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Visualizing the App Album with Björk's *Biophilia*

Nicola Dibben

Abstract

Digitalization has brought profound changes to the way people make and experience music. This essay examines the implications of the mobile app format for audiovisual aesthetics through a case study of Björk's *Biophilia* (2011). A number of consequences and opportunities of this new format are identified: new aesthetic and pedagogical implications of music visualization, immersive versus "distributed" modes of listening, interactivity and multisensory experience of music, and the creation of a curated artistic vision that counters the fragmentation and lack of multimedia experience associated with prevalent practices of music consumption via MP3 download. The essay ends by considering the relationship to interactive video, computer games, and the physical music artefact, arguing that mobile music apps are (re)introducing interactivity and multimodality into the experience of recorded music.

Keywords: music app, music album, interactivity, multisensory, Björk, *Biophilia*

On its launch in July 2011, Björk's *Biophilia*[1] was received as the birth of a new music format—the "app album"—a music album designed for mobile digital devices. It was greeted as the way forward for musicians and developers and likened to the birth of cinema.[2] Although I'll consider such grand claims, I'll focus in this essay on the emergence and characteristics of this new format, focusing on the implications of the app for audio-visual aesthetics.

Biophilia is a multimedia project conceived and created by the musician Björk, comprising an audio album, a suite of apps for mobile devices (the Apple iPad and iPhone), live shows, residencies with "pop up" music schools, and a variety of other activities and artifacts. My analysis, focusing on the app suite, draws on participant observation, informal

discussion, and formal interviews carried out during my time as a collaborator on the project from September 2010 to July 2011. This is supplemented by material drawn from published interviews, critical reception, music industry statistics, analysis of the music and apps, and an interview study with members of the general public.[3]

I start by putting the app into its historical context and then consider the consequences and opportunities of the app album format for audiovisual aesthetics as realized in *Biophilia*.

The Music App as a New Digital Medium

Although software applications have existed for decades, the idea of "apps"[4]—applications for mobile devices that are low cost, function specific, and downloadable—reached the mass market in the first decade of the twenty-first century via the widespread availability of smartphones and digital distribution platforms. Since their initial launch, such products and services have increased exponentially,[5] and mobile devices and services are now an important part of how lives are lived.[6] Consequently, the app medium fits into a projected future for digital media as mobile rather than fixed personal computer services.

Music apps are usually a type of "immersive app," characterized by a focus on the content and a user experience that can be customized[7], and are fairly popular compared to other app categories.[8] Apps associated with established musicians emerged from 2009. However, these tended to be promotional items for albums. For example, the French band Nouvelle Vague released a promotional app for their album *3* in 2009, which included material that might normally be found on an artist website, such as news, videos, and the option to purchase the album. Custom-made apps are expensive; therefore, many artist apps are based instead on a toolkit comprising a selection from different modules including free streaming services for an artists' audiovisual content, photographs, news, chat rooms, and the option to buy music, tickets, and other merchandise. The Madonna app by Mobile Roadie is one such toolkit app.[9]

In addition to these music and social content apps, which arguably serve a gateway function similar to a website, a range of other artist apps offer interactive functions more akin to computer games. Remix apps allow the user to create new versions of an artist's song from the original instrumental and vocal tracks (*Remix David Bowie,*[10] *iDaft 2,*[11] *David Bowie Golden Years App*[12]), in some cases while playing a game (*Goldfrapp Pinball*[13]). Musical instrument and sequencer apps allow the user to generate sound and create music from samples (Kraftwerk—*Kling Klang Machine—No1*[14]). Sing- and play-along apps enable the user to perform along with the artists' tracks (*Piano Complete: Elton John's Greatest Hits Vol. 1,*[15] *David Archuleta Open Mic*[16]). In music action game apps, the user performs missions within an artist-themed virtual world (*Linkin Park 8-Bit Rebellion,*[17] *Gorillaz Escape to Plastic Beach for iPad*[18]). In a few cases, the app can be thought of as a new audiovisual music "album" release. For example, 2manyDJs' *RadioSoulwax*[19] is a series of twenty-four 1-hour mixes of classic tracks with animated album cover art synchronized with the music sampled, and Bluebrain's *The National Mall* is a site-specific app whose music changes according to the listener's proximity to particular locations.[20]

Björk's *Biophilia* was unique in being a suite of apps structured as an album and released in synchrony with the physical and digital album.[21] The app suite consists of a "mother app" (referred to by the developers as the "box"), which has its own song ("Cosmogony") that serves as the interface from which users can access a suite of apps corresponding to nine additional songs. These ten songs form the basis of the physical release of the album, although the mix in each version is unique. Nested within the *Biophilia* app, each song has its own "box" within which is a suite of items: "play" is the song presented as an interactive audiovisual semieducational game; "animation" is a scrolling graphic score with playback; "score" is a scrolling notated score with MIDI playback; plus lyrics, credits, and essays (see Figure 1).[22] Each app is an interactive exploration of each song's concept and

musical structure, taking a variety of forms, from new musical instruments through to linear music video. In some respects the apps can be thought of as digital music videos, and, therefore, as one example of the extension and diversification of traditional music video.[23] For the purposes of this essay, I consider the *Biophilia* app in the context of the music album, noting that it brought the term "app album" into widespread use.[24]

[INSERT FIGURE 39.1a, 39.1b, 39.1c, 39.1d HERE]

Why Make *Biophilia* an App Album?

