Exploring Art Schema and their Relevance to DAW Teaching and Pedagogy – Examples of Artistic Practice in the Field of Music Production

Boon, H.

The definitive, peer reviewed and edited version of this article is published in Journal of Popular Music Education, 7, pp. 285-302:

https://doi.org/10.1386/jpme_00126_1

Abstract:

This article discusses my on-going exploration of art schema and their potential role to develop DAW and music technology teaching. Arts practices have been noted by various researchers as potentially assisting creativity, DAW or otherwise. One useful advantage of this approach is advocating for more exploratory and materials based approaches for DAW learning and teaching. This is not necessarily under the banner experimental, but, instead, being different from a discrete set of engineering or technical decisions.

For this article I discuss Osborne's art schema and Sawyer's creativity framework to establish some principles which are illustrated by six short artist examples. These examples assist in placing these discussions in a common practice context, sampling. This is used to facilitate a useful comparison between practitioners and their various approaches. The examples generate questions for music educators to reflect upon authentic artistic working methods, the role of these schema broadly within technology teaching, and how these could be incorporated into current and future music production curricula, with the intended aim to develop student working practices not just in the institution but beyond.

Keywords: music technology, Digital Audio Workstation, sampling, production, art schema, creativity

Title: Exploring Art Schema and their Relevance to DAW Teaching and Pedagogy – Examples of Artistic Practice in the Field of Music Production

Introduction

This article discusses my on-going exploration of art schema and their potential role to develop Digital Audio Workstation (DAW) and music technology teaching. Arts practices have been noted by various researchers as potentially assisting music creativity, DAW or otherwise. One useful advantage for DAW learning and teaching of this approach is advocating for more exploratory and materials based approaches, not necessarily under the banner 'experimental', but different (Frith and Horne 1987: 22) from a discrete set of engineering or technical decisions (see Anthony 2022 for a discussion of issues with teaching production from this perspective). For this article I discuss the work of Osborne (2013) and Sawyer (2012) to establish some principles for educators to consider.

The target group for this discussion is higher education, though these principles can be introduced in earlier education settings. The discussion is illustrated by six short artist examples placed in a common practice context, sampling. This is used to facilitate a useful comparison between practitioners and their various approaches. I have selected sampling because the sampling process is a fantastic student-led learning opportunity, one of discovery and challenge for all participants (Chambers 2022: 560), encouraging (creative) decision making through an ongoing practice and developing much needed transferable skills in the world of production. This also challenges educators to communicate the diverse practices in sampling, hence the utility of the artist examples. Hopefully, some new questions will be raised for music educators to reflect upon the range of authentic artistic working methods, the role of art practices broadly within technology teaching, and how these could be incorporated into current and future music production curricula, with the ultimate aim to develop student working practices not just in the institution but beyond.

Whilst some readers may insist that I am advocating for an arts based pedagogy applied to teaching music creation with or without music technology, I am not. Instead it is to query where in (technology) teaching students can, or are, encouraged to transgress boundaries. The argument from those in popular music studies, such as Frith and Horne, Strange, Eno, and more recently Rick Rubin, is that art based pedagogies have always been in popular music, certainly since the 1960s. What should be kept in mind is that the officially sanctioned version of what a technology is for, changes when this technology is repurposed by practitioners interested in neither remaking the past nor maintaining the status quo. Fiske refers to those who do this sort of work as ‘agents of popular power’ (2010: 313).

Example Artists as Agents of Popular Power

The choice of which artists or examples to study are a matter of personal judgement. As Merriam and Tisdell note ‘the vast majority of research topics come from one’s personal interest in the field and from the work setting itself.’ (2015: 74) Much of my research interest is generated by my own working experience and ongoing interest and curiosity in the practice of sampling. Therefore, the artist examples have sufficient correspondence with Osborne's schema and Sawyer’s framework from which to derive approaches which can be applied or adapted to teaching situations, whether involving technology or not. Whilst the word sample or sampling elicits different responses from educators and practitioners, sampling is also subject to one of Feenberg’s ten paradoxes of technology; ‘*Simplification complicates*’ (2010: 10 original emphasis). From one perspective a sample may appear to be simple, yet to make this sample fit in a meaningful way, especially with

other samples from different recordings (pre-existing or not), is a challenge of complexity. This complexity will also produce new sonic artefacts where previously none existed:

> there was no bass of any sort, all the bass was all the other instruments slowed down, and everyone kept saying 'It sounds like this is a band playing.' (Inglis 2003)

Thematic Areas and Sampling

There are a number of thematic areas relevant to music practice discussed in this article. The first considers two articulations of art and creativity. Osborne's art schema (2013) will be the primary reference to provide some guiding principles, which will be cross referenced with Sawyer's integrated framework (2012: 88). Both Osborne and Sawyer assist in considering ideas useful for querying creative production teaching and reflecting upon how to embed these ideas in work and dialogue with students. They are also useful in dialogic situations with students, especially when critiquing a work or determining how a work could be expanded beyond conventional approaches.

The second thematic area draws upon a number of short, artist examples to demonstrate these schema and framework in operation. As a common thread I have selected artists who use sampling as a core part of their work. Taylor suggests that sampling offers “aural glimpses of the social.” (Taylor 2001: 139) Tara Rodgers draws attention to the literature's lack of understanding of the 'musicality of the sampling process' (Rodgers 2003: 314) to which Harkins notes that “Sampling has often been described in a reductive way as a form of musical quotation or, to its detractors, theft.” (Harkins 2020). The contribution of this article is to re-associate this musicality of process, assisted by Osborne and Sawyer.

