Research Area Project: Forensic Musicology

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Forensic musicology refers to the practice of expert witnesses in court cases involving alleged music plagiarism. When one party accuses another of copying musical elements from their original song, both the plaintiff and the defendant may call upon witnesses with professional expertise in music theory to provide a particular analysis of each song to help determine whether or not there is evidence of substantial similarity between the two. The field of forensic musicology has been in consistent action for about 75 years, though it has always been a hotly debated topic regarding its presence in the courtroom and the practice itself. Only more recently have scholars worked to point out the main issues of the field and attempted to reconcile some of the difficulties the practice has had.

I view the field of forensic musicology as an important sub-area of public music theory. It is a prime example of the work of music theorists being fully visible to the public. In this field, the analyses that music theorists provide are not only of particular interest to public opinion, but can also involve large financial gains or losses. In the world today, no other music analysis may be worth as much monetarily as the analysis of a forensic musicologist. Money aside, the work of forensic musicologists can also have a great effect on a musician's career and reputation, along with the precedents that are set regarding future songwriting creativity. The scope and the accuracy of such forensic analyses are crucial to the musicians involved, the court of law, and the progression of the modern music world.

Since U.S. Congress began protecting musical compositions as copyrighted works in 1831, debates have risen about the role that music theory should play within the litigation

process of determining music plagiarism. The use of forensic musicology in the courtroom ebbed and flowed for much of the 19th and early 20th century, rather than following an upward trajectory.[1] According to lawyer Margit Livingston and musicologist Joseph Urbinato, some courts in the 19th century "recognized the difficulties confronting lay judges and juries in determining whether two musical works were substantially similar in a musicological sense", but by the early 20th century, "references to expert testimony in music infringement cases were rare, and several judges seemingly took pride in relying on their own musical sensibilities to determine plagiarism".[1] It wasn't until the case *Arnstein v. Porter* in 1946 where a solid framework was developed regarding the use of the expert witness in court, outlining the process of using an "extrinsic test" in the summary phase of the litigation by an objective expert analysis, and an "intrinsic test" that relies on the subjective responses of the jury.[2] Though an extrinsic test may exist, it is ultimately the intrinsic test that decides the ruling on the case, which may or may not take the extrinsic test into much consideration. This framework is still used today, and has essentially gone unchanged.

In 1988, the *California Law Review* journal published an article by lawyer and composer Aaron Keyt that called for improvements to be made in the court's litigation process when ruling on issues of music plagiarism, as well as improvements within the practice of forensic musicology. To my knowledge, this was one of the first articles of its kind. It has gone on to serve as a reference for many other scholars in the next generation who have attempted to deal with the issues Keyt had initially outlined. Keyt's argument is essentially twofold: 1) the current U.S. copyright laws and procedures (specifically the U.S. Copyright Act of 1976 and the *Arnstein v. Porter* precedent) are both ill-suited and outdated with regard to discussing,

understanding, and ruling on music in the court of law, and 2) the common analytical methods used by judges and forensic musicologists alike fail to consider the totality of music and its appropriate contexts, therefore offering inconclusive evidence regarding the existence of plagiarism. Keyt's ultimate goal of his argument is that "injunctive relief (for the plaintiff) should be granted much more reluctantly than is currently the case"[2], citing how current procedures have often ruled too easily in favor of the plaintiff, thereby skewing the public's idea of music similarity and stifling potential future creativity. Though Keyt's sentiments largely ring true among scholars and external observers today, the fact remains that little change has been made to the actual practice and the process, leaving many to bring up the same arguments that Keyt did several decades later.

