of water with life or with rebirth come easily. More often than not, these openings mark the commencement of a soft, gradual process.

Furthermore, there's an intriguing durational relationship that exists between the introductions on the album. Note that the following calculations were made using the durations on my copy of *This Binary Universe*. Those listed on the US release on discogs.com differ in a few places by a second or two.\(^53\) These slight incongruities have minimal impact on the broad trends that can be seen.

\(^52\) The introduction to “The Internal Locus,” as mentioned previously, is more complicated than the label of slow introduction suggests. A full discussion of these complexities can be found in Chapter III.

\(^53\) [http://www.discogs.com/BT-This-Binary-Universe/release/769487](http://www.discogs.com/BT-This-Binary-Universe/release/769487)
<table>
<thead>
<tr>
<th>Track Title</th>
<th>Intro</th>
<th>Total Duration</th>
<th>Intro as % of Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>All That Makes Us Human Continues</td>
<td>0:50</td>
<td>8:16</td>
<td>10.080645</td>
</tr>
<tr>
<td>Dynamic Symmetry</td>
<td>2:18</td>
<td>11:24</td>
<td>20.175439</td>
</tr>
<tr>
<td>The Internal Locus</td>
<td>1:03</td>
<td>10:28</td>
<td>10.031847</td>
</tr>
<tr>
<td>1.618</td>
<td>2:16</td>
<td>11:34</td>
<td>19.596542</td>
</tr>
<tr>
<td>See You On The Other Side</td>
<td>0:00</td>
<td>14:24</td>
<td>0</td>
</tr>
<tr>
<td>The Antikythera Mechanism</td>
<td>1:27</td>
<td>10:06</td>
<td>14.356436</td>
</tr>
<tr>
<td>Good Morning Kaia</td>
<td>0:12</td>
<td>8:12</td>
<td>2.439024</td>
</tr>
</tbody>
</table>

**Figure 2:** Relative durations of the introductions to tracks on *This Binary Universe*.

There is a clear pattern being set up here. The first four tracks alternate in devoting approximately 10 or 20 percent of their total duration to their respective introductions.\(^{54}\) BT's love of mathematical proportions and extreme attention to detail makes such occurrences hard to discount as mere coincidence. After all, two of the seven tracks on *This Binary Universe* reference the Golden Ratio in their title alone.\(^{55}\) While the Golden Ratio does not contribute to the specific moments that I discuss within the analyses, it does play an important role throughout the album in other ways. A thorough investigation into its various manifestations on *This Binary Universe* is beyond the scope of this project.

\(^{54}\) Moreover, the second and fourth track are nearly equivalent in duration.

\(^{55}\) BT makes no secrets about his obsessive nature in the studio. He notes, “probably my craziest experiment was trying to time correct something of the Mandelbrot set into a micro rhythm so that the micro reflected a mirror image of the macro. For your edification it might be fun to figure out what track on *TBU* has a mirror image bar of that effect and no one has ever found it.” Quotation taken from [https://www.reddit.com/r/IAmA/comments/rev6f/iama_grammy_nominated_composer_and_technologist/](https://www.reddit.com/r/IAmA/comments/rev6f/iama_grammy_nominated_composer_and_technologist/).
Once the pattern has been established, we might well expect “See You On The Other Side” to begin with an introduction that occupies approximately 10 percent of total track duration (and therefore lasting 1:26). We instead encounter a track whose material sounds like an introduction. Functionally, however, this track has no introduction whatsoever. Moreover, we realize this only retrospectively, when this ‘introduction’ material is recalled again and again, thereby accruing a structural significance more in line with that of a main thematic section than of an introduction. In the opening of “See You On The Other Side,” the proposed introduction thus becomes, in the terminology of Schmalfeldt, a main thematic section. This thwarting of our expectations has significant implications on how we interpret the material of subsequent introductions.

Each of the introductions of This Binary Universe contains elements that run counter to our expectations, creating different flavors of form functional ambiguity in the process. BT invites us to hear this music with a specific classical framework in our ears. This means listening for a particular type of goal-motivated forward motion. When we encounter elements that prolong a sense of stasis, we feel a disruption of our expected forward motion. At these times, the music seems to project one function but in fact enacts another. The friction between the dynamic and the static represents in a microcosm the tension created by the combination of two seemingly conflicting musical genres, classical and ambient, a point to which I’ll return shortly.

At the foundation of these theories as I am applying them is the idea that musical material is fulfilling a particular function at any given moment. These functions have temporally based identities—we might be at the beginning of a process, the middle, or the end of one. In each case, we look at the makeup of the musical material to help clarify the structure of the piece. Beginnings sound different than endings and use different means to carry out their functions.
The sentence theme-type is a good example of a very local level manifestation of this temporal organization. Here, we can map out the beginning, middle, and end of this formal type in the following way, in accordance with the terminology developed by Caplin:

<table>
<thead>
<tr>
<th>Beginning</th>
<th>Middle</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>4: presentation</td>
<td>4: continuation +</td>
<td>conclusion</td>
</tr>
<tr>
<td>2: basic idea</td>
<td>2: basic idea’</td>
<td>(typically 1 + 1 + 2: cadential)</td>
</tr>
</tbody>
</table>

**Figure 3:** 8-bar Archetype of Sentence

The archetypal sentence has a beginning, or presentation phase, consisting of a 2 bar basic idea and its repetition, possibly varied, usually set first on tonic and then dominant harmony. The middle phase marks the liquidation of the material, typically through the use of sequences in 1 bar phrases, and moving into a 2 bar cadential or ending phrase.

Now, we could next talk about the harmonic processes that undergird these formal functions.\(^{56}\) Indeed, for Caplin, “local harmonic progression is held to be the most important factor in expressing formal functions of themes (or themelike units).”\(^{57}\) He grounds form with harmony in the following way, claiming that “prolongational progressions are associated with most initiating contexts and some medial contexts; sequential progressions are normally tied to medial contexts; and cadential progressions form the basis of closing contexts.”\(^{58}\) These observations correspond neatly to what we see in the instrumental music of the high Viennese classical style.

\(^{56}\) In the case of the sentence, these functions are presentation, continuation, and cadential.
\(^{57}\) Caplin, 4
However, I am interested within this study in thinking about how musical rhetoric can evince similar notions of formal function without recourse to the same types of tonal progressions and prolongations. *This Binary Universe* does not share the musical syntax of Haydn, Mozart, and Beethoven. Nevertheless, we can hear enough of a common rhetorical thread between these two languages such that we map the basic form functional protocols from one onto the other.

In order to use Caplin’s theories in this particular slice of the EDM realm, we must explore the idea that musical material is capable of projecting a sense of beginning, middle, or end without a necessary recourse to harmony. Note that the same musical material may simultaneously project different degrees of beginning/middle/end due to the recursive nature of function that we can construct within a form. A short example of this idea at work is seen in what Caplin calls “framing functions.” These include introductions, which have a “before-the-beginning” function, and closing sections, which have an “after-the-end” function. The introduction section functions as a block of before-the-beginning material relative to the formal section that follows, yet within the introduction itself various musical material will operate in either an initiatory, prolongational, or concluding capacity.

What we hear thus depends in part on the lens through which we analyze it. Our choice of lens will likewise depend in part on our expectations for what we think the music should be doing. Schmalfeldt’s “becoming” language helps to illustrate the process that our listening experience undergoes as we attempt to resolve any discrepancies between what we think should be happening in the music and what actually happens. She writes:

59 For a thorough discussion of this idea, see Caplin’s essay, “What Are Formal Functions?” in Begré, (*Musical Form, Forms, & Formenlehre: Three Methodological Reflections*, 2009), 21-40.

60 Caplin *Classical Form*, 15
If one were thus to perceive that, say, the opening passage of a movement initially projects the characteristics of an introduction but retroactively functions as a main theme, one could represent that analytic perception as ‘Introduction => MT.’

We’ve already mentioned this experience in the context of “See You On The Other Side.” There, the sense of becoming embraces the entire proposed introduction retrospectively reheard as a main thematic section. Compare this to the introduction to “All That Makes Us Human Continues,” which emphasizes a liminal boundary between the introduction and the main thematic section. In this case, we have two distinct formal sections—the obscured border through a slow crossfade is the source of the formal ambiguity. There’s a point at which we are both no longer strictly in the introduction and yet not firmly established in the main thematic section, yet the distinction between the sections and their divergent compositional functions remains clear.

An important nuance within Schmalfeldt’s theory is that any reassessment does not negate the original one even while it replaces it. In her words, “the original perception still exists; it has not disappeared; it has been overturned but at the same time preserved. And therein lies the process of becoming.” In this way, the terminology does an admirable job in capturing the listening experience as it unfolds, and does so in a time-sensitive manner.

Had BT said nothing whatsoever about a classical influence within This Binary Universe, we would still benefit from listening to this album with classically oriented expectations in mind. Doing so proves productive in revealing a compelling dynamicism between what we expect to get and what we actually get. This interplay of fulfillment and denial makes for a more engaging listening experience as the negation of our expectations spurs us to formulate new ones. The continued deflection of the anticipated course of action making us more interested, not less.

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61 Schmalfeldt, 9
62 Schmalfeldt, 19
Indeed, the interaction between expectation and instantiation is a hallmark of the classical style and works precisely because the music written in this genre and during this period in time developed a remarkably codified musical language relative to music that precedes and succeeds it.

Music written in the classical style is a goal-oriented phenomenon. We can speak more precisely and say that the classical style lies at the intersection of a number of specific musical considerations and that it is the product of a dynamic interplay among these elements. These considerations include, among others, a distinctive and cogent harmonic syntax, constrained possibilities for instrumentation, certain idiomatic rhetorical gestures, and style-specific conventions.

As we move away any from one particular genre and towards another one, we observe a corresponding shift in some of the components even as we retain others and use those for very similar artistic purposes. Indeed, the overlap of musical elements between the classical style and other styles may be quite large and yet allow for these other genres to live outside the classical realm. The majority of pop music draws from the same pool of tonal building blocks, deploying them in more or less in very similar patterns to that of classical music. One can find countless examples of rock songs built on the same I to IV to V harmonic motion that supports numerous classical compositions. However, within the pop context, the same harmonic material can be reorganized to support the motion I to V to IV, whereas such progressions are uncommon in the classical style.63

We speak more precisely about classical music as a goal-oriented phenomenon by pointing to its inherent dependence on the mechanics of tonality as latent within the diatonic

63 Additionally, within the classical syntax, V tends to go to IV6 when it does go to IV.
scale. We create a hierarchical relationship of chord function relative to tonic. The chords most removed from tonic have the strongest drive to return, fulfilling dominant function. Here, we observe particular melodic tendencies driven by the half-step motion within the diatonic scale and harmonic tendencies driven by the falling fifth motion that stokes the tonal engine. The resolution of these goals takes place on numerous levels in a manner somewhat analogous to our previous discussion about nested formal functions.

For example, the final dominant chord in a cadential progression could locally be operating to close a particular phrase. At the same time, this harmony could serve as the final cadence to close a recapitulation. We would thus have a second-order functionality at the level of a recapitulation (with far greater significance as a structural marker) and first-order functionality at the level of the theme. Schenker developed the terms ‘foreground,’ ‘middleground,’ and ‘background’ in part to capture this sense of a hierarchy of goal-oriented tonal motion.