I use sampling almost on a daily basis. I was first introduced to sampling via the CMI Fairlight II (Manning 2014: 225-227) as a student at Goldsmiths in 1984/85. Apart from some production and remix work I have done for artists like De La Soul, almost every use of sampling has been what can be termed self-sampling or resampling work (Exarchos 2021), which did not involve sampling the music of others. So, ideas of borrowing or quotation have little merit in these situations. Therefore, sampling carries many differing connotations for various practitioners. Benny Blanco says that ‘I rarely use samples from other songs, unless I need something I absolutely cannot recreate and the sample embodies exactly what I need.’ (Tingen 2012) Kieko Uenishi highlights the attractiveness of ‘crisp, clear sound’ when combined with ‘really bad-quality sounds … makes some depth, like a three-dimensional feel.’ (Rodgers 2010: 266) Warner suggests that 'sampling offers a musician a

way to explore systematically those parts of their musical imagination which developed as a result of listening to records' (Warner 2003: 96). Therefore, sampling presents a diversity of activity areas and is, I contend, a central pillar of music practice, not just for some groups of practitioners. This is because sampling artists are also influential on practitioners who do not use sampling. Thus, sampling is well suited to any number of interpretations when considered as a site of and for systematic exploration and imagination. This is perhaps because a sampler is sufficiently generic in operation to process anything from single cycle waveforms to much longer audio recordings. The sampler can be viewed as a process, as opposed to just an instrument, with audio as its data. This process, as well as producing intended results, may also produce 'intangible aspects or side-effects of “process” and “data.”' (Riddell 2001: 337), which, for some artists, becomes integral to their work.

Art Pedagogies and Music

Earlier research by Frith and Horne (1987: 1) aimed to identify why British Art Schools were implicated in the emergence of particular branches of British popular music of the 1960s onwards. They locate art training approaches as having a focus on being ‘a bit different’ (Frith and Horne 1987: 22) reinforced their observation of Art’s importance to Popular Music as a seeing what happens to ‘art ideas as they are diffused in pop generally’ (*ibid*.: 24) Harkins even went as far as to identify one of his research participant’s art based music as a continuation of ‘Eno’s art school tradition of investing pop creativity with technological experimentalism.’ (Harkins 2010: 14)

More recently art practices in Music and creativity research have received attention as pedagogy, as practice, as philosophy, as politics and as aesthetics (Barrett 2021; Bell 2015; Butt 2022; Harkins 2010; Liechti 2022; Morey and McIntyre 2014; Rodgers 2010; Strange 2017). This also extends into the growing research interest to move beyond tools based teaching that suggest that Art processes are valuable especially to balance overly technical disciplining (Boon 2021; Walzer 2020). However, as Frith and Horne note, most popular music musicians will not have gone to art school, yet they will come into contact with art school ideology interrelated with ideas of professionalism and music business (*ibid*.: 22) in the course of their work.

Influential popular music artists and producers (see Strange 2017: 273 for an indicative comparative listing), foreground art practice, or at least the suggestion of it, as a key component of their work. The implication here is that studying Art approaches may be potentially advantageous for music practitioners. This idea is further troubled in music production and creative practice when producer

Rick Rubin declares that they “have no technical ability. And I know nothing about music” (Lonsdale 2023) and attributes their success to other skills in understanding the creative artistic process. Rubin’s point regarding technical skills and musical abilities are observations previously made by the KLF in their manifesto first published in 1988 (Cauty and Drummond 1988). Thus, all of these claims can be thought of as what anthropologist Marilyn Strathern describes as 'alternative coordinates for thinking' as a means to 'challenge any seeming singularity of the concept' (Strathern 2020: 7-8), in this case, producer.

Art interventions are also available such as *Oblique Strategies*. First produced in 1975 by Eno and Peter Schmidt, using a system of cards 'each of which is a suggestion of a course of action or thinking to assist in creative situations' (Eno Shop 2010). The cards are an example of the circulation of art school ideology in the popular music domain. They can be deployed to address issues of creative blocks, as much as to provide a conceptual underpinning for a new project or means to take a less well travelled route, which links back to Firth and Horne’s idea of being a bit different. Each solution is potentially different because each practitioner will interpret their situation and available actions differently. This decision making continues as a theme of interest for researchers (Walzer 2020: 80) as well as music technology companies (Desantis 2015) and practitioners such as The KLF, Rubin and Eno where the usefulness of art based schema for music 'are transferable and mirrored in the process and production of pop' (Strange 2017: 271). Therefore, the implications for music technology educators, if one accepts Strange's claim, are that these approaches have always been present and, therefore, provide opportunities to develop the teaching and learning context.

Osborne’s Schema

In the following sections I introduce Osborne’s schema and Sawyer’s framework. Before doing so I briefly discuss schema. Rather than consider schema within the arc of human history, which is impossible to do in an article of this length, I refer to schema from a selection of disciplines. This shows that far from being a known and therefore closed subject area—a claim of epistemological closure—that information is being added to schema all the time from a variety of disciplinary perspectives which are also mediated by individual experiences.

From a social sciences perspective, schema are defined as ‘mental structures that an individual uses to organize knowledge and guide cognitive processes and behaviour.’ (Michalak 2019). Recent AI research sees advantages where ‘Schema-based mechanisms also aid in memory consolidation over

longer time-scales into reusable knowledge structures' (Guntupalli et al. 2023: 1). These ideas of memory, organization and of reuseable knowledge structures correspond well with Gjerdingen's description of schema use within the practice of partimento, as the teaching context for composition training. For example, he suggests that for Galant period music practitioners, and their listeners, originality might not be as important as 'the quality of its presentation' (Gjerdingen 2007: 40). Zagorski-Thomas advocates a 'connectionist approach' where 'certain aspects of experience … remain the same while the details may differ' (2014: 8). For cognitive theorists, the term schema also leads to '"role schema," … refer to the behavioral expectations that we may have for an individual occupying a given role.' (Nelson 2015: 215) Within technology (teaching) settings, such as using samplers and DAWs, fulfilling these behavioural expectations of technology use and composition, leads to what Nelson refers to as 'an adroit use of schemas' (Nelson 2015: 215). Again, this use refers back to Gjerdingen and Zagorski-Thomas's respective ideas. Therefore, adroitness suggests a type of practised knowing and working, which can be linked to two points from Toynbee. These are that '[t]he music maker identifies (hears) possibles according to a) the perceptual schema of her/his habitus and b) its point of intersection with the creative field' (Toynbee 2000: 40). Toynbees's identification of hearing the possibles can be argued to play a significant role in the artist examples and in ideas of anti-aestheticism which form a consequential discussion item in this article.

