

Music, Copyright, and Technology: A Dialectic in Five Moments

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This article traces the coevolution of musical culture, law, and technology over the arc of modern Western legal and cultural history, from the Renaissance to the present day. This historical analysis is intended to lend context and substance to contemporary conversations about the role of the Internet and digital production platforms, as well as Internet-based intellectual property laws, such as the Digital Millennium Copyright Act, in shaping contemporary global musical culture. I propose a 5-stage coevolutionary process, based on the dialectical relationships between (1) laws and regulations, (2) market dynamics, (3) codes and practices, (4) music technologies, and (5) concepts of authorship.

Keywords: copyright, music, authorship, media industries, technological innovation, cultural history, media law and policy

The complex relationship between music and law has been of interest to scholars, creators, and institutional powers for centuries, and especially since American copyright was extended to cover musical scores in 1831. Legal and cultural researchers from Lessig (2004) to Marshall and Frith (2013) have chronicled the ways in which IP protection for music has expanded through the years as new technologies and business models have prompted legacy industries to lobby for broader and stronger control over the production, distribution, and audition of sonic cultural artifacts. Similarly, scholars such as Demers (2006) and Schloss (2014) have demonstrated some of the ways in which musical aesthetics have shifted in response to these legal and technological changes, such as the pivot away from sampling-based pastiche in commercial hip-hop following several high-profile litigations at the turn of the 21st century. Guiding these analyses, scholars such as Woodmansee (1984) to Decherney (2013) have emplaced these dynamics within broader historical and philosophical frames, showing how our very concepts of authorship and artistry are subtly and not-so-subtly shaped by the evolving legal constraints surrounding creative production.

In earlier work (Sinnreich, 2010), I proposed a theoretical model for understanding the relationship between music and copyright as fundamentally dialectical in nature. The institutional regulation of music on one hand, and the aesthetic resistance to, and navigation through, these regulations, on the other, generate a set of irresolvable tensions, and one result of this dialectical pull comes in the form of emergent, and therefore unpredictable, musical stylistic innovation. In a way, I argued, musical aesthetic codes can be

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read as a sonic map of the exogenous forces acting upon musical production, and their warps and contours may be traced to specific instances of regulation and resistance surrounding these practices.

This article aims to extend and refine that theoretical perspective by introducing the notion of a cyclical, five-moment model of musical evolution, taking into account both regulation and resistance, and encompassing legal, technological, economic, and ontological factors as integral to the process of aesthetic innovation. This model both draws and differs from some earlier cyclical analyses of culture in important ways. For instance, in their circuit of culture model, du Gay, Hall, Janes, Mackay, and Negus (1997) give primacy to the process of cultural interpretation, relegating factors such as law and economics to a somewhat overbroad umbrella category of cultural regulation. Moreover, their model uses the metaphor of the closed loop not as an analytical scaffolding to understand historical processes over time but rather as a method for researchers to ensure that a given cultural instance is being “adequately studied” (p. 3). Along similar lines, Johnson (1986) also proposes that we may understand “circuits of culture” via four discrete “moments,” yet each of these moments is again related to the consumption or production of social texts, and to the “social relations” that shape the cultural milieu in which these processes unfold, to understand the “social life of subjective forms” (p. 62) that underlies our cultural experience.

The model I propose here, like Johnson’s (1986), aims to provide a heuristic illustration of the factors I believe are at play in the evolution of musical aesthetics and praxis over time, to “hazard some provisional description of the different aspects or moments of cultural processes” (p. 46) and their relationships to one another. However, unlike both “circuit” models cited above, this work looks beyond cultural studies to scholarly fields such as science and technology studies (Bijker, Hughes, Pinch, & Douglas, 2012) and law and society (Ewick & Sibley, 1998), both to foster interdisciplinary dialogue and to provide a more nuanced account of economic and technosocial processes that does not merely subsume them within cultural ones. Finally, unlike my earlier work, as well as most explanatory accounts of Western musical history, the model proposed here treats aesthetic innovation as a causal factor in perpetuating the cycle, rather than being merely an emergent consequence of it.

Because this cyclical and emergent model of cultural change has no beginning and no end—and, to be clear, no single path or spiral through cultural history, present and future—there is no definitive place to begin describing it in either abstract or concrete terms. Nonetheless, for the sake of this article, we can think of the five moments in the following order:

1. Laws and regulations. There is ample evidence that, as I have described in previous work (Sinnreich, 2010), music has been treated historically as something akin to a controlled substance. State powers, wary of its disruptive capacity (per Plato, “the musical modes are never changed without change in the most important of a city’s laws” [1992, p. 99]), have often used both legislative and executive means to constrain musical codes and practices, especially innovative and subaltern ones. Seen from this perspective, the application of intellectual property to music in Europe, America, and elsewhere around the world during the 18th and 19th centuries represents a new phase in this millennia-long tradition.