Even a short, low-level musical phrase can project an orientation towards a particular goal. Lacking any other context by which to situate ourselves, we can still reasonably expect that a ii\(^6\)-V\(^7\) snippet has at least some measure of closing functionality and that the goal here is I. A more refined interpretation of this phrase depends on both context and on learned expectations, especially the more generalized the phrase is. Still, we manage here to support an expectation within the classical syntax with this simple coupling.

Turning to the jazz world engenders expectations of a much more modular treatment of these harmonies. Related ii-V’s, interpolated ii-V’s, substituted ii-V’s, etc. are all common parlance in jazz, and in many instances do not convey a sense of closure. Nor are they meant to. “Moment’s Notice,” by John Coltrane, exemplifies several different uses of the ii-V progression that project different and non-classical formal functions.
Figure 4: ii-V’s acting in non-standard ways relative to the classical syntax

This goal orientation in classical music manifests within diverse musical forms. Smaller forms typically have a certain predisposition towards the diversion (e.g. dance forms), while larger forms tend to be imbued with a certain compositional weight or prestige. Indeed, the classical style supports the fulfillment of goals as a viable and indeed structurally crucial component of its musical architecture. Highly specific harmonic goals articulate the formal divisions of sonata form, for instance, and on some level the piece is very much about the process of achieving these expected goals.

Nor must these goals reside solely in the harmonic realm, despite the use of harmony to obtain them. Other concerns might include a predilection for large-scale symmetry, and this is especially prominent as a motivating force in early sonatas. The gradual unfolding and ultimate consummation of innate potentials within thematic material has driven many a classical composition. Other pieces concern themselves with the creation of musical metaphors for the human experience.

At times, pieces composed in the classical style can be heard as satisfying a number of these compositional concerns simultaneously. Large-scale forms especially can support a variety
of goal-oriented behaviors. The longer sectional durations at work here provide ample time to establish something as a focal point while also giving us sufficient time to work towards and ultimately attain it.

Consequently, when BT invokes sonata form in discussing *This Binary Universe*, we respond by creating a particular set of expectations that have at least a vestigial connection to those appropriate for the traditional classical style. We thus expect to hear a directional purpose or principle at work. BT elaborates on his notion of form as it appears in the classical style, stating that the music on this album follows a "classical music form where you have a statement of a theme, a variant of a theme, and then a recapitulation of the theme. There's three distinct movements to most of the pieces." The use of the term ‘movement’ in this way is surprising and inappropriate from a technical point of view. Still, the focus here is not to interrogate BT’s understanding of classical lexicon but rather to investigate the impact of his incorporation of classical formal procedures, as he understands them, on a classically oriented listening experience.

Now, what BT has described above is neither sonata form nor concerto form as they are understood within the context of the classical style. It is at best a very open framework for thinking about how to organize musical material.

This is ok. Given the numerous and important distinctions between compositions in the classical style and *This Binary Universe*, the interesting question is whether or not traces of classical form functional procedures operate within the album and if so, how.

Now, it’s quite possible that what we hear as projecting a goal-oriented motion in accordance with classical form functionality is merely a product of our own creation, a

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64 M-Audio
confirmation bias. We expect to hear it and these expectations shape our interaction with the material in such a way so that we do in fact hear it. BT may have no intention or awareness of our hearing the music this way. Whether or not this is the case is moot. The adopting of this modality of listening is confirmed as valid by what we hear. We understand, for example, that the ostinato that opens “See You On The Other Side” sounds like a vamp, exhibiting introductory function. It continues to do so, despite the fact that no melody emerges. Eventually, we understand that the emphasis is not on a forthcoming melody but rather on this subtly shifting texture and that this material can no longer be considered to have introductory function. Hearing our way through This Binary Universe in this manner gives us a method of contextualizing what we are calling form functional ambiguities. It gives us a language to describe why this ostinato ultimately fails to be an introduction.

Let’s turn now to this issue of form functional ambiguity. When we encounter the unexpected, this deflection of our projected path naturally engenders the desire to know both why it happened and what the possible consequences there might be on the upcoming material. As we proceed forward, we conduct a process of continual reevaluation both of our current (estimated) location within the form and of what we might reasonably expect to come up next. Taken together, these create a feedback cycle—the constant influx of new data factors into both calculations, which in turn impact each other.

BT uses this mechanism to his advantage within the introductions of This Binary Universe by injecting elements that don’t accord with what we’ve been primed to expect. We see different versions of this happening in the openings to “All That Makes Us Human Continues,” “The Internal Locus,” “See You On The Other Side,” and “The Antikythera Mechanism,” the four introductions analyzed in detail in Chapter III. When things don’t go according to what we
expect, as happens to some degree in each of the four above-mentioned introductions, we experience uncertainty regarding the 'proper' formal functions of this musical material. These renegade elements have thus disrupted our projected musical narrative, momentarily casting us adrift and forcing us to reevaluate what might be going on.

The resulting listening experience becomes in many ways a far more active one, for we now must scramble to reorient ourselves. No longer passive recipients, we now engage in the process of hearing. We hear both in time and out of time, looking backwards in order to project forwards.

Now, to be clear, the playing with expectations by composers is by no means a new phenomenon. Indeed, much of the humor and delight of classical music arises when the expected norms are subverted in some way. This can be seen even on the smallest level of something like deceptive harmonic motion, where the melodic component behaves as anticipated but the harmonic component does not. Moreover, and this is a key point that factors heavily within our analyses of the introductions to *This Binary Universe*, this deceptive harmonic motion has given off its own set of expectations. We now have a hitherto nonexistent expectation of an eventual return to V along with the restoration and enactment of its proper dominant function.

Within *This Binary Universe*, we see the manipulation of functional expectations result in something entirely different. Here, the disparity between what we expect and what we actually get comes from the interaction between two seemingly incongruous genres. BT has assumed the role of cosmic DJ over the album, seeking to genre-mix elements of music rooted in the classical style with those coming out of ambient music. The sense of formal ambiguity that we experience in the introductions arises when the more static, detail-oriented characteristics of ambient music
collide with or subvert our classically derived expectation for purposeful, harmonically directed motion.

This makes sense given that the compositional goals associated with classical music are not the same as those associated with ambient. Rather, it’s the charged contrast between elements of these two genres that creates the form functional breakdown within these introductions. BT has told us very explicitly that he is attempting to use classical forms on this album. As a result, we read musical phenomena in a particular way. We experience this form functional breakdown when what we hear does not correspond with or even actively works against what we anticipate. Our expectations steer our experience, and BT steers our expectations.

There is a divergence in the purpose or goal in music of the classical style and ambient as BT uses it on *This Binary Universe*. Ambient music does *not* need to enact some high-order V-I motion (or its modal equivalent) in order to fulfill its genre expectations successfully. This approach eschews the idea of a massive Schenkerian descending fifth harmonic resolution with stepwise melodic motion to tonic at the deepest background layer as fundamental to our foreground journeys. We have instead a sort of purposeful directionlessness. Brian Eno, one of the first to use the term 'ambient' deliberately when referring to this genre of music, describes his efforts to “accommodate many levels of listening attention without enforcing one in particular,” stating further that the music “must be as ignorable as it is interesting.” It must support a multi-valence of possible listening experiences. The music is all about the details and yet in typically as nonintrusive a manner as possible.

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65 As with other genres, there are many types of music that the term “ambient” encapsulates. See the two Aphex Twin records, *Selected Ambient Works 85-92* and *Selected Ambient Works Volume II* for a sense of the broad range of musical possibilities. *This Binary Universe*, on the other hand, is consistent in the ambient characteristics found throughout its tracks.

66 From the liner notes for Eno’s album, *Ambient 1: Music for Airports.*
This type of musical philosophy of course comes from a classical heritage as heard and expressed in the music of earlier composers like Satie. Yet this is an entirely different style of classical music, far from the goal-directed formal functions of the high Viennese classical style.

Formal functionality, even when considered in the abstract as I am doing here, doesn’t seem to relate in a meaningful way to the processes found in ambient music. Therein lies the tension.

That is not to say that ambient music is without goals. Indeed, it’s crucial to emphasize that in referring both to classically oriented goals and to ambient-oriented ones, we are as concerned with the process towards the goal as with its ultimate attainment. This sentiment finds traction with Schenker’s claims that within a composition adhering to the classical style, the goal and the course to the goal are primary. Content comes afterward: without a goal there can be no content. In the art of music, as in life, motion toward the goal encounters obstacles, reverses, disappointments, and involves great distances, detours, expansions, interpolations, and, in short, retardations of all kinds. Therein lies the source of all artistic delaying, from which the creative mind can derive content that is ever new.67

In this case, at least, the experience of classical and ambient music coincides.

Is this frustration of expectation within the respective introductions of This Binary Universe a mere byproduct of BT’s genre-mixing, or can we ascribe a more compelling compositional logic behind its creation? Well, when we experience one of these 'confused' periods and have our projected path metaphorically thrown to the wind, we respond by struggling to reorient ourselves anew. We assimilate this new data and project forward, speculating about what this current development means for the road ahead.

This type of response comes out of a classical orientation. At the same time, the extremely detailed ambient surface sound design and the general downtempo ethos of *This Binary Universe* encourage us set our functionality driven framework down for a while and to consider the music from this new orientation. Both approaches are viable and are supported by what we encounter in the music, but particular musical instances may favor the application of one over the other.

Having this kind of flexibility of approach built into the music effectively creates a multifaceted musical universe to explore. On the one hand, one can listen actively for the projection of goal-oriented forward motion, his/her expectations informed by the classical style. Here, the anticipation of a certain functionality of material engenders a particular delight when one's expectations are met and in some ways more still when they are not. On the other hand, one can listen more passively, focusing on the highly detailed ambient qualities as though strolling through a garden of auditory delights, lingering here and there as one's fancy dictates.

When we decide to participate in this musical experience as afforded by *This Binary Universe*, we can decide which of these two seemingly disparate, even polarized methods to employ. The sound design of the drone-driven yet richly detailed opening to “1.618” can occupy us as does a painting, where we are concerned not with what the next painting on the wall will look like but rather on absorbing the colors, shapes, and shadows of this one. Conversely, we can listen to the function of this opening gesture, comparing it to the openings of the previous three tracks and most especially to “The Internal Locus,” whose stasis becoming goal mechanisms so turned around our expectations.

While this dynamic/static classical/ambient dialectic may appear to be a hard either/or scenario, this isn’t actually the case. Rather, the decision to use one set of ears in no way
precludes our ability to switch to our other set mid-note. Instead, the choice is more about the balance of use between these two approaches and when it might behoove us to select one versus the other. By embracing the fact that we can have two different but equally workable ways of listening to this material, we expand our notion of what this music seeks to accomplish. We can celebrate the sense of a classically derived goal-driven process at work even as we focus on the more ambient qualities on the album. *This Binary Universe* enables us to effect a synthesis of the two genres.
CHAPTER III:
The Introductions

All That Makes Us Human Continues

The opening vast sonic expanse that greets us at the start of “All That Makes Us Human Continues” presents us with a seemingly unending cosmos ripe with possibility. Heavy use of reverb saturates the stereo field. Melodic fragments blink in and then out again, in and out. Life here is an atmosphere charged with potential, at once both active and passive. We feel a forward thrust even as the central pitch gently constrains us, pulling the harmonic world into focus while we as listeners peer with our ear closer, a sense of movement in still life.

