Music on Screen: From Cinema Screens to Touchscreens

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Title:

SOUND MIRRORS: BRIAN ENO & TOUCHSCREEN GENERATIVE MUSIC

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Abstract:

With the recent publication of the edited collection *Brian Eno: Oblique Music* (Albiez & Pattie, 2016) and the distribution of Brian Eno's 26th solo studio album *Reflection* in 2017 on vinyl, CD and as an innovative software application, the time is ripe for a reconsideration of the way in which software has been used by the musician, composer, record producer and visual artist Brian Eno. This paper explores how Eno has used simple but innovative ideas and processes to inform his music over the course of his career, and consider how his work with collaborators – specifically the musician and software designer Peter Chilvers – has converged with the emergence of touchscreen technologies and modes of distribution. We will demonstrate how Apple's App Store global distribution platform has further disseminated Eno's ideas of 'generative music' to a wider audience through he and Chilvers' *Bloom* (2008), *Trope* (2009/2015), *Scape* (2012) and *Reflection* (2017a) software applications for Apple's iPhone and iPad, and the impact on the distribution and reception of Eno's own music. Echoing Eno's own processes of appropriation, remix and collaboration the authors wrote the paper through exchanges dictated by the turn of a card selected from the third edition of the *Oblique Strategies* deck, issued by Eno and Peter Schmidt in 1979.

Article

1. 'Change instrument roles' (Eno & Schmidt, 1979)

Much of Brian Eno's career has orientated around the use of simple but innovative ideas and processes that have informed his work as a musician, composer, record producer and visual artist. In a talk delivered at the Imagination Conference in San Francisco, Eno differentiated his ambient work from that of other musicians through the principle notion that his music was not composed in a traditional sense. Instead, he argued, his work 'was based on [...] the idea that it's possible to think of a system or a set of rules which once set in motion will create music for you' (1996a). Eno acknowledged that these ideas had been evident in his earliest solo work, citing the influence of Terry Riley's *In C* (1967) and, perhaps more importantly in terms of the impact of the use of technology on his music, Steve Reich's 1965 phase music 'It's Gonna Rain' (1987). In Reich's piece, two tapes of the same recording fall out of sync

with one another over time. Eno made use of the same technique in *Music for Airports*, released in 1978, where he stated that his use of tape loops of varying lengths allowed the music to develop over time through 'the various clusterings and configurations of [...] six basic elements' (1996a).

In his 1995 diary, published in 1996 as *A Year with Swollen Appendices*, Eno acknowledged the impact of computerized systems generators such as John Conway's the *Game of Life* (1970) and Craig Reynold's *Boids* (1987) on his own music production practice (1996b). Each of these computer programs used the interrelationship of simple rules on graphical cells in an initial state to create dynamic, complex systems – the behavior of which has since been used to simulate physical dynamics of living systems, phenomena such as crowds and also utilised in the development of artificial intelligence systems (Sample, 2015). Eno coined the term 'generative music' to describe his system of musical composition born of such systems (1996b). Citing the technology writer Kevin Kelly, Eno described generative music as being out of control, as opposed to classical music being under control (2011). He later told journalist Stuart Jeffries his desire 'to rethink surrender as an active verb [...]. It's not just you being escapist; it's an active choice. I'm not saying we've got to stop being such controlling beings. I'm not saying we've got to be back-to-the-earth hippies. I'm saying something more complex' (In Jeffries, 2010).

2 'From nothing to more than nothing' (Eno & Schmidt, 1979)

Eno has used a generative approach to music since 1975's *Discreet Music*. The liner notes for that release declare that

[i]f there is any score for the piece, it must be the operational diagram of the particular apparatus I used for its production [...]. Having set up this apparatus, my degree of participation in what it subsequently did was limited to (a) providing an input (in this case, two simple and mutually compatible melodic lines of different duration stored on a digital recall system) and (b) occasionally altering the timbre of the synthesizer's output by means of a graphic equalizer (Eno, 1975).

Dan Fox suggests that these kind of statements and Eno's 'style enabled people to safely bracket him as an eccentric; at the same time he occupied the role of intellectual studio boffin, happy to engage in conversation about John Cage or cybernetic theory' (Fox, 2016). You could also take a more cynical view, as Sasha Frere-Jones does, suggesting 'negative ambition is a big part of what motivates artists' (Frere-Jones, 2014).

Eno takes a different view, pointing out that 'systems and rules in music allow you to come up with things that your sense of taste would never have allowed you to do. But then your sense of taste expands to accommodate them!' (In Kelly, 1995). He also qualifies his take on systems and rules, referring back to cybernetician Stafford Beer, who 'had a great phrase that I lived by for years: Instead of trying to specify the system in full detail, specify it only somewhat. You then ride on the dynamics of the system in the direction you want to go' (In Kelly, 1995).