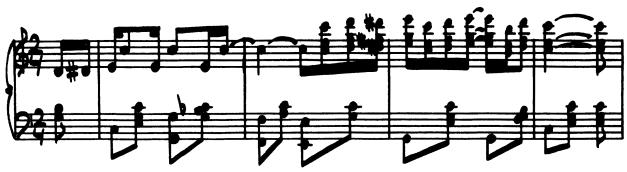
Despite the advancements made in the inclusion of forensic musicology in the courtroom since the 1950's, the initial debate on the extent to which music theory and expert analysis should be used in these court cases has still lingered. Considering that the lay listener can be a representation of the market that such plagiarism cases would effect, an argument against the use of expert analysis in music plagiarism cases is that the lay listener already has all of the necessary requirements to determine substantial similarity between two songs. Since they are ultimately the consumers of the product, one may think that it is the lay listener alone who should be responsible for deciding if a song has been plagiarized or not from a legal standpoint. Along this line of thought, some argue that expert witnesses often "over-analyze" the music at hand, pointing out elements of the music buried underneath the surface that do not have any affect on the lay listener's experience.[3] Also, given that two supposedly objective analyses have historically yielded vastly different results depending on which side they argue for, Livingston

and Urbinato point out that "the expert opinions tended to cancel each other out, and given most experts' comparable qualifications, it was difficult to weigh one side's expert testimony more heavily than the other's".[1] This can make it hard for the work of a forensic musicologist to be taken into consideration during the intrinsic test process. While the argument against using forensic musicology is the courtroom is not a widely held belief in any kind of scholarship, it remains a point of contention in the public eye, including the hypothetical lay listener who may be tasked with deciding upon such cases of music plagiarism.

Naturally, given these contentious perspectives, some of the scholarship devoted to forensic musicology has been spent defending the existence of the field in the first place. Several scholars, notably musicologist Katherine M. Leo, have described forensic musicologists as necessary translators in the court of law. Leo states that "expert contributions constitute acts of musical translation, enabling music to 'speak for itself'…they continue to translate music and, in so doing, can advocate for informed, acute evaluations of musical similarity".[4] If one accepts the idea of music being a type of language, a language that some may speak and understand more fluently than others, then it is perfectly reasonable to expect a translator to aid the judges and jurors in such cases.

Another solid argument provided by Aaron Keyt makes the case that the traditional method used by judges and lay listeners to determine music plagiarism in the absence of expert testimony, that being basic pitch mapping between two melodies, is highly inadequate. As an example, Keyt himself composed a piece with a short passage that, on paper, shares the exact same pitches in its melody with the well-known piece "The Entertainer" by Scott Joplin. While a pitch-by-pitch comparison alone would conclude that these two songs are identical, the fact is

Example A[58]



Example B[59]

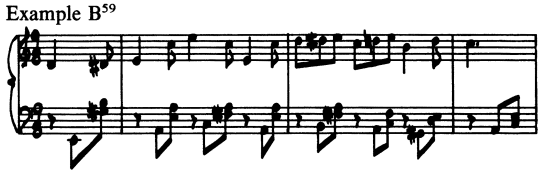


Figure 1[2]
Example A - "The Entertainer" by Scott Joplin
Example B - "The Plagiarist" by Aaron Keyt

that the two songs are in different keys, different meters, use different rhythms, and sound nothing alike. Keyt explains that "we, as musical listeners, tend not to hear merely acoustical sounds *per se*, but rather *structural relations* among sounds".[2] These structural relations may not be as easily understood to the lay listener, even though they still exist perceptually. Therefore, someone who can better explain such structures; a "translator"; is required.

On the purely auditory side, researchers Beagult, Heise, and Peltier point out another disparaged method often used in the absence of a music theory-based analysis in court, which is the audio mash-up (the simultaneous mixing of two recordings). This has also become a popular mode of exemplifying opinions on music plagiarism in the general public, with videos and websites devoted to this method. According to their research, auditory studies suggest that because "the similarity of many elements of popular music particularly enables forming a common gestalt pattern from two different musical sources…listeners are wired to form a single coherent pattern from different sound sources that share common attributes".[3] This demonstrates that lay listeners may only perceive similarity as a result of common style or technique, and are unable to parse out actual inherent similarities. Using music theory as a translation tool, then,

can reveal the inaccuracies and manipulations of the lay listener's hearing senses to help uncover a more precise truth.