Biophilia is a concept album that presents an artistic vision of the relationships among nature, technology, and music. The hundreds of interviews, press releases, and other information released about the project since just before its press launch in June 2011 are a way of "storying *Biophilia*," in which the genesis of *Biophilia* is made and remade in the telling. For example, it would be easy to see *Biophilia* as the natural extension of Björk's creative vision, whereas the stories told about *Biophilia* might more properly be thought of as the creative vision reimagined in the light of the eventual product. Nonetheless, it is possible to identify a range of factors that contributed to the making of the *Biophilia* app album.

Most notably, *Biophilia* was shaped by precursor tools, rather than by the app as a preexisting thing best suited to realizing her ideas. Björk had been using touchscreens and other interactive electronic physical devices, including Lemur touchscreens and Reactable, to perform and compose since 2007:

> [T]he initial idea, in a way, was because of the arrival of the touch screen. I was already on my last tour from 2006 to 2008, the "Volta" tour. I had a touch screen instrument called the Lemur and another one called Reactable. And I was performing or people who were playing with me in the band were on those. Once the tour was finished in 2008, I was excited not just to perform with touch screens, but to write with them or kind of use it as much as you could.[25]

Björk believed that touchscreens offered a more intuitive and easily accessible form of instrumental accompaniment, which allowed her to change her usual compositional habits of composing vocally:

> Because I don't play the piano or guitar, and usually I've always written my music when I am just walking outside, I've finally found something that's appealing to me as an accompaniment . . . . I can just scrabble with my fingers—it's a breakthrough for me.[26]

When the iPad came out it offered a way of realizing her project as an interactive app. *Biophilia* was originally intended as a three-dimensional (3D) film to be directed by Michel Gondry, and then as a "music house" (like a museum) in which each room would represent one of the songs and contain interactive exhibits corresponding to its natural science subject matter.[27]

> We were trying to make the film behave like an app, but it wasn't . . . . I also kept thinking about the music house—that's how I wrote these songs. But the house is, like, rooms—like the apps.[28]

The key point about the project conception for the purposes of this essay is the relationship between the visuals and sound, which, in each case, is intended to relate directly to musical structures and processes. Björk's idea was to use touchscreens as an intuitive tool for music making and as a means for interactive, educational experiences that would allow the user to learn about some aspect of musical structure through natural-world phenomena. According to the lead app developer on the project, interactive artist Scott Snibbe, the song apps are "not merely a music video, and also not just some kind of pure musicological analysis, but they're actually a new creative experience that uses music, nature, technology and interactivity."[29] Hence, at a meeting in September 2010, Björk illustrated her ideas for how *Biophilia* might be manifested as an interactive semieducational project by showing me two types of app:

high-quality educational apps (including *The Elements*,[30] *Solarwalk*[31]) and sound-art apps, some of which combined nature and music (*Soundrop*,[32] *Bubble Harp*,[33] *Bloom*[34]).

Biophilia addresses themes found in Björk's previous work, which reconfigures the relationship between nature and technology and emphasizes the "instinctive."[35] But events simultaneous with the making of *Biophilia* also point to a very practical engagement with questions of the relationship between nature and technology: Björk's involvement in the *Náttúra* campaign for environmental protection in Iceland, her involvement in a venture fund for start-up companies that emphasized the role of renewable energies and sustainable industry, and the Icelandic economic crash in 2008. A distinctive feature of the way that *Biophilia* addresses the relationship between nature and technology is the positive perspective in which new technologies can be used to go "forward to nature," in Björk's words.[36] The interactive music-educational aspect of the project is part of this positive proactive approach in two ways: by celebrating the natural world through a thematic focus on natural phenomena ("nature") and by using touchscreen technologies to enable intuitive, spontaneous, and embodied forms of music-making and learning ("the natural").

As this illustrates, the digital and multimodal character of the project can be seen as an integral component of its concept and aesthetic. However, for an artist like Björk, whose music is part of a larger concept realized through a range of media, a digital format that encompasses the multimedia is important strategically as well as aesthetically. From a personal perspective, Björk was influenced by the shift from physical to digital formats and distribution platforms:

> I have a lot of musician friends and they're all like it's the end of music and it's all going downhill, and music's going to die, and there's no more CD shops . . . and I'm including myself, you know? It was so sort of a reaction to

that: “Let’s just clear the slate. And what do we got?” We got people that want to hear music, and people that make music, and they’re exchanging it online.[37]

Prior to *Biophilia*, Björk’s fans tended to buy her physical releases in preference to digital downloads,[38] so by releasing a digital artifact that retained and expanded the multimedia component of her work, fans would be encouraged to engage with downloads as a format for her music. Perhaps, too, she would be able to reach new audiences who wouldn’t normally have bought her music. It is no coincidence that the emergence of music apps occurred simultaneous with a decline in global music sales, a reduction in physical sales, and growth in digital sales.[39] In 2011, 32 percent of global record industry revenue came from digital sources, and, in the United States, revenues from digital sources surpassed those from physical sources.[40] Thus, creation of music apps is a response to the broader shift toward digital as opposed to physical sales.