This is as near, perhaps, as conjuring music from 'nothing' can be, although of course systems have to have an input. Eno did something similar for his DVD 77 *Million Paintings*, a generative visual project (2006). Here, in a project subtitled 'Painting Software DVD' a finite number of images (296) are layered, four at a time, to produce a new image onscreen. Unfortunately, it is less like 'The Future of Television', the title of a written Eno piece reproduced in the DVD booklet, and more 'Painting by Numbers', the title of Nick Robertson's contribution, where he excitedly declared that '77 *Million Paintings* is the next evolutionary stage of Brian Eno's exploration into light as an artist's medium and the aesthetic possibilities of "generative engines" (2006).

Robertson goes on to use a garden analogy to discuss the work, noting that '[e]very user will buy exactly the same pack of "seeds" but they will all grow in different ways and into distinct paintings, the vast majority of which, the artist himself has not even seen' (Eno, 2006).

Journalist Sean McManus describes it as 'like ambient music for the eyes', noting that 'Eno said: "I think of these things as visual music' (In McManus, 2006).

McManus argues that "77 Million Paintings" poses interesting questions about what's an original artwork, giving everyone access to the same opportunity to view art, while ensuring everyone has a unique viewing experience. Most importantly, it's intriguing and fun' (2006). Melina Greenfield reports that 'Peter Doroshenko, Baltic Director, said: 'Brian Eno's work is constantly pushing the boundaries between convention and innovation', yet others beg to differ (In Greenfield, 2007). James Flint, reviewing the installation of the project at Baltic, Gateshead, suggesting that:

it is decoration. Subtle, extravagant, elegant decoration, but decoration none the less. [...] it doesn't enhance my sense of nature, or politics, or the social. It in fact flattens and subdues the chaos and the noise of the "natural" world around me, freeing me up to think rather more intently about myself. I understand that in certain parts of Notting

Hill this experience passes for something "spiritual". But personally, I've never been quite convinced (Flint, 2007).

Flint suggests there is a disconnect from both society and the real, arguing that 'profundity deals in tension and conflict, which flow from its involvement with the real. The seventy-seven million pictures which make up this kaleidoscope lack that fight or bite, and as a result they fail to get beneath the skin' (Flint, 2007). Reviewing a 2007 installation, Linda Stupart notes: "One of the points of these things is to not start and to not finish," writes Eno, "I want them to kind of feel like they were always going on and that they could always carry on... that they are just conditions of things, like an eddy in a river is a condition, it's not really a thing. If there is a narrative, it's in what happens to you as a viewer" (Stupart, 2007).

It seems that Eno expects the viewer to 'ride on the dynamics of the system' too (Kelly, 1995), but I'd suggest that his declaration that '[n]ow, broadly speaking everyone is using the same tool: a computer' suggests that he is doing nothing that is different from other artists or musicians (Smith, 2007). Alfred Hickling derogatorily suggested that the installation at Baltic was 'Essentially [...] a giant kaleidoscope with a therapeutic soundtrack' (Hickling, 2007).

Is Eno's assertion that the computer is now 'producing a climate in which the emphasis is taken from virtuosity towards compositional sense and the disciplinary boundaries are blurring' a good thing? (Smith, 2007). Even Eno is reported to have said that '[t]he most remarkable thing about seeing work originally created for the small screen on forty-five-foot ones [...] is actually watching the people watching it' (In Simmons, 2007).

'What is it that Eno brings to his clients?' asks Robert L. Doerschuk. 'Nothing but the keys to their own imaginations' (Doerschuk, 1989).

3. 'Give the game away' (Eno & Schmidt, 1979).

The software album *Generative Music 1*, released on floppy disk in 1996, made the use of generative systems explicit. The album used the SSEYO Koan software and was the first manifestation of Eno's music which surrendered some control of his music-making process to the listener. The album used 150 different conditions of probability that the user/listener could apply to a number of different instrument voices – affecting timbre, tempo, vibrato and pitch, as well as the intervals between individual notes (Mills, 1996; Cole, T and Cole, P, n.d.). Eno noted in the liner notes that the album was 'ever-different and changing, created by a system'

(*Generative Music I*, 1996b). He specified that the term music had itself become an outdated descriptor of his own work, coining his own phrase 'sonema' in order to describe his own distinctive output which he has described as offering a sense of 'sonic immersion and environment' (In Sisario, 2011).

In 2008, Eno began work with the musician and software designer Peter Chilvers to create a number of compositions for *Spore*, a real-time strategy video game designed by Will Wright for the Maxis development company. The pair used generative music techniques that echoed the procedural generation of the game engine, which allowed players to develop their own creatures from unicellular organisms to complex animals. In addition, players could further edit and personalize these musical elements within the game itself. After the release of the game, the pair continued to develop the generative music system from *Spore* as 'a prototype of Bloom, running in Flash using a Wacom tablet' equipped computer (Chilvers, 2016).

