# Language and Music: Alike in Syntactical Structure?

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**Introduction:**

In 1973, American composer and conductor, Leonard Bernstein, delivered a series of lectures at Harvard University where he developed a theory that compared musical syntax to linguistic syntax (Bernstein, 1973). Since then, there has been some debate regarding the extent to which language and music are related. Some disapprove of the idea, holding that music and language should be considered distinct cognitive domains, while others agree that the two are deeply similar. In their talk, "The Recursive Syntax and Prosody of Tonal Music," Jonah Katz and David Pesetsky of MIT suggest that while music and language are separate cognitive domains, they are exactly the same, not in regards to their building blocks, which are different, but in terms of what they do with them (Katz & Pesetsky, 2009).

Despite differences in opinion, each theorist attempts to answer the question of whether or not language and music are related syntactically through discussion that is centered around music demonstrating clear-cut tonality. "*Tonality* refers to an organized system of tones (e.g., the tones of a major or minor scale) in which one tone (the tonic) becomes the central point to which the remaining tones are related" (Benward & Saker, 2015, p. 39). However, if the notion that language and music are alike in syntactical structure is to hold true, then I propose that we should be willing to venture beyond the confines of tonal music to explore this theory. This paper will attempt to add to the ongoing discussion of syntax as it relates to language and music by exploring the possibilities of such a theory within the scope of both tonal and atonal music.

**Universal Grammar and Syntax:**

Bernstein was taken with Chomsky's *Universal Grammar* hypothesis, of which the key idea is that "despite the many superficial differences among languages, there are certain

commonalities with respect to how syntax works…" (O'Grady, Archibald, Aronoff, & Rees-Miller, 2017, p. 192). Universal Grammar (UG) allows for variation amongst languages within the bounds of a finite number of linguistic *parameters*- "the set of options that UG permits for a particular phenomenon" (O'Grady et al., 2017, p. 192). These parameters create an overarching unity amongst languages, all of which do vary from one another based on the different parameters they employ. He also draws upon Chomsky's concept of deep structure and surface structure- *deep structure* being "the abstract level of structural organization in which all the elements determining structural interpretation are represented," (Wijaya, 2018) and *surface structure* being the final syntactic form that results from applying operations to that deep structure. For example, the sentences *Jack loves Jill* and *Jill is loved by Jack*, are both surface level realizations of the same deep structure- *Jack love Jill*- that have undergone different transformations (Bernstein, 1973). According to Chomsky's theory of *generative*, or, *transformational grammar*, we all have this innate ability to learn certain types of rules that will allow us to transform sentences according to the particular message we want to convey (Nordquist, 2019). Bernstein believed transformational grammar could provide us with a model for the way we think, not only in regard to the language we speak, but in all areas of creative expression (Bernstein, 1973).

Bernstein suggested that there also seems to be a sort of "worldwide, inborn musical grammar" that works in much the same way (Bernstein, 1973). Before we make this comparison though, we must separate language and music to an extent, as Jonah Katz and David Pesetsky do. One reason we may say that all languages fall within the same domain is because they share the same building blocks- lexical items. Music, in contrast, is ultimately made up of pitches and chords (Katz & Pesetsky, 2009). Though Bernstein suggests we *may* be able to create rough

parallels between the two by comparing verbs to rhythms, adjectives to chords, etc (Bernstein, 1973), we will hold that linguistic and musical structures cannot be translated precisely. "…in the discussion of the similarity between the syntactic structures in music and those in language it should not be assumed that language structures are replicated exactly in music. There is no equivalent in music of the noun and the verb etc" (Sutcliffe). Language and music are alike, though, in that their respective building blocks serve the same function (Katz & Pesetsky, 2009). While there are a finite number of them in each case, the building blocks may be assembled in an infinite number of combinations to create either sentences, or musical phrases. However, in the same way that we must be sure to assemble our lexical building blocks with adherence to the parameters employed in the particular language we are building in, we must also be sure to assemble our musical building blocks together with adherence to the set of parameters governing the grammar of whatever style of music we are building in. "Music, like language, has components which are creative and components which are systematic. The creative components are governed by artistic concepts such as: balance, form, beauty and expression. The systematic components are governed by rules which determine the structures of chords, the voice leading and the progression of chords" (Sutcliffe). The creation of tonal music requires adherence to a series of rules that allow for sound that people recognize as "correct" or "pleasing to the ear." We may equate these rules to linguistic parameters, as both allow for freedom within a framework.