2. **Market dynamics.** One of the primary ways in which laws and regulations affect musical style, especially in the context of intellectual property, is through their role in shaping and constraining the operations of the marketplace. Music's relationship to the marketplace has evolved and deepened over time, as musical composition and performance became increasingly professionalized; as musical events transcended their ritual, royal, and liturgical roles to become paid concerts; as musical scores, mass produced via printing presses, became global commodities; and as recording and broadcasting technologies at the turn of the 20th century expanded the range and value of musical commodities.
3. **Codes and practices.** The fields of cultural studies, sound studies, and economics are rife with examples of the ways in which market dynamics shape cultural practice and leave their imprint upon musical artifacts. In some cases, the needs of the marketplace are straightforward determinants of musical expression, such as the role of radio's advertising revenue model in constraining the length of popular songs (Hirsch, 1969). In other cases, as first elaborated by Adorno (1989), the logic of the marketplace is normalized and validated through the formalistic qualities of the musical artifact and the cultural modes of reception. Using an empirical perspective, Crain and Tollison (1997) conclude from a time-series analysis of stylistic change over half a century of popular music that "there is ample evidence that economic forces influence the characteristics of pop music and the competition to be a successful artist in this market" (p. 204). To be clear, I am not suggesting here that market forces are the only factors accountable for changes in aesthetics and praxis; merely that, taking all five moments of this model into account as a holistic network of actors and relations, they can be best understood as among the most proximate factors.
4. **Music technologies.** Our aesthetic codes and practices do not merely inform the development of sound technologies; they are instantiated and reinforced through them. As Sterne (2012) argues persuasively and poetically in his sociotechnical history of the MP3 digital audio format, "Encoded in every MP3 are . . . whole histories of sonic practice" (p. 2). These resonances and isomorphisms are not merely metaphorical but indexical and material in nature; as Kittler (1999) argues, media technology was founded on "links between flesh and machine" (p. 74). In short, we can understand the devices, formats, instruments, and techniques used to produce, distribute, audit, store, and edit musical expression to be transmitting not only musical codes and expressions but also the web of social relations and institutional structures in which they originated.
5. **Concepts of authorship.** The complex relationship between authorship, property and cultural practice has emerged as a central theme in cultural theory, especially in the half century since Barthes (1977) proclaimed the "death of the author" and Foucault (1979) asked "what is an author?" Though these disparate texts and perspectives diverge in many ways, one of the key themes that unites them is the premise that authorship operates as a proxy for personhood, subjectivity, and/or agency. Seen through this lens, seemingly abstruse questions about whether collectives, animals, or algorithms may be accorded the mantle of authorship (some of which are, at the time of writing, in the process of being litigated)

become pressing existential and ethical questions about the limits and contours of liberties, rights, and responsibilities (hence the interest of PETA, an animal rights organization, in litigating the question of animal authorship in the infamous “monkey selfie” case; Guadamuz, 2016). Finally, this five-stage dialectical process loops back upon itself, as concepts of authorship play a role in informing the contours of law—especially, but not exclusively, in the context of intellectual property (Woodmansee & Jaszi, 1994).

Before we move on, two additional aspects of this process must be emphasized. First, though the role of each moment in shaping the next has been described above (and will be exemplified further, below), this order is not the only path that may be traced between the five moments. For instance, though musical codes and practices clearly help to shape technologies, the reverse is equally true. Katz (2010), for instance, chronicles several historical cases in which musical technology has influenced performance techniques, such as when violin vibrato and the “crooning” vocal style of Bing Crosby emerged as direct responses to the demands and affordances of new microphone and recording technologies in the early decades of the 20th century.

Second, the relationship between any two moments in this dialectical process is neither fixed nor obvious. It is certainly never as simple as a linear cause-and-effect model. Instead, we can think of each intersection between moments as a locus of tension and negotiation. In some cases, the changes in one moment may accord with the changes in another; in other cases, the changes may be better understood as an act of resistance, or a backlash. In any event, the outcome of these changes may be noted in the evolution of musical style and understood historically as a causal agent in future changes among the other moments in the process.

In the remainder of this article, I will attempt to follow one thread of this coevolutionary process, outlining the dialectical process of musical stylistic change from moment to moment, emphasizing the spaces of juncture and disjuncture between each moment. As should be clear from both my theoretical overview and the specificities of my examples, this may be understood as only one of innumerable simultaneous and overlapping threads—one very specific path through musical cultural history. I invite you to chart your own as well.

The Dialectic in Process: Musical Coevolution in the West

Because this cycle has neither origin nor terminus, we could choose to examine its operations during any historical period or periods. Like many other cultural histories of the West, however, I opt to begin our exploration during the Renaissance. This is because, following the political, cultural, and technological innovations of this period, the cycle of change arguably accelerated, and the changes it wrought became more exaggerated—or, at least, more notable from a 21st-century, Western vantage point.

Additionally, rather than proceeding, as most cultural histories and genealogies do, in regular increments from one predefined cultural era to the next, our exploration will follow the dialectical process organically from one moment in the cycle to the next. The gaps between moments will narrow as the story progresses, no doubt due as much to my own presentism and myopic historical perspective as to any objective

acceleration in the cultural process. However, this neither limits nor contradicts my analysis; as I have already stated, there are countless paths through this cycle, and it applies at numerous overlapping time scales. Altogether, the strand we follow in this article will cover four full iterations of the five-moment cycle, beginning and ending with the laws and regulations moment.