A year later saw the release of the generative software itself, made available for the Apple iPhone through iTunes by Eno's Opal publishing company. Designed by Eno and Chilvers, they described the app as a progression from their work on *Spore*, in that *Bloom* allowed the user greater control over the ability to create music themselves (Chilvers, 2016). The iPhone touchscreen is integral to the generation of music using the *Bloom* software, with each press generating a musical note and a coloured impression on the display similar to an ink blot, with the visual impression and sound both fading with time. The sounds are pitched low to high from the bottom to the top of the screen, with the software including 12 'moods' which alter the colour palette of the ink blots, and subtly change the characteristic of the sounds, their relationship with one another and the length of sustain. Additional functions allow for the adjustment of delay, and the sounds themselves – offering either a higher attack in 'impact', a hollower 'bowl' sound, and 'blend', which combines the two (2009).

When opened but left untouched by the user, *Bloom*'s built in generative music player creates its own compositions. Chilvers explained that '*Bloom* actually existed in some form before the iPhone SDK [Software Development Kit] was announced - possibly before even the iPhone itself was announced. From the second we tried running the prototype, it was obvious that it really suited a touch screen. And Apple provided one! The difficulty developers have faced with generative music to date has been the platform. Generative music typically requires a computer, and it's just not that enjoyable to sit at a computer and listen to music.

The iPhone changed that – it was portable, powerful and designed to play music' (In Milani, 2009).

Trope, an app released by Opal in 2009, also offered 12 moods with different colour palettes and accompanying tones, though hid from the user some functions such as the adjustment of delay and the interval between notes (Beyer, 2015). Again, making use of the touchscreen the app was distinguished from *Bloom* through its support of the drawing of more complex shapes using five differently shaped cursors, each with its own characteristics. These additional parameters allowed for more detail and control of recordings and were inspired, Chilvers claimed, by he and Eno having seen the contrails of passing aircraft evaporate in the sky (In Beyer, 2015).

Scape, an app released by the pair in 2012, further extended the range of sounds and images and was also described at the time as an album in that it 'began in full compositions by Eno. before being isolated for the app', and could be listened to in its entirety through the app (In Dredge, 2012). In *Scape*, the user selects shapes whose placing and interrelationships change the sounds and development of the piece, while the different colours and patterns of the backgrounds add a further layer to the music production – Eno describing this process as 'having taken music "out of time and into space" while Chilvers presents *Scape* as 'an act of curation than composition' (Dredge, 2012). David Brancaccio and Ben Johnson take a note from Eno, suggesting 'we are almost buying his seeds, and growing them on our own patch' (2012). The app adds further functionality through the ability for users to share their output as attachments which can be edited by other users of the software, and adds a further incentive to use, where the number of available elements increases as the software is used. *Scape* remains an outlier within the apps released by Eno and Chilvers, who have yet to return to this curative music software, instead following its release with Bloom HD in 2013 and a 2015 update of *Trope*, both of which took advantage of Apple's operating system updates that allowed for greater use of the screen, and also extended the apps from the iPhone to the larger screen of the iPad, which Chilvers described as 'like jumping from television to cinema' in terms of user experience (In Beyer, 2015).

4. '(Organic) machinery' (Eno & Schmidt, 1979)

John Schaeffer suggests that '[t]here are any number of methods for generating process music, and contemporary composers have been especially inventive in devising new ones'

(Schaeffer, 1987: 51). Eno is more self-deprecating, noting that 'in a way, the apps and the generative music are borrowing from all the technology that has evolved in connection with recorded music and making a new kind of live, ephemeral, unfixable music. It's a quite interesting historical moment' (In Sherburne, 2017). This seems to be an ongoing theme, for he earlier declared in 'Generative Music', one of a number of Appendices gathered together at the back of his diary *A Year with Swollen Appendices* that '[f]rom now on there are three alternatives: live music, recorded music and generative music' (1996: 332).

John Cage, almost a decade before, begged to differ: 'I agree that technology opens up new possibilities to us but I think that finally what we are dealing with is what we were always dealing with, namely, mind' (Kostelanetz, 1988: 258). The composer Tom Johnson takes a more mystical approach, stating that 'I've often said, I don't want to compose the music. I want to find it' (Gottschalk, 2016: 58), whilst Sasha Frere-Jones suggests that 'The genius of Eno is in removing the idea of genius. His work is rooted in the power of collaboration within systems: instructions, rules, and self-imposed limits. His methods are a rebuke to the assumption that a project can be powered by one person's intent, or that intent is even worth worrying about' (Frere-Jones, 2014).

Eno prefers a more organic analogy, suggesting that '[i]t's a little bit like gardening – [...] What you have to do is put together some elements that you are kind of familiar with and watch what happens to them and how this garden turns out compared to that garden is dependent on a whole lot of factors and it needs observation; you have to pay attention to it... Another thing I would say is that you don't finish a piece of music like this, you start it. You bring it into the world and then it has its own life' (In Wray, 2016). Cage does not see this as distinct from mind. In his article, 'History of Experimental Music' in the United States, he wrote 'What is the nature of an experimental action? It is simply an action the outcome of which is not foreseen. It is therefore very useful if one has decided that sounds are to come into their own, rather than being exploited to express sentiment or ideas of order' (Cage, 1961: 69).

Eno radically suggests that '[w]e have been looking for art in the wrong places' (In Kelly, 1995). Through processes and systems, including the *Oblique Strategies* card deck, which Fox suggests is 'a low-maintenance I-Ching', Eno exploits new technology without letting it ensnare him. He knows exactly where to hold a tool so that he can forget he has hold of it.

This confluence (indifference to and intimacy with technology) enables Eno to pioneer so many cross-technological arts' (Kelly, 1995; Fox, 2016: 89).

Eric Tamm suggests, however, that 'putting sounds on tape is far from enough; judgement has to intervene at some stage of the game', especially, as Schaeffer notes, 'Eno's tape loops obviously provided a quick way to produce huge amounts of sound from one source' (Schaeffer, 1987: 56; Tamm, 1989: 74).

Eno, however does not just spend time producing music, he 'always tr[ies] to keep this balance with ambient pieces between making them and listening to them', going on to note that '[a]ll of our musical experience is based on the possibility of repetition, and of portability, so you can move the music around you where you want to be, and scrutiny, because repetition allows scrutiny. You can go into something and hear it again and again. That's really produced quite a different attitude to what is allowable in music' (Sherburne, 2017).

But this begs a question. If, as Eno states, '[t]he tape is now the music', how can it be 'live, ephemeral, unfixable' (Eno & Schmidt, 1979; Sherburne, 2017)? The organic, garden analogy does not seem appropriate to the final product, the music does not keep growing, it has been harvested and fixed on tape as a CD or music file, or by the algorithm of an app.

5. 'Balance the consistency principle with the inconsistency principle' (Eno & Schmidt, 1979)

Reflection, Eno's 26th album, was released on 1 January 2017 in software form through iTunes App Store. Eno has described it 'the most recent of my Ambient experiments and represents the most sophisticated of them so far' (2017). The music was created through a generative system where Eno applied 'randomization scripts' coded by Chilvers to sounds in the digital audio workstation Apple Logic Pro (Sherburne, 2017). Once in motion, Eno allows the music to develop and evolve as it plays. 'Sometimes that's all that happens, and I do my emails and then go home. But other times, it starts to sound like a piece of music. So then I start working on it' (Eno, in Sherburne 2017). The physical vinyl and CD released through Warp Records presented a 54-minute, curated snapshot of Eno's generative music process. Though some critics described the Warp release as a single live take (Cole, 2016), Eno later admitted in interview that these versions of the album – in addition to the version made available through streamed services such as Spotify – in fact comprised a splice of two

snapshots that Eno felt had 'strange and exotic alignments' (in Fenwick 2017). In contrast to these iterations of the album, the app itself is unbounded by time and presents what Eno has described as an 'endlessly changing version of the piece of music' (2017). In the app, the generative music is accompanied by similarly generative visual paintings, slowly shifted coloured shapes which fill the screen of the device running the app – iPhone, iPad or through Apple TV.

Unlike Eno and Chilvers' earlier apps, which allowed the user/listener to take an active role in the creation of the music, *Reflection* operates autonomously and does not make use of touch screen other than to display the generative paintings. There are only three functions which allow the user to pause playback, set a sleep timer and allow streaming to Apple TV via Airplay. Though a number of critics questioned Eno's authorship of the work, Kitty Empire acknowledged the automation in her review but also the central conceit that Eno retained control of the parameters of its production – the sounds included and the deployment of the algorithms to control those sounds (2017). Unlike music created by the user in *Bloom*, *Scape* and Trope – albeit within the walled garden of Eno and Chilvers' software – with Reflection Eno reclaimed control – 'a finished piece of music that will never repeat, but [...] a finished piece' (Eno, in Sherburne, 2017). The app format also allowed for updates, with the intrinsic design of the software causing the music to 'shift slightly each time the app is opened' (Voyce, 2017) and the music shares a function Eno claimed for *Scape*, in that the music develops according to the time of day (Brancaccio and Johnson, 2012). In Reflection, Chilvers describes how 'harmony is brighter in the morning, transitioning gradually over the afternoon to reach the original key by evening' (Chilvers, 2017). In addition, the app has been subject to further seasonal updates, the initial release changing with Spring and Summer iterations released later in 2017, which Eno intimated altered parameters in the algorithms through factors external to the software, including temperature (Wray, 2016). Critic Clayton Purdom argued that the comparison of the physically released 'snapshot' copies of the album to the generative music application was, 'no less than seeing a photograph fade into the real thing' (2017), drawing upon Eno's own longstanding analogy of generative music as being closer to gardening than architecture, where the music's elements were influenced by a range of factors outside of itself (In Wray, 2016).

Eno made a direct connection in the accompanying press release to 1975's *Discreet Music*, and the album is compared by both Eno himself and critics to the producer's earlier releases

Thursday Afternoon (1984), his 1993 album Neroli and the adaptation of his own installation work 12 Seasons, Music for the Great Gallery, released in 2012 as LUX (Eno, 2016; Sherburne, 2017; Beta, 2017). Each of these albums was a product of Eno's generative music processes and if, as Godfre Leung argues, Eno's 'home video version of Thursday Afternoon represents the fullest realisation of Eno's medium-specific inquiry into the emergent CD technology' (2016), then Reflection stands as the fullest realisation of his original ideas of generative music. As Sherburne observes, 'Unlike the album, the app is not a recording of the piece; it is the piece itself, a virtual machine with all the probabilistic clockworks coded right in' (2017), a music release governed by a system which runs over a one year cycle actualizes Eno's ambition of generative music presenting 'continuous variation' (In Fenwick, 2017) or 'an endless piece of music' (In Sherburne, 2017).

6. 'What are you really thinking about just now?' (Eno & Schmidt, 1979)

I am listening to the rain on the study roof, as *Discreet Music* plays on a small stereo I recently purchased to replace my broken boombox (Eno, 1975). I am wondering why summer has ended so soon and feeling sorry for the new students arriving in Cornwall today, having previously visited in sunshine.

I am thinking about how Tim told me he used to play Eno's ambient albums through the stereo of the restaurant he worked in one year in Kingston, until eventually a senior manager asked 'What the hell is this?' and enforced a return to approved middle-of-the road music.

I am thinking about how timeless much of Eno's music is, and how Eno said, back in the early 1980s, that he didn't 'think of [his] work in the short term', and hoped that *On Land* had 'a quality' that it wouldn't 'be earmarked as being specifically of this time' (McKenna, 1982).

I am listening to Eno's *Sisters*, a bonus free download album related to the price increase of his *Reflection* app, thinking how each of the four tracks sounds as though they could have been made at any time in the last 30 years, and indeed may have, although the liner notes state that 'The tracks in Sisters were each produced by an algorithm similar in nature to that used in Reflection; like sisters, they share characteristics, yet have distinct personalities' (Eno, 2017a; 2017b).

I am thinking about Oliver Rose's review of *Sisters* where he angrily suggests that 'were you lucky enough to have the app in the first place, you could've just generated the ambient music yourself. So Eno just invalidated himself as artist. Yet, in issuing Sisters, patronisingly reassured everyone of the elitism in artist-fan relations, by suggesting (through the official manifestation of his work and its distribution) that he handles the generative algorithm better than you' (Rose, 2017).

Rose may be right, as Eno states on the iTunes App Store that 'Reflection is the most recent of my Ambient experiments and represents the most sophisticated of them so far' (2017), suggesting that he is assuming the traditional role of composer/creator in relation to his work, rather than simply stepping back from the result of the generative process.

I am thinking about Eno's statement that his 'original intention with Ambient music was to make endless music, music that would be there as long as you wanted it to be. I wanted also that this music would unfold differently all the time – "like sitting by a river": it's always the same river, but it's always changing' (Eno, 2017a). All well and good, but who can listen to music or sit by a river forever?

I am listening to the rain on the study roof, as *Sisters* plays on a small stereo I recently purchased to replace my broken boombox (Eno, 2017b). I am thinking that it is no longer generative, it is a chosen moment, a named piece of generative music which Eno has selected, and that I have now burnt to CDR. 'Hannah', 'Irial', 'Darla' and 'Anya' are now four tracks, which form an album, framed by the overall title, and no different in musical form than my old vinyl copy of, say, *Music for Airports*, Eno's first foray into ambient music (Eno, 1978).

I am thinking about how buildings remain once the scaffolding is removed, and how I tell my students that a reader may not need to know the process used to create their writing. Perhaps we should consider only the music and not let the scaffolding get in the way of our listening? 'Brian Eno's got a new thing out. A computer made it, not him', writes Rose but he is missing the point (Rose, 2017).

Eno suggests that 'in listening to a record repeatedly, you're hearing something that you know is identical every time it's played. It doesn't change, so if something seems different a change has clearly happened in you. So as you listen to a piece of music over a period of years and it

assumes different levels of mood, connotation and meaning, what you're really hearing is your own shift going on' (McKenna, 1982).

I am listening to the rain on the study roof, as *On Land* plays on the small stereo I recently purchased to replace my broken boombox (Eno, 1982/1986). 'Every art object is really a package of possibilities for a kind of world that could exist' (Eno, in Wright, 2012: 381). Today, my world is quiet and grey.

7. 'Ghost echoes' (Eno & Schmidt, 1979)

I really think that for us, who all grew up listening primarily to recorded music, we tend to forget that until about 120 years ago ephemeral experience was the only one people had' states Eno (In Sherburne, 2017). In the liner booklet notes for the CD edition of *On Land*, released in 1986, Eno talks about the 'inaccuracies of memory' which helped him produce a 'slightly thrilling sense that you're almost in some other time, not quite in touch with the present' (Eno, 1982/1986; McKenna, 1982). This sense of time is somewhat at odds with Eno's ongoing engagement with contemporary technology and his, albeit sometimes seemingly lo-tech and tangential, engagement with the CD-Rom, touchscreen platforms and software applications.

Much of the interest in Eno's recent projects is about the interface of science and artistic endeavour. Daniel Dylan Wray notes that '*Reflection* is a single album release as per any usual record but it will also be released as an app, in collaboration with Peter Chilvers. It's a generative piece of music that has a lot of statistical probability functions in the design, so that it's evolving and morphing, most prominently in line with the temperature as the year goes on' (Wray, 2016).

Eno is again, trusting to systems to produce music that will act on the listener emotionally, hoping to produce the 'inaccuracies of memory' mentioned above. This does not always happen. In an unpublished piece, only made public after his death, Lester Bangs notes that 'Depending on your point of view, *Discreet Music*, Eno's most passive piece, is either the definitive unobtrusively lustrous statement on ambient music or a wispy, treacly bore that defies you to actually pay attention to it' (Bangs, 2003).

Brian Dillon quotes Eno to suggest that he sees the 'inaccuracies of memory' as 'a mixture of nostalgia and hope, from the desire to make a quiet place for myself. They evoke in me a

sense of "what could have been", and hence generate a nostalgia for a different future' (Dillon, 2013: 198). This is a nostalgia dependent upon visiting the past to see what was being imagined as the future then, say space-age projections on the back of the Apollo rocket missions in the 1960s.

In this tangle of fiction and memory we might agree with Dan Fox, who suggests – not necessarily dismissively – that 'Eno's career is a successful experiment in pretension' (Fox, 2016: 89). Or take a more Zen approach, as Eno does when he says 'As Jon Hassell always says, I prefer to shoot the arrow, then paint the target around it' (Doerschuk, 1989).

5040 Words

Bibliography

Albiez, Sean & Pattie, David (Eds.) (2016). Oblique Music. London: Bloomsbury.

Bangs, Lester (2003). 'Brian Eno: A Sandbox in Alphaville', in *Perfect Sound Forever*, August 2003. Accessed 19 September 2017. http://www.furious.com/perfect/bangseno.html

Beta, Andy. (2017). 'Eno: Reflection', in *Pitchfork*, 4 January 2017. https://pitchfork.com/reviews/albums/22714-reflection/ (Accessed 07 June 2017)

Beyer, Jonah (2015). 'Harness Brian Eno's Soundcsapes on Your iPad", in *Vice*, 11 July 2015.

https://creators.vice.com/en_us/article/bmyddv/harness-brian-enos-soundscapes-on-youripad

(Accessed 07 November 2016)

Brancaccio, David & Johnson, Ben (2012). 'Brian Eno on his new app, Scape, and new album, Lux', in *Marketplace*, 7 November 2012. http://www.marketplace.org/topics/tech/brian-eno-his-new-app-scape-and-new-album-lux (Accessed 07 November 2016)

Cage, John (1961/1978). 'History of Experimental Music in the United States', in *Silence Lectures & writings*. London: Marion Boyars.

Chilvers, Peter (2016). 'Ten Years working with Brian Eno', in *PeterChilvers.com*, 10 November 2016.

http://www.peterchilvers.com/?p=134
(Accessed 7 July 2017)

Chilvers, Peter (2017). 'Brian Eno: Reflection', in *PeterChilvers.com*, 1 January 2017. http://www.peterchilvers.com/?p=134 (Accessed 7 July 2017)

Cole, Tim and Cole, Pete (n.d.). 'Generative Music & Brian Eno's GM1 with SSEYO Koan Software', in *intermorphic.com*.

http://intermorphic.com/sseyo/koan/generativemusic1 (Accessed 3 May 2017)

Cole, Dan (2016). 'Brian Eno: Reflection', in *Drowned in Sound*, 9 December 2016. http://drownedinsound.com/releases/19756/reviews/4150668 (Accessed 07 January 2017)

Conway', John. (1970). Game of Life.

Dillon, Brian (2012). 'Gone to Earth', in Scoates, (2013), Pages 185-198.

Doerschuk, Robert L. (1989). 'Brian Eno - On Simplicity, Context, & The Necessity Of Urgency', in *Keyboard*, June 1989..

http://music.hyperreal.org/artists/brian_eno/interviews/keyb89.html (Accessed 19 September 2017)

Dredge, Stuart (2012). 'Brian Eno and Peter Chilvers talk Scape, iPad apps and generative music', in *The Guardian Apps Blog*, 26 September 2012.

http://www.theguardian.com/music/appsblog/2012/sep/26/brian-eno-scape-ipad-apps (Accessed 7 November 2016)

Empire, Kitty (2017). 'Brian Eno: Reflection review – soothing, but sobering', in *The Guardian*, 1 January 2017.

https://www.theguardian.com/music/2017/jan/01/brian-eno-reflection-album-review-ambient-generative

(Accessed 7 July 2017)

Eno, Brian (1975). Discreet Music. EG.

Eno, Brian (1978). Music for Airports. EG.

Eno, Brian and Schmidt, Peter (1979). *Oblique Strategies*. The Authors.

Eno, Brian (1996a). 'Generative Music', in *InMotion Magazine*, 8 June 1996. http://www.inmotionmagazine.com/eno1.html (Accessed 7 July 2017)

Eno, Brian (1996b). A Year with Swollen Appendices. London: Faber

Eno, Brian (1996c). Generative Music 1. Intermorphic/Koan.

Eno, Brian (2006). 77 Million Paintings. London: AllSaints/Wordsalad/Ryko/Hannibal.

Eno, Brian (2011). 'Composers as Gardeners', in *Edge*, 10 November 2011. http://www.edge.org/conversation/composers-as-gardeners (Accessed 7 July 2017)

Eno, Brian (2016). 'Reflection: Press Release', in *Facebook*, 15 November 2016 https://www.facebook.com/brianenomusic/photos/a.556181867729342.141504.148573968 490136/1477189158961937/ (Accessed 7 July 2017)

Eno, Brian (2017a). Reflection. Warp Records.

Eno, Brian (2017b). Sisters. The Authors/Download.

Eno, Brian (2017c). Reflection_(app). Opal.

Eno, Brian & Chilvers, Peter (2008). Bloom. Opal.

Eno, Brian & Chilvers, Peter (2009/2015). Trope. Opal.

Eno, Brian & Chilvers, Peter (2012). Scape. Opal.

Eno, Brian & Chilvers, Peter (2013). Bloom HD. Opal.

Fenwick, Tom (2017). 'Brian Eno', in *Flaunt*. 23 January 2017. http://www.flaunt.com/content/people/brian-eno (Accessed 7 July 2017)

Flint, James (2006). 'This "Art for Airports" Is Only Skin Deep', in *The Telegraph*, 2 February 2006.

http://www.moredarkthanshark.org/eno_int_telegraph-feb07.html (Accessed 19 September 2017)

Fox, Dan (2016). Pretentiousness. Why It Matters. London: Fitzcarraldo.

Frere-Jones, Sasha (2014). (Ambient Genius.The working life of Brian Eno', in *The New Yorker*, 7 July 2014.

https://www.newyorker.com/magazine/2014/07/07/ambient-genius (Accessed 19 September 2017)

Gottschalk, Jennie (2016). Experimental Music Since 1970. London: Bloomsbury.

Greenfield, Melissa (2007). 'Brian Eno: A New Collection of Light Art at Baltic', in *24 Hour Museum*, 9 February 2007.

http://www.moredarkthanshark.org/eno_int_24hour-feb07.html (Accessed 19 September 2017)

Hickling, Alfred (2007). 'Brian Eno. Baltic, Gateshead', in *The Guardian*, 27 February 2007. http://www.moredarkthanshark.org/eno_int_guardian-feb07b.html (Accessed 19 September 2017)

Hodkinson, James (2017) 'Playing the Gallery. Time, Space and the D in Brian Eno's Recent Installation Music', in *Oxford German Studies*, Vol 46, Issue 3. pp. 315-328.

Jeffries, Stuart (2010). 'Surrender: It's Brian Eno', in *The Guardian*, 28 April 2010. https://www.theguardian.com/music/2010/apr/28/brian-eno-brighton-festival (Accessed 7 July 2017)

Kelly, Kevin (2011). What Technology Wants. London: Penguin.

Kostelanetz, Richard (Ed.) (2003). Conversing with Cage. John Cage on his word and his work. New York: Omnibus.

McKenna, Kristine (1982). 'Eno: Voyages in Time & Perception', in *Musician*, October 1982

http://music.hyperreal.org/artists/brian_eno/interviews/musn82.htm (Accessed 18 September 2017)

McManus, Sean (2006). '77 Million Paintings by Brian Eno', 12 October 2006. http://www.sean.co.uk/photography/lightbox/brian_eno_77_million_paintings.shtm (Accessed 19 September 2017).

Milani, Matteo (2009a). 'Generative Music: An Interview with Peter Chilvers', in *Unidentified Sound Object*, 19 September 2009. http://usoproject.blogspot.co.uk/2009/09/generative-music-interview-with-peter_19.html (Accessed 7 July 2017)

Mills, Robert (1996). 'My Ever Changing Moogs', in *Q*, July 1996. http://www.moredarkthanshark.org/eno_int_q-jul96.html (accessed 1 June 2017)

Purdom, Clayton (2017). 'Brian Eno's latest isn't an album – it's a process', in *AV Music*. 16 January 2017

https://music.avclub.com/brian-eno-s-latest-isn-t-an-album-it-s-a-process-1798256494
(accessed 1 June 2017)

Reich, Steve (1987). 'It's Gonna Rain', in Early Works. Elektra Nonesuch.

Reynolds, C. W. (1987). 'Flocks, Herds, and Schools: A Distributed Behavioral Model, in Computer Graphics', in *SIGGRAPH* '87 Conference Proceedings, 21(4) () pages 25-34. https://www.red3d.com/cwr/papers/1987/SIGGRAPH87.pdf (Accessed 1 June 2017)

Reynolds, Craig. (1987). *Boids*. https://www.red3d.com/cwr/(Accessed 1 June 2017)

Riley, Terry (1967). In C. Columbia Records.

Rose, Oliver (2017). 'We have Brexit to thank for Brian Eno's terrible new albums, says Oliver Rose', in *Pearshaped*.

http://pearshapedexeter.com/brian-eno-sisters (Accessed 16 September 2017)

Sample, Ian (2015). 'Inside the Mind of renowned mathematician John Conway', in *The Guardian Science Weekly Podcast*, 20 November 2015

https://www.theguardian.com/science/audio/2015/nov/20/mathematics-john-conway-numbers-game-theory.

(accessed 1 June 2017)

Schaeffer, John (1978). New Sounds. The Virgin guide to New Music. London: Virgin.

Scoates, Christopher (2013). Brian Eno: Visual Music. San Francisco: Chronicle Books.

Sherburne, Philip (2017). 'A Conversation with Brian Eno About Ambient Music', in *Pitchfork*, 16 February 2017.

https://pitchfork.com/features/interview/10023-a-conversation-with-brian-eno-about-ambient-music

(Accessed 1 June 2017)

Simmons, Sylvie (2007). 'Brian Eno's "77 Million Paintings" Is An Artwork That Won't Sit Still' in *San Francisco Chronicle*, 27 June 2007.

http://www.moredarkthanshark.org/eno_int_sfc-jun07.html (Accessed 19 September 2017)

Sisario, Ben (2011). 'Pushing Back the Limits of Speech and Music", in *The New York Times*, 4 July 2011.

 $http://www.nytimes.com/2011/07/05/arts/music/brian-eno-and-rick-holland-release-drum-between-the-bells.html?mcubz{=}1$

(accessed 1 June 2017)

Smith, Sean (2007). 'Brian Eno', in *Flux*, February/March 2007. http://www.moredarkthanshark.org/eno_int_flux-febmar07.html (Accessed 19 September 2017)

Tamm, Eric (1995). *Brian Eno: His Music and the Vertical Color of Sound*. Cambridge, MA: Da Capo Press.

Unknown author (n.d.). 'A discussion of The Game of Life', in *Stanford University*. http://web.stanford.edu/~cdebs/GameOfLife (accessed 1 June 2017)

Unknown author (2010). 'Brian Eno's Generative Apps ... for a few dollars more...', in *AmbientBlog*, 20 March 2010.

http://www.ambientblog.net/blog/2010-03-20/brian-enos-generative-apps (Accessed 07/11/2013)

Voyce, Keagon (2017). 'Brian Eno and the End of De-Civilisation', in *Noisey*, 21 February 2017.

https://noisey.vice.com/en_uk/article/9agaye/on-brian-eno-and-the-end-of-de-civilization (accessed 1 June 2017)

Wray, Daniel Dylan (2016). 'Art Scientific – world exclusive interview with Brian Eno', in *Loud and Quiet*, 16 December 2016

http://www.loudandquiet.com/interview/brian-eno-a-world-exclusive-interview (accessed 1 June 2017)

Wright, Will (2012). 'A Conversation Between Will Wright and Brian Eno', in Scoates, Christopher (2013). *Brian Eno: Visual Music*. San Francisco: Chronicle Books. pp. 377-388.