Having read multiple accounts that defend the use of music theory in courtroom litigation, I can piece together one additional argument that was circled around but never explicitly stated among the articles. This argument is meant to directly counter the opposition argument that lay listeners are a representation of the market and therefore qualified to rule on such cases independently. If the true standard measurement of plagiarism only consists of "whether the defendant has interfered with the plaintiff's market by copying the plaintiff's work",[1] as the anti-forensic musicologists argue, then the argument essentially rests upon whether or not an average consumer would purchase the defendant's work over the plaintiff's due to the existing similarity. While this may have been an adequate standard to judge upon a century ago, today's music consumerism has altered and expanded drastically to the point where such an argument is both unreasonable and irrelevant.

I see two main reasons for this: 1) a consumer's decision to purchase one work over another may have nothing to do with any sort of musical similarity, but rather other factors regarding ease of accessibility, musician/fan relationship, cultural trends, etc. (in other words, consumers are not buying music for its melody, or perhaps even the musical content overall, but for external reasons); and 2) in the age of streaming, the actual act of a consumer purchasing musical content and providing financial support to one song over another is diminishing. Both songs are likely to be theoretically equally accessible to the average consumer, and preferring one to the other does not necessarily mean purchasing one and not purchasing the other anymore. It could possibly mean a handful of more streams, or views, but overall it carries less financial

consequences than it did before. Therefore, though I believe the question of the plaintiff's market is still important in cases of music plagiarism, to hinge one's argument solely upon the supposed consumer representation is misleading. The extrinsic tests of forensic musicologists remain vital.

Regarding the practice itself, a crucial question that scholars have worked on hypothesizing is the criteria and thresholds that determine how substantial similarity between two works get measured. Throughout the first century of these cases, courts largely relied on what was considered the "reasonable listener" test; that is, "if a part taken would be recognized by an ordinary, reasonable person familiar with the work, then that taking is substantial and may infringe copyright".[5] Using this test alone was seen by some as the court of law's best attempt at reconciling with an impossible question, while others, particularly recent scholars on forensic musicology, find this solution to ignore the actual question altogether.[5] This test has still remained a standard for jurors; however, after the precedent set by the *Arnstein v. Porter* case in 1946, courts became less reluctant to use music theory and expert analyses in litigation, eventually adopting room for more objectively measurable criteria to be used as evidence in a case of substantial similarity in music.

At first, this criteria centered primarily around melodic analysis. This was an element of the music that was both quantifiably measurable and easy to understand among judges and jurors as a significant part of a composition.[6] Therefore, forensic musicology work dealt mostly with close, detailed comparisons of melodies. As one judge for the 1952 case *Northern Music Corp. v. King Record Distributing Co.* wrote, "it is in the melody of the composition--or the arrangement of notes or tones that originality must be found. It is the arrangement or succession

of musical notes, which are the fingerprints of the composition, and establish its identity".[2] Aaron Keyt points out a shortcoming in this argument, stating that "Such an analysis ignores two crucial facts about music. First, music is made up of many more "elements" than these. Second, originality is better viewed as a function of the interaction and conjunction of these elements than of any element alone; a change in one element necessarily affects our perception of all others".[2] Indeed, this type of analysis did not seem to make any significant improvement on the accuracy of finding substantial similarity from the basic pitch mapping that lay listeners could already do themselves. Keyt called for forensic musicology to broaden its horizons on what could be considered an appropriate analysis on substantial similarity, and for the courts to recognize a wider variety of evidence from these extrinsic tests.

Several decades later, some improvements were made in this regard. In the case *Straughter v. Raymond* from 2011, the court acknowledged that a "uniform set of factors for analyzing a musical composition under the extrinsic test"[1] had never been created to a sufficient degree, thereby observing that "a composer can combine a wide variety of elements, unprotectable in isolation, to form a musical composition - elements such as lyrics, rhythm, pitch, cadence, melody, harmony, tempo, phrasing, structure, chord progression, instrumental figures, and others".[1] In this particular case, while the analysis from the defendant's expert witness relied on a note-by-note comparison of the two melodies, an analysis by the plaintiff's expert witness focused more on similarities between formal structures and other "numerous commonalities" not based on melody. The court ultimately sided with the plaintiff and found the defendant guilty of plagiarism. This signaled a step in the right direction for forensic musicology, since the ruling demonstrated, at least to some degree, that a musical analysis was

able to include a more realistic, comprehensive reflection of the music itself rather than just a single element, and that such an analysis could be accepted as appropriate evidence.