Laws and Regulations: Renaissance Patronage

Music during the late Medieval period and early Renaissance was produced within a highly institutionalized environment, both shaping and constraining the aesthetics and praxes of musicians and their audiences. Yet, during this era, the law per se had very little role in the process. Because the dominant institutions were the church and the court, and because music in these contexts played a primarily functional role—either liturgical or political—the regulation of musical expression was primarily local and ad hoc, or else communicated ideologically and enforced ritually (such as the prohibition on instruments other than organs in the church; Bowles, 1957). Composers and performers served at the leisure of their patrons, and these patrons could be permissive or restrictive, depending on their moods or needs.

Market Dynamics: Rise of the Musical Public

The 14th century in Europe marked the rise of a politically and economically empowered bourgeoisie, as well as a growing political consciousness among the peasantry. This economic power created the market conditions for new cultural forms that were increasingly independent of traditional institutional patrons. Thus, music became one of the primary forms through which these new “publics” constituted themselves, forging cultural identities that were increasingly independent of political and religious markers. These threats to their dominance were not ignored by entrenched institutional powers. The aristocracy responded with both political violence (such as the suppression of the Jacquerie) and cultural strictures (such as sumptuary laws, governing dress codes for different classes). The church responded by decrying these irreligious musical forms; in a 1325 papal bull entitled *Docta Sanctorum*, for instance, John XXII excoriated the “disciples of the new school” who “prefer to invent their own music rather than sing the old” (Abraham, 1979, p.117).

Codes and Practices: Bourgeois Music and Musical Specialization

The first secular musics to reflect the economic and cultural power of the bourgeoisie were *ars nova* in the early 14th century and mannerism a few generations later. They were early examples of what we might now call “music for music’s sake,” with no functional role outside of their popular and market contexts, and no longer dependent on textual sources for their rhythmic and melodic contours. Consequently, bourgeois secular music soon came to outstrip religious and court music in its structural complexity and sophistication. These stylistic innovations were buoyed by post-Renaissance notions of authorship and artistry; for the first time, musical creators were routinely celebrated for their own sake, rather than as mere extensions of their institutional benefactors. A consequent development later in the Renaissance was the division of musical labor: For the first time, composition was considered to be a separate—and superior—role in musical expression relative to arrangement or performance. As Swiss music theorist Henricus Glareanus wrote in 1547, “Shall we not consider him who invented the melody . . . a greater genius than him who later composed a whole mass on it?” (Lowinsky, 1964, p. 479).

Music Technologies: Movable Type and Opera Houses

The secular independence of musical publics was reinforced through two important sociotechnical interventions: the printing press and the opera house. Although Gutenberg's press was introduced in the mid-15th century, it was not until the early 16th century that European publishers began to adapt and standardize movable type for mass producing sheet music. With this intervention, music effectively became a regionalized commodity supported by secular markets, rather than merely a localized ritual supported by state and religious institutions. This technology also reified the musical division of labor, providing economic and reputational support for composers independently of the performance of their work. Later in the 16th century, secular music began its metamorphosis into popular music (music produced for, and constituent of, musical publics) with the development of opera in Italy. In the 17th century, the new art form exploded across Europe, and its role as a symbolic "meeting place" for the bourgeoisie became reified architecturally, through the construction of specialized theaters dedicated to it (Storey, 2002). These two developments—socioeconomic and sociotechnical—were intimately bound to one another; as Abraham (1979) explains, "Opera soon ceased to be a severely intellectual form of art and with the opening of the first public opera-house in Venice in 1637 it ceased to be an exclusively aristocratic one" (p. 204).

Concepts of Authorship: "Great Composers"

With the rise of an industrialized music publishing market and an increasingly internationalized opera culture, the cultural elevation of intellectual over physical musical labor soon reached its apogee. The baroque and classical periods of the 18th and 19th centuries were virtually defined by their "great composers"—stylistic innovators celebrated not only for the beauty of their work but for their individuality and ingenuity. As time progressed and the romantic notion of "genius" became integral to the mythos of the great artist (Sinnreich, 2010; Woodmansee, 1984), many of these composers became even more celebrated in death than they were in life. Thus, while baroque innovators like Henry Purcell, George Frideric Handel, and J. S. Bach were justifiably famous in their own time, their ascent to canonical status took place largely during the 19th century. What is often unacknowledged in the popular discussion about these "great" composers is that, despite their reputations as innovative geniuses and the romantic claims made for their unique contributions to the field (Kivy, 2001), they would frequently "borrow" music from one another, or even recycle their own melodies and arrangements.

