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CHAPTER 6

Composing with the digital audio workstation

Mark Marrington

Software environments for music production, or Digital Audio Workstations (DAWs), have since the early 2000s become central to the creation of commercially released music, as indispensable to the studio-based professional recording engineer as to the so-called “bedroom” producer. The proliferation of the DAW is to a certain extent the result of rapidly evolving computer power, which has revolutionized the ability to handle digital audio. However, it is also due to the unique possibilities for music creation afforded by the DAW which have, over time, effected significant transformations in popular music practice. My purpose in this chapter is to provide insights into how the singer-songwriter might benefit from using such software beyond its most typical application as a conventional recording and production engine. Part of this will involve a consideration of the DAW in general terms, identifying key aspects that are worth taking into account when using such systems to create music. I will also discuss examples of DAW-based compositional practice with reference to artists who have used the DAW to create songs. My main aim is to show that the DAW, like the piano or guitar in previous eras of songwriting, is an instrument in its own right which impacts upon the conception and organization of musical ideas. To put it another way, the DAW has its own particular creative “paradigms” to contribute to the songwriter’s process, which once understood, can be harnessed to great effect.¹

Before dealing with the DAW itself, I wish to offer a few remarks on the DAW’s relationship to the traditions of songwriting in general terms. Anyone familiar with the history of songwriting during the twentieth century will appreciate that (broadly speaking) the essential foundations of the practice were laid between the 1920s (the Tin Pan Alley period) and the 1960s (the emergence of the modern singer-songwriter)—in other

words, many years prior to the wide establishment of digital technologies. Songwriting during this period evolved into a two-stage process which has since become the tradition—namely, a writing stage usually involving the piano or guitar, followed by a studio realization stage involving recording engineers, arrangers and producers.² For songwriters who remain immersed in this tradition the DAW represents, at best, increased autonomy where the second stage is concerned—that is, it functions as a virtual tape recorder to capture the completed song’s performance and a convenient means for the songwriter to undertake the arranging, mixing and even mastering of the song in-house. The DAW of course has many benefits over the traditional studio in this regard, including the ability to easily recall various versions of one’s project as it develops, the capacity to quickly comp³ together multiple takes into a single convincing performance (no tape splicing required) and the ability to build up complex musical arrangements using realistic-sounding virtual instruments. However these are essentially enhancements of an established mode of practice and, where the songwriting process itself is concerned, there is little indication, even in the most recent interview literature, that the DAW has begun to become more widely integrated into the creative thinking of instrument-based songwriters.⁴ That the DAW can represent a stumbling block for the traditional songwriter is illustrated by a recent forum on the popular *Gearslut* website, entitled “Songwriters favorite DAW and why.”⁵ One user states for example, “I don’t really see how a DAW can help with ‘songwriting.’ Song arranging and production, sure, but the writing part only requires an instrument and maybe a voice.” Similarly, another commentator adds that, “most DAWs were developed for music production, but ... that’s not the same thing as writing a song. Songwriting is not a linear process ... for most people.”⁶ This chapter is primarily aimed at this kind of singer-songwriter—one who has already spent a good deal of time developing their songwriting idiom in association with a conventional musical instrument, and considers it a reasonable question as to whether a DAW can have anything additional to contribute to the process beyond the recording and arranging stage.

The DAW: Some key concepts

A DAW is essentially a visual environment represented graphically on a computer screen, whose functionality, when reduced to its simplest terms, is to allow for the manipulation of two main forms of information—MIDI data and digital audio. The manner in which this takes place depends very much on the design of the DAW interface, which has particular consequences for creative decision-making and workflow. A range of software platforms may qualify as DAWs, each with its own metaphor for the