That being said, several scholars have noted that a larger issue still remains. The *Arnstein v. Porter* case, while important for the development of the field of forensic musicology, also created a limitation on what the methodologies and goals of an expert analysis could be. As Leo describes it, "according to the *Arnstein* court, these analyses were prohibited from determining the outcome of the case, and were instead intended only to inform the legally subjective and totalizing, yet dispositive, perceptions of non-musical-expert factfinders".[4] The court essentially prohibits an expert analysis from containing any sort of personal opinion or methodology that could be considered subjective, and will disregard any such analysis. From the point of view of due process in the U.S. courts, this is only logical. A jury should be presented with purely objective facts and results in order to form their opinion on a case, and the role of the forensic musicologist is to use their expertise to relay such facts to the court. Recent scholarship on the practice of forensic musicology, though, argues that these regulations fail to consider the nuances of the art of music and how the medium differs from other works of art (or otherwise) that may also be subject to plagiarism.

From what I gather, there are two common threads of arguments that exist among the forensic musicology community, both of which exhibit the current shortcomings of the practice's integration with courtroom conventions. The first of these arguments is that the courts operate under an inherent bias for visual evidence. With music being foremost an auditory experience, there exists a chasm between how music is perceived and how music is understood within the court of law.[4,5,6] Looking back at the list of elements that the court from the *Straughter v.*

Raymond recognized as measurable in determining plagiarism; lyrics, rhythm, pitch, cadence, melody, harmony, tempo, phrasing, structure, chord progression, and instrumental figures; we notice that each of these elements can be represented and analyzed visually. While the courts and forensic musicologists have worked to include a broader criteria of determining substantial similarity, the ultimate need for objectivity and relatability in courtroom litigation has forced the analysis of music to be reduced to only its visual properties, thereby missing crucial aspects of musical content and perceptions.[5,6] Some scholars also criticize this perspective as upholding biases toward the Western musical tradition that puts emphasis on a hierarchical approach to music analysis, often privileging the more structural and visually understood elements of music, as opposed to more performative elements such as timbre.[4]

The second prevalent argument is that an amount of subjectivity is largely inevitable when determining musical similarity, regardless of expertise. According to Livingston and Urbinato, two of the main challenges that forensic musicology faces in attempting to appease the court's need for objectivity is 1) the innate subjectivity of the listening experience (regardless of existing facts, no two listeners may ever hear the same piece of music the same way), and 2) the existence of what we may call musical "commonalities" due to genre and style that make it hard to discern direct plagiarism from stylistic reflection.[1] Psychologists Michael Mopas and Amelia Curran acknowledge the former point in their work, stating that there is "no practical way of knowing how the average person listens to music"[6] with regards to carrying out the intrinsic test of the jury, and argue for the use of more phenomenological methods through the aid of "psychologists or neuroscientists, who may be more inclined to speak about the way that listeners perceive and respond to music".[6] Although Mopas and Curran seem to largely

misinterpret the discipline of music theory as being completely entrenched in formalism and are unaware that a branch of phonomenolgy exists within music theory, I believe their overall sentiments are accurate and important to consider.

However, it is not a foregone conclusion among forensic musicologists that subjectivity is a necessary part of the practice. Forensic musicologist Alexander Stewart, who has particular experience in cases involving digital sampling, explained that "as an expert witness, my charge is not to take sides in these debates but rather to offer unbiased and objective analyses that attempt to keep these analytical strands separate and clear."[4] Beagult's team of audio forensic scientists also argue for an approach to forensic musicology that is as scientific and objective as possible, stating that "it is still possible for experts to adopt scientifically-based procedures for establishing an experimental procedure and reporting results while avoiding those methods that can be proven to be disparaged or pseudo-scientific".[3] On the other side, another expert witness Judith Finnell describes the job of a forensic musicologist as one who "knows what's the relevant context in its entirety" and that "the musicologist's job is to understand the hierarchy of important and unimportant elements in a musical work".[4] As Leo observes, Finnell's perspective shows how "experts do not simply identify similarities; they also contextualize those similarities for their relevance to fact-finders tasked with deciding whether such evidence might amount to infringement",[4] and thus the practice requires an element of subjectivity. This reflects Livingston's and Urbinato's second point on how one must consider historical, cultural, and stylistic context in many cases, which do not necessarily offer a viable scientific method of analysis.