In Osborne's *Anywhere or not at all: philosophy of contemporary art* (2013) he outlines a thesis for contemporary art. It is important to appreciate that Osborne did not intend for his schema to be used to stimulate creative works but more as a critique of the category of post-conceptual art rather than 'traditional art-historical or art-critical concept at the level of medium, form or style' (Osborne 2013: 28). Despite these potential misgivings in utilising them for this purpose, there are many points that have relevance for music practice and its teaching:

1. Art's necessary conceptuality. (Art is constituted by concepts, their relations and their instantiation in practices of discrimination: art/non-art.)
2. Art's ineliminable – but radically insufficient – aesthetic dimension. (All art requires some form of materialization; that is to say, aesthetic – felt, spatio-temporal –presentation.)
3. The critical necessity of an anti-aestheticist use of aesthetic materials. (This is a critical consequence of art's necessary conceptuality.)
4. An expansion to infinity of the possible material forms of art.
5. A radically distributive – that is, irreducibly relational – unity of the individual artwork across the totality of its multiple material instantiations, at any particular time.

6. A historical malleability of the borders of this unity.

(Osborne 2013: 28)

Osborne explains that items 1 and 2 are necessary features that 'lead to the third' (*ibid*.) and it is the third item in this schema which is one of the most important underpinnings for popular music and is, perhaps, a more concrete term to Frith and Horne's being a bit different (1987).

From a musical perspective, the 'anti-aestheticist use of aesthetic materials' might be a more difficult goal for music technology education to implement as this will also rely upon identifying unconventional and/or non-technological solutions for creative situations. Further, a solution might also not be a product of using the tool(s) 'correctly', therefore new sound(s) might be produced by not using the software or tools as intended. The solution of going against tool use must be viewed as a valid mechanism of the everyday and not as a response to orthodoxy. Therefore, it is a vital part of the continuum of material expression, and not as a less frequently occurring optional process or under the less helpful rubric 'creative abuse' (Keep 2005). In my own published work, I have outlined how a DAW can be used differently from conventional use (Boon 2021) with various enhancements, extensions, and material transformations (Boon 2022a; Boon 2022b).

Osborne continues that the fourth is implied by the previous three schema which lends support to Walzer's identification that 'what is missing in music technology education is a spirit of aesthetics with media.' (Walzer 2020: 88) Osborne concludes his schema with the fifth and sixth as 'expressions of logical and temporal consequence' (Osborne 2013: 28), which refer to the passage of time or retrospective process, whereby works are evaluated and deemed as artworks. From my perspective, points 1-4 have the greatest potential application for music, its technologies, and its teaching, with 3 and 4 perhaps treated as cornerstones of popular music practice. What Osborne's schema shows is that a musical work must escape the gravitational pull of genre and community expectation, i.e., sounding like the last thing or tools can only be used in certain ways and ends.

Sawyer's Framework

Sawyer's framework is of a generally practical nature and more straightforwardly applied in creative working situations. There is a clear, yet complementary, difference with Osborne's schema, especially where Sawyer's is an 'integrated framework that captures the key stages of all of the various models that psychologists have proposed' (Sawyer 2012: 88) synthesized from different

creativity models. This framework is indicative of the sorts of ‘activity’ expressions which can also be found in material such as Eno’s *Oblique Strategies*. The directions as enumerated by Sawyer are:

1. Find and formulate the problem
2. Acquire knowledge relevant to the problem
3. Gather a broad range of potentially related information
4. Take time off for incubation
5. Generate a large variety of ideas
6. Combine ideas in unexpected ways
7. Select the best ideas, applying relevant criteria
8. Externalize the idea using materials and representations

(Sawyer 2012: 88)

The blanket application of any or all of Osborne’s schema and/or Sawyer’s framework do not necessarily guarantee that a work is art. However, they do assist in better understanding conditions for/of art. Both offer opportunities to explore conceptuality and investigation of process, rather than focusing purely on the output or correct tool use. Much of what Sawyer has identified can be folded into some of Osborne's schema—at least the first four—without too much trouble. Whilst Sawyer’s framework can be considered as more instructional, and therefore a more straightforward ‘fit’ for Music. Osborne’s schema articulate what should be viewed as fundamental operating practices in popular Music (broadly conceived) irrespective of changes in production culture and technology. In the following section, I discuss several artist examples related to Osborne’s schema and Sawyer’s framework.

Example 1 – Public Enemy - Black Steel In The Hour Of Chaos

Black Steel In The Hour Of Chaos (Channel ZERO 2010) is from Public Enemy's 1988 album *It Takes A Nation of Millions To Hold Us Back*. Public Enemy production duties were handled by Hank Shocklee and the Bomb Squad, setting out to 'create a sound designed to oppose the traditional western expectations of melody and timing' (Scobie 2014: 2).