representation of MIDI and audio, the best known of which include Apple's Logic Pro, Avid's Pro-Tools, Propellerhead's Reason, and Ableton's Live.⁷ While the appearance of their interfaces may vary, many DAWs share common elements, such as the main sequencer interface (often referred to as the "arrange" page), the mixer, the "piano roll" for MIDI editing (a rather archaic interface which refers back to the era of the Player Piano), a waveform display (modeled on the oscilloscope) and the traditional score. There are also some DAWs which are more specific in their design, such as Sibelius (Avid) and Finale, whose interfaces are based predominantly on the score, and MAX MSP which is a music programming environment favored by experimental electronic musicians. Most modern DAWs offer functionality which models electronic music technology of the past, including samplers, drum machines, synthesizers, various signal processors (EQ, compressors), and effects (reverb, delay, chorus, distortion etc.). In this sense, DAWs are essentially skeuomorphic, a property which at its most pronounced entails the precise visual emulation of these technologies, down to every last detail of the original interfaces.⁸ One of the best-known examples of this is Reason (first released in 2000), which accurately represents a virtual rack of hardware (including drum machines, samplers and effects units), even offering the capability to manually route cables at the back of its devices. Designers of third party plugins for DAWs also emphasize skeuomorphism—Arturia's "V Collection," for example, faithfully recreates iconic synthesizers and keyboards of yesteryear while Waves' "Abbey Road" bundle models microphones, effects, and consoles associated with recordings made in the iconic London studio. Some commentators have suggested that this approach to software design is intended to play on an association with past genres of music that were created using the technologies being modeled.⁹ On that basis it is possible to generalize (loosely) that Reason's rack metaphor with its drum machines and samplers is designed to appeal to hip-hop artists, Live's sample loop-trigger metaphor is meant to appeal to DJs, Pro-Tools' multi-track studio metaphor is best suited for the recording musician, Sibelius's notation metaphor is appropriate to classical musicians and so on. The strength of these kinds of embedded musical affinities is likely to mean that a songwriter's choice of DAW will reflect their particular technical background and musical sympathies.

In addition to these broader aesthetic concerns it is also important to consider some of the specific ways in which the typical DAW interface can affect the perception of the musical material the songwriter is working with. There has been much discussion, for example, of the typical DAW "arrange" page, where a songwriter is likely to spend much of their time working. In this environment the music is represented by blocks of data (sometimes called "regions"), which encourages a certain visually oriented approach to organizing the material of a composition on-screen.¹⁰ This is further encouraged by the typical DAW's word-processor derived editing

tools edit—“cut,” “copy” and “paste”—which can potentially turn the composition process into a graphic design exercise. Electronic musician and originator of the Folktronica genre, Kieran Hebden (aka Four Tet), has observed that, “People who make music on computers don’t realize how powerful the visual element is. Whether you like it or not, your mind starts to think in terms of patterns, because it’s a natural human way to do things, and you start seeing the way drums are lining up on the screen, and it becomes completely instinctive to line them up in a certain way.” He adds the caution that, “It’s important just to close your eyes and use your ears, and trust what’s coming out of the speakers more than anything.”¹¹

Another aspect of the DAW which can have significant implications for a songwriter’s way of working, is its capacity for “linearization.” This refers to the tendency of most DAWs to encourage the organization of material on a timeline, with varying degrees of flexibility for experimenting with alternative configurations. James Mooney, for example, has commented that the timeline aspect of the DAW interface suggests that the “music should be built additively by appending one item after another until the desired duration is achieved,” adding that the “grid” encourages a “default state of affairs” for the creation of “rhythmical music in 4/4 time at 120 beats per minute.”¹² One of my own observations, gleaned from teaching students who use the DAW for writing songs, is that a particular effect of linear sequencer interfaces is to encourage “accumulative” forms of composition, in which the constituent parts of the music are gradually introduced one layer at a time until the piece appears as a complete entity in front of the user.¹³

It may be helpful for the songwriter to consider these remarks on the DAW’s structuring capacities in reference to the attributes of a more traditional songwriting instrument, such as the guitar. The grid-like patterning of the guitar fret board, for example, permits certain left hand configurations in the formation of chords, in effect informing the precise arrangement of notes within a particular harmonic structure, and thereby the characteristic chord voicings associated with that instrument. These chords will also be articulated in a certain way by the performer, dependent upon the right hand techniques they employ—strumming, rolling, plucking, “chugging” and so on—creating further pitch orderings, unique rhythmic characteristics, as well as timbral properties. In other words, the character of guitar-based music is in a certain sense the product of the user’s mode of engagement with the instrument. Being aware of the ways in which a tool one uses is shaping the musical outcome is sometimes referred to as knowing the “affordance” of a particular technology. This means that you develop an appreciation the range of actions the technology permits you to undertake and, perhaps more importantly, a sense of whether the tool might be pushed outside these boundaries.¹⁴ Songwriters who use traditional instruments are often quite insightful where the concept