This is true even of their most celebrated, oeuvre-defining works. Handel's *Messiah* recycles several older pieces of his own work (Taruskin, 2010). Mozart's *The Magic Flute* lifts Papageno's signature song, note for note, from an aria written by his Viennese contemporaries in the opera *The Beneficent Dervish*, which also draws on the same source material for its libretto (Baer, 2002). And Beethoven's work is rife with borrowings from Mozart, including the use of arpeggios from *Don Giovanni* as the scaffolding for Sonata Op. 27, No. 2 (*Moonlight Sonata*; Tsur, 2009) and the lifting of the entire theme known as "Ode to Joy" in his Symphony No. 9 in D Major directly from Mozart's *Misericordias Domini* (Hinton, 1998).

I do not cite these borrowings to besmirch the reputation of these composers; within the context of their own musical cultures, such borrowings were not only commonplace, but widely accepted, and their reputations for originality were based on their ability to use these shared source materials in new and

interesting ways, rather than on their ability to generate entirely new material from whole cloth. Instead, I raise the issue of widespread borrowing to demonstrate that the romantic ideal of total stylistic originality and creative independence was never more than a fiction; as the old chestnut, frequently attributed to Pablo Picasso, Igor Stravinsky, and/or T. S. Eliot has it, "Good artists copy. Great artists steal."

Laws and Regulations: Musical Copyright

Despite their evident falsehoods, the myth of originality and the mythos of greatness were seized upon by increasingly wealthy and influential music publishers as a justification to lobby for copyright monopoly over printed scores. This strategy bore fruit around the turn of the 19th century, with statutory musical copyright enacted in France (1793), the U.S. (1831), Britain (1842), and elsewhere during this period, culminating in the Berne Convention of 1886, the first multilateral international accord to systemize reciprocal copyright protection. It is hardly a coincidence that these laws first emerged during this era. Not only were romantic tropes invoked to justify the law, but the creation of statutory copyright produced an economic incentive for composers to stop borrowing from one another, which strengthened the myth of stylistic originality, leading to a snowball effect and radical changes in musical codes and practices to be discussed below.

Market Dynamics: Industrial Music Publishing

With the creation of musical copyright, the nature of publishing as an industry changed significantly. No longer were publishers primarily in the business of producing and distributing physical goods in the form of scores; instead, they were now in the business of generating and maintaining a library of intellectual property. This, in turn, would lead to new and exotic laws and economies; for instance, in the second half of the 19th century, laws "protecting" public performances of compositions, rather than merely the printed score, emerged throughout Europe and in the U.S., and a new breed of organizations—performing rights societies—sprung up in their wake to collect the dues. The publishers themselves also changed as a result of these legal and economic shifts. The economic incentives produced by copyright's temporary monopoly led publishers to seek ever more material for their burgeoning libraries of intellectual property, which spurred the rise of a popular music industry, the establishment of songwriting factories like Tin Pan Alley, and the development of promotional music industry practices such as "song plugging" (Furia, 1992), which eventually evolved into what we now call "payola" and "paid promotion" (Dannen, 1991).

Codes and Practices: Orientalism, Primitivism, and Folk Music

The legal, economic, and cultural changes that followed the introduction of musical copyright did not stop Western composers from borrowing; it merely stopped them from borrowing as much from one another. Now threatened with the prospect of liability for infringement and accusations of unoriginality, they shifted their gaze to unprotected and undercommodified sources. For many classical composers of this era, this meant music from Africa, Asia, and Latin America—regions that were becoming more culturally accessible because of colonization and the establishment of international ocean trade. Between Mozart's opera *Die Entführung aus dem Serail* in 1782 and Camille Saint-Saëns' *Samson et Dalila* a century later, for

instance, Western composers evinced increasing fascination with “the Orient” as a source of musical inspiration.

This era also saw the rise of increasing interest in recycling anonymously penned “folk” melodies for classical work. Sometimes, multiple composers would even recycle the same material, as when Beethoven and Mussorgsky both used the song “Slava” (published in a 1790 folk song anthology) for the Razumovsky string quartets (1806) and *Boris Godunov* (1868–1873), respectively. The classist and colonialist logic of these practices, which essentially produced value for Western elites without crediting or compensating those outside of copyright’s protective halo, was rarely if ever remarked on at the time (instead, they were seen, somewhat accurately, as reflections and amplifications of growing European nationalism). In fact, the extractive metaphor was adopted explicitly and uncritically by contemporary musicians; as music theorist Robert Schumann advised his fellow composers, “Listen attentively to all folk songs. They are mines of the most beautiful melodies” (Schumann, 1946, p. 35)

Music Technologies: Recording and Broadcasting

Neither of the 20th century’s defining music distribution technologies were initially intended to be used for that purpose. Shortly after he patented the phonograph in 1878, Thomas Edison published an article describing his many imagined uses for it. Music only ranked fourth on the list, after dictation, audiobooks, and “the teaching of elocution” (Chanan, 1995). Similarly, wireless transmission of sound, or what came to be called “radio,” was initially adopted as a peer-to-peer medium for voice communications, by hundreds of thousands of amateur operators in the 1910s. Yet both of these technologies soon came to be nearly synonymous with recorded music. This was not an inevitable result of the technologies’ affordances, but rather a direct consequence of industrial trends in the music industry and stylistic trends in tastes following the introduction of copyright (Sinnreich, 2013). Music publishers, now organized around the model of stockpiling and mass producing intellectual property, were constantly seeking new avenues of distribution and profit (the player piano, which developed in tandem with the phonograph, but peaked in popularity during the 1920s, is another example). Popular music, an epiphenomenon of this new industrial setting, was, by virtue of its brevity, simplicity, and stylistic generativity, also well suited to make the most of the phonograph’s limited temporal and timbral capacities and attenuated shelf life. Similarly, the music radio industry evolved in lockstep with popular music; within a few years of government regulations designating “clear channels” for broadcast networks, programmers had adopted pop as the dominant format for their stations, primarily because “advertisers paid more attention to popular tastes” (Garofalo, 1999, p. 331) than to classical music or other “highbrow” forms of entertainment.