Shocklee discusses an incident during the song’s recording, best described as an unintended consequence. The issue involved a piano sample which Shocklee 'thought somebody must have broken … where it somehow got corrupted' (Buskin 2010), which he could hear 'sounded so ridiculously lo-fi' (*ibid*.). Once the back of the sampler was examined, the cause was identified as a

jack only making a partial connection. Some signal could pass through but with reduced fidelity. Once resolved, Shocklee decided to use this new found process, leading to recording the piano part in two passes. The first with the jack fully in, and the second using the partial connection. These two tracks were combined as a sort parallel processing technique, balancing levels between hi-fi and lo-fi versions. Cascone identifies that ‘[n]ew techniques are often discovered by accident or by the failure of an intended technique or experiment." (Cascone 2000: 13). The identification of a fault that was quickly flipped into a viable and immediately useable sonic choice, reveals a significant aspect of the studio as composition tool concept (Eno 2004). It demonstrates an in the moment reflexivity, transforming potentially negative incidents into more positive, musical outcomes.

This example aligns with Osborne's second and third points. These being 'radically insufficient – aesthetic dimension' (Osborne 2013: 28), illustrated by the dissatisfaction with the piano part and looking for other ways of altering its character. The decision to continue to use the faulty connection is an example of Osborne's third point 'an anti-aestheticist use of aesthetic materials' (*ibid*.). Shocklee identified that this lo-fi version could be incorporated to provide a more interesting sonic signature. The critical question for teaching is how to bring these conditions to music creation by either incorporating 'bugs' or turning 'bugs' into features. Can students explore materials by exploiting imperfect connections?

Example 2 – Tricky, Mark Saunders and an Arm Full of Records

Tricky signed a solo deal with 4th & B'way Records (a US based subsidiary of Island Records) and was previously part of the Bristol collective The Wild Bunch, where some members would go on to form Massive Attack. Tricky’s album *Maxinquaye*, alongside Massive Attack's *Blue Lines,* would usher in the music style Trip Hop. Producer Mark Saunders, prior to working with Tricky, was best known as an engineer for rock band The Cure, electro group Bomb The Bass and artist Neneh Cherry.

There are two working approaches worth considering in the making of *Maxinquaye*, best described as a melding of Saunders' technical expertise with Tricky's aesthetic choices. Saunders characterized the working relationship as 'equal parts fun and utter frustration!' (Saunders n.d.) Once they got over the initial false starts, Saunders, originally hired as engineer, became the producer describing it as:

> Tricky picked a couple of vinyl records (which were literally covering most of the floors in his flat) off the floor and told me he wanted to sample them. 'Sure' I said, expecting him to leap into action at the computer and sampler. He saw me waiting and waved his hand towards the gear and said 'oh...I don't know how to use any of that stuff!'. (*ibid*.)

With Saunders now also taking care of technological duties, Tricky would ask for samples to be 'heard' together. Saunders would point out that they 'wouldn't work because they were different tempos and in different [keys]' (*ibid*.), but Tricky still wanted to hear them. To Saunders 'it was a total train wreck' (*ibid*.) In fact Tricky heard something else 'nodding his head to a beat that didn't exist in the cacophony' (*ibid*.), that Saunders either could not or did not hear. However, even though Saunders thought it would not work, he still attempted to make something for the artist who was adamant that they would. 'I fiddled around with samples and lo and behold, after a few minutes, the two pieces suddenly gelled into an unexpectedly great loop. In many ways the desire to hear a collection of samples sourced from different recordings, instrumentation, keys, tempi and time periods can be thought of as a forced constraint to create new sound, not achievable using traditional instruments, nor played or programmed by a variety of musicians.

Tricky's approach aligns well with Osborne's schema, especially point four. Through his record collection, he is able to magnify the 'possible material forms of art' (Osborne 2013: 28), precisely because the number of records, including the number of samples that can be extracted from them, when also adapted and processed in a myriad of possible combinations, means that, even if not quite infinite, this represents a large amount of possibility and growth in sound. This idea of possibles, linking back to Toynbee’s point, highlights the importance of listening 'over both instrumental skill and an understanding of music theory' (Morey and McIntyre 2014: 56). Tricky's intimate knowledge of 'his' records becomes transformed into an imaginary context, juxtapositioned with other samples heard in the artist's mind as possibility.

Tricky's feat of confidence in the 'rightness' of his choices indicates an aspect that Western Music ear training cannot develop unless it accepts 'the possibilities and unknowns' (Tonkinwise 2008: 1), which the ear cannot predict. Tricky's working practices lead him to this position, where no single person is capable of predicting the outcome of combining samples in as many different ways, to achieve new sound. This implies a new teaching context if the outcome cannot be safely predicted. This situation places both the learner and the teacher in a co-position of naivety. How can this be used to advantage to bring out the possible?

Example 3 – Four Tet – Sample Mining

Four Tet's approach to sampling is demonstrated (timandbarrytv 2014) in an up against the clock video (a common YouTube challenge format), sampling everything from Michael Jackson's 1982 album *Thriller*. The first point to appreciate here is the limited amount of time for the task. To best utilise the time, Four Tet scans the vinyl by dropping the needle at different points. His record deck is already connected to his computer, recording each audio selection. Ethics of sampling aside, Four Tet's method has a certain immediacy which potentially results in a 'vibe' to capture ideas.

The second point is his avoidance of time and/or beat stretching algorithms, as well as not topping and tailing his samples into orderly loops. Listening to him work, especially when he has a number of channels open, can sound chaotic, jumbled, jarring and confusing. However, at each point Four Tet 'knows' what he is looking for, demonstrating a virtuosity 'of the imagination with an expertise in the manipulation and organization of sound' (Warner 2003: 96), with 'the ability to switch from listener to composer and back again' (Morey and McIntyre 2014: 51). Four Tet creates midi trigger parts, moving sample start points to different chunks of audio. He evaluates the result and makes a decision. This aligns with Sawyer's framework, especially 'generate lots of ideas... combine ideas in unexpected ways... select the best ideas' (Sawyer 2012: 88). As he does not use time stretching or beat slicing, he instead repitches samples to adjust their playback speed. He does not set an end point, but, instead, adjusts the sustain and release parameters of the sampler's envelope rather than adjusting note lengths in the midi clip. He utilizes similar approaches with audio tracks. He sets the loop brace to a small size and moves it around in a non-linear fashion. Jumping between sections to identify points of interest, mining data from the sample as he goes along demonstrating ‘constant ongoing adjustment’ (Reuter 2021: 6).