Harmonically, we open the track with a stack of fifths, C2 to D3. We hear the C as primary both because it is the lowest pitch (and reinforced by the G a fifth above) and because the D comes in just slightly later, sounding almost like a grace note until we realize that it hasn’t dissipated.

Chords built in fourths and fifths are useful ways to obscure a clear sense of major or minor while retaining a close link to the familiar tonal world. These chords, often referred to as quartal and quintal harmonies, can be considered derivations of ordinary triads with the second or the fourth substituting for the third. In the figure below, the starting harmony could be either a C major or a C minor triad.

![Figure 5: Quartal and quintal harmonies and their relationship to third-based harmonies (triads)]
Given that this is the first thing we hear, we by default know that something will follow. We’re just not sure what to expect. Moreover, the harmonic stability of the fifths removes a good degree of the compulsion to move that we might otherwise feel. Withholding the harmonic quality of the opening chord in this way gives the beginning of the piece a more modern sound. Note too that this harmony is completely synthesized. Accordingly, and relative to the prominent classical influence we’ve been primed to expect, this chord is totally unexpected both in terms of harmony and of instrumentation. In some ways, opening with an unexpected harmony recalls the famous gambit of Beethoven’s first symphony (mentioned previously).

The suspension dissolves slowly as successive pitch classes are introduced to our harmonic language. E and F float in at 0:10 and dance gracefully back and forth, resolving the major/minor question. The low C remains uncontested, a bedrock against which to hear these new pitches. The ambiguity of the opening thus remains present but now has changed its flavor.

With the addition of E and F, we’re confronted with a sense of both tonic and predominant harmony simultaneously. What is more, the tonic harmony on C as we interpret it holds a dominant sway over IV. To be sure, we haven’t heard any A or Ab that would clearly define the subdominant. Yet this E to F comes in the soprano voice and sounds like leading tone motion, even though the vacillation of the pitches undermines any perceived resolution of the half-step instability.

In response, G1 fades in at 0:12 and then out, performing a tonicizing gesture to the low C. Although one might argue for hearing this as ii-V motion in F, the lack of supporting harmony above the G and the C’s ever-steady presence belies this interpretation. At this point, we have a better sense of where we stand, especially when compared to how we opened the track, but we

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68 Recall that the entire track was written in Csound.
69 I assumes dominant functionality when it acts as V/IV (or more commonly V⁷/IV).
nevertheless remain uncertain of what to expect next. We certainly do not have the harmonic clarity that characterizes the vast majority of the forms of the classical style. BT’s maneuverings here feel purposefully at odds with what he has led us to expect. Listening with a classical orientation here lets us feel more engaged as we puzzle our way through.

We do get fairly indisputable harmonic clarification at 0:18 with the emergence of a Bb. The C harmony that we open with now becomes, in the words of Schmalfeldt, dominant rather than tonic in function, the Bb acting as the flat 7th above C.\textsuperscript{70} We must now re-hear the E-F melodic motion at 0:10 and know that it was indeed leading tone motion in spite of its wavering.

The problem that immediately emerges for us, once we’ve performed these analytic reinterpretations, is that the Bb is not actually treated like the 7th of a C\textsuperscript{7} chord. Rather than resolving down by step to A, the expected expression of normal dominant functionality in this case, this tone goes up by scalar step to C. The repetition of this upward resolution when the Bb subsequently appears, even in different registers, conspires against hearing a dominant function after all. Like the E to F vacillation, we have another instance here of melodic motion at odds with harmonic implication.

This is not a case of simple harmonic re-voicing of C\textsuperscript{7}. Rather, we now re-hear our opening harmony not as a functional dominant but rather as having a mixolydian flavor that becomes stronger the longer we sit on it. As listeners, we’ve come a long way already, so focused on imagining and then reimagining this chord within different contexts that perhaps we haven’t given a thought yet to formal considerations. There has been a confusion of formal function right from the outset, and each successive clarification has brought with it a new

\textsuperscript{70} Perhaps an allusion to Beethoven’s first symphony?
obfuscations. We would do well to ask just what is going on in this album opener, and where are we? How is the ‘classical influence’ manifesting within the form.

We have witnessed a gradual filling up of our sonic space that coincides with the introduction of new pitch classes. Based on our knowledge of BT’s existing discography to this point, it’s reasonable to assume that we’ll be using diatonic scales here as the basis for our musical language. Composers from the classical period certainly weren’t using fully chromatic, non-tonally functional music. Moreover, nothing in the opening material that we have encountered indicates that anything to the contrary is at work here.

By 0:18 then, we have heard six distinct pitch classes and are in a position to assume that the missing pitch class will be A and not Ab.\textsuperscript{71} There has been an anticipatory quality to the music so far, our pitch material being parceled out piecemeal. When considered along with the slow tempo and the dominant-like characteristics of this opening harmony, we can make a reasonable assumption that we are in a slow introduction. The musical qualities enumerated above certainly resonate with the musical elements found in slow introductions of classical music with which BT is in dialogue, despite the more modern language. This all feels very before-the-beginning in formal function, but we can’t be sure until we’ve gone somewhere new and thus have the benefit of hindsight.\textsuperscript{72}

When then will we cross the threshold from an introduction to a main thematic section? The surface details have been progressively accumulating, making a strong rhetorical case for anticipating a forthcoming big structural downbeat. A reasonable goal for this opening material

\textsuperscript{71} We assume A because that pitch class would keep us operating within a diatonic system. \textsuperscript{72} The fact that this feels before-the-beginning doesn’t negate the possibility that this section will comprise the entirety of the track. In that case, rather than operating formally as an introduction to nothing, this opening material would become the main section. In this way, we can’t know how to interpret this material from a formal standpoint until we’ve already left it behind.
is the completion of the diatonic set, and this becomes a more compelling expectation to hold the longer the A takes to appear. When it finally does, at 0:46 and low in the mix, we’ve already entered a liminal state, a mercurial transition between introduction and main section.

![Figure 6: The gradual introduction of successive pitch classes](image)

From the charged potential of this opening has come the gradual emergence of melody, unfolding at a seeming glacial pace. It rises from within the texture, coming slowly to the forefront. We become aware of having moved into a new formal section only after having been firmly in it for a while. Moreover, we cannot pinpoint the exact moment at which the transition to this new section occurred. In this way, the ambiguity of formal function found within the introduction has followed us out of it.

**The Internal Locus**

The introduction to “The Internal Locus” explodes out of the gates, an amalgamation of its two predecessors that are here recalled and distilled to a hyper-concentrated, incredibly dramatic six potent seconds. As with the start to “Dynamic Symmetry,” here we start right in the middle of a churning mass of activity. Unlike “Dynamic Symmetry,” here things are loud and our resulting disorientation is consequently all the more pronounced. This opening marks a striking departure

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73 Please note: I included a second appearance of G at 0:12 because of the discussion about its role in clarifying that the C remains in effect throughout the appearance and resolution of E to F.  
74 We are aware that we have fully moved into the main thematic section perhaps around 1:17.
from both the cosmic expanse encountered in “All That Makes Us Human Continues” and the more grounded yet still sweeping opening to “Dynamic Symmetry.”

In each of the previous tracks, we experienced gentle introductions characterized by a gradual build in energy. Minutes have served as our rough metric for the durations of these introductions thus far—nearly one for the first and over two for the second. It’s natural then that we would on some level anticipate a similar situation to occur within the material that opens this third track. Instead, “The Internal Locus” erupts violently and without warning, its blast over almost before it starts. This rhetoric is entirely different.

This divergence of what we get from what we anticipate engenders our need to recalibrate our expectations. Determining just what form things should take is another matter entirely. How might we interpret what we just heard? Were these six seconds the early sown seeds of what is to come? “The Internal Locus” opens with a thunderclap and certainly seizes our attention. That this gambit has subverted our expectations here is obvious. What are not as clear are the possible compositional motivations for doing so.

From a formal function standpoint, this material clearly suggests an introductory function. It’s too short to be a main thematic section on its own and lacks a recognizable thematic profile. Moreover, as the first thing we hear, it almost by default assumes the role of introduction unless nothing else follows. In that case, we would retrospectively re-hear and reinterpret its function as becoming the main (and only) thematic section. Yet even if we set these contextual considerations aside, this material evinces before-the-beginning form functionality on its own merit.

The characteristics of this opening gesture indicate the presence of the formal function unit that Caplin refers to as a thematic introduction. This opening therefore diverges from the
slow introductions in use on the first two tracks in terms of its formal model. The emphasis within this thematic introduction is on gesture rather than content, except to the extent in which content serves gesture. What matters here from a formal function perspective is this very quick, very intense build. The manner in which we instantiate this function is largely of secondary importance. Any number of compositional choices could create a comparable rhetorical effect, and while the specific material in each case contributes to the formation of the salient points of the gesture, they themselves are not these salient points.

This opening is all about an impending climax. Although we are in the fully electronic realm, we can recognize corollaries to this gesture in just about every style of music. It’s the build just before the proverbial drop, the intensification before the release. Indeed, one of the hallmarks of today’s EDM influence in contemporary pop music is this predictable but oh so effective rise and release idiom, often expressed as a looped vocal snippet and driven by a snare pattern of steadily decreasing durations (attacks on the quarters, then eighths, then sixteenths, then sextuplets (sometimes skipped in the process), then an unmeasured roll).

The fact that this material is entirely synthesized and heavily processed marks a departure from the cohabitation of nature and synthesizer sounds found in the previous introduction, that of “Dynamic Symmetry.” Changing the type and therefore the character of the introduction suggests that a corresponding change in the main thematic section might well be in store. This charged opening alerts us to the impending arrival of a new world. Anticipation abounds.

Even within this introductory burst of activity, we can establish a hierarchy of rhetorical forces. The gesture contains two major components. The first suggests a gust of electronic wind, sweeping us up and carrying us forward. Had we sustained this sound, it would function in a ________________

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75 Indeed, slow introductions are used on six of the seven tracks of This Binary Universe, including this one, albeit in a complicated form here.
similar role to that of the drones found in the previous two introductions. This opening would then surely take the form of a slow introduction rather than the thematic introduction we experience here.

Instead, the real impetus in this introduction is the startlingly quick spike of intensity. This burst lasts just from 0:04 until 0:06. Nevertheless, it has a profound impact on the rest of “The Internal Locus” and indeed on the rest of our engagement with the album. This new gesture at 0:04 casts aside everything else in its path, its unchecked upwards rush seemingly unbridled. Suddenly though, and without warning, this almost overwhelming noise tsunami is instantly negated at 0:06.

We are left with a muffled explosion that is surrounded and nearly drowned out by an almost palpable void. That which surged uncontrollably upwards now floats gently downwards, the internal combustion of this introduction blanketed by rain spreading over and throughout everything. The giant downbeat projected by our agitated anacrusis has failed to materialize, our momentum ineffectively sputtering out. We are left stranded and without our bearings, wondering where in the form we are and where we could possibly be going from here.