The end to Björk’s record contracts in 2007 made this unusual venture feasible. Two difficulties from the perspective of a record label were the absence of agreed-on publishing rates for music in apps and the risk that the apps would undermine music sales. Rather than sign to a major record label for the project, it was funded through a profit share with the app developers[41] and released independently, and the audio album was signed to Nonesuch records as a one-off deal.

This account of the history of the *Biophilia* app album highlights factors that contributed to the development of its concept and aesthetic. In the remainder of this essay, I analyze the audiovisual character of the app suite and its implications for music making and consumption and briefly consider its position in relation to music video and album formats.

Implications of the App Album for Audiovisual Experience

The app format, as realized in *Biophilia,* has three main consequences for musical and audiovisual experience, which I deal with in turn: first, music is visualized in a way that

seems to encourage attentive listening to and playing with musical structures and processes; second, it offers a multimodal experience by virtue of touchscreen interactivity; and third, it presents a curated experience of a coherent artistic vision that is the product of collaborative work.

Visualizing Music

The *Biophilia* app emphasizes the visual dimension of music that in some respects was greatly diminished by the advent of recorded sound.[42] Adopting Korsgaard's summation of audiovisual relationships in music video, the app can be said to "visualize music" (by recasting preexisting songs in visual form) and, drawing on Vernallis,[43] to "musicalize vision" (by allowing the images to "respond" to musical structures).[44] What's distinctive about the particular audiovisual relationship in *Biophilia* is that a specific (and different) musical parameter of each of the ten songs is recast in relation to different natural phenomena.[45]

The audiovisual relationships in the song apps serve a pedagogical purpose in drawing attention to particular musical features of individual songs that function as sonic analogues of natural phenomena; conversely, too, natural phenomena are used as metaphors for musical processes. In the case of "Solstice," for instance, the user can learn how complex looping procedures work in music by seeing melodic sequences visualized as planets circling a sun on the screen. In "Thunderbolt," the user can learn that arpeggios are a kind of musical structure that retains the same basic interval arrangement even when range and tempo change by altering the length and height of lightning arcs on the app screen. As one informant stated: "The stuff you can do is really cool and I like how it relates to the actual song that it's talking about as well, they're not like completely random" (student, aged twenty). One criticism of the pedagogical approach is that it fragments the musical experience by treating different aspects of musical structure as completely separate: musical materials are isolated so that

they become separable parameters of form, scales, chords, meter, and tempo. It could be argued that this even reinforces a rather traditional idea of what music is and how it should be taught—one that reflects Björk's own rather negative experience of music education perhaps.

The choice of natural phenomena and musical structures (Table 1) **[INSERT TABLE 39.1]** was driven by a variety of factors. For example, Björk focused on some natural phenomena because she thought of them as examples of nature at its grandest, such as electricity (performed by a Tesla coil in "Thunderbolt"). Others were chosen for personal reasons, such as the virus, which was an example of a symbiotic relationship inspired by her own battle with a throat infection. In each case, there is a connection to the apparently personal lyrical content of the songs, as in "Hollow," whose subject matter is genetic descent and DNA. The choice of which musical structure to visualize in which track was, in some instances, guided by rather than determined by the songs. Comparing the early briefs given by Björk to developers of the apps with the final realizations of the apps reveals this malleability. For example, Björk's initial brief for "Pneuma" (subsequently titled "Dark Matter") suggested the app should feature a human face, the mouth and throat of which would be manipulated to control the flow of breath and resulting vowel sounds.[46] However, Björk subsequently used this app to explore musical scales instead.

The audiovisual relationships between the natural phenomena and musical structures are idiosyncratic and reflect the way Björk conceives of and hears music. For example, Björk likened the way she hears verse-chorus form in pop music to the experience of traveling through intersections, and the idea of crystal structures as analogous to that:

> I've sat a lot of my life in buses and taxis from 20 years of touring and somehow all these different types of intersections have gone on file in my brain. Like some have 3 streets meeting with very tall buildings on all sides while others are complex with like 5 streets meeting but all buildings are low

> and so on . . . seems like each one of them has a different mood, different spatial tension or release. Part of my obsessive nature wants to map out each intersection in the world and match it with a song . . . to me crystal structures seem to grow in a similar way.[47]

The app realization of "Crystalline" combines these ideas by representing song sections as tunnels which the user travels down (by virtue of the camera's gaze fling through the tunnels), and representing the boundaries between song sections as tunnel intersections at which the listener selects a route by tilting the device. The aim of the game is to collect crystals from the sides of the tunnels, which accumulate to form larger crystals corresponding to a particular route through the song form. Interestingly, the visual aesthetic of "Crystalline," the first single and app released, is a retro video arcade game, highlighting the continuity between new and old gaming technologies and aesthetics.