Four Tet's approach to using samples avoids using the 'convenience' of time stretching and beat slicing algorithms. By avoiding these, he opens up the possibility for new rhythms to be created, not present in the original audio files. It is almost as if there are several tape recorders or record decks running but not in sync, where each is manually adjusted to achieve a coherent result. Again, this links back to the possible and Osborne’s the 'possible material forms of art' (2013: 28). Can music technology teaching avoid the use of corrective algorithms for advantage?

Example 4 – Burial – Tape Based Techniques in the Digital Age

Untrue was Burial's second album, released in 2007, and made using Sound Forge. Sound Forge is primarily an audio editor and whilst external VST effects can be used, it does not use midi nor

plugin instruments. Therefore, it can be thought of as a departure from more standard DAWs of the time. Burial's use of Sound Forge is as a multitracking tool, a software tape machine with high powered in place editing features. On my view many of these techniques and processes align well with Cage's *Williams Mix* (Cage 2010). Cage's instructions are to collect several field recordings; to treat some of these recordings with some sort of post-processing; and then to assemble them to tape using a number of splices. Burial's gathering of samples from a range of sources not just from music recordings but also from TV, Film, Game audio and field recordings, can be viewed similarly. Post-processing was applied to some or all the files, not just once but multiple times, increasing or decreasing audio duration and artefacts.

When discussing his own work Burial declares that he does not have “kit good enough to make the music instrumentally stand up to itself.” (Clark 2006) It is perhaps a very revealing remark that an album hailed as significant (Reynolds 2017), that the artist also highlights their lack of equipment as an issue. This aligns well with Osborne's second point 'Art’s ineliminable – but radically insufficient – aesthetic dimension.' (Osborne 2013: 28). The acknowledgement of this limit is not a barrier to doing good work.

Burial's album, more than any example in this article, raises some really important questions for music education, music technology teaching, and DAW's. If such a profound, moving, and influential work can be created using an audio editor, that many would consider to be less well featured than many DAWs, then how can educators guide students to develop aspects of their craft that are not as straightforwardly rooted in orthodox approaches? This is especially important when they might not have access to all of the 'right' tools or instruments. Burial self-identified that what people found innovative in his music was due 'to his own amateur resourcefulness' (Hsu 2019). In and amongst all of the professionalism rhetoric and promise of DAWs, how can educators incorporate amateur resourcefulness as part of the curriculum?

Example 5 – Grimes – Process Is the Best Part

The Canadian artist-producer Grimes' working method contains a number of parallels with Public Enemy and Tricky. Whilst she makes use of samples, these tend to be more in the domain of one shots, especially drums. For other parts of her tracks she tends to play and sing parts, generally as multiple takes, playing keys, guitar, and violin. Whilst she characterizes her abilities as those where she is not really a 'proper' guitarist, her working practice demonstrates a key aspect of studio work. This can be best summarized as getting the job done despite limitations. She acknowledges this as

an advantage 'and I think like the fact that I’m not like a super-proficient guitar player or violin player whatever is kind of important' (The FADER 2015). Being able to capture ideas, even on instruments where the musician might have rudimentary understanding, but still being able to get something usable from it, is an important mindset to develop and cultivate in students, especially those using software. This 'just in time', or making do approach, is another aspect of the studio as compositional tool (Eno 2004) that producers such as Grimes demonstrate well. Her use of one shots, layering forty drum samples to make a snare drum (Song Exploder 2016 timestamp: 2'35”), is an approach similar to Tricky's working method. Whilst unconventional, the artist hears something that others might view as either flawed or not the right way of doing things. Yet still part of Toynbee’s possibles.

Grimes represents a very independently minded project and embodies the spirit and practice of studio as compositional tool. She is an influential practitioner for women producers and artists alike. Her work encapsulates all of Sawyer's framework such as 'generating lots of ideas' (Sawyer 2012), and 'selecting the best' (*ibid*.) Grimes' work aligns well with Osborne's schema especially as her work always has a conceptual base. Her use of instruments, without necessarily having pre-requisite skills, is a good example of the anti-aestheticist approach using aesthetic materials. As such it aligns with 'learn these three chords … now form a band' (Riis 2021) which is a cornerstone of punk rock.

Example 6 – Tokimonsta – Field Recordings, Sound Combinations, and Interesting Tonalities

The Californian artist-producer Tokimonsta demonstrates the enduring appeal of field recordings in production approaches. Whether recorded using a mobile phone or field recorder, she captures environmental sounds, ambiences, records walking across different surfaces, tapping, hitting, and dropping objects, recording each variation and iteration. Her practice is one that represents a pre-composition, material generation phase. This is very much aligned with the previously cited *Williams Mix* (Cage 2010) and the work undertaken by Burial.

Her use of field recordings is explained by layering several field recordings to create a percussion sound (The Big Story 2019). Her reasons for doing this are to create a sound that is unique and that 'the great thing is when you do stuff like that, no one else will have that sound' (*ibid*.). In this formulation uniqueness is not a product of manipulating notes and rhythms but is developed within the domain of timbres by exploring the qualities of sound combinations, to which Riddell argues that sound might be all there is (Riddell 2001: 340). Tokimonsta's methodology is to bring something of the external (sound) world into the digital recording environment. Even though field

recordings are available in sample packs, many producers still elect to make their own. They view location as an opportunity for exploration and discovery, captured on a device, transferred into their DAW for evaluation and/or additional processing.