of affordance is concerned.¹⁵ Sting, for example, has stated that: “You stick something in your hand that you’re unfamiliar or slightly at odds with—like the lute, which is close to a guitar but different, and complex enough to really mess you up—it will put you in that strange territory of not being in your comfort zone, and that position can be stimulating and very fruitful.”¹⁶ Jimmy Webb, in reference to piano-based songwriting, has made the interesting point that one can self-consciously ignore the instrument’s traditional paradigm. His language here is interesting because he could almost be describing a DAW interface: “Sometimes I work graphically and look at the keyboard as if it had nothing to do with music and it’s a mathematical grid. And going, ‘What if I move that there and move that there?’ And not even listen to the sound of it very much at the outset and just trying to gain another mathematical insight into how to move voices around and not be afraid to move them around.”¹⁷

Where the DAW is concerned, two examples will serve to illustrate this notion of affordance. Imagine in the first instance that you are using the facilities of a dedicated notation-based package like Sibelius to write your song. The virtual manuscript paper design “affords” composition in accordance with the rules of staff-based notation, which you arguably need to have some familiarity with to use the software effectively. You compose onto realistic-looking pages of music (which can even be given a parchment-like texture), input score-specific performance instructions (such as tempo markings and expression) and play back the music using conventional acoustic instrument sounds. However, in reality this interface is simply acting as the front end of a MIDI sequencer which uses standard MIDI instructions to trigger audio waveforms in a sample player. Knowing what is behind the metaphor in this way is useful because the songwriter may then feel inclined to experiment with the limitations of the software to creative effect. With Sibelius, one might ask, for example, whether it is possible to notate instruments outside their standard ranges given that MIDI itself isn’t limited by these kinds of conventions, assign non-typical sounds to those same tracks, or explore ways of modifying the original sounds using the onboard sample player. It may not even matter if you are unable to read music when using such a program because the interface is essentially metaphorical—that is, it is just another way of viewing MIDI data. When working with the platforms that emphasize a more studio-oriented approach, such as Cubase, Logic, and Pro-Tools, the same principles apply. In addition to the standard arrange page, MIDI and audio editing facilities, such DAWs also provide a range of “engineering” tools (or “plugins”) which are designed for use in general production tasks (compressors, EQs, effects and other signal processing plugins). For songwriters new to the DAW, such tools can be off-putting in their complexity, requiring a certain amount of immersion in digital audio principles and mixing theory, for example, to be of use in the professional sense.¹⁸ However, an alternative approach is to view these plugins simply as

devices which can affect the character of the sound. By freely loading them onto a DAW's channel strip, choosing presets, and tweaking knobs, while carefully listening to their effect on the song's material, one may be led in surprising new directions which can themselves come to inform how you conceive songs in the future. The overarching point in both these cases is that, through exploration of the DAW's scope, the songwriter gains insight into how the software may potentially be put to creative use without necessarily being constrained by its paradigm.

Songwriting and the loop paradigm

There is, on the other hand, a sense in which it can be logical to exploit a specific characteristic of a DAW if it can help to facilitate the songwriting process. Workflow is a particular concern for the songwriter, who will often wish to spend time working out the song's content by a process of trial and error—as one *Gearslutz* user succinctly puts it, songwriting means “getting down ideas, sketches, rough arrangements, researching textures, trying alternate versions, modulations or cadences.” Therefore, it makes sense to use the features of a DAW that can accommodate live experimentation as well as enable you to maintain the song's materials in a state of open-endedness. One particular aspect that is commonly exploited for this purpose is the “loop” paradigm, which can be activated in most DAWs by selecting sections of MIDI or audio material in the arrange page and using the cycle feature found on the transport bar to repeat it *ad infinitum*. The loop essentially acts as a stimulus for musical ideas while the songwriter jams along with an instrument, usually with the record button activated. Some DAWs make a particular point of foregrounding the loop paradigm as a real-time interactive tool. Ableton's Live (introduced in 2001), for example, offers a highly flexible “on the fly” vertical loop-trigger “Session View,” which has made it particularly popular with songwriters who eschew the linear approach. Andy Barlow (one half of the electronic songwriting duo Lamb), for example, considers Live to be “by far the best tool for songwriting” because it allows the user to freely trigger the different sections of a song to try out different arrangements: “I can assign keys to different parts of the song. For example, I can press the Q key and keep cycling around the verse loop until I press the W key, which takes it to the chorus/bridge, and the E key, which then takes you to the chorus. When we're actually writing stuff that actually allows the arrangement to be completely fluid and flexible.”¹⁹ The songs of Ableton Live-based songwriter Bradford Cox (Deerhunter, and most recently his solo Atlas Sound project), are strongly characterized by the DAW's loop paradigm. Cox, who is also a guitarist, will not necessarily even begin the songwriting process with the harmonic or melodic