Currently, it would seem that the field of forensic musicology has two major issues to reconcile; the biases toward visual evidence and the paradox of subjective results within a necessarily objective realm; if further progress is to be made in the pursuit of developing better methods in analyzing the question of substantial similarity. I certainly agree with Leo's argument that criteria regarding outside historical and stylistic context, along with more attention to purely auditory/performative clues as opposed to strictly visual ones, are essential to consider in most every modern case when determining music plagiarism. However, I also see merit in the angle Beagult takes that argues for proven scientific methodologies and objective results across both visual and auditory evidence. If common ground could be found within these two perspectives; for example, finding a truly objective way to measure stylistic commonality; I feel as though it would greatly benefit the practice of forensic musicology.

As it turns out, there is a completely separate side to forensic musicology scholarship making some strides in this regard, which has involved integrating the discipline of computer science. Other scholars and professional practitioners have only seemed to merely acknowledge the existence of this separate research area, going no further in recognizing its development or including the work that has been done into their own research. I can understand why that may be, which I will explain shortly. However, when discussing the potential future development of forensic musicology, I believe the aid of computer science may hold the key to reconciling the major issues.

This specific research area is certainly not without its difficulties. These difficulties are very much on the surface of the work being done, and are likely why this area has not been seriously considered in other branches of scholarship. The biggest problem is that the work on

creating computer-based algorithms for detecting music plagiarism has largely only dealt with *melodic* plagiarism. Several of these completed studies cite rather erroneously that melody is "the most significant parameter of a musical composition"[7], especially when considering pop music, and use this stance as a way to rationalize their study. The problems with this melody-centric perspective have already been discussed. It is the same issue that the courts had over the past two centuries, and one that forensic musicology has worked to combat since at least the turn of the 21st century. One could surmise that the work done in this area is simply lagging behind.

Visual bias is also a problem in this area. Not only are the results from such algorithms obviously designed to be presented visually, but the visualization of such data can be skewed to the point where the actual outcome is misrepresented. One such study led by computer scientist Roberto De Prisco inadvertently confirmed this, where a focus group came to different conclusions regarding the outcome of the same plagiarism cases based on three different visualizations of the data from simple pitch mapping algorithms.[8] Though the study was meant to find more accurate patterns and designs for the visualization of musical data results, it also showed how susceptible lay listeners are to a visual analysis depending on how one chooses to display it.

Although this may suggest that computer science is no closer to solving the major issues that forensic musicology deals with than other scholarly work, there are some important positives of the area to note. The clearest positive, one that the area is essentially built upon, is that the methods of analyzing substantial similarity in this way produce clear, objective, and repeatable conclusions. This provides the court with a resolute piece of evidence, a resoluteness that would be difficult to disregard should the method be sound. Another positive, one that has not yet

seemed to reach the other areas of research, is that advancements in algorithms have recently been made in order to include more analytical criteria. Although a purely melodic analysis may be reflected on the surface, several studies have worked to engage with a more extensive range of musical and contextual elements to provide a more holistic result. In fact, these newer algorithms have been proven to be more accurate than standard plagiarism detection algorithms with regard to the outcome of the actual court cases.[7,9]