This fortuitous convergence of music and environment can bring something unique to a production, that is difficult to realize with software instruments or effects alone. This approach brings something of the variability of environment to enliven potentially static productions. Field recordings assist producers in generating lots of ideas from which to make suitable selections to be incorporated in their productions. The question for music education is how to embed this as a general part of the production workflow, not merely as novelty, but to reflect aesthetic production choices?

Summary

I have used each example artist to highlight a pedagogic action point from which curriculum activities can be devised. Each provides a jumping off point not just to think about practice but also devising teaching situations. Where educators value the importance of activities grounded in authentic settings then these are good examples of authentic working. This is important for teaching and learning as many will seek to influence what they view as the authentic. For example, Benedict and O'Leary, make a claim regarding authenticity that music educators should modify technology teaching so as to "restore students' freedom to "reclaim making" in the age of neoliberalism" (Benedict and O'Leary 2019). There is the spectre here of an assumption that students do not already have a critical view of technology, that their approach does not have a social focus and that they are somehow not skilled and not free to make choices. The question here is how to encourage the exploration of different tools, materials, processes, and different uses of tools within the selected DAW, without closing off other avenues of enquiry or application. When technological processes 'fail' to solve the issue, the question must be solved by turning to other means outside of the immediate domain. Irrespective of how an educator will conceive of ideas such as authentic working, issues that students will encounter in their learning will not be addressable purely at the tool level. This becomes a 'distinctive problematic' (Strathern 2020: 3) of education to articulate what lies beyond tool knowledge.

Barrett suggests popular music 'can reflexively confront contemporaneity' (Barrett 2021: 16), which Frith and Horne identify as being 'concerned with the surrounding environment, alive to cultural change and stylistic nuance' (Frith and Horn 1987: 36). Therefore, addressing contemporaneity can

be achieved not with tool use, but by addressing material conditions where 'musical thinking and practice is informed by the vast social dimension of contemporary life' (Riddell 2001: 338). Public Enemy exhibit this as a challenge to Western Music, using chaos and noise as an organising principle. Barrett posits that an art music might not even be recognized as music by those who consider themselves to be musicians and composers (Barrett 2021: 18). Likewise, what is considered skill may equally be misrecognized if those within a discipline advocate for a specific baseline proficiency that might not include anti-aesthetic approaches (Bates 2013: 17). This points to a condition where, perhaps, the overly disciplined Western ear, or even the desire to articulate a disciplinary baseline, may prove to be a barrier to 'hearing' art as music and music as art.

Piekut's observation that 'Experimentalism is a grouping, not a group' (Piekut 2011: 6) is arguably applicable when considering sampling. Sampling, as a term, offers neither an explanation nor a 'definition of a category' (Piekut 2011: 6). The selected artists are a deliberate choice to reinforce this point both as a necessary aspect of practice. These artists have made decisions informed by an aesthetic approach of their own determining rather than one determined by the tool. This is the authentic setting which educators need to accommodate, irrespective of their favoured recording medium or ideology. Simply because artistic works can be created using any method.

Conclusions

The choice for music education and technology teaching becomes less about the tool(s), but instead, more about artistic processes so as to accommodate any musical ambition, even those not aligned with mainstream practices. In essence, Music Technology and DAWs *should* be thought of as 'simultaneously supporting traditional and non-traditional ways of thinking about music' (Riddell 2001: 338) and not that 'the DAW is essentially a genre-specific medium' (Marrington 2019: 49), thereby implying a loss of agency on behalf of users. The key thing to understand here is that the work of using samples, subverting their meaning, or even attempting to do things in ways that challenge a conception of what is popular music, is a magnificent transferable skill. It is not wasted time nor is it a consolation prize for not playing an instrument. It imparts the ability to do things with recordings that might well lead to interesting music and artistic pathways, which may also lead to others wondering how the sound was achieved.

Anti-aestheticist approaches are a fundamental aspect for (many) popular music styles. They also exceed familiar terms and phrases such as 'creative abuse' (Keep 2005; Théberge 2001: 4). Examples like Tony Moon and Peter Lloyd's three chord illustration (Riis 2021) is anti-aestheticist

but not creative abuse. It both defines a sound and the minimum skill necessary to learn to get out there and do it! Not only is it a (community) pedagogic device of informal learning but it is also an aesthetic decision regarding the quality of chord relationships to communicate sound. As such the anti-aestheticist approach need not create ruptures in the manner implied by terms like ‘creative abuse’ or ‘misuse.’ It can be gentle. The anti-aestheticist approach concerns materials and artistic ambition, which should be the teaching focus. Not as a narrow formulation, nor even under the heading of experimental, but in the manner that Osborne describes as 'an expansion to infinity of the possible material forms of art.' (Osborne 2013: 28) The goal of popular music education is to increase the material forms of musical expression and not to limit them.

References

Anthony, Brendan (2022), *Music Production Cultures: Perspectives on Popular Music Pedagogy in Higher Education,* Abingdon: Routledge.

Bates, Eliot (2013), ‘Popular Music Studies and the Problems of Sound, Society and Method’, *International Association for the Study of Popular Music*, 3:2, pp. 15-32.

Barrett, G. Douglas (2021), 'Contemporary Art and the Problem of Music: Towards a Musical Contemporary Art', *Twentieth-Century Music*, 18:2, pp. 1-26, https://doi.org/10.1017/S1478572220000626. Accessed 23 February 2023.

bell, adam patrick (2015), ‘Can we afford these affordances: GarageBand and the double-edged sword of the digital audio workstation’, *Action, Theory, and Criticism for Music Education*, 14:1, pp. 44-65. act.maydaygroup.org/articles/Bell14_1.pdf. Accessed 23 February 2023.