Concepts of Authorship: Production as Composition

With the increasing ubiquity and sophistication of sound recording technology in the mid-20th century, musicians and audiences alike began to pay more attention to the “autographic” elements of musical expression (Gracyk, 1996)—the aspects of the sound, such as timbre and reverberation, that are not typically notated on a score. After World War II, the widespread accessibility of magnetic tape contributed to a boom in sonic experimentation akin to the autographic visual styles such as collage and ready-mades that had revolutionized visual art a generation earlier (Sinnreich, in press). After a wave of

initial experimentation by avant-gardists like John Cage and Pierre Henry, these techniques were also embraced within popular music. Producers such as Les Paul, George Martin, Brian Wilson, and Lee "Scratch" Perry gained widespread acclaim and spawned entire new genres of music through their embrace of multitrack editing technology and the techniques previously associated with musique concrète. As a result, producers increasingly came to be recognized as essential, or even primary, creative forces behind musical expression—a role reserved for composers (and, to a certain extent, conductors) in the previous three centuries.

Laws and Regulations: Phonographic Copyright

It took nearly a full century after the development of the phonograph before the creation of a phonographic copyright, which covers the sound of the performance embodied on an audio recording, rather than the composition that is being interpreted. Why, after so much time, did this new variety of right finally emerge? The greatest proximate cause was an intensive international lobbying effort by the International Federation of the Phonographic Industries (IFPI), which represented an increasingly wealthy and powerful recording sector. The IFPI successfully pushed for an international treaty, known as the Rome Convention, which, in 1961, established international standards for such laws and set the terms for their widespread adoption over the next decade (in the U.S., phonographic copyright would be enacted in 1972). Other contributing factors included growing licensing demand for recorded music (synchronization rights, which give copyright holders the ability to negotiate a fee for the pairing of musical works with video footage, would come only a few years later, in 1976), and the proliferation of cheap and accessible home-taping technologies such as magnetic cassettes. But all of these factors hinged on the producer-as-author concept, because copyright law is rooted foundationally in the concept of authorship. In fact, the Rome Convention made this explicit; in Article 3, which sets forth its definitions, it refers to the "producer of phonograms," the controller of the phonographic copyright, as "the person who, or the legal entity which, first fixes the sounds of a performance or other sounds."¹

Market Dynamics: Litigation as Business Strategy

The creation of the phonographic copyright changed the nature of the recording industry just as much as the creation of music copyright had changed the publishing industry more than a century earlier. Like the publishers, record labels in the mid-to-late 20th century ceased to operate primarily as manufacturers of physical commodities, and shifted their strategy to become licensors of intellectual property and policers of infringement. One result of these changes was a drastic rise in the number of music infringement suits. While it is probably impossible to count the number of lawsuits that have been filed over the years in the music industry, a joint project by the Columbia and University of Southern California law schools keeps track of judicial decisions in music infringement cases. According to their tally, the number of decisions leapt drastically after the introduction of phonographic copyright, from a total of 54 in the century and a half from 1830 to 1972 to 58 in the remaining quarter century between 1973 and 2000.² Given that

¹ The full English text of the Rome Convention can be found at http://www.wipo.int/wipolex/en/treaties/text.jsp?file_id=289757#P71_3633

² These data are available at <http://mcir.usc.edu/cases/Pages/>

fewer than 3% of civil cases typically reach a verdict at trial (Barkai, Kent, & Martin, 2006), this probably represents thousands of lawsuits in the years since phonographic copyright was created.

Codes and Practices: Sampling and Hip-Hop

Countless books and documentaries have been devoted to the rise of hip-hop in New York City in the mid-to-late 1970s, and to the cultural origins of the deejaying and sampling techniques that form the backbone of the hip-hop sound (an excellent example is Chang, 2007). Rather than rehashing these arguments, I will simply observe that it is no accident of history that this art form emerged and soon achieved global popularity immediately following the development of the phonorecording copyright and the abrupt spike in infringement litigation and policing during the early 1970s. As the traditional venues for musical stylistic innovation became ossified by overprotection, it is only natural that the most novel and compelling innovations would emerge in the un- and underregulated cultural spaces not yet transformed by this litigious new ethic. Whatever other factors played a role, the fact that playgrounds, parks, and house parties in The Bronx, New York, fell beneath the radar of traditional rights holders was crucial to hip-hop's development, by providing a crucible in which artists could experiment freely without fear of crippling economic liability or institutional censorship.