One such study done by musician/computer scientist Daniel Müllensiefen and musicologist Marc Pendzich in 2009 introduced what they termed "statistically-informed" algorithms for plagiarism detection, which use "statistical information about the prevalence of chains of pitch intervals in a large pop music database".[7] This model was taken from a more common algorithm used in detecting passages of sameness in literature, called the TF-IDF model. TF, or "term frequency", measures the frequency of some given element (words, pitches, intervals, etc.) in a particular excerpt, and the IDF, or "inverted document frequency", measures the TF for its occurrences against a larger body of work, be it the work itself, a collection of works, etc. In this study, Müllensiefen and Pendzich use the IDF coefficient as a collection of MIDI encodings of over 14,000 pop song melodies from 1950-2006. Essentially, these statistically-informed algorithms measure the uniqueness of a particular melodic passage against a massive corpus of past pop music, discerning whether or not the particular melodic passage is rare (and therefore more easily copyrightable), or common among style and basic musical language (therefore not as protectable). Müllensiefen and Pendzich used this TF-IDF model both as itself and as a particular element to another similarity algorithm, the "ratio model" created by Amos Tversky, who can be considered the founder of substantial similarity measurement in the

field of psychology. Tversky's ratio model works in part to measure the salience of a particular feature, and this study used the IDF coefficient of the pop melody corpus as the type of salience being measured in the equation. Several nuanced TF-IDF algorithms were created based off of Tversky's ratio model that each had slight differences in measurement and reference context.

These statistically-informed algorithms were then measured against more basic pitch mapping algorithms such as edit-distance (a simple equation of transformation) and n-gram (a set of values and their frequency, essentially a TF on its own) to see how well each of them were able predict the verdict of 20 selected past court cases. The result was that the statistically-informed algorithms altogether outperformed the basic similarity measures, correctly picking the outcome of more cases. Four of the six TF-IDF algorithms were correct in at least 17 out of the 20 cases, the highest of which went 18 out of 20; the edit distance and n-gram algorithms had no more than 15 correct.

The case *Selle v. Gibb* served as a critical divider among the algorithms. Basic similarity algorithms concluded that the melodies from the songs "Let It End" by Ronald Selle and "How Deep Is Your Love" by The Bee Gees were substantially similar enough to warrant a verdict of plagiarism. The statistically-based algorithms, though, determined that the similarities between the melodies were musical conventionalities, involving mostly stepwise diatonic scalar motion,

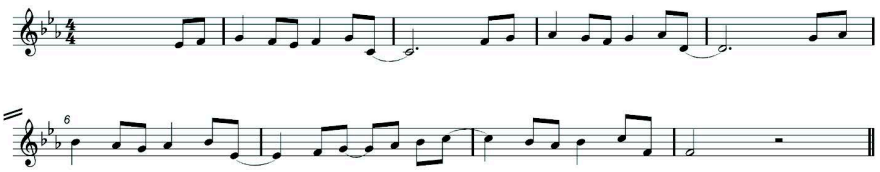


Figure 2a[7]
Melody from "Let It End" by Ronald Selle

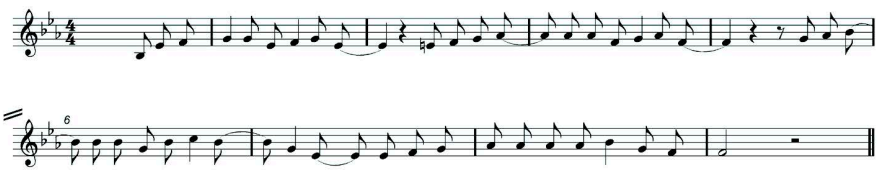


Figure 2b[7]
Melody from "How Deep Is Your Love" by The Bee Gees

and that likely the melodies "overlap mainly by their more frequent and trivial melodic material from a common musical repertoire".[7] Taking this stylistic context into account, these algorithms determined that no plagiarism was involved, siding with the court. Though the actual court's decision for the verdict was on the basis that the defendant had no prior access to the plaintiff's composition, this study reveals more convincing evidence that such a case was correctly ruled.

I sense a real possibility for forensic musicology to advance through developing better informed theoretical models that include both an understanding of broader musical context and the necessary objectivity that the court relies on. Though stuck in the realm of purely melodic analysis and yet to be used in any court case to my knowledge, the fact that there are algorithms developed that take into account over 14,000 past melodies to help determine stylistic commonality and the intricacies of elements such as rhythmic/intervallic variety and consonance/dissonance,[9] each of which largely mirror the actual court rulings, shows intriguing progress to me. On the other side, a major victory took place for the evolution of forensic musicology in 2015 on the ruling of the *Marvin Gaye estate v Robin Thicke and Pharrell Williams* case, where the plaintiff's experts successfully argued for substantial similarity through mostly aural evidence of timbre and personal stylistic duplication, as opposed to a reductive pitch analysis that had typically been the standard.[4] Both research areas have had successes in their application of ideas within the last decade or so; an important next step in my opinion is how these ideas can coexist and create something truly revolutionary.