Both the linguistic sentence and the musical phrase may be subdivided into smaller phrases, which we can then divide up further into the building blocks we have already discussed. This possibility of subdivision suggests a common hierarchy present in both language and music. This hierarchy will be the main topic of interest in this paper, as it is what constitutes linguistic

and musical *syntax*- “a set of principles governing the hierarchical combinations of discrete structural elements into larger units and/or into sequences” (Asano & Boeckx, 2015). A language’s syntax is what determines the correct sequencing of words to create a grammatical sentence. “…a theory of the syntax of chord progressions should explain the way chords are assembled to make up a musical phrase” (Sutcliffe). In regard to music, we may assume that its syntax should be concerned with the particular sequencing of pitches and chords required to create a “grammatical” musical phrase.

Music of the Classical period came to depend heavily on tonality for its structure (Wildridge, 2018). In discussing syntax within tonal music, it will benefit us to look at the work of W. A. Mozart, one of the greatest composers from this time, whose music is defined by clarity and structure (Stephan, 2019). Bernstein presents a good place to begin this discussion with a structural analysis of Mozart’s main theme from his Symphony no. 40 in G minor.

**Generative Grammar- its Role in Language and Tonal Music:**

In consideration of transformational grammar as it relates to music, Bernstein admits, in agreement with Katz and Pesetsky, that no true analogies can be made in comparing linguistic phrase structures to musical phrase structures because “sentences belong to the world of prose,” while “musical phrases inhabit the world of poetry” (Bernstein, 1973). In other words, linguistic sentences are concerned with literal meanings, but a phrase of music is concerned with aesthetics. In response to this discrepancy between language and music, Bernstein presents his own hypothesis- to create a true parallel between language and music, we must first transform a linguistic surface structure, or, prose, into a new super-surface structure, art, by reapplying transformational rules. When we do this, we end up with poetry. For example, Shakespeare writes in his Sonnet 66, “tired with all these / for restful death I cry.” Here, we see a super-

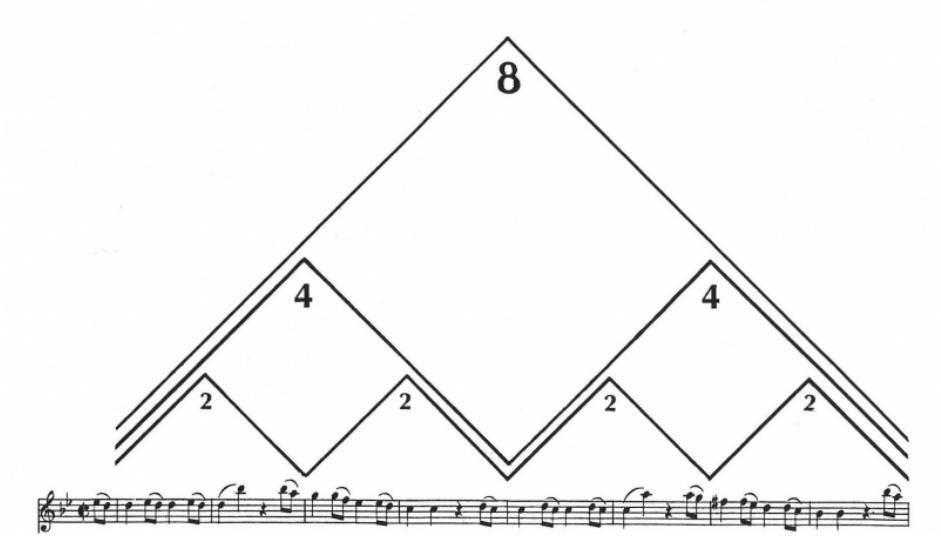
surface structure that results from transformations to a deeper “prosy” surface structure. This surface structure, from which the more artful phrase is derived, is not likely very aesthetic, which is why Shakespeare, in his quest to transform language into a work of art, opts to reapply transformational rules (Bernstein, 1973).