Within the rain, all that remains of the dramatic, attention-seizing opening is a subtle background drone on G. Although this drone is quickly reinforced with D, the fifth above, it shows little indication of any forthcoming forward motion. In this way, the drone and nature synthesis occurs after all, but there’s a sense of too little, too late. This rain-soaked wreckage certainly does not seem like an introduction. The feeling of isolation within This Binary Universe that it exudes comes from the scarcity of connections here to the previous introductions. We are left without a context and without a clue. A slow low electronic sol-do, perhaps the specter of a timpani gesture, emerges from the debris and but fades out again by 0:30. Although both the G
drone and its D satellite remain in effect throughout, these tones have been largely obscured by the rain, becoming nearly imperceptible.

Before hearing even a single sound in “The Internal Locus,” we already held the expectation first that we would encounter an introduction and second that it would take the form of a slow introduction, resembling its two predecessors in more ways than it differed. Instead, we find material that operates in seemingly total opposition to what we had predicted. Our projected slow introduction is in reality a volatile thematic introduction, a formal type of different scope and with different associated characteristics.

To account for this unpredicted, explosive start, we must first recalibrate our expectations. Given our understanding of how thematic introductions work, we surmise that this introduction in which we find ourselves will be short-lived and that it will give way to a main thematic section over the course of two to four bars. There’s been a disruption in the anticipated pattern of introduction characteristics but after this mental adjustment on our part, order and predictability should be restored.

Except that it isn’t. Another plot twist comes when what we have decided is a thematic introduction leads not to a big rhetorically charged structural downbeat but instead to a totally unforeseen stagnation in the rain. Our reinterpretation thus appears to have been foiled as well. This stasis will last for nearly an entire minute. By virtue of the drastic contrast in duration between the initial quick blast and this subsequent slow burn, this material retrospectively becomes the goal, however improbable, of the opening gesture.76

How might this new sense of formal function ambiguity be reconciled? Given the circumstances, we can posit the following possible situations at work here: a thematic

76 Approximately 90.476619% of the introduction consists of this stasis (fifty-seven of sixty-three seconds).
introduction leads to a main thematic section, a thematic introduction leads to a slow introduction, or a slow introduction with a fast beginning comprises the entire passage. The second and third scenarios support the idea of a two-part introduction. I find this idea to be more compelling than that presented in the first scenario. The material from 0:06 to 1:03 has none of the formal characteristics of what we expect in a main thematic section.

Nor does it exhibit the formal characteristics that we expect of an introduction, either thematic or slow. There’s no forward-looking projection and not even a remote semblance of a build or a gathering up of energy. We aren’t laying the groundwork for anything here. Even without applying a formal function framework to this opening material, we know that it is a departure from the expected. We simply don’t have an archetypal form at hand. Whatever the organization principle at work here, the first minute of “The Internal Locus” remains a different, complicated modality of organization then that of the previous introductions on *This Binary Universe*.

The rain and the rolls of thunder during this period very much recall the ubiquitous study and sleep-aid recordings of the same. The function in those cases is to provide a background tapestry, something intended to be turned on and then tuned out. Within such recordings, big finales are rare, as is the creation of any expectation that we are on our way towards one. The dramatic narrative tends to be a fairly flat line in order to serve the purpose of background listening. When the CD reaches its end, the rain stops. That’s it. Such material asks for an ambient modality of listening, with its own constituent of expectations. Our listening experience in these cases will therefore differ greatly from the harmony driven experience when listening to classical music and its focus on forward, goal-driven motion.
From a compositional standpoint, BT’s use of rain here in response to the sudden build might be considered to function in the abstract sense as a form of deceptive resolution. We hear this mad rush towards a climax and we therefore anticipate a big structural downbeat to follow. Instead, the climax is avoided entirely as we sidestep and land in a world completely unlike the one where we started. The rain, acting as a marker for ambient music, signifies this transition.

At the time that we first encounter it, we don’t know whether or not this static world will be all that follows. If there’s nothing else, if the rain comprises the rest of the track, then this material functions as the main thematic section. We understand this only retrospectively, through Schmalfeldt’s becoming language. The ambient quality of material from 0:06 to 1:03 confuses our expectations, for it’s a departure from the mechanisms used thus far by BT on *This Binary Universe*. According to our classical listening orientation, this material certainly does not project the formal function of a main thematic section.

Nor, for that matter, does it project the formal function of an introduction. We do not have an explicit anticipatory quality being engendered here. The awkward tension and slight discomfort that results from remaining in this unforeseen formal limbo provokes our hope that something will soon change, that we’ll experience some sort of clarification or contextualization. A slight push comes right at the end of this static section when the volume of the G pad increases. Nevertheless, the vast majority of the material in this section doesn’t suggest any sense of forward motion or of goal-directed activity.

As a result, the piano chords, when they enter at 1:03, are almost entirely unexpected even while we seize onto them to help get our formal bearings. They are certainly the most direct
connection to the classical style that we have yet encountered on our journey through the track. Yet they are shadows of this classical world as filtered through an EDM prism.

Relative to all this rain, these chords sound much more like something we’d expect to find as a formal marker. As far as our classical listening orientation goes, we interpret these chords as signaling the beginning of the main thematic section of the track. All of the previous material therefore retrospectively assumes the formal function of before-the-beginning, of introduction. This of course also includes the long stretch of inactivity from 0:06 to 1:03, even though we claimed earlier that it does not demonstrate before-the-beginning formal function. The folding in of this static material within what we’ve decided must be an introduction, given our understanding of what that form function entails, feels uncomfortable. Yet how else can we handle it within a classical listening framework?

Within this opening minute of material, we encounter two different types of music, each with goals that diverge from the other. The first portion, the more goal-oriented six seconds, conforms to our expectations of how introductions should operate. The next fifty-seven seconds, on the other hand, do not. We feel confused with this second portion, as much by its inclusion as by its contents. The formal ambiguity between goal-oriented and non-goal-oriented musical elements found here manifests in different ways throughout “The Internal Locus.” Indeed, this friction between classical and ambient listener expectations occurs across This Binary Universe. Without attempting to be exhaustive, the following is a brief but noteworthy example of the ramifications of this introduction’s ambivalence impacting how we hear later moments in the track.

77 Thanks to Dan Trueman for pointing this out in his comments.
Considered on a more abstract level, silence becomes the goal for certain processes within “The Internal Locus.” We’ve seen the negation of sound play an important role in this introduction, demarcating a structurally significant break between the two parts, the active giving way to the unexpected passive. The pronounced durational imbalance between the six-second goal-driven build and the fifty-seven seconds of rain soaked stasis disorients us all the more with each passing moment we remain stuck in it. Once the piano enters at 1:03, we finally have a sense that we’re actually going to go somewhere, to our profound relief. Yet this relief proves to be short-lived. After a short while we are unceremoniously arrested in our tracks at 2:56. Here and within an instant, the sound evaporates and forward motion ceases.

A ghostly reverberation of that first muffled explosion pushes momentarily through the ever-present rain and then subsides. We are again left without any indication of where we are from a formal standpoint and where we could possibly hope to go from this point. As with the introduction, here we must retrospectively understand this point of stasis to have been the goal of the previous passage.

After floating in this state of narrative suspension, we get a short-lived but goal-directed surge, spanning 3:15 to 3:18. Once again, the nascent process that we’ve barely begun is suddenly cut off, leaving us with only a drone. In this way, the use of ambience works almost as a ritornello, serving as a reset mechanism that prepares the ensuing thematic sections. Considered as such, the ambience itself becomes thematic due to its recurrence.\textsuperscript{78}

The rain, present here and throughout “The Internal Locus,” has by this time in the track acquired a heightened structural significance by virtue of being the only thing to pass through these sound vacuums and remain unaffected. The classically oriented, goal-driven processes

\textsuperscript{78} Many thanks to Steve Mackey for his insightful suggestion here.
continue to be undercut, overtaken, and outlasted by the ambient ones. Within “The Internal Locus,” we thus have been continuously confronted with a sense of the apparent futility of trying to derive formal function expectations from the musical material in this track.

In order to understand better what it is that we are experiencing, we have to recalibrate our expectations towards an ambient-focused modality of listening. Doing so allows us to put aside our perceived need of the goal-directed motion that is the classical style imperative. Only then can we account for these extended periods of stasis. Silence can thus become a viable, although certainly unconventional goal of rhetorically active processes. Given the recurrence of these points of stasis at various points throughout “The Internal Locus,” perhaps a further revision of the formal function of the opening material is required. An acknowledgement that these points have acquired structural importance may lead to a retrospective interpretation of the period lasting from 0:06 until 1:03 as a main thematic section after all. The fact that this feels like an uncomfortable step to take indicates a limitation in looking to capture ambient-oriented compositional procedures with analytical frameworks engineered for the classical style.

Of the tracks on This Binary Universe, “The Internal Locus” is certainly the most challenging towards the hegemony of a classically oriented, goal-focused way of thinking. Towards the end of the track, we see a rapid engagement with and subsequent discarding of the most prominent styles that appear on the album. It feels almost like BT is auditioning each style in turn to see if it can stand as the structural downbeat we’ve been waiting for all this time.

At 7:56, dulcet piano chords that are almost-but-not-quite classical go into the processing blender. BT uses destructive signal processing to annihilate this resemblance, creating a super-granularized version of the former piano texture. We get a pregnant pause at 8:10, the forthcoming possibilities seemingly as endless as they are unpredictable. What we get is an
unforeseen series of gnarly effects that culminate in a glitch-laced groove very much stylistically at home in EDM. This near-transient moment is proportionately way too short, becoming a process cut off before it really starts in a compositional ploy we’ve seen time and again in “The Internal Locus.”

The most overt sign of classical music, the orchestra, comes back at 9:09 and it seems like we’re finally about to restore order. Instead, at 9:19 this material is unceremoniously dropped, leaving us with a hollow, detuned chord that sounds submerged. The rain suddenly reappears, outlasting these chords until all that we’re left with at 9:50 until the end of the track is this rain and thunder. Within “The Internal Locus,” the ambient rain ultimately reigns.

Given the prominence of ambient material that very much steers the course of “The Internal Locus,” we have the need for determining a new way of engaging with and thinking about the musical material on *This Binary Universe*. By bringing ambient listening expectations to bear, we can better understand the nature of the formal function ambiguities and the tensions that result form the simultaneous inclusion of elements from both more classically derived and more ambient-related genres.

**See You On The Other Side**

The start of the fifth track, “See You On The Other Side,” is a notable departure from the rest of the compositions on *This Binary Universe* in terms of its formal structure. Instead of an introduction, here we begin right with the first main thematic section. Nor do we realize this at the time, the characteristics evinced by this thematic area suggesting introductory formal function and thus appearing to confirm our expectations. This musical material thus deliberately prevents us from grasping the full scope of our formal departure at the time when we first hear it.
We experience a dawning awareness that is fostered in real-time but comprehended only in retrospect. The introduction becomes a main thematic section.