One distinguishing feature from the traditional narrative pop video in each case is the (almost total) absence of the star persona. In other words, what is being visualized is the music, rather than the image of the artist herself. Björk's central idea was that the audiovisual relationship should always visualize musical structures and that the visual scale of any natural phenomena should be either very big or very small, but never human scale. This presented some difficulties for the app developers who, to some extent, wanted to use the human scale to provide an emotional connection and also because the subject matter of songs are as much about human experience as they are about natural phenomena (arguably the songs present natural phenomena as analogies for human emotional experiences).[48]

The absence of the author image was a problem in the case of "Hollow," which is also arguably the most traditional because it is the only linear music video that tracks the song. The animated video uses increasing levels of magnification to take the viewer from the level of human blood tissue to that of DNA akin to the visual technique used in the science

documentary *Powers of Ten*[49] that was an inspiration for the video. The "falling effect" created by this increasing magnification is also a metaphor for musical processes (changes of tempo and meter) and the lyrical content (in particular, the narrative idea of falling through time and through genetic ancestry). An early version of the video featured Björk's face as the human-scale starting point for the animated journey but, under Björk's direction, her face was removed on the basis that although such a literal representation might be suitable for MTV or YouTube, it was less appropriate for the app, which should focus instead on the idea of the "ghost in the machine." Hence, in the final version Björk's visual image features twice: a brief glimpse as the camera exits the body at the end of the video and a mask-like representation made from protein strands midway.

In addition to the song apps, music is visualized in the scrolling music notation and animated graphic scores. These were created by the composer, inventor, and educator Stephen Malinowski, whose work Björk had seen online. Malinowski's "Music Animation Machine," from which these animations derived, was influenced by the work of twentieth-century abstract animator Oskar Fischinger, and, as Korsgaard notes, they can be regarded as a return to the prehistory of music video.[50] Significantly for *Biophilia's* educational agenda, the animations have a pedagogical function:

> One of the things about a musical score is that if there's something in there that you're not perceiving, because it requires more attention than you're giving it, it gives you another way in to hear something. I've had people say, about pieces of music they've loved and known all their life, that after watching one of my videos they see something in it that they'd never heard before and now they hear it every time they listen to that piece of music. It's part of the education, people don't realize that when you're listening to a piece of music you're learning how to hear it, how to make sense of it.[51]

A review of *Biophilia* by a deaf person even notes how the animations provided a musical experience of Björk's music otherwise absent.[52]

The variety of music representation in the *Biophilia* app also has a deliberate purpose. Traditional sheet notation, graphic scores, MIDI, and mp3 each have different educational and musicological histories that Björk characterizes as old, "elitist," and new "street" representations.[53] The juxtaposition of music scores and graphic scores, MIDI and mp3, academic analyses and educational games highlights the equivalence between old and new, elitist and street. According to Björk, "It's sort of trying to blur these lines . . . that it's actually sort of the same thing."[54]

Beyond the characteristics of the individual apps, the app suite is united by a particular design aesthetic: a virtual environment that aims to create an immersive interactive experience. The designers M/M Paris created the star field "mother" app ("Cosmogony"), which visualizes the musical work as a 3D virtual environment that contains the songs (Figure 2), and exploited the possibilities of the newly emerging HTML5 for Björk's website. Everything within the environment moves making it feel live and organic, a model for this being *The Elements* periodic table app in which the contents are interactive and 3D. In the star field interface, stars corresponding to the song apps glow and pulse; each song increases and decreases in volume as the user approaches them in the 3D space by pinching the screen and zooming nearer and farther away; even song names in the track listing screen move and bob as if suspended in space.

[INSERT FIGURE 39.2 HERE]

The app suite also uses a particular color palette distinctive to each song and two custom-made fonts developed by M/M Paris while working on production of Björk's sheet music as part of another project: Bjotope for text and Allegretto for music notation. These are used in the app (and other associated products) and combined in a new font, Bjotope-staff, within the "Sacrifice" app, which introduces those without musical training to music notation

through text and in which the iPad becomes a musical instrument. It is not just the type of visual material but also the high definition of the iPad screen that makes the visual experience of the apps so compelling.

One consequence of these audiovisual relationships is that the app encourages immersion in the audiovisual experience and attention to sound—in effect, a (re)new(ed) listening mode. The games, scrolling musical notation, and graphic scores draw attention to musical details of the song materials and structures by virtue of the musical parameters they choose to represent; the metaphorical relationship between natural phenomena, musical processes, and lyrical content; and the hands-on interactive medium. These relationships work against accusations that (interactive) images distract from the music, turning music into something akin to "unheard" film music[55]—an accusation also leveled against interactive video and early music video.[56] Furthermore, amid claims that the ubiquity of music on mobile devices is shortening attention spans and structuring musical experience as something "background" to other activities, it could be argued that the *Biophilia* app counters this by encouraging users to make music listening a central activity.

As evidence of this, informants in my interview study remarked on the high degree of attention demanded by the apps and viewed this positively or negatively depending on their primary mode of musical engagement and particular situation of listening (whether music was habitually background or foreground to some other task). Many said they would be most likely to use interactive music apps while traveling by train, indicating that the app experience benefits from focused attention.