Benedict, Cathy and O’Leary, Jared (2019), ‘Reconceptualizing “music making:” Music technology and freedom in the age of neoliberalism’, *Action, Criticism, and Theory for Music Education*, 18:1, 26–43. doi:10.22176/act18.1.26. Accessed 23 February 2023.

Boon, Hussein (2021), ‘Using DAWs as modelling tools for learning design sound-based applications in education’, *Journal of Music, Technology & Education,* 13:2-3, pp. 305-322, https://doi.org/10.1386/jmte_00028_1. Accessed 23 February 2023.

Boon, Hussein (2022a), ‘Learning and Designing Sound Based Music: Enhancing Music Production Pedagogy in HE’, *Equalise, The Institute of Contemporary Music Performance*, London 08 September 2022.

Boon, Hussein (2022b), 'Learning and Designing Sound Based Music: Enhancing Music Production [CONFERENCE PRESENTATION 2022]', YouTube, 14 September, https://youtu.be/iqBoN7FREnY. Accessed 23 February 2023.

Buskin, Richard (2010), ‘Public Enemy ‘Black Steel In The Hour Of Chaos’ | Classic Tracks’, *Sound on Sound*, January, https://www.soundonsound.com/techniques/public-enemy-black-steel-hour-chaos-classic-tracks. Accessed 23 February 2023.

Butt, Gavin (2022), *No Machos or Pop Stars When the Leeds Art Experiment Went Punk*, Durham, North Carolina: Duke University Press.

Cage, John (2010), ‘Williams Mix’, Electronic Music Sources, Sinetone AMR, YouTube https://music.youtube.com/watch?v=xLxK_UXWM_Y&feature=share. Accessed 23 February 2023.

Cascone, Kim (2000), ‘The Aesthetics of Failure: “Post-Digital” Tendencies in Contemporary Computer Music’, *Computer Music Journal*, 24:4, 12–18.

Cauty, Jim and Drummond, Bill (1988), *The Manual (how to Have a Number One the Easy Way)*, London: KLF Publications.

Chambers, Paul (2022), ‘Producing the self: Digitisation, music-making and subjectivity’, *Journal of Sociology*, 58:4, pp. 554-569, https://doi.org/10.1177/14407833211009. Accessed 23 February 2023.

Channel ZERO (2010), ‘Public Enemy - Black Steel In The Hour Of Chaos (Official Music Video)’, *YouTube*, 27 August, https://youtu.be/ZM5_6js19eM. Accessed 23 February 2023.

Clark, Martin (2006), ‘soundboy burial’, *Blackdown*, 21 March, http://blackdownsoundboy.blogspot.com/2006/03/soundboy-burial.html. Accessed 23 February 2023.

Desantis, Dennis (2015), *Making Music 74 Creative Strategies for Electronic Music Producers*, Berlin: Ableton.

Eno, Brian (2004), 'The studio as compositional tool', in C. Cox and D. Warner (eds), *Audio Culture: Readings in Modern Music*, London: Continuum, pp. 127–130.

Eno Shop (2010), Oblique Strategies, https://www.enoshop.co.uk/product/oblique-strategies.html. Accessed 23 February 2023.

Exarchos, Michail (2021), 'Making records within records', in R. Hepworth-Sawyer., J. Paterson, & R. Toulson. (eds), *Innovation in Music: Future Opportunities*, New York: Routledge.

Fiske, John (2010). *Television Culture*. Abingdon, Oxon: Routledge.

Feenberg, Andrew (2010), 'Ten Paradoxes of Technology', *Techné*, 14:1, pp. 3-15.

Frith, Simon and Horne, Howard (1987), *Art into Pop*, London: Methuen.

Gjerdingen, Robert, O. (2007), *Music in the galant style*, New York: Oxford University Press.

Great Big Story (2019), 'Losing And Finding Music After Brain Surgery | TOKiMONSTA', *YouTube*, 8 February, https://youtu.be/MmaKnkz4IaU. Accessed 23 February 2023.

Guntupalli, J. Swaroop et al. (2023), 'Graph schemas as abstractions for transfer learning, inference, and planning', *arXiv*, 34:4, pp. 337–343, https://doi.org/10.1162/00240940152549294. Accessed 23 February 2023.

Harkins, Paul (2010), 'Appropriation, Additive Approaches and Accidents: The Sampler as Compositional Tool and Recording Dislocation', *Journal of the International Association for the Study of Popular Music*, 1:2, pp. 1-19.
Harkins, Paul (2020), *Digital Sampling: The Design and Use of Music Technologies*, New York: Routledge.

Hsu, Hua (2019), 'Burial's Search for Fleeting Moments', *The New Yorker*, 2 December,

https://www.newyorker.com/magazine/2019/12/09/burials-search-for-fleeting-moments. Accessed 23 February 2023.

Inglis, Sam. (2003), ‘Four Tet Kieran Hebden: Recording Rounds’, *Sound on Sound*, https://www.soundonsound.com/people/four-tet. Accessed 23 February 2023.

Keep, Andy (2005), ‘Does creative abuse drive developments in music production?’, in *The Art of Record Production, 17-18 September 2005, University of Westminster*, London, UK. https://www.artofrecordproduction.com/aorpjoom/arp-conferences/arp-archive-conference-papers/17-arp-2005/72-keep-2005. Accessed 23 February 2023.

Liechti, Hannes (2022), *This Track Contains Politics*, Bern: Norient Books.

Lonsdale, John (2023), ‘Rick Rubin’s New Book Rocks to the Top of Amazon’s Bestseller List Days After Hitting Shelves’, *Rolling Stone*, 20 January, https://www.rollingstone.com/product-recommendations/books/rick-rubin-book-the-creative-act-1234665058/. Accessed 23 February 2023.