We've seen in Figure 2 the establishment of a clear pattern of alternating durations of the introductions for the first four tracks. Despite not having any official confirmation that this pattern is intentional, we know that BT is a self-confessed nano-nerd. An extreme attention to detail characterizes his productions and gives credence to seemingly extravagant claims like statements like the following, when he says

One thing that stylistically I do a lot, that I think resonates with a lot of the people who like technologically based music or make technologically based music themselves, is insane—and I picked that word carefully—insane attention to detail. That's one of the things that people pick up on in what I do. It's the real care and attention to detail. Nothing is in there by accident. There's not an extraneous reverb tail in my music, there's not a single ringing frequency below 150 Hz on a single hi-hat on any one of my last three albums [\textit{Ima}, \textit{ESCM}, and \textit{Movement in Still Life}]. There's a psychotic attention to detail. There's also a lot of ear candy because of that attention to detail.\footnote{Mike Levine “Sonic Surgeon” (\textit{Electronic Musician}), \url{http://www.emusician.com/gear/1332/sonic-surgeon/33829}.}

BT holds the spot in the \textit{Guinness Book of World Records} for the most edits in a piece of music.\footnote{The lead vocals of “Somnambulist” off of \textit{Emotional Technology} contain 6,178 edits.} It is true that there could be a multitude of ‘unofficial’ instances of pieces containing more edits. However, the fact that BT cares enough to go through the official documentation process and thus establish himself as the record-holder further adduces his fixation on micro-details. I'm therefore hesitant to dismiss this correlation between the durations of track

\footnote{\textit{Ima}, \textit{ESCM}, and \textit{Movement in Still Life}.}
introductions as merely coincidental. We are not in a position to know with certainty the motivations behind BT’s track structuring, but I think the reasons propounded here make for a compelling explanation.

We get a sense right from the start that something is amiss relative to our expectations on how this track should begin. The change of sound source from drone or nature-based material makes this opening already stand in stark contrast to its predecessors. For the moment, perhaps this difference is all we are aware of. We're not sure what functional role this ostinato will play in the full track. Is this part of an introduction? Thematic material? Background to a forthcoming foregrounded melody? Part of a minimalist-oriented texture? We have no way of knowing why this opening is different. We simply know that it is different.

Different, and yet in a lot of ways the same, for the opening ostinato actually sounds like an introduction. It too adheres to the diffident, gradually unfolding nature that has characterized the previous introductions. In a word, the ostinato feels vamp-like, a waiting-on-something. The softly building dynamic from pianissimo upwards very much sounds like a motion towards a big structural downbeat and not the firm beginning of a main thematic section in and of itself. All of these factors collaborate to project before-the-beginning formal functionality for this material. Although the opening to “See You On The Other Side” is in some ways different from the previous four, it remains close enough that we do not yet sense that we are not in an introduction. Herein lies the deliberate formal ambiguity.

Sonically, this material is similar to the introductions of the preceding tracks, coming as it does out of the same three pools that BT uses to sculpt the entire limited sound world of This Binary Universe. The melodic material that opens “See You On The Other Side” consists of a complex layering of sound and processing. This lets the material elude the quick categorization
of ‘this sine wave’ or ‘that thunder sample.’ Instead, we as listeners have to focus on its sound and try to decipher the various components that create the aggregate. This draws us in for a deeper listening, the first clue that the compositional focus here will be on the details. We understand this more in retrospect than in time, as a consequence to the formal function ambiguity we will soon encounter.

The repetitive nature of this melodic figure contributes to a mechanistic quality somewhat at odds with the previous openings. We have the sense of a process in motion, a steady ticking of gears. The full ostinato is shown in the following figure:

![Figure 7: The opening ostinato](image)

This is the orientation that the track starts with and presumably the default one for hearing this material. Beats 1, 3, and 5 emphasize E as the main structural pitch, the pitch classes giving a dorian flavor. Interestingly, there is a sense of hierarchy of pitch within this ostinato that seems to operate independently. The D, C#, and B feature a distinct orchestration relative to the rest of the figure. Their bell-like tone and long reverb tails help to bring these notes to the forefront in the texture. If we prioritize these notes, we hear an emergent melody emphasizing B. Orienting ourselves according to this prominently orchestrated upper line morphs the ostinato into the following figure:
In this hearing, the sense of where the downbeat occurs has shifted. Because we have no influx of additional musical material for quite some time, we tend to lock into whatever orientation we initially seize onto. The lack of a clear on-beat/off-beat distinction that something like a drum set would provide creates this slightly nebulous situation. What might this type of ambiguity be included here?

What we have the capacity to experience in this opening is a far more subtle example of “turning the beat around” than what one finds in the typical EDM track. This phenomenon occurs most frequently in techno. There, an initial pulse is established, generally by the drums and percussion. The sudden entrance of the kick on what has been perceived as off-beats destabilizes our orientation, creating a rhythmic dissonance that we resolve only upon reorienting ourselves to hear the kick on the downbeats. Within contemporary classical music, this effect is common enough in music by composers such as Steve Reich. Needless to say, turning the beat around is certainly not a crucial component of the high Viennese classical style of in the way it is of EDM.\textsuperscript{81}

The possibility of hearing this type of nuance suggests that a forward drive towards a big structural downbeat is perhaps not the governing principle at work within this opening material. The emphasis instead seems to be detail-oriented rather than a preoccupation with projecting a particular road map. We become more aware of these insights retrospectively. Nevertheless, this

\textsuperscript{81} In his book, \textit{Unlocking The Groove: Rhythm, Meter, and Music Design in Electronic Dance Music}, Mark Butler coins the term ‘turning the beat around’ to describe this hallmark of the EDM experience.
initial ambiguity already starts to undermine the sense of an introductory formal function at work here.

The pacing of this opening, the motor-rhythmic ostinato notwithstanding, is slow indeed. A 7/4 countermelody bubbles up quietly at 0:44, so faintly at first that it appears nearly gossamer. It is all but inaudible at this point, slowly increasing in volume as the track progresses. The use of strong timbral profiles for the two divergent melodies enables each to retain its identity at the points when they are in close proximity. BT uses the metaphoric DJ volume faders to blend the textures in an organic way. One can’t identify exactly when this melody is ‘loud enough’ to have its own identity, but it certainly feels established as an equal contributor to the texture by 1:14.

Figure 9: Introduction of the second melody to the ostinato texture

1:14 also coincides with the entrance of the third and final addition to the ostinato, likewise entering at a very soft volume. This sparse melody is in 9/4 rather than 7/4, thus avoiding a neat alignment with the opening texture in the way that the second melody does. The plethora of space at the end of the phrase keeps the register clear, making each subsequent appearance of the theme a noticeable reentry into the texture.
The effect of the 9/4 against 7/4 is to displace this new melody by a half note each time it enters. This is another effective use of getting more compositional mileage out of minimal means, and that is a critical component of the way BT uses this opening material. The emphasis is on repetition rather than development, and this runs counter to our expectations on how, from a formal function standpoint, an introduction should behave.

The listening experience thus far is very much one of detail-oriented listening. Time passes and we don’t really mark its progress. Before we're aware of it, we're at the three-minute mark and we now occupy the seemingly contradictory position of feeling like we've gone somewhere and yet haven’t moved beyond our introductory material. Moreover, these three minutes would amount to over 25% of the durations of any of the previous four tracks. The longer the length of this opening material, the more uneasy we become with continuing to view this material as introductory.
On the other hand, if we retain our classical formal function orientation, we still hear this opening as “before the beginning.” The addition of new melodic material doesn’t sound like a developmental process so much as it does a general thickening of the texture. The addition of the second and third melodies to the ostinato doesn’t alter our sense of this initial formal function. We have then an ambiguity of function here. Like “The Internal Locus,” we’re slowly realizing that our classically oriented expectations are not fully capturing what seems to be the compositional mechanisms at work here. As in that track, perhaps an ambient orientation will be the better the way to go.

The appearance of the bass at 3:04 comes as a surprise, in part because of the unexpected change of timbre and registral positioning, but more because we’ve been focused so intently on the ostinato and its subtle shifts in color. There has been no projection of an impending structural downbeat, no energy build-up to signal an EDM drop. Although our ears are immediately drawn towards the entrance of this new material, we hear it enter the texture so leisurely, the still-running ostinato remaining the prominent feature, that the complete shift in focus to this new material is very much a gradual transition, an organic process of replacement. The bass slowly gains prominence through its repetition and an increase in volume. The attack envelope decreases with each repetition, so that by 3:40 the line feels quantized with the rest of the texture. The bass cycle lasts 24 beats and so doesn’t overlap with the predominant 7/4 or the 9/4.
Figure 12: Overlap of bass with the existing texture
This giant cross-fade lasts until 4:16, taking 1:12 or approximately 28% of the total track duration to this point. The entrance of the acoustic guitar at 4:16 indicates that we have decidedly left the old section for the new.

Figure 13: The guitar and bass of the B section (notated as sounding)

The bass-line now drives the meter changes, the different durations of each note a marked departure from the even ostinato. The use of sixteenth-notes in the guitar likewise diverges from the use of eighths and quarters in the opening section. In addition, the change in orchestration very much projects a sense of formal divison. Even here, the D and C# of the ostinato pulse very faintly but periodically within the texture, delicate impressions of the ostinato upon our memory. They fade away completely by 4:54.

Have we finally attained a main thematic section, Section A, at 4:16? As alluded to earlier, by this point in the track our classically based expectation for hearing this material functionally as an introduction is under serious question. This proposed introduction, 0:00 to 4:16, has lasted nearly twice the duration of any of the introductions to the previous tracks. Nor does it at any point project a sense of leading towards a structural downbeat. There is a sense of advancement with the addition of the two supporting lines to the ostinato but nothing in the way of motivic development or harmonic progression that we associate with the classical style.

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82 The transition lasts for 72 out of 256 total seconds, at which point the acoustic guitar enters.
Moreover, the multiple re-emergences of what we initially proposed to be introductory material belie this formal function. See for instance 7:52, where the bass ends on B and we are dropped into the opening world once again. This recall is not expected and indeed we require a brief moment to get our bearings. The reappearance of the third ostinato melody at 7:54 enables us to orient ourselves.

Nor is this a simple, brief recall of introductory material before moving forward to a new main thematic section. Instead, we have a re-habitation of that first sonic space. All the more significant, once we do move forward in the composition, we do so through the development of this initial material. We therefore conclude that the initial material, originally considered as a possible introduction, retrospectively becomes Section A. Likewise, the section starting at 4:16 becomes Section B.

Thinking more broadly, we should ask why might BT choose to diverge from the expected at this point on the album. For what purpose does he abandon the duration-based introduction pattern seen in Figure 2? Why is the opening material here not an introduction and why does it still sound as though it functions as one? So that we might address these and similar questions, we will take a step backwards at this point and try to contextualize this track and its opening within the context of *This Binary Universe* as a whole. By understanding the present in terms of where we’ve been and where we eventually go, we can trace certain tendencies and see how they play out in “See You On The Other Side” and in what follows.

Given BT’s proclivity for all things Golden Section, perhaps the dramatic divergence of this track’s opening from its four predecessors results from the application of this proportion on an album-wide scale. While an intriguing hypothesis, this situation fails to occur. “See You On
The Other Side” starts approximately 56% of the way through the album, and so this new way of opening does not coincide with the Golden Section.\(^8^3\) We remain in search of an explanation.