material of the song itself—instead he may simply start with a drumbeat and gradually assemble textures over the top of this.²⁰ A typical example can be heard on the song “Recent Bedroom” on Atlas Sound’s 2008 album, *Let the Blind Lead Those Who Can See But Cannot Feel*, which is built on looped samples of guitar, music box and vibraphone. Creating tracks via looping has arguably become the most predominant compositional paradigm of the DAW, with Joe Bennett, a notable songwriter and educator, even suggesting that the practice has become so popular as a result of the DAW that it has now “jumped species” from computer-based genres to band-based genres.²¹ It is worth adding incidentally, that what is really being retrieved here is the aesthetic previously associated with digital loop pedals, which have long been a part of the armory of singer songwriters. These still remain popular with artists who play live as a means generating complex textures on the fly (notable examples include KT Tunstall’s “Black Horse and the Cherry Tree” (2005) and Ed Sheeran’s “You need me, I don’t need you” (2011)) and the effect of the DAW has arguably been to solidify this practice as a compositional strategy for the songwriter.²²

One further thought on this particular paradigm of the DAW relates to the fact that all these software packages also come loaded with large libraries of pre-composed loops for easy incorporation into tracks.²³ This presents an interesting creative conundrum for the artist, given that in the “auteur”-driven singer-songwriter domain at least, where originality is highly favored, it would be anathema to build one’s work on such materials in the way that a hip-hop artist would do with samples. Some DAW users, it is worth adding, will even extend this to a refusal to use any of the software’s given plugin presets (synthesizer patches, instrument sounds, reverb settings etc.). This may not necessarily be the most constructive attitude to adopt, however, given that such elements can often be very helpful both for generating basic material for a song or inspiring ideas. On the originality point it is worth remembering the facetious but perceptive words of the Timelords (Bill Drummond and Jimmy Cauty) in their *Manual: How to have a Number One the easy way* (1988): “all music can only be the sum or part total of what has gone before ... There is no lost chord. No changes untried. No extra notes to the scale or hidden beats to the bar. There is no point in searching for originality.”²⁴

Re-imagining the song in the DAW

For the final part of my discussion, I wish to make suggestions as to how one might use the DAW as a means of experimenting with the traditional song template. Essentially this means using the DAW’s various onboard editing facilities and sound processing tools to elaborate the song’s basic materials,

which might exist in the form of pre-recorded sketches of the song's vocal and accompaniment, or musical ideas that have been programmed in MIDI. In practice this could, for example, entail the user engaging in detailed re-sculpting of the audio material using a DAW's sample editor, or exploring the potential of its various plugins for transforming and manipulating these sounds across an arrangement. Essentially, we are in territory more typically referred to as music production, although the implication here is that there is greater scope for exploration than simply opting for a conventional song realization. Kieran Hebden, a seasoned DAW-based artist, encapsulates this approach in the following terms: "the idea is very much that the computer's the instrument. If I wanted a guitar line or something, I'd never pick up a guitar and write a guitar melody to go on it. I might record some guitar into the computer, then start working on a track, and if I decide I need some guitar, I'd go to that recording, break it up into pieces, and then compose the melody using that sound."²⁵ What Hebden is emphasizing here is that the DAW is the starting point for his writing process, in which sampled sounds, comprising little more than a few short fragments, become the basis for a much more extensive compositional process carried out within the environment of the DAW itself.