Music Technologies: Drum Machines, Samplers, and Sequencers

With hip-hop's rising popularity and influence in musical culture, and its rapid spread from New York throughout America and the world at large, popular music aesthetics underwent a major shift. In essence, the autographic elements of rock and disco became the dominant elements of hip-hop; composition became nearly entirely subsumed within production. Although the earliest hip-hop recordings were made using the limited creative affordances of technologies intended for consuming (the turntable chief among them), a new species of musical instruments and production tools (the distinction became increasingly blurry) emerged to serve this new aesthetic and creative labor force. Three important new tools of the trade included the drum machine (exemplified by the Roland TR-808, released in 1980), audio samplers (exemplified by the Akai MPC series, released in 1988), and digital audio sequencers, which would evolve over time into digital audio workstations (DAWs, exemplified by Cubase, first released for Macintosh computers in 1990). While traditional Western musical instruments and production technologies were built to suit the harmonic and rhythmic specifications of 17th- and 18th-century music, which remained foundational until the rock era, these new tools reflected hip-hop aesthetics in their privileging of associative structures over harmonic ones, industrial timbres over instrumental ones, and cyclical temporal logics over linear ones.

Concepts of Authorship: Death of the Composer

While early-to-mid-20th-century avant-garde musical movements such as serialism, minimalism and musique concrète actively questioned and critiqued the concept of musical authorship, these critiques remained largely academic until the widespread proliferation of post-hip-hop musical production tools, which both democratized the means of musical production and revealed the romantic myth of the solitary composer to be nothing more than an artifact of its sociotechnical milieu. To be sure, mainstays of traditional pop

musical styles decried the rise of hip-hop musical logics. A popular bumper sticker around the turn of the century claimed that “drum machines have no soul,” and a *New Yorker* music critic in 1991 stated unequivocally that “[Cole] Porter is music and rock is music. Rap isn’t music” (Mordden, 1991, p. 113). Yet many sample-based musicians responded to these claims not by bolstering their own compositional credentials but rather by critiquing the entire notion of musical originality, and playfully taking on the persona of the pirate. Notable examples include hip-hop superstars Beastie Boys’ song “Rhymin’ & Stealin” (1986; the first track on their debut album), John Oswald’s album *Plunderphonic* (1989), turntablist group X-Ecutioners’ album *Built From Scratch*, (2002), and UK grime pioneer The Streets’ albums *Original Pirate Material* (2003) and *Everything is Borrowed* (2008).

Laws and Regulations: Sampling Lawsuits and Anticircumvention

Although hip-hop originated in unregulated cultural spaces, its exploding popularity during the 1980s and 1990s put its sampling practices and explicit challenges to traditional concepts of authorship in direct confrontation with the increasingly litigious recording industry. Two legal developments emerged from this confrontation. The first was a spate of copyright infringement lawsuits that sought to establish the fundamental illegality of unlicensed sampling. Until these suits, it was a legal gray area, with neither statute nor case law to determine whether sampling could be protected as a “fair use” or could be sufficiently limited in its scope to be deemed “de minimis” and therefore beneath the notice of the law. After two prominent hip-hop artists—De La Soul and Biz Markie—ended up settling and losing sampling lawsuits, respectively, in 1991, industry practice adapted to reflect the presumptive requirement of clearing licenses. This inaugurated a 25-year cascade of sampling litigations, most of which strengthened the industry’s hand (with some notable exceptions that are beyond the scope of the present article). Although music sampling has yet to be addressed explicitly in copyright statute, the 1996 World Intellectual Property Organization (WIPO) treaty and America’s 1998 Digital Millennium Copyright Act (DMCA) addressed industry concerns about sampling by regulating the use of the underlying technologies. Through the use of “anticircumvention” provisions, WIPO and DMCA made it illegal for an unlicensed third party to bypass encryption protecting a copyrighted work from being copied—even in the case of fair use or other noninfringing uses. Although the unencrypted CD format had already been on the market for 15 years at this point, the law anticipated the rise of newer encrypted formats such as music video DVDs, encrypted music downloads and streams, and (failed) music-only physical formats like copy-protected CDs, DVD-Audio discs, and Super Audio CDs.

Market Dynamics: Litigation as Profit Motive

The legislative and litigative victories of the recording industry in the 1990s amplified the record labels’ reliance on intellectual property as the crux of its business model. In fact, by the turn of the 21st century, litigation was such an integral component of the music industry’s revenue strategy that major record labels often made the active decision to restrict their licensing practices or overcharge for access to their content in the hopes of netting greater profit from suing infringers who were unwilling or unable to pay hefty up-front advances. As the former head of digital strategy for Universal Music Group told me in an interview, the attitude at the labels during this time was “Why license them and make a little, when you can sue them and make a lot?” (Sinnreich, 2013, p. 157). The sudden popularization of the Internet and the rise of a speculation-driven startup economy added gasoline to the proverbial fire during the late 1990s and