Interactivity

A key to the immersive experience just described is the interactivity offered by touchscreen technology. The audiovisual aesthetic of touchscreen technology is cinematic and interactive. As Scott Snibbe notes, the first commercially available mass computers were interactive: you

turned the computer on to be greeted by a flashing cursor and "you had to do something."[57] Subsequent operating system design and language conceptualized the computer interface in terms of "desktops" and "windows," which are both non-interactive flat spaces. Snibbe remarks that touchscreen technologies like the iPad restructured the interface using a cinematic language of swipes, cuts, and dissolves and achieved a more immersive experience.

The interactive aspect of *Biophilia* can be seen as continuous with related developments in interactive video, its precursors in video games and other forms of participatory consumption involving user-generated content and open-ended forms,[58] and, from a musical perspective, can be seen as a reflection of experimental musical practice post-Cage. Each song app allows a traditional, linear listening and viewing experience, but most also allows users to create their own versions of the songs. Indeed, with the exception of the "Cosmogony" and "Hollow" apps, songs do not exist in fixed versions: the apps allow users to improvise a bassline ("Thunderbolt"), create a route through the song structure ("Crystalline"), delay song progression ("Virus"), compose musical sequences ("Moon," "Solstice," "Hollow," "Dark Matter"), and write music notation ("Sacrifice"). This means that the listener personalizes the experience in so far as the album can be heard in different ways on revisits.[59]

Within this context, the song becomes process rather than a fixed, single object that is remade in different performances according to available resources: not only are the versions of songs on the app suite and music album different, the versions on the song app, score, and animation also differ. Other features also allow interactivity and user-generated content. The sheet music and graphic scores can be used to aid listening or performance: Björk and the choir used the graphic notation as a teleprompt in live performance. In addition, the music score feature allows MIDI playback, enabling users to reorchestrate the music or sing and

play along. Björk had noted that whereas people can grab a guitar and sing rock songs together, they couldn't do that as easily with electronic music.[60]

This interactive experience is contrary to the receptive mode of consumption privileged by the advent of recorded music. However, the degree and type of interactivity differs throughout the suite, reflecting the different approaches to interactivity of the different developers. Some of the apps are instrument-like in their capabilities, and, although, as with computer console music games, they may lack the flexibility of real musical instruments, they entertain and may teach some elements of music and encourage users to explore further beyond the app. Scott Snibbe's work on *Biophilia* and elsewhere is concerned with open-ended interaction within simulated environments, hence the apps he designed reflect this:

> I'm not as into the kind of push button kind of interactivity, but more that you are interacting with a simulated model of reality. So, the two apps that we did, "Virus," where you're interacting with the simulated microscopic world and, "Thunderbolt," where you're manipulating simulated electricity and lightning, both of those are completely open ended. They are different every time. You can explore them as if you can do that thing in reality. That is probably our specific angle on interactivity and you can see other peoples' personalities and approaches to interactivity came out in the apps.[61]

The digital interactive format of the touchscreen device is also central to the project through the way that it makes electronic music making and learning a more embodied process. As Korsgaard notes,

> *Biophilia*'s use of touchpad-based devices activates the sense of touch in a way normal music video do not. Both the images and sounds of the "music video" apps can be "touched" and thereby altered. This allows for a more tactile way of experiencing music *and* images.[62]

He contextualizes this "mediated embodiment" as "a response to the coldness and dematerialization of digitality." The introduction of touch and movement to the audiovisual experience is crucial for understanding the *Biophilia* project. Björk saw touchscreens as the tool by which she could capture (or indeed free!) "the natural" and "spontaneous" in her own and others' music making, teaching, and learning.

As regards her own music making, Björk characterized touchscreens as offering a more spontaneous and embodied mode of engagement. The standard tool for electronic music composition is the Digital Audio Workstation, yet tangible musical interfaces such as touchscreens can allow a more embodied form of composition and performance, both for performers and audiences of electronic music.[63] As regards music teaching and learning, Björk saw touchscreens as a way to make music education a more embodied experience, countering what she saw as its unnecessarily dry and abstract theorization of musical structures and processes:

> [T]he core or idea of this project is taking something that has usually been quite academic or bookish and making it impulsive and tactile. So actually explaining it or doing an interview about it or writing or reading a press release about it, makes it sound like 500 times more complicated that it actually is. It's like trying to explain how to dance in an e-mail. If you would just turn it on and do it together, it'd be way easier. I am hoping that it would sort of dissolve this VIP status that musicology has—that it's only for the chosen few, if you are super clever, and you've studied for billions of years, you understand about scales.[64]

Curation

One notable feature of the *Biophilia* app suite as an audiovisual entity is the way it offers a curated vision. This is particularly pertinent given the increase of digital downloads and

streaming services within which the unit of exchange is the song rather than the album. Streaming and download platforms fragment albums and, even if a listener chooses to listen to a whole album instead of a mix of singles from different albums, intervening adverts interrupt the continuity of the listening experience. The *Biophilia* app suite both communicates a project concept and adds creative value to the album at a time when the creative value of music alone seems to be proving insufficient to sustain industry sales and income. Indeed, in many ways, *Biophilia* potentially reinvigorates the idea of the album. Scott Snibbe remarks that the multimedia character of the app recalls the traditional physical album experience:

> In some reviews of *Biophilia*, people said, "Wow, I haven't had this experience in 20 years. Before CDs came out, I'd buy an album and hold the 12-inch cover in my hand, sitting cross-legged on the floor while I listened to the music, read the liner notes, and looked at the pictures." People used to have this very tactile, multimedia experience when they bought an album. But with the digitization of music, we've lost that special moment. You can think of the app as, finally, that chance to unwrap the box and have a personal, intimate experience again with music.[65]

The app suite deliberately recalls the album format in its architecture. Indeed, many of the difficulties encountered during the process were in trying to mimic the physical and chronological structure of the physical album release. For example, the app box design mimics the architecture of the physical album: the individual song apps are housed within a song box app alongside the other elements of the release, and these song boxes are housed within the mother app, "Cosmogony." Scott Snibbe noted that it was technically difficult to nest apps within each other[66] and to mirror the standard staggered release of three audio

singles followed by the full album in the App store because it was the first time either had been attempted.[67]

This staggered release is standard industry practice designed to maximize media exposure and consumer desire, yet this album cycle is potentially undermined by the opportunities that digital formats offer for more continuous releases. For example, the constellation design of the *Biophilia* interface, and contractual agreements, meant she could add new song apps in the future should she wish. Other artists have increasingly used a variety of release formulae. For example, Ash released one single every two weeks for a year because, according to them, it suited their creative flow and meant there was no need to tie everything together.[68] A similar point has been made by other artists. For example, David Hockney remarked that "I draw flowers everyday on my iPhone and send them to my friends, so they get fresh flowers every morning," recalling the spontaneity so attractive to Björk. He also went on to remark: "[The iPad is] like an endless piece of paper that perfectly fitted the feeling I had that painting should be big."[69] Hockney's idea of a canvas with no boundary is similar to the open-ended music of some of the music apps and, less directly, the idea of a continuously expanding constellation of songs as described by Björk. However, whether Björk will use the star field in this way remains to be seen since the relationship between record labels and media is still currently structured by marketing that relies on the temporal build up to a release.

For the app user, the star field interface provides a less hierarchical and arguably less dictatorial means of music selection than is frequently the case, as noted by one informant:

> [M]ost of the music apps or software that I've seen is mainly just lists and it's like a grid format, it's quite, what's the word . . . it kind of takes out the artistry of the music, cos its like this is what you're going to listen to next and there's a queue of music and you don't get the "play about with it" kind of

> thing [reference to 3D navigation within the star field] . . . I think the whole spread-out idea's quite good, rather than "this is the top one you've got to listen to," you can pick and choose what you're going to do. (female student, aged twenty)

What's particularly interesting about the way this is realized is that, even though navigation and choice is not dictated by the *Biophilia* interface, a curatorial vision is retained through the consistency of the interface's design with the album's concept—interactivity and the natural world.

Although there is insufficient space here to discuss the creative process in detail, it is difficult to consider the artistic vision in a project such as *Biophilia* without also mentioning the collaborative character of the work that went into its creation.[70] Scott Snibbe describes his experience of collaboration, noting that:

> [S]he acts like a director. She has a very strong, high level vision for the project that she articulated in a long manifesto and in many meetings, playing the songs, explaining what they meant. But quite often she let us go off and interpret what she said in our own way, as long as we were sticking to the big message, the narrative, and the broad strokes she was painting. There was room for us to improvise within that.
>
> So it was a lot like working on a movie—there was a clear area where each person could make their own contribution, but there is an over-arching ultra-powerful vision from Björk at the top. And of course like any project, she makes corrections along the way.[71]

In practical terms, Björk presented a manifesto and design brief to collaborators, including detailed references to visual sources for the look and concept of each song app. These were then realized as storyboards and prototype apps with limited functionality, which were

refined through developments and testing. In parallel with this, collaboration went on to develop the music scores, animations, and, in my case, the written text, and the designers and developers worked to create an architecture that would house this material. This work entailed a combination of face-to-face meetings, e-mails, and shared documents and artifacts in virtual storage spaces.

As an example of the strong creative vision exerted by Björk over the project, many of the final apps are very close to Björk's original conception: Björk's brief for "Solstice," for instance, is almost identical to its final realization:

> [T]he app could be a "circular" harp, which moves in planetary orbits . . . in brief: there is a central "sun" from which you draw the strings of the harp out. you then throw a planet in orbit and each time it passes a "string" it plucks it. you can fiddle with the size of the orbit, the speed of the planet, the length and spacing of the strings until you like it . . . and then you tap the central sun, change the colour, and pull out a new set of strings, plucked by a new planet. you can keep doing this, assigning different sounds to different planets, until you have a solar system of sound.[72]