Manning, Peter (2014), *Electronic and Computer Music*, 4th ed., Oxford: Oxford University Press.

Marrington, Mark (2019), ‘The DAW Electronic Music Aesthetics and Genre Transgression in Music Production: The Case of Heavy Metal Music’, in R. Hepworth-Sawyer, J. Hodgson & M. Marrington (eds), *Producing Music*, New York: Routledge.

Merriam, Sharan B. and Tisdell, Elizabeth J. (2015), *Qualitative Research : A Guide to Design and Implementation*, New Jersey: John Wiley & Sons.

Michalak, Katja (2019), ‘schema’, *Encyclopedia Britannica*, 3 October, https://www.britannica.com/science/schema-cognitive. Accessed 23 February 2023.

Morey, Justin and McIntyre, Phillip (2014), 'The Creative Studio Practice of Contemporary Dance Music Sampling Composers', *Dancecult: Journal of Electronic Dance Music Culture*, 6:1, pp. 41-60, https://doi.org/10.12801/1947-5403.2014.06.01.03. Accessed 23 February 2023.

Osborne, Peter (2013), *Anywhere or not at all: philosophy of contemporary art*, Brooklyn, New York: Verso Books.

Piekut, Benjamin (2011), *Experimentalism Otherwise The New York Avant-Garde and Its Limits*, California: University of California Press.

Reuter, Anders (2021), 'Who let the DAWs Out? The Digital in a New Generation of the Digital Audio Workstation', *Popular Music and Society* 45:2, https://doi.org/10.1080/03007766.2021.1972701. Accessed 23 February 2023.

Reynolds, Simon (2017), 'Why Burial's Untrue Is the Most Important Electronic Album of the Century So Far', *Pitchfork*, 16 October, https://pitchfork.com/features/article/why-burials-untrue-is-the-most-important-electronic-album-of-the-century-so-far/. Accessed 23 February 2023.

Riddell, Alistair (2001), 'Data Culture Generation: After Content, Process as Aesthetic', *Leonardo*, 34:4, pp. 337–343, https://doi.org/10.1162/00240940152549294. Accessed 23 February 2023.

Riis, Henrik (2021), TONY MOON and PETER LLOYD | 'Three Chords', *Eyestorm*, 31 December, https://www.eyestorm.com/Pages/Magazine.aspx/TONY_MOON_and_PETER_LLOYD___%7C___%e2%80%98Three_Chords%e2%80%99/1071. Accessed 23 February 2023.

Rodgers, Tara (2003), 'On the process and aesthetics of sampling in electronic music production', *Organised Sound*, 8:3, pp. 313–320, https://doi.org/10.1017/S1355771803000293. Accessed 23 February 2023.

Rodgers, Tara (2010), *Pink Noises: women on electronic music and sound*, Durham, N.C.: Duke University Press.

Saunders, Mark (no date), 'Maxinquaye – Tricky', *Mark Saunders*, https://www.marksaunders.com/tricky-maxinquaye. Accessed 23 February 2023.

Sawyer, R. Keith (2012), *Explaining creativity: the science of human innovation*, 2nd ed., New York: Oxford University Press.

Scobie, Niel (2014), ‘We Wanted Our Coffee Black’: Public Enemy, Improvisation, and Noise, *Critical Studies in Improvisation / Études critiques en improvisation*, 10:1, https://doi.org/10.21083/csieci.v10i1.3028. Accessed 23 February 2023.

Song Exploder (2016), ‘Episode 78: Grimes – “Kill V.Maim”’, US 14 July, https://songexploder.net/grimes. Accessed 23 February 2023.

Strange, Simon (2017), ‘What Lessons can Higher Popular Music Education Learn from Art School Pedagogy?’, in *Popular Studies Today*, J. Merrill (ed.), pp. 271-80. Wiesbaden: Springer, https://doi.org/10.1007/978-3-658-17740-9_28. Accessed 23 February 2023.

Strathern, Marilyn (2020), *RELATIONS An Anthropological Account*, Durham, N.C.: Duke University Press.

Taylor, Timothy D. (2001), *Strange Sounds Music, Technology and Culture,* New York: Routledge.

Théberge, Paul (2001), “'Plugged In': Technology and Popular Music”. In *The Cambridge Companion to Pop and Rock*, edited by Simon Frith, Will Straw, and John Street, 271-280. Cambridge University Press.

The FADER (2015), Grimes - Art Angel (Documentary), YouTube, 10 December, https://youtu.be/fi2N5KHgO80. Accessed 23 February 2023.

timandbarrytv (2014), BEAT THIS - EPISODE 19 - FOUR TET, YouTube, 15 January, https://youtu.be/TUDsVxBtVIg. Accessed 23 February 2023.

Tingen, Paul (2012), ‘Benny Blanco Songwriter & Producer’, *Sound on Sound*, June, https://www.soundonsound.com/people/benny-blanco. Accessed 23 February 2023.

Tonkinwise, Cameron (2008), ‘Knowing by Being-There Making: Explicating the Tacit Post-Subject in Use’, *Studies in Material Thinkin*g, 1:2, https://materialthinking.aut.ac.nz/papers/30.html. Accessed 23 February 2023.

Toynbee, Jason (2000), *Making popular music: musicians, creativity and institutions*, London: Arnold.

Walzer, Daniel (2020), 'Blurred lines: Practical and theoretical implications of a DAW-based pedagogy', *Journal of Music, Technology & Education*, 13:1, https://doi.org/10.1386/jmte_00017_1. Accessed 23 February 2023.

Warner, Tim (2003), *Pop music, technology and creativity: Trevor Horn and the digital revolution*, Aldershot: Ashgate.

Zagorski-Thomas, Simon (2014), *The musicology of record production*, Cambridge: Cambridge University Press.