2000s, as hundreds of digital music services emerged to take advantage of consumers' seemingly insatiable demand for new and innovative music discovery, community and programming opportunities on their computers and Internet-connected devices. Nearly all of these services ultimately faced the same choice: Pay the record labels millions of dollars and a share of equity in advance as insurance against litigation, or face the inevitable infringement lawsuit. As a result, the vast majority of them ended up shuttering, or being sold off to established industry players.³

Codes and Practices: The Death and Rebirth of Hip-Hop

As online distribution channels and digital production technologies became increasingly policed, based on a growing body of case law effectively outlawing most standard music sampling and sharing practices, hip-hop and electronic music aesthetics shifted to reflect these new ecological conditions. Sampling, once the cornerstone of producers' mixes, became rarer and less subtle, with recycled hooks from prior pop songs replacing dense collages of largely unrecognizable snippets. This shift is evident in the contrast between popular De La Soul or Public Enemy tracks from the late 1980s with songs like Puff Daddy's 1997 single-sample mega-hit "I'll Be Missing You," in which the instantly recognizable guitar riff and hook from The Police operate as a kind of sonic bling—proof of Puffy's power and wealth, by virtue of, rather than in spite of, the high cost of sample clearance. By 2006, Nas was lamenting that *Hip Hop is Dead*, citing the increasing materialism and industry friendliness of rappers who purveyed "legitimized crap." Even *Spin* magazine identified overzealous copyright policing as the root cause of hip-hop's malaise, publishing an article titled "Is Sampling Dying?" (Newton, 2008).

Yet, as commercial music venues and institutions lost the capacity to foster experimentation and innovation as they once had, new unregulated venues and institutions emerged, which led to new aesthetic innovations in sample-based music. One notable example is the rise of trap music, a fusion of southern rap and electronic dance music that gained initial prominence not through traditional broadcast or retail conglomerates but via a largely underground network of digital and physical "mixtapes," which is itself rooted in underregulated cultural institutions like strip clubs and barber shops. By 2017, the style had become so dominant aesthetically that The Bronx, New York, rapper Cardi B topped the *Billboard 100* chart with her trap song "Bodak Yellow"—perhaps the first time in hip-hop history that a New Yorker had risen to prominence based on a distinctly southern style of music.

Music Technologies: Cat-and-Mouse Sampling and Policing

As mixtapes and DJ sets became increasingly prevalent distribution platforms for sample-based music in the first two decades of the 21st century, a new cat-and-mouse game emerged between music producers and rights holders. The proliferation of unregulated distributors and increasing caution of producers about revealing their unlicensed sources contributed to the widespread adoption of music "fingerprinting" technology like Audible Magic, which enables rights holders to register their recordings in a database, and allows digital distribution platforms to monitor their users, checking every audio file against

³ I discuss the details of this dilemma, and its far-reaching consequences, in greater detail in Chapter 7 of Sinnreich (2013).

the database. The company's database includes music from every major label and the larger independent music aggregators, and is used by distributors including Apple, Tumblr, Vimeo, Soundcloud, and even mixtape distribution site DatPiff.com. Yet even as the tools of automated copyright infringement surveillance have grown in power and scope, so have producers' abilities to distort their samples, making them more resilient to automated forensic analysis. In recent years, for instance, Ableton Live, a digital audio production environment engineered specifically for the needs of deejays and performers in sample-based music genres, has eclipsed the earlier generation of DAWs, like Cubase and Pro Tools, in popularity and prominence among performers. Unlike these earlier production tools, the ability to sample, mix and alter preexisting recorded sound is Ableton's primary use case, and it has helped to spawn a new wave of sample-based musical styles; as a recent article headline in *Vice* magazine argued, the software "transformed electronic music performance forever" (Slater, 2016).

Concepts of Authorship: The Rise of the Superproducer

As new electronic musical codes and tools flourished in the 2010s, there was a concomitant escalation in the status and power of the producer, relative to other musical laborers, such as performers and composers. Although the term "superproducer" used to describe a particularly influential and powerful exemplar (akin to the romantic era's "great composers") has been in use since the early 1990s, a Nexis search for the term reveals a drastic uptick in its usage in news articles beginning in 2009. This is not to suggest that powerful music producers are a new phenomenon; the roles of producers like Teo Macero, Orrin Keepnews, and Norman Granz in jazz, and of Sam Phillips, Phil Spector, and George Martin in rock, are now canonical in the histories of those art forms. Yet the newly ascendant ethic of the "superproducer" places a primacy on the producer's role that did not exist in those eras. *Kind of Blue* and *Sgt. Pepper's Lonely Hearts Club Band* are widely viewed as the creative expressions of Miles Davis and The Beatles, rather than Macero and Martin, respectively. Their roles, though influential, were understood to be fundamentally subordinate. By contrast, contemporary superproducers like DJ Khaled, Max Martin, and Calvin Harris are not only household names, they are widely understood as the principal "authors" of the recordings they create. In the meantime, singers and rappers who appear on their tracks are increasingly consigned to "featured" roles (typically shortened to "feat." in the credits), rather than promoted as the sole creative forces behind the works.