Nevertheless, the change in the introductory method employed here is a welcome and effective compositional modification to BT's established method of beginning tracks on this album. We appreciate this change all the more when we consider it in light of This Binary Universe as a whole album. BT is very forthright about the importance of considering this work as one cohesive entity. He states,

I really would like to encourage people who are interested in it to sit down, like maybe with friends, whatever, and to enjoy from the beginning to the end without distraction, you know. It's not the sort of thing that you put on in the background—it would be confusing if you put this on in the background you'd be like 'wha' it would like spin you out if you were checking into it every once in a while, you know it's the sort of thing that attention—it requires a commitment, it's an hour and a half of your life and if you're willing to do that I think that it's something that's really hopeful, and evocative, and by the end of it will put you in a better place than you were when you started watching it.\(^8^4\)

Already lasting 14:24, ”See You On The Other Side” is the longest track on This Binary Universe even without an introduction. The easy claim is that BT sets us up to expect an introduction here and deliberately teases that expectation by providing material that at first blush feels convincingly ‘introduction-like.’ On the other hand, given the track’s length, BT’s decision to forgo an introduction here might be explained by a desire to avoid disproportionately

\(^{8^3}\) 2502 seconds out of a total of 4464 (56.048387 percent) have passed by the time we start “See You On The Other Side.”
\(^{8^4}\) M-Audio
weighting this track at the expense of the others. Given that the average track length is approximately 10:38, “See You On The Other Side” is 3:46 above the mean. The next closest outliers are the album’s opening and closing tracks, “All That Makes Us Human Continues” and “Good Morning Kaia,” at 2:22 and 2:26 below the average duration, respectively.

We can think of the durations for the entire tracks as creating a rough arch form, and this makes sense when considered from an album-wide perspective. The shorter tracks at the start and the end function to lead us into and out of This Binary Universe without overstaying their welcome. “See You On The Other Side,” the longest track on the album, comes just to the right of the record’s center point and so adheres to the general principle of the Golden Section even if this strange ostinato-driven opening doesn’t correspond to this precise structural ratio. There’s absolutely no reason for it to do so, after all. Use of the Golden Section and similar structural proportions do not automatically deliver musical magic.

<table>
<thead>
<tr>
<th>Title</th>
<th>All That</th>
<th>Dynamic</th>
<th>Internal</th>
<th>1.618</th>
<th>See You</th>
<th>Antikythera</th>
<th>Kaia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>8:16</td>
<td>11:24</td>
<td>10:28</td>
<td>11:34</td>
<td>14:24</td>
<td>10:06</td>
<td>8:12</td>
</tr>
</tbody>
</table>

*Figure 14:* Durations constituting a rough arch shape relative to opening and closing tracks

Moreover, “See You On The Other Side” helps re-launch the energy flow that has coursed at various strengths through This Binary Universe. The plaintive, searching melodies of the Csound-based “All That Makes Us Human Continues” ease outwards into the expanded sonic palette of “Dynamic Symmetry.” This track propels the overall album energy onward and upward, keeping us off-balance and on the move through its deft genre-hopping. “The Internal Locus” dials down the intensity with its relatively sparse, piano-driven introduction and its focus
on silence. This is only a momentary pause from an album-wide perspective, however, for the crisp martial material and glitched breakbeats in the latter portion of the track lead us to new heights. The direction of energy flow reverses with the advent of the fourth track, “1.618,” its opening ambiguities and the fixture on silence as a local-level goal dissipating some of the pent-up energy. This comedown is a welcome reprieve, a settling down into a long, leisurely evening of a full album listen.

At this point in our listening, we're engaged and in tune with This Binary Universe as a cohesive whole. The carefully constructed sonic space lets us make connections on an album-wide scale as well as on a track-by-track basis. Once “1.618” subsides, “See You On The Other Side” steps in and galvanizes our return to forward momentum. We sense the energy level of the album slowly creeping up again. Right at the outset of this track, we're on the move and more importantly are aware of this shift. We register the ostinato as something different, a harbinger of new things. As we note this, we are simultaneously swept up and carried onwards by its fast motor rhythm, its near machine-like forward propulsion.

Yet there is ambivalence here. While the surface activity is much faster relative to any opening we’ve previously witnessed, the slow tempo here restrains us from running forward in wild abandon. The ostinato unquestionably engenders forward motion in a manner unlike any of the previous introductions. However, like “The Internal Locus,” this momentum stalls on some levels, becoming more static, though nowhere near to the same degree. While the ostinato ‘develops’ with the addition of its two component parts that enter after it is already underway, globally speaking there isn’t a whole lot that happens in those first three minutes. Additionally, the transition to the next section lasts for over a minute.
In this way, the beginning of “See You On The Other Side” evinces an ambiguity of purpose. While the ostinato creates a sense of directed purpose, this is undercut by the overall slow rate of change. In this sense, the opening follows a more ambient-focused compositional sensibility. Forward motion comes from orchestration here, not from the traditional classical means of motivic development and harmonic progression.

“See You On The Other Side” seems at first to offer a welcome respite from the increasingly complicated introductions, each with layers of formal function ambiguity that seem to be getting more complicated as the album progresses. The result of this process is that in each case we are kept listening intently to the form as it unfolds and develops in real time. We have expectations on how things will progress, not assurances. In this track, our classically oriented expectations regarding formal functions are again seemingly met and then undercut as we realize that we’ve been in Section A from the very start. We don’t have an introduction in which formal function ambiguity can reside but we clearly have formal function ambiguity nonetheless.

The main melodic material of “All That Makes Us Human Continues” emerges so gradually that it becomes impossible to isolate the precise point at which the introduction has terminated fully and the main thematic section has commenced fully. We're in the introduction and then simply no longer are. Any attempts to discern the exact structural downbeat that marks this change are as futile as trying to identify the moment when ice begins to melt. “Dynamic Symmetry” wanders and rumbles, its synthesized and sampled sounds colliding unpredictably before the main section suddenly springs forth. “The Internal Locus,” rockets upwards almost immediately before bottoming out into a rain-soaked stasis, while “1.618” takes this notion of collapsing into a passive equilibrium even further. Each of these four introductions occupies a

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85 Nevertheless, I’ve designated an approximate location for the purposes of duration-based analysis.
significant percentage of the respective track (recall Figure 2). On the face of it then, rather than beguiling us with introductory ambiguities, “See You On The Other Side” would seem to cut right to the chase, excising both introduction and therefore presumably the ambiguity in the process.

Except that it doesn't, for reasons described above. Furthermore, we can make these claims about the form and formal function of this musical material only in retrospect. During our first hearing, we're confronted with material that looks, feels, acts, and sounds exactly like we believe an introduction should. An ostinato enters quietly, running with soft assurance in 7/4, the subdued demeanor and slow tempo working together to blur its asymmetry of meter, rounding the corners with a lapping wash of sound. Perhaps it prepares the background bed from which a forthcoming melody will rise, expanding as it stretches and sings. Perhaps it is the precursor to a minimalist-based texture. Perhaps the ostinato is a composing out of a drone and thus an elaboration on the type of opening we're more familiar with on this album. This opening material sets the stage just as the other openings have, letting us peer into the piece. It just so happens that this act of looking is actually a main feature. Ambiguity abounds here as elsewhere.

Yet there’s a coda to this discussion, an “after-the-end” counterpoint to the claim for no introduction. The Golden Section of the album corresponds exactly to the start of the B section. If we stipulate, as I think we should, that this is a very deliberate compositional choice by BT, then within this more global context the opening material of the track functions in an introductory capacity. The overall duration of This Binary Universe determines the precise moment of the Golden Section for the album. Within “See You On The Other Side,” the fact that Section A is the only section prior to this point, that it is unified, and that it displays an ambiguity
of introductory function are all very deliberate choices. Framing “See You On The Other Side” within this broader context, we can argue for hearing the opening material as an introduction to this Golden Section Moment.

When listening to the entire album, do we recognize that the start of the B section is the Golden Section? Is our listening experience altered in a meaningful way depending on whether or not we do? Once we know that this point is the Golden Section of the album, is our listening experience impacted when we listen to “See You On The Other Side” in isolation? These are all provocative questions and doing them any degree of justice would take us beyond the scope this project. The formal function ambiguity found within this opening material allows us to engage in different possible hearings, the openness an asset and not a fault. The idea of a functionality depending on the breadth of the lens used, or of one that evolves as the track progresses are both compelling issues to consider. Ultimately, as with the other tracks discussed, determining the ‘correct’ way of hearing our way through the material isn’t as important or interesting as exploring the multiple possible ways through.

**The Antikythera Mechanism**

Beginning seemingly *in medias res*, “The Antikythera Mechanism” starts evolving right from the outset. Indeed, this is so much the case that the second note already receives a sheen of vinyl distortion that was notably absent from the first note. From a timbre point of view, this is a pronounced departure from the sonic treatment of the piano in prior tracks. There’s an alliance between electronic and acoustic at play here, both in terms of the electronic processing of the acoustic piano sound and the juxtaposition of piano and the electronic pad that hovers behind it within the texture. This binary reminds us of the openings of other tracks, such as the drone and
nature sounds of “Dynamic Symmetry,” and helps contextualize “The Antikythera Mechanism” in terms of the rest of the album.

The opening melody seems both improvisatory and yet purposefully directed. While these do not necessarily have to be conflicting forces, the sense of both in effect at the same time obscures a clear understanding of formal function of the material. Since this track comes post- “See You On The Other Side,” we’ve had our expectations regarding the given inclusion of an introduction shaken. Going forward, we have to clarify our formal expectations as a response to that track. Towards that goal, let’s first examine this opening gesture and see why it is that the material eludes an easy formal categorization.

![Sheet Music](image)

**Figure 15:** Opening to “The Antikythera Mechanism”

There's a real sense of breath in the phrasing that lifts and lightens the locution here. This melody conjures itself into being through the focused yet varied repetition of a smattering of primordial melodic cells. We fragment and recombine musical DNA, pausing here, lingering there. Our germinal material consists of the composing out of a minor third interval. This takes two forms within the melody: we ascend stepwise from C to Eb and we use the motion F to D to create neighbor tones to Eb. In each case, the Eb pitch class is the goal of the melodic motion.
Figure 16: Opening melody seen as a collection of minor thirds (part 1)

We break from this pattern after the second C to Eb appearance. Note that the following D to F motion is not filled in with the expected Eb. Instead, this melodic cell serves as a springboard for a new minor third coupling, G ascending to Bb and thus obtaining the unique high point of the melody.

Figure 17: Opening melody seen as a collection of minor thirds (part 2)

Yet even here as we change the mode of its construction, this melody retains its melodic cohesion. Observe that the expected Eb actually does appear in an inner voice, working here to support the high Bb. In this way, we preserve our original motive even while the melody extends beyond it. This tight motivic organization helps to project a sense of directed motion or purpose by these musical constituents.