To conclude, I will make a personal observation on a recent lawsuit involving supposed music plagiarism, using the ideas and models from the aforementioned scholarly work to outline what I would consider to be the foundation for a sufficient analysis by a forensic musicologist.

On March 1st 2022, the alt-reggae group Artikal Sound System sued pop star Dua Lipa and her songwriting team for allegedly plagiarizing their 2017 song “Live Your Life” in Dua Lipa’s 2020 hit song “Levitating”. By focusing on melody alone and using either a basic similarity algorithm or a reasonable observer’s comparison, one would likely conclude that there is substantial

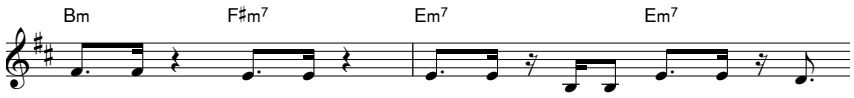


Figure 3a
Melody from “Live Your Life” by Artikal Sound System, 0:20-0:24 (author’s transcription)

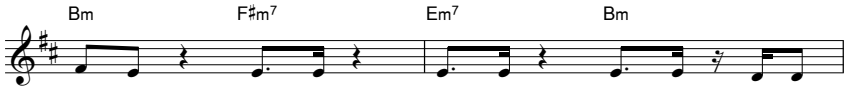


Figure 3b
Melody from “Levitating” by Dua Lipa, 0:46-0:50 (author’s transcription)

similarity between the two songs. Even by broadening the scope and considering the melodic rhythms and harmonic progressions within the two passages, the two are almost visually identical. Pair that with an audio mashup of the two passages in question, either juxtaposed or superimposed on each other, and one would surely have difficulty understanding these examples as two unique musical passages, thereby concluding that one had to be plagiarized.

Historically, this would have largely been the standard process of an expert witness testimony, and it unfortunately stills seems to be considered adequate today. As discussed by many, this analysis is highly insufficient because it a) does not consider the totality of musical elements that may (or may not) be affecting the outcome, b) is reductive in nature and formatted to fit the biases of courts and lay listeners, c) contains no discourse on the presence of musical conventionality or stylistic context, and d) feeds off of the lay person’s inability to parse out inherent similarities over perceived similarities due to style and memorability. My hope is that

the work from a modern musicologist would address these points and give a more multidimensional, comprehensive analysis. This may start by strictly including more musical elements to compare, notably form, which would set each passage in their respective contexts and formal functions within the song; the plaintiff's being a prevalent chorus hook, the defendant's being a short post-chorus link or "dance chorus". In doing this, one could also address musical elements that are not copyrightable and therefore not affecting the substantial similarity ruling, such as the key and the tempo, unchanging in both instances. This could also lead to analyzing the use of the chord loop, and how it is not used as a particular feature of either section but rather a stagnant part of each song's structure.

Then, the analysis should also include a discussion on the musical conventionality and stylistic context of the melodic, harmonic, and rhythmic features, either through the use of statistically-informed algorithms, historical anecdote, the authority of professional expertise, or in my mind hopefully a combination of these methods. This may reveal that neither the i-v-iv-i progression nor the continuous dotted 8th-16th pattern have much copyrightable originality to them, and instead are features of common figures among the shared style. While I wish I would be able to use existing algorithms to test this commonality measurement myself (perhaps an important next step in the computer science area is to make their work more accessible), my educated guess would be that any dependable algorithm would conclude that stylistic commonality is abundant in this particular case. By methodically analyzing a more thorough range of relevant criteria, modern forensic musicology can produce a more accurate reading of what "substantial similarity" truly entails within musical works, and in this case save a potential victim from an erroneous accusation.

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