Laws and Regulations: Sampling Wins in Court

As discussed above, there is still no statutory law about the legality of unpermitted sampling in the United States. Yet the (il)legality of this practice was largely considered settled following some high-profile sampling lawsuits in the 1990s and early 2000s, especially *Grand Upright v. Warner*⁴ and *Bridgeport v. Dimension*.⁵ In 2006, the year after the *Bridgeport* case was decided, I interviewed electronic music producer and attorney Gary Adelman, who predicted that as generational and cultural churn changed the composition and perspective of the judiciary, the pendulum would swing back in the opposite direction, and there would be "more cases decided on the side of the sampler" (Sinnreich, 2010, p. 138). Roughly a decade

⁴ 780 F. Supp. 182 (S.D.N.Y. 1991)

⁵ 410 F.3d 792 (6th Cir. 2005)

later, Adelman's predictions were borne out with a pair of victories for defendants in high-profile sampling lawsuits. First, in 2014, in a case called *TufAmerica v. Warner*,⁶ Jay-Z successfully defended a claim of infringement for using a short sample of an Eddie Bo song in his hit "Run This Town." Then, in 2016, in a case called *VMG Salsoul v. Ciccone*,⁷ Madonna defended another infringement suit for the use of a short sample in her early 1990s hit "Vogue." In both cases, the rulings were based on a finding that the uses of the samples were "de minimis"—too small to warrant protection under copyright. This is the exact opposite of the outcome in *Grand Upright* a decade earlier, which found that sampling was categorically exempt from de minimis exceptions. Most recently, a 2017 ruling in *Smith v. Cash Money Records* established that the Drake song "Pound Cake/Paris Morton Music 2" did not infringe copyright when it sampled the recording "Jimmy Smith Rap" because the music was "sharply different," and therefore a fair use.⁸ This was the first judicial ruling of fair use for music sampling outside of the context of musical parody. Thus, it seems more than likely that these new rulings will have an impact on market dynamics, by providing sample-based musicians and their labels with more protection against potential liability, and therefore freeing them economically and creatively to innovate and explore.

Conclusion

As this article demonstrates, we can understand the historical coevolution of musical aesthetics, law, and technology in terms of a continuing dialectical process in five moments. This analysis departs from some other analyses of aesthetic innovation in several respects. First, there is no single causal agent, or origin for the process. Rather than viewing aesthetic codes and praxes as superstructural and economic processes as fundamental, or treating technology and its affordances as causal agents, or discussing legal changes as the necessary results of cultural and economic ones, this model attributes coequal roles to each of the five moments. In this way, it builds on, and unites, some of the core premises in disciplines like science and technology studies (Bijker et al., 2012) and law and society (Ewick & Sibley, 1998). These are scholarly fields that reject the ontological purity of concepts like culture, law, and technology, opting instead to see each as a set of relations instantiated within another set of artifacts and institutions, governed by multiple stakeholders and interrelated in ways that are both multifaceted and unpredictable.

Second, rather than describing historical cultural change from the top down in terms of predefined epochs, this article seeks to understand such processes from the bottom up, by describing crucial points of flux as moments that emerge from the fundamental tensions between legal, cultural, and economic forces. In musical terms, this is metaphorically akin to a harmonic system based on "just intonation," or the intervals between any two scalar notes, rather than one based on "equal temperament," in which octaves are arbitrarily divided into equal units, for standardizing and streamlining harmonic progressions and melodic contours. Like a musical work using just intonation, this article's narrative may seem jagged at times, and difficult to reconcile holistically; such is the cost of a descriptive method focused on moments rather than epochs.

⁶ 67 F. Supp. 3d 590 (S.D.N.Y. 2014)

⁷ 824 F.3d 871 (9th Cir. 2016)

⁸ 253 F. Supp. 3d 737 (S.D.N.Y. 2017)

Unlike many chronological accounts of musical, aesthetic, or cultural change, this article makes no claims to definitiveness or even linear integrity. There was nothing historically necessary or inevitable about any of the particular moments described herein. As discussed above, the order of the five moments is debatable and open to reinterpretation; there is ample reason to suggest that market dynamics influence legal developments, or that technological change plays a direct role in shaping new aesthetic codes. Even the number of moments in my model is up for debate; one could add new moments, such as political events, to the mix, or remove one or more of the moments I have already identified, without undermining the basic premise.

Finally, although this article focuses exclusively on music in its relation to sociotechnical processes, it seems likely that the multimoment dialectical model of change could apply equally well to other historical instances of cultural and aesthetic (co)evolution. In Sinnreich (in press), I explore a similar set of conditions and processes surrounding the coevolution of Western visual art and copyright, though not with the same granularity applied here. One could probably adapt the model to explore subjects like dance, cuisine, games, and any number of subjects as well. Ultimately, the aim is not to produce a fixed and immutable history of culture, or to predict the inevitable next step in musical innovation, but merely to understand the myriad of stakeholders and various power relations in the cultural process, and to understand each moment of cultural change as a rearticulation of these relations, a resolution of one tension and the production of another, a window of opportunity for the unexpected.

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