We have established that a linguistic sentence may or may not serve both communicative and aesthetic functions, which leads us to wonder if music, which is inherently art and a surface structure in itself, also has a deeper prose structure created from raw material. Bernstein suggests that we might consider this raw material to be things like scalar passages, such as those found in a Hanon piano practice book- melodic, harmonic and rhythmic “underlying strings” waiting to be developed into art by way of transformations.

| Language | Music |
|---|---|
| **A) Chosen Elements:**<br>- Morphemes, words, etc… | **A) Chosen elements:**<br>- Key, meter, etc… |
| **B) Underlying strings**<br>- Deep structure | **B) Underlying strings**<br>- Melodic, harmonic, rhythmic |
| **C) Prose**<br>- Surface structure | **C) “Prose”**<br>- Deep structure |
| **D) Poetry**<br>- Super-surface structure | **D) Music**<br>- Surface structure |

(Shuster, 2014)

In both cases, underlying strings- deep structure in language and melodic, harmonic and rhythmic material in music- are the foundation of the final product, or, surface structure. In attempt to solve the musical “prose” problem, Bernstein offers the opening of Mozart’s first movement of his G minor symphony as a type of musical equivalent to Shakespeare’s line, believing that the clue to uncovering music’s deep structure is found in its highly symmetrical formation:



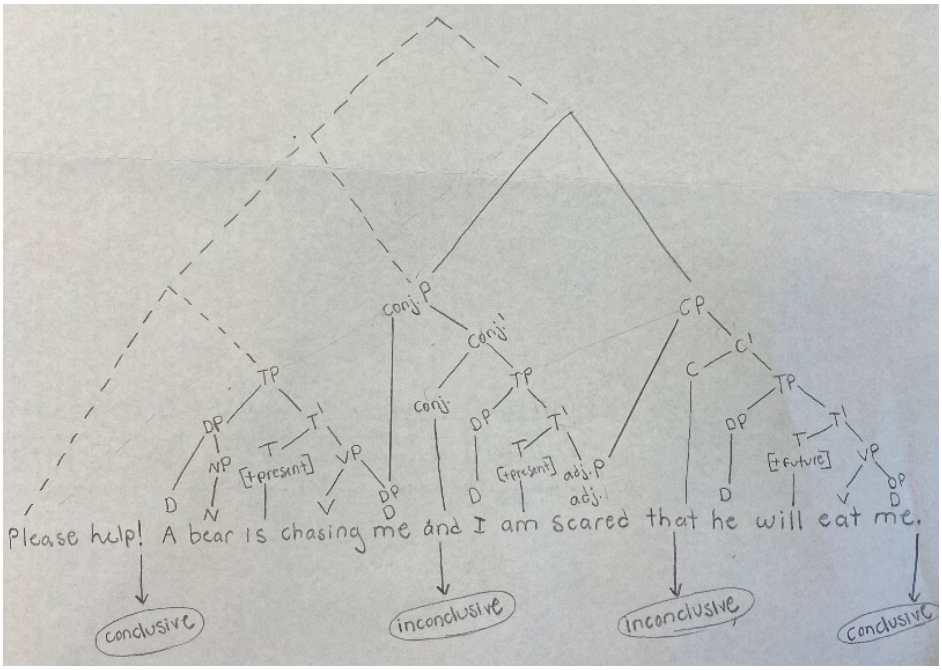

(Bernstein)

Here, we can see that Mozart has countered the first two-bar phrase with a complementary two-bar phrase, forming a larger four-bar phrase. He then answers that four-bar phrase with yet another four-bar phrase and they combine to form a complete, balanced eight- bar phrase, or, musical "sentence." Bernstein claims that the symmetry present in music points to our innate symmetrical instincts that drive us to create music with deep structure, or, "prose." He likens this to our innate knowledge of transformational rules that allow us to, for example, *embed* phrases to create a whole sentence, like *John was glad* that *Harry persuaded John to take up golf*, and then, through inborn knowledge of pronominalization, avoid unnecessarily long, repetitive structures, creating more aesthetically pleasing final products- *John was glad* that *Harry persuaded* ***him*** *to take up golf*. In same way that Shakespeare's super-surface structure phrase arises from an unpleasing, unnecessarily long "prosy" surface structure, Bernstein suggests that Mozart's main theme is generated from a deep structure that has unnecessary repeats in the name of symmetry, and he demonstrates this with a recording of what he calls a "perfect nightmare of symmetry" that Mozart has yet to balance through transformations: https://www.youtube.com/watch?v=yIwVc3yfYYA Of course, this hypothetical musical structure

never surfaces as the final product that we enjoy listening to because it is not aesthetic. Only after we apply a series of transformational actions to this abstract musical "prose," in Mozart's case, namely that of *deletion*, do we end up with our artful surface structure- music that is balanced but not perfectly symmetrical. We tend to create balanced, surface structure music without ever having been taught it explicitly, just like we subconsciously apply transformational grammar to our sentences (Bernstein, 1973). We may assume that all tonal music, with clarity and structure, is formed in much the same way because of, what Bernstein calls, our "worldwide inborn musical grammar."