Figure 18: Opening melody as minor thirds with the inclusion of an inner voice
The top voice in the piano carries the melody and through that gains the structural importance of this opening gesture. The lowest voice starts as an equal countermelody but quickly becomes more subservient, especially once the inner voices enter. The emphasis here does not feel like a strict adherence to a particular harmonic syntax. Rather, these inner voices form little melodies as a consequence of thickening the texture and supporting the top voice through intervallic consonance.

It is not clear from this first phrase whether we are in an introduction or if we have begun the track with a main thematic section. This music is ambiguous in terms of the formal function that it projects. Its tentative, diffident nature certainly recalls the character of earlier introductions within *This Binary Universe*, supporting the lullaby-aesthetic that runs throughout. The music here evinces an almost fantasia-like quality. Within the classical tradition, slow introductions can feature tight-knit as well as loose-knit thematic structuring. We can well imagine hearing this opening musical material as expressing before-the-beginning functionality.

And yet, here we also have a melody with the capacity to function as a main section. We can easily imagine the appearance of a short piano solo at this point in the album to act as a palate cleanser of sorts after the very long and sonically dense “See You On The Other Side.” The melody feels purposeful, directed, and more akin to classical beginnings than most of the previous openings. Only later, once the melody ultimately fails through its turns, shifts, and overall static nature to become a main theme do we realize that it is in the state of being melodic without actually being a melody. We therefore have here a confusion regarding the intended functionality of this opening material. How are we to interpret what we are hearing from the

86 Thanks to Steve Mackey for this phrase.
standpoint of formal function? More broadly, what expectations are reasonable to hold when hearing this material for the first time?

“The Antikythera Mechanism” follows immediately on the heels of “See You On The Other Side.” There, we had our expectations completely subverted, for we were forced to reinterpret retrospectively as Section A what we initially thought to be introductory material. As a result, we feel wary when “The Antikythera Mechanism” starts up. We’re unlikely now to make the easy assumption that just because material we're presented with sounds like an introduction, it must therefore be an introduction.

Nor can we assume any longer that the pattern of structural proportions observed in the first four tracks (recall Figure 2) will continue to hold true. After “See You On The Other Side,” introductions don’t have the same sense of inevitability as they did previously. It is true that we have never been promised an introduction to any of the tracks on This Binary Universe. More explicitly, we are the ones generating these expectations. At times they may coincide well with what is happening in the music, but this need not always be the case. With each successive appearance of an introduction as the album unfolds, we became more biased towards holding the reasonable expectation that such a pattern might continue. Following the formal ‘disappointment’ of “See You On The Other Side,” this approach will no longer work in the same capacity.

Let’s contextualize this track within the overall narrative of This Binary Universe to help shed some light on how we might interpret the formal function of opening material we find on “The Antikythera Mechanism.” As noted above, the track immediately prior is the longest on This Binary Universe by nearly four minutes. Its leisurely pacing, strong degree of thematic cohesion, near-ubiquitous consonance (even within the drum-driven section), and its overall soft
dynamic level marks “See You On The Other Side” as perhaps the most lullaby-like of the tracks on the album. By the time we reach its end, we have traversed just over three-quarters of This Binary Universe. In light of these considerations, we might well expect to encounter a strong contrast in the track that follows to act as a jump-start to our progress through the album. Perhaps a higher level of energy, manifested through a faster tempo, or a more dense orchestration with a louder, more dynamic beginning will await us in “The Antikythera Mechanism.” We certainly don’t anticipate more of the same.

However, instead of releasing the bombastic, BT encourages us to turn further inward. The shift in instrumentation to solo piano plus electronics that opens “The Antikythera Mechanism” is a paring down rather than the anticipated ramping up. We do not start with a sonic fusillade in order to galvanize both this composition and the album-wide energy level into action. Instead, soft melodic tendrils coax themselves up tentatively, emerging slowly from within the piano. It is true that the open registral space that greets us serves as an understated yet effective contrast to the ostinati that ran the course of the previous track. Nevertheless, the similarities in register, tempo, and timbre make “The Antikythera Mechanism” feel like a continuation rather than a contrast from the previous track. The contemplative atmosphere engendered here gives us ample time to reflect on what we hear while it unfolds in real time.

We’re unable to rely as firmly on past experience within the context of this album to guide our hearing of this opening. However, the use of repetition and the upward climbing rhetoric of the melody pushes us firmly towards the conviction that we are in an introduction. Upon completing its first melodic statement, the piano returns at 0:17 to the initiating C D Eb cell and starts its slow but purposeful climb anew, striving upwards in a similar manner. The

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87 “The Antikythera Mechanism” starts at 3366 / 4464 or at 75.403226% of This Binary Universe’s duration.
material is developed more expansively this second time, the dynamic level louder, the process of elaboration pushing us ahead. This second surge has enough forward momentum at this point that we don’t reboot again until 0:32, at which point we return to the same opening minor third gesture.

The opening melody is the most thematically oriented we’ve seen yet in an introduction in *This Binary Universe*. The return to the basic opening elements again and again suggests a gathering of strength. This starting over, the ever-increasing waves of energy, and the upward trajectory of the melody give us a sense of musical material striving towards a big structural downbeat. We are reaching for something—we are not yet at that something. The formal function being projected is now very clearly before-the-beginning. It’s true that a composition could consist of nothing but initiating gambits, the sense of an introduction continually grasping for a proper start. And yes, once the piece ends, we would understand in hindsight that our “introduction” within that scenario had in hindsight become the main section of the piece. This possibility is of course present in any composition. Within “The Antikythera Mechanism” then, as with any other analysis, we’ll hold in reserve the right to recalibrate if deemed necessary. In the meantime, we recognize the introduction-like qualities present here and therefore base our expectations regarding a forthcoming main thematic section accordingly.

The melody starts the final push at 0:57, becoming ‘stuck’ on the rising scalar figure C D Eb F G. Rhythmically, after the first iteration where we hear the process start on C, the D now becomes the starting point. The C thus becomes the concluding tone in the cycle. Nevertheless, we can obviously hear the clear connection between this and our initial melodic cell. The relative stasis of this melody-becomes-ostinato acts as a foil to the pads now rising, first slowly and then faster. We have simultaneous and different electronic and electro-acoustic versions of an
ascending Shepherd Tone, the piano becoming more and more distorted as we commence our final rush towards our now-anticipated downbeat that drops at 1:27.

The initial formal function ambiguity has been dispelled over the course of the introduction, but with the other tracks of This Binary Universe, its ramifications spread beyond its boundaries to resound within the rest of the composition. Detailing this must remain the work of another day. As a brief glimpse, consider for a moment the point at which the introduction leaves us at 1:27. Instead of launching us into the expected exhilarating plunge after this momentous build, we vanish from the track altogether.

We’ve been transported instantaneously into a still, rarified place. The distortion has vanished, leaving the texture cleaner. In contrast to the introductory section, we now have both a stable pulse and a stable melody.

![Figure [x]: Section A of The Antikythera Mechanism, starting at 1:27](image)

This new section feels in some ways like a cleaned up and quantized version of the introductory material. Although the timbres have changed, we don’t experience the same kind of

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88 Thanks to Dan Trueman for this suggested hearing of the two sections.
pronounced instrumentation shift that we found in “The Internal Locus” or in “See You On The Other Side.” The upward registral expansion of the introductory material finds here a corollary in the high descending counter-line. Hearing this new material as the goal or endpoint of the previous offers an explanation for the repeated starting over’s that characterized the opening material. We now recognize a striving towards this point of crystallization.

In addition, the immediate juxtaposition of these two sections makes the initial material appear more introduction-like in retrospect. The differences in rhythm and character become amplified, the opening more clearly an initiating formal function. The firm 6/4 makes those initial melodic excursions more tentative, more like exploratory opening gambits.

Similarly, this new material at 1:27 feels more like a main thematic section when heard against the opening section. Its melodies, considered in isolation, could act as a background for a forthcoming melody. In another context, we could hear this material as a vamp, an introduction itself. Unlike in the classical style, here we don’t get the same type of clear main theme projection. Nevertheless, in comparison to the opening material, the section beginning at 1:27 becomes a main thematic section and we hear it as such in a large way because of this juxtaposition. The formal function ambiguity here finds a resolution as both sections become what we expect them to be.
CHAPTER IV:  
AFTER-THE-INTRODUCTIONS

Concluding the Universe

When discussing *This Binary Universe*, BT states his explicit intent from the outset to use classical form as a way of organizing thematic material. Throughout the course of our studies here, we have taken that statement at face value. Within the EDM community, BT is very outspoken about his classical background. *This Binary Universe* is enough of a departure from the typical EDM fare, so that those who commit to listening to the album are probably aware of BT’s interest in classical music and his intended application of it here. Yet even if BT’s claim were false, or perhaps true but unknown by us, our listening experience would nevertheless follow a similar path. The language of formal function gives us a modality to discuss musical phenomena that exists on the album.

*This Binary Universe* rewards the application of a classically oriented listening lens. There are various forms of ambiguity present within the introductions to the tracks on this album. By approaching the music from a classical standpoint, we can develop alternative ways of thinking about the confusions of purpose that we discover during these moments. We have a different way to hear these introductions. Moreover, we are better situated to talk about our own listening experience and to examine how it unfolds as we encounter these various incongruities between what we expect and what we get. The application of the ideas of formal function and becoming tells us more about our own understanding of classical formal procedures than about BT’s.

A natural reaction to BT’s statement about the use of classical form on *This Binary Universe* might be the desire to create a catalog detailing the various forms that BT employs on
the album. One would then attempt to trace connections back to possible progenitors within the high Viennese classical style. In this way, we could speak more concretely about the accuracy of his statement and the way in which classical form manifests on an EDM album with strong ambient leanings.

For our purposes however, such an endeavor feels largely beside the point. I believe that our time has been more appropriately devoted within this study to the investigation of what it means to orient ourselves as classical listeners. Choosing one particular framework over another will by necessity open certain doors while closing others, and so we want both to pick an appropriate framework and to remain flexible in case it becomes prudent to switch. Doing so enables us to enrich our understanding of the listening experience as we engage in it beyond this particular album and artist.

In developing a way to think and talk about the listening experience here, I abstracted some of Caplin’s ideas temporal relations as they relate to formal function. Although the music of This Binary Universe is not based on the classical harmonic syntax, we can still apply Caplin’s conceptualization of form as a matter of nested temporal organization. This gives us the language like “before-the-beginning” in order to describe formal function. Likewise, although Schmalfeldt’s theories on the process of becoming apply most directly to the highly codified musical language of the classical style, her ideas about retrospective hearing and reinterpretation have nevertheless yielded good results here.

Adopting a classical orientation for the listening experience means that we form certain expectations ahead of time about how the musical material ‘ought’ to behave. During our journey through the introductions of certain tracks on This Binary Universe, we encounter numerous points at which the anticipated form functionality breaks down.
“All That Makes Us Human Continues,” for example, opens with a harmonically ambiguous chord built in stacked fifths. “See You On The Other Side” commences with material that evinces extremely characteristic introductory qualities and yet is understood retrospectively to have been a main thematic section. This particular point of ambiguity has major consequences on how we form expectations for the rest of the album. From this point forth, we must be more cautious about the possibility of formal function chameleons, despite their prevalence already. This need for care is especially apparent in “The Antikythera Mechanism,” the track that immediately follows “See You On The Other Side.”