Other apps changed during the course of realization as one or another element of the concept gained greater weight according to aesthetics and the practicalities of usability. For example, the original image for the "Moon" app depicted Björk's idea of fluid pulled up through a spine with the fullness of the moon and with notes of the song arrayed in horizontal lines like ribs.[73] However, this wasn't particularly easy to manipulate and didn't fully convey the idea of music as fluid and was subsequently changed to the ribbon design seen in the final "Moon" app.[74]

Like other collaborative music products, the presence of the author-image for the work is still an important part of how it is valued and understood,[75] both for audiences and

other collaborators: as Max Weisel commented: "Collaboration is definitely a huge aspect of a project like this. If we were to release an app without any feedback along the way, you wouldn't get this sense that it's actually something from Björk."[76]

Vizualizing the Future

Considering *Biophilia* in the broader contexts of music albums, music videos, and computer games highlights the distinctive features of the app suite as a new format. In the context of music albums, the growth in digital album sales to 2011 shows there is still a demand for a body of work by an artist,[77] and, in this case, the app format is well-suited to produce the curated album experience central to the conceptual character of the project. More generally, it offers a way of retaining and reinvigorating the album format in a context of music dissemination that tends to fragment the whole. From the perspective of video, the app suite extends the form: it is similar in presenting close relationships between music and image and differs as regards their interactivity and in not fixing song length and structure.[78] In the context of gaming, the apps extend the notion of music games in that they also allows users to create and perform music, but focus on musical structures and processes through metaphors of natural phenomena; as one informant noted, comparing the *Biophilia* app to the status of music within computer games: "you're coming from music and you're sort of bringing in, you're 'game-ifying' the album" (male computer technician, aged thirty).

As regards the relationship between the app album as a format on the one hand and downloadable MP3s and the physical album on the other, there are perhaps two key features of the *Biophilia* app suite: the perceived materiality of apps in comparison to MP3s and the creative value that apps add to music.

Whereas some see the app as disposable (something to load, play with, and then delete if it doesn't sustain interest), some see it as having greater materiality than the MP3 file format and therefore as being more desirable. The just quoted informant went on to note:

> I suppose the attraction then is you've got an application that's on the iPad, so you're getting that extra bit, you know, it's putting value back to the music by going back to buying that physical object, which is not the case now really. I still like buying CDs, if I really like an album I like to physically have the CD. There's something about . . . I'm just a hoarder, maybe, but yeh there's something about physically owning a physical object and you don't get that now with files but that . . . I don't know, is that [the app] a physical object? It feels more physical, it feels more real. (male computer technician, aged thirty)

Another informant notes the added value that the multimedia content of the app brings to the music:

> I think it's really interesting how much stuff you get and how involved it is and how much more interesting it is than just having the song, cos like for music piracy there's a lot of stuff I will obtain in less than legal means because you think, well it's the soundtrack to *The Avengers*, they're gonna make a gazillion pounds, they don't need me to pay for it. But then all you pretty much get is the bare bones of the music, but if you've got something like this, there's more meaning to it, it seems to have weight to it, it's more interesting than you just having all the MP3s. (female student, aged twenty-two)

In some regards, this idea of added creative value is also evidenced in the stratified market for physical music formats. The physical release of *Biophilia* comprised three types of low-end physical release, including the standard CD in jewel case and two high-end releases: a limited edition (retailing at £35) and an ultimate edition of 200 copies available for preorder at £500 each. The Ultimate Edition includes a set of tuning forks in an oak box: one fork for each of the ten songs in the album, each tuned to the pitch center of the track (Figure 3). This unique packaging, produced by print and packaging consultant Daniel Mason, embodies

some of the same ideas found in the app realization of the album: they are tactile, interactive, have educational potential, and can be used to make music.

The existence of this high-end physical release indicates a desire on the part of consumers for a covetable, tactile experience, previously noted in relation to the switch from CD to MP3 formats.[79] One consequence of a move to digital, then, is that digital media frees print from the communication process and opens an opportunity for the music industry to exploit the market for an enhanced physical product.

[INSERT FIGURE 39.3 HERE]

At its crux, *Biophilia* (re)introduced multimodality into digital audiovisual formats and used this to realize a creative vision of intuitive and embodied forms of music making and learning in which the natural world provides productive metaphors for emotional experiences and musical processes. Although there is a contradiction implicit in trying to create an artifact that will make music theory less elitist on a device that currently restricts its use to the moderately wealthy, *Biophilia* explores the possibilities of a new technology that will soon become cheap and available to most people. As an innovative use of a new format, this is a tantalizing glimpse of things to come, one in which digitalization changes not just the way we buy or store music, but the very modality of music listening.

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Figure 1

Illustrative images from Björk *Biophilia* app (One Little Indian/Wellhart, 2011). From left to right: (A) "Moon," musical instrument song app; (B) "Crystalline" essay; (C) "Virus" animation; (D) "Virus" score. Screen shots by the author.

Figure 2

"Cosmogony" navigational interface from Björk *Biophilia* app (One Little Indian/Wellhart, 2011). Screenshot by the author.