Where songwriting is concerned, recent practice has typically involved conflating the traditional elements of the song with production techniques more usually associated with the electronic musician. This is illustrated for example, by the work of James Blake, which is characterized by a fusion of songwriting with the electronica production values of Dubstep. Blake, who produces his tracks from start to finish using Logic Pro, shows a keen appreciation of way in which the DAW's visual paradigm affects how he creates his songs: "I could record them and look at them, almost physically – graphically – and just chop up what I did like and I didn't like, it didn't have to be all in one take, it could be something I designed from the ground up, visually."²⁶ Aside from the incorporation of specific Dubstep traits into his style (such as the characteristic beats and sub-bass effects), fundamentally, Blake's approach is to use the DAW's capacity for sound design and audio processing to create unique sonic environments that envelop his vocals and generate heightened emotional depth. This can be heard in tracks like "The Wilhelm Scream" (from c. 2:00 onwards), a remarkable tour-de-force of production in which a simple loop-based song becomes gradually immersed in and obscured by distortion and cavernous reverb (the approach here is essentially "accumulative").²⁷ On other tracks, the exploratory nature of Blake's production is even more apparent. The Burial-esque, "I Mind," for example, with its glitch-inspired rhythmic disruptions and extreme delay effects, moves the idea of the "song" very close to its complete deconstruction. One of the most characteristic features of Blake's work is the processing that is applied in varying degrees to his vocal lines, which ranges from subtle auto-tuning to the use of a vocoder

(the track “Lindisfarne” is particularly interesting in this respect). Blake’s vocal parts are also frequently subject to fragmentation, an approach reminiscent of the “stutter editing” technique associated with electronic and dance music producers. This is obviously very interesting where songwriting is concerned, given that the voice is the key delivery mechanism for the song itself. As Blake comments, “When you produce your voice in certain ways, manipulating it or not, you learn to analyze it like any other sound.”²⁸ In other words, the voice is treated as if it is another sonority in the musical arrangement, offering a unique and potentially liberating way of re-considering the function of the vocal in a songwriting context. Blake’s overarching attitude to using his DAW is perhaps best summed up by his comment that “Producing just becomes part of the writing process,”²⁹ which is an apt way of describing the effect the DAW has had in general terms on the process of creating recorded music since its inception.

Conclusion

In this chapter I have demonstrated, at least in outline, some of the ways in which the DAW might be regarded as a creative tool for songwriters. First, it is important to be aware that all DAWs are mediating structures—that is, they each have their own properties which influence how they may be used by the songwriter and these are often bound up with particular forms of media used for music creation in the past, ranging from the score to the sampler. Theoretically, it should be possible for a songwriter to employ any DAW effectively provided they are prepared to learn to recognize these characteristics and negotiate the tool for their own purposes. I have also drawn a parallel between the DAW and traditional instruments which have been previously associated with songwriting practice, suggesting that the DAW ought to be considered an instrument in its own right, whose idiosyncrasies need to be mastered if it is to be used effectively in the heat of the moment. Ultimately, how the DAW is used in songwriting will be determined by the place it holds in the process. One might, for example, exploit a particular DAW paradigm and allow this to condition the character of the music that emerges at an early stage. This was illustrated by the loop-trigger model, a dominant characteristic of platforms such as Ableton Live, which has appealed to songwriters who use the DAW as a vehicle for on the fly experimentation. Alternatively, one might view the DAW as a means of elaborating “offline” musical ideas that have either been pre-recorded or pre-programmed. Here it is a question of the songwriter’s imagination in employing the DAW’s MIDI and audio editing facilities, signal processing tools and effects to expand upon the song’s basic material. A conservative approach would be to use the DAW to arrange and produce the song

in accordance with an established model, while the more adventurous songwriter might decide to experiment in the hope of discovering new possibilities for the development of their idiom.

Discography and further listening

- Atlas Sound (Bradford Cox). *Let the Blind Lead Those Who Can See But Cannot Feel* (2008) and *Parallax* (2011). Use of Ableton Live for looping.
- Blake, James. *James Blake* (2011) and *Overgrown* (2013). Use of Logic Pro.
- Condrad, Suzy. *She of Little Faith* (2013). Use of the Boss Loopstation and vocal effects processor, with Avid's Pro-Tools as production platform, see <http://www.suzycondrad.com/>
- Four Tet (Kieran Hebden). *There is Love in You* (2010). Hebden was an early adopter of the Yamaha Tenori-On (essentially a hardware step-sequencer which can be used as a looper)—see the track “Sing.”
- Lamb. 5 (2011) and *Backspace Unwind* (2014). Use of Ableton Live.
- Merz. *No Compass Will Find Home* (2013). Of interest for the electronica-infused production approach using the DAW (Logic Pro)—see the tracks “Eudaimonia” and “Toy,” for example.