My framework in approaching this dissertation derives from a classical formal function orientation. Although *This Binary Universe* has various classical manifestations that occur throughout, it is also very much an ambient-focused album. Herein lies a source for some of the expectation-based formal friction that we experience. Classically oriented music and ambient-oriented music have different formal goals and different mechanisms for obtaining these goals. Part of our delight in experiencing *This Binary Universe* is the unforeseen substitution of one type of goal for another. We discussed this type of mechanism in the context of “The Internal Locus,” where silence and stasis become the goals of multiple rhetorically driven builds. The inclusion of both classical and ambient-oriented processes creates these instances of formal ambiguity and allows us to turn the “binary” in this universe from an “either/or” into a blend of both.

This raises the provocative question regarding for whom this music is intended. Its residence in the liminal space between classical and ambient means that *This Binary Universe* necessarily creates a friction of expectations for listeners from both camps. We’ve spent most of this dissertation detailing the listening experience for someone using a classical pair of ears. Had
we approached *This Binary Universe* from an ambient orientation, we would still experience breakdowns in expectations. The music is too active for these ears, the rapid cutting between genres on certain tracks too discursive, the classical orchestration and formal organization a departure from the expected. Because this music is neither strictly classical nor ambient nor EDM more generally, no matter our orientation we would thus be telling a similar story with different details.

The fact that this music is neither classical nor EDM surely serves as a potential liability for listeners from either genre. Yet this works to the advantage of *This Binary Universe* as well. The extreme reaction from either side is of course a refusal to engage with the music. Those who choose to listen, on the other hand, experience both a reinforcement and an expansion of their understanding of the musical genres they are passionate about. For classical and EDM listeners alike, identifying what on *This Binary Universe* is “not classical” and “not ambient” means having to determine exactly what each of these genres constitutes. The creation of this definition is a personal decision and an incredibly hard thing to do. Being aware of what one likes and more importantly *why* one likes it results in a deeper self-awareness. Encountering music that is similar in many ways but not quite what we’re comfortable with gives us the possibility to use the familiar as a bridge into the new. This opportunity can only be a good thing. Whether we take it or not is our choice to make.

**Beyond the Universe**

Throughout our discussion, we’ve explored different facets of BT’s incorporation in *This Binary Universe* of a classical influence in his musical language. We focused our analytic attention on his use of classical formal function and the manipulation of genre-informed expectations. The
formal ambiguity that we experienced within the introductions arose from the divergence in the functional goals of classical music with those of ambient music.

Nor is *This Binary Universe* the only haven within his discography for BT’s classical influences to manifest. In subsequent releases, BT continues to explore the compositional territories that he began charting here. 2012 witnessed the release of two follow-up albums, *If The Stars Are Eternal So Are You And I* and *Morceau Subrosa*. Both share many of *This Binary Universe*’s ambient qualities and sonic characteristics, including “Csound, Kyma, Max/MSP and granular and spectral operations applied gratuitously to world instruments.”

From a formal standpoint, the first album is seven distinct tracks while the second is one album-long track divided into seven sections. When discussing these two albums, BT does not explicitly reference classical form in the same way that he does when talking about *This Binary Universe*. However, my casual comparisons between the material on these albums and that on *This Binary Universe* suggest that there is an overlap in the use of form and the handling of formal function ambiguities. These possible connections merit further research in the form of a follow-up project.

BT recently announced plans for an early 2016 release of the ‘official’ sequel to *This Binary Universe*. At the time of this writing, details about the forthcoming release are extremely difficult to track down. It will be illuminating to see whether or not BT picks up the formal threads of his earlier album in this follow-up. If he does so, how might his conception of classical form and formal function have evolved during the intervening years? A project that compares formal organization, the use of ambiguity, and the role of expectations among these three sequels and *This Binary Universe* itself could prove most interesting.

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89 [https://www.facebook.com/bt/posts/197720780336799](https://www.facebook.com/bt/posts/197720780336799)

Also of note is the 2015 release of *Electronic Opus*, BT’s reimagining of his catalog through a very explicit ‘classical influence’ lens. After a successful Kickstarter campaign, BT and his team made arrangements of fourteen tracks that spanned his career, including some from his film scores. The project went across the sea to record with the City Of Prague Philharmonic Orchestra. BT then took these acoustic results and added the electronic components in his studio.

The album is of special interest to us, given our purposes within this dissertation, in that it contains two tracks that formally appeared on *This Binary Universe*. Lasting just 5:24, “1.618” appears in less than half of its 11:34 duration on *This Binary Universe*. The second shared track, “Good Morning Kaia” is likewise reduced, here 7:19 from 8:12, although this represents much less of a drastic cut. In regards to each track, the changes made to the durations could have a number of different causes. Some ready suggestions include the difference in scope and in the goals of the two projects as well as the desire to fit more tracks on *Electronic Opus*.\(^{91}\)

We did not discuss either of these tracks in depth within this current research project. It would be very interesting to examine carefully how the 2015 renditions of these tracks differ from their 2006 versions. In addition, at the time of its release, BT took a modified version of *This Binary Universe* on tour in order to promote the album. An examination of how these multiple different versions diverge from the album version would shed more light on how we might privilege certain musical elements over others when listening to *This Binary Universe*.

Consequently, we can see that while BT’s work on *This Binary Universe* came to a close in 2006 with the album’s release, his interest in the ideas explored therein has remained steadfast. *This Binary Universe* represents a very formative period within his creative development, acting simultaneously as the culmination of his production techniques to that time

\[^{91}\] Other reasons most likely come out of the more mundane but no less trivial concerns dealing with budget constraints.
and as an indication of where he would go next. BT’s explicit embrace in 2006 of his classical music background continues to resonate within his productions today. On his current biography on the Armada label, BT states, “I make protracted compositions in classical form with a modern tonal palette.”

Through the musical material on the album, BT creates the possibility for multiple ways of hearing, engaging with, and understanding This Binary Universe. Yet perhaps the more intriguing aspects of what we’ve discussed in this dissertation reside beyond this album, beyond BT. We create the multiple ways of hearing, engaging with, and understanding This Binary Universe as well as the rest of the music we listen to.

Analytic techniques work as a sorting mechanism, a way to partition the indeterminately large amount of information contained within music. Our decision of what tools we use to engage with the music will emphasize certain details but consequently de-emphasize others. Focusing on harmonic voice-leading in a Beethoven symphony means that we aren’t talking about the rhythm, timbre, or any number of other elements involved in the creation of the music. We can’t possibly encompass all these musical details simultaneously and from all possible considerations, and so analysis provides a way to navigate coherently through the music.

Yet we’ve seen the impact that the choice of analytical framework creates on our listening experience within the context of This Binary Universe. Our knowledge of genre too has a profound impact on what we hear and how we hear it. Our listening experience is powerfully shaped by the expectations that we bring and by our awareness of these expectations. In short, we participate in determining how we will respond to the music. As we change, our relationship

\[92 \text{http://www.armadamusic.com/artist/bt/} \]
with music changes. Listening to this album enables us to learn about both its influence and our own in actively shaping not just the worlds of *This Binary Universe* but also the worlds beyond.
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Dave Molk

murmur

2 vibraphones, 4 players
 circa 12'
This piece requires cardboard dowels taken from coat hangers, cut in half and used as mallets. ‘Break in’ the head so you aren’t playing on the pointy edge of cardboard. Each player also needs ping pong balls to be used in controlled ricochets. Player 3 needs 2 bows (optimally—1 is feasible).

Player 1 and 2 share Vibraphone 1. Player 3 and 4 share Vibraphone 2.

Pedal markings are given to all players, except in situations where the person on pedal is obvious. Coordinate who will pedal when.

Rolls should approximate 32nd notes but should not be coordinated—push yourself out of sync if this happens. Always start rolls low to high.

\[ \text{\textbullet} \] indicates a double-stop attack immediately into a roll
murmur

\( \text{Dave Molk} \)

\( \frac{1}{4} = 72 \)

\( p \) use minimal pedal necessary to add a hint of pitch

P1 (vibe 1)

\( p \) use minimal pedal necessary to add a hint of pitch

P2 (vibe 1)

P3 (vibe 2)

\( \frac{1}{4} = 72 \) with dowels

P4 (vibe 2)

P1

with dowels

P2

\( p \) with dowels

P3

\( p \) with dowels

P4

\( p \) with dowels
Dave Molk

fade to light

2 vibraphones, 4 players
circa 20'
committed to Carolina Alvarado Molk

This piece requires cardboard dowels taken from coat hangers, cut in half and used as mallets. The sticky hangers are gross—try to find the non-sticky ones. Break in the head so you aren’t playing on the pointy edge of cardboard. Each player needs 2 dowels.

All players need 1 coin and 2 bows, with the exception of Player 3, who needs 1 bow. These are bass bows, optimally. Players 1 and 3 each need 2 ping pong balls.

Player 1 and 2 share Vibraphone 1, with Player 1 high and Player 2 low. When indicated, Player 2 will go to the opposite side of Vibraphone 1 (and come back when prompted).

Player 3 and 4 share Vibraphone 2, with Player 3 high and Player 4 low. When indicated, Player 4 will go to the opposite side of Vibraphone 2 (and come back when prompted).

Techniques:

**node**: when indicated, play on the node for different timbre. otherwise, play over the resonator portion of the bars.

**ric**: create a ricochet-like effect (like feathered beam, *not as* in letting the dowels rebound naturally). start slow and get progressively faster while the duration of the indicate note is in effect.

**ppb** (ping pong ricochet): hold the balls just over the resonator section of the bars and use controlled drop to create ricochet.

**bowed ppb**: with ppb on bar, form a cage with your hand and bow—the activated ball will begin to bounce. hover with the hand—don’t deaden the sound by resting your hand on the bar.

**bowed coins**: by placing the coin over the center of the bar and bowing, you get the harmonic 2 octaves above as well as the bowed note (with some nice sizzle). make sure the coin doesn’t fly away!

**uneven 16ths**: non-equal division of the beat into however many ‘16ths’ are indicated. for a given beat, the later 16ths are faster and the earlier ones slower.
fade to light

Dave Molk

\( \text{d} = 46 \)

P1 vibe 1

with dowels (over resonator unless specified)

P2 vibe 1

with dowels (over resonator unless specified)

\( \text{p} \)

pedal down

P3 vibe 2

with dowels (over resonator unless specified)

\( \text{d} = 46 \)

P4 vibe 2

with dowels (over resonator unless specified)

\( \text{p} \)

pedal down

P1

7

P2

(unmeasured)

P3

(unmeasured)

P4
hold onto ppb and use as mallets...
these are even 32nd notes!!!
keep adding notes/beat to echo, switch to an increasing trem.
when doublestops become impossible
Out of tempo—do not synchronize with anyone else and don’t start on this downbeat.
Drift along slowly, without fixed rhythm or sense of pulse. These durations should not be equal to one another.

with bow

P1

resonator

P2

P3

P4
when you hear P1 play F's like this, continue your pattern until you reach the E, then drop all other pitches and continue bowing the E harmonic at a leisurely, disconnected pace.