TECHNOLOGY	NATURE	MUSIC
Dark matter	Dark matter	Scales
Mutual core	Tectonic plates	Chords
Crystalline	Crystal structure	Structure and spatial musical environments
Moon	Moon phases	Musical sequencer and liquid forms in music
Solstice	Earth's tilt/seasons	Gravity as counterpoint in music
Virus	Viruses	Generative music
Cosmogony	Music of the spheres	Equilibrium
Sacrifice	Interaction of the sexes	Musical notation and fonts
Thunderbolt	Thunder and lightning	Arpeggios
Hollow	DNA	Rhythm and speed

Figure 3

Björk, *The Ultimate Art Edition*, 2011. Photograph by the author.

Table 1

Categorization of songs for press launch (Derek Birkett, e-mail message to author, June 12, 2011). This categorization also appears in naturalist and broadcaster David Attenborough's recorded narration to the *Biophilia* live show.

[1] Björk, *Biophilia*, One Little Indian/Well Hart, 2011.

[2] Jason Lipshutz, "Björk's App Designer Scott Snibbe Talks In-Depth About 'Biophilia,'" *Billboard.biz*, last accessed July 26, 2011, http://www.billboard.biz/bbbiz/industry/digital-and-mobile/bjork-s-app-designer-scott-snibbe-talks-1005293722.story Please add the details in the bibliography.

[3] The interview study conducted in June and July 2012 was designed by the author and conducted by Research Assistant James Rhodes. A convenience sample comprising fifteen informants was recruited through personal contacts and e-mail announcement

to the University of Sheffield volunteers list. Respondents varied in age (age range 9–52) and experience with music apps (including no prior experience). Informants were asked about their experience of apps, music listening habits, and preferences before being given 15 minutes to play with the *Biophilia* app. They were then interviewed about their experience of the app. Interviews were recorded and transcribed for subsequent analysis using Interpretational Phenomenological Analysis.

[4] The term "app" is an abbreviation of "application program" and distinguishes software programs, generally encountered by users, from "systems programs," which are those used by the computer itself. The term "app" was popularized by Apple's trademarked advertising slogan for the App Store ("There's an app for that"), although it had been in circulation prior to that.

[5] From Apple's initial 2008 launch of the iPhone 3G and digital store application to March 2012, available apps have increased from 500 to 585,000. ("Android Overtakes Apple with 44% Worldwide Share of Mobile App Downloads," ABI Research, last accessed October 24, 2011, http://www.abiresearch.com/press/3799-Android+Overtakes+Apple+with+44%25+Worldwide+Share+of+Mobile+App+Downloads.) The iPhone has a total sales of 116 million to date ("Android Expected to Reach Its Peak This Year as Mobile Phone Shipments Slow, According to IDC," IDC.com, last accessed June 6, 2012, http://www.idc.com/getdoc.jsp?containerId=prUS23523812), and the iPad tablet computer, 55 million. ("Apple Total Sales for the iPad Reaches 55 million," *Talking New Media*, last accessed January 25, 2012, http://talkingnewmedia.blogspot.co.uk/2012/01/apple-total-sales-for-ipad-reaches-55.html.)

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[8] "Play Before Work: Games Most Popular Mobile App Category in US," *NielsenWire*, last accessed July 6, 2011, http://blog.nielsen.com/nielsenwire/online_mobile/games-most-popular-mobile-app-category

[9] *Madonna*, Madonna, 2012.

[10] *Remix David Bowie*, EMI, 2009.

[11] *iDaft 2*, dothedaft.com, 2010.

[12] *David Bowie Golden Years App*, EMI, 2011.

[13] *Goldfrapp Pinball*, Mute Records, 2010.

[14] *Kling Klang Machine – No1*, Kraftwerk, 2011.

[15] *Piano Complete: Elton John's Greatest Hits Vol. 1*, Better Day Wireless, 2011.

[16] *David Archuleta Open Mic*, Sony, 2011.

[17] *Linkin Park 8-Bit Rebellion*, Artifical Life, 2010.

[18] *Gorillaz Escape to Plastic Beach for iPad*, Matmi New Media, 2010.

[19] *RadioSoulwax*, Our Patience is Limited, 2011.

[20] *The National Mall by Bluebrain*, Bluebrain, 2011.

[21] *Biophilia* received huge international coverage in press and broadcast media on its release. Sales figures are not publically available, but rankings indicate it has performed fairly well. *Biophilia* for iPhone was ranked in the top ten of downloaded music apps in eight countries, and top 100 in thirty-two countries; *Biophilia* for iPad was ranked in

the top ten in one country and top 100 in sixty-two countries; it was in the top ten for top grossing music apps in one country, and top 100 for eight others. ("App Database, Björk: Biophilia.")

[22] For a video tour of the app see Björk, *Björk: Biophilia: Cosmogony App Tutorial*, online video, 1:44, posted by "bjorkdotcom," January 17, 2012, http://www.youtube.com/watch?v=3dlRg6lM4mQ.

[23] See Mathias Bonde Korsgaard, "Music Video Transformed," in *The Oxford Handbook of New Audiovisual Aesthetics*, ed. Claudia Gorbman, John Richardson and Carol Vernallis (Oxford: Oxford University Press, 2012).

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