Also of interest are Radiohead's *Kid A* (2000) and *Amnesiac* (2001), electronica influenced albums created early in the DAW era with older versions of Logic, Pro-Tools and Cubase along with various hardware (vocoders, autotune etc). Particularly interesting where Thom Yorke's vocal production is concerned – anticipates much of the later practice.

Notes

- 1 I use the word “paradigm” throughout this chapter to refer to a DAW's particular set of attributes.
- 2 For an involved discussion of the historical relationship between songwriters and studio practice see Albin Zak, *The Poetics of Rock* (Berkeley, CA: University of California Press, 2001).
- 3 Comping refers to the amalgamation of the best parts of several different takes into a single ideal performance.
- 4 Daniel Rachel's, *Isle of Noises: Conversations with great British songwriters*. (London: Picador, 2013), for example, contains no references to the DAW (aside from a passing comment on computers by Tennant and Lowe, aka the Pet Shop Boys). Media such as the guitar and piano, on the other hand, are discussed frequently. See also, Bill Flanagan, *Written in My Soul: Rock's great songwriters talk about creating their music* (Chicago: Contemporary Books,

- 1986); Paul Zollo, *Songwriters on Songwriting* (Cambridge, MA: Da Capo, 2003).
- 5 For the full thread (begun January 2012), see <https://www.gearslutz.com/board/songwriting/689687-songwriters-favourite-daw-why.html>
 - 6 Such views are also echoed in certain professional “how-to” guides. Stephen Citron, for example, has stated that “It is so easy to sit at a computer, toy with a MIDI input device such as a digital keyboard, play in a tune, and have the computer print it out, making a hard copy of the song or if desired, have the computer burn a CD or create an mp3 of the song. But this is, in my estimation, not songwriting.” See Stephen Citron, *Songwriting: A Complete Guide to the Craft* (revised and updated edition) (New York: Limelight Editions, 2008), 284.
 - 7 As it is neither practical nor prudent to focus extensively on any one specific DAW in a chapter of this nature, my purpose is to provide observations on common DAW characteristics that may be applicable in a number of different contexts.
 - 8 For further discussion of skeuomorphism in the DAW, see Adam Bell, Ethan Hein, and Jarrod Ratcliffe, “Beyond Skeuomorphism: The Evolution of Music Production Software Interface Metaphors,” *Journal on the Art of Record Production* 9 (2015). <http://arpjournal.com/beyond-skeuomorphism-the-evolution-of-music-production-software-user-interface-metaphors-2/> (accessed August 9, 2015)
 - 9 For an interesting analysis of the aesthetic appeal of the skeuomorphic DAW interface, see Gaute Barlindhaug, “Analog sound in the age of digital tools. The story of the failure of digital technology,” in *A document (re)turn: Contributions from a research field in transition*, eds. R. Skare, N. Windfeld Lund and Andreas Vårheim (Frankfurt am Main: Peter Lang, 2007), 73–93. <http://munin.uit.no/bitstream/handle/10037/971/paper.pdf?sequence=1> (accessed August 9, 2015)
 - 10 For a recent discussion of the visual aspects of the DAW, as well as technology and creativity in music production in general, see Simon Zagorski-Thomas, *The Musicology of Record Production* (Cambridge: Cambridge University Press, 2014).
 - 11 See “Four Tet,” *Sound on Sound*, July 2003. <http://www.soundonsound.com/sos/jul03/articles/fourtet.asp> (accessed August 9, 2015)
 - 12 James Mooney, “Frameworks and affordances: Understanding the tools of music-making,” *Journal of Music, Technology and Education* 3 (2/3) (2010): 147.
 - 13 See Mark Marrington, “Experiencing musical composition in the DAW: the software interface as mediator of the musical idea,” *Journal on the Art of Record Production* 5 (2011). <http://arpjournal.com/experiencing-musical-composition-in-the-daw-the-software-interface-as-mediator-of-the-musical-idea-2/> (accessed August 9, 2015); for a detailed discussion of notion of “accumulative” composition in the terms I have described here, see Mark Spicer, “(Ac)cumulative forms in Pop-Rock Music,” *Twentieth Century Music* 1 (2004): 29–64.

- 14 Aside from Mooney, 2010, “Frameworks and Affordances,” there are some useful comments on this idea in Zagorski-Thomas, *The Musicology of Record Production*, 98–102, 145–6, where the term “affordances” becomes applied to practical problem-solving situations which themselves suggest innovative uses of technology.
- 15 Songwriters’ awareness of the role of musical instruments in their creative approaches is well documented in the interview literature—the various commentaries compiled in Flanagan, Zollo, and Rachel, for example, contain numerous references to the use of the guitar and piano in songwriting in response to interview questions specifically designed to interrogate the effect these have on the musical outcome. Flanagan, *Written in my Soul*; Zollo, *Songwriters on Songwriting*; Rachel, *Isle of Noises*.
- 16 Rachel, *Isle of Noises*, 196.
- 17 Zollo, *Songwriters on Songwriting*, 159.
- 18 I do not necessarily intend to downplay the value of learning such tools “properly.”
- 19 See “Andy Barlow,” *Computer Music Special: Singer-Songwriter Production Guide* (2012), 22.
- 20 Another track of interest is “Te Amo” on the album *Parallax* (2011). Useful commentaries on Cox’s approach can be found in Mosi Reeves, “Bradford Cox: Boy Wonder,” *Creative Loafing Atlanta*, February 13, 2008. <http://clatl.com/atlanta/bradford-cox-boy-wonder/Content?oid=1272094> (accessed August 9, 2015) and Marc Hogan, “Interviews: Atlas Sound,” *Pitchfork*, January 14, 2008. <http://pitchfork.com/features/interviews/6763-atlas-sound/> (accessed August 9 2015)
- 21 See Joe Bennett, “Collaborative Songwriting – the ontology of negotiated creativity in popular music studio practice,” *Journal on the Art of Record Production* 5 (2011). <http://arpjournal.com/collaborative-songwriting-%e2%80%93-the-ontology-of-negotiated-creativity-in-popular-music-studio-practice/> (accessed August 9, 2015). Bennett’s claim requires further qualification given that 1960s blues-based rock songs, for example, were frequently based on one or two bar riffs (effectively loops). What is implied here perhaps is that more traditionally conceived songs have become simpler in structure as a result of the DAW’s influence.
- 22 See also the U.K.-based artist, Suzy Condrad, who has built her style around the use of the Boss Loopstation. <http://www.suzycondrad.com/> (accessed August 9, 2011)
- 23 It is significant that such loops have often been used in high profile released music—Rihanna’s hit “Umbrella,” for example, was famously built on a Garageband drum-loop. See Adam Webb, “Is GarageBand top of the pops?,” *Guardian*, October 18, 2007. <http://www.theguardian.com/technology/2007/oct/18/news.apple> (accessed August 9, 2015).
- 24 See The Timelords, *The Manual: How to have a Number One The Easy Way* (Aylesbury: KLF Publications, 1988), 28.
- 25 “Four Tet,” *Sound on Sound*.

- 26 Alex Needham, “James Blake: ‘I didn’t make this record for Chris Moyles, I’m in the dubstep scene,’” *Guardian*, January 22, 2011. <http://www.theguardian.com/music/2011/jan/22/james-blake-dubstep-scene> (accessed August 9, 2011). See also, Neil McCormick, “James Blake: pop, but not as we know it,” *Telegraph*, February 16, 2011. <http://www.telegraph.co.uk/culture/music/rockandpopmusic/8329194/James-Blake-pop-but-not-as-we-know-it.html> (accessed August 9, 2015)
- 27 “The Wilhelm Scream,” along with the other tracks referenced here, can be heard on Blake’s debut album, *James Blake* (2011).
- 28 J. Poet, “James Blake,” *SOMA Magazine*, September, 2011. <http://www.somamagazine.com/james-blake/> (accessed August 9, 2015).
- 29 J. Poet, “James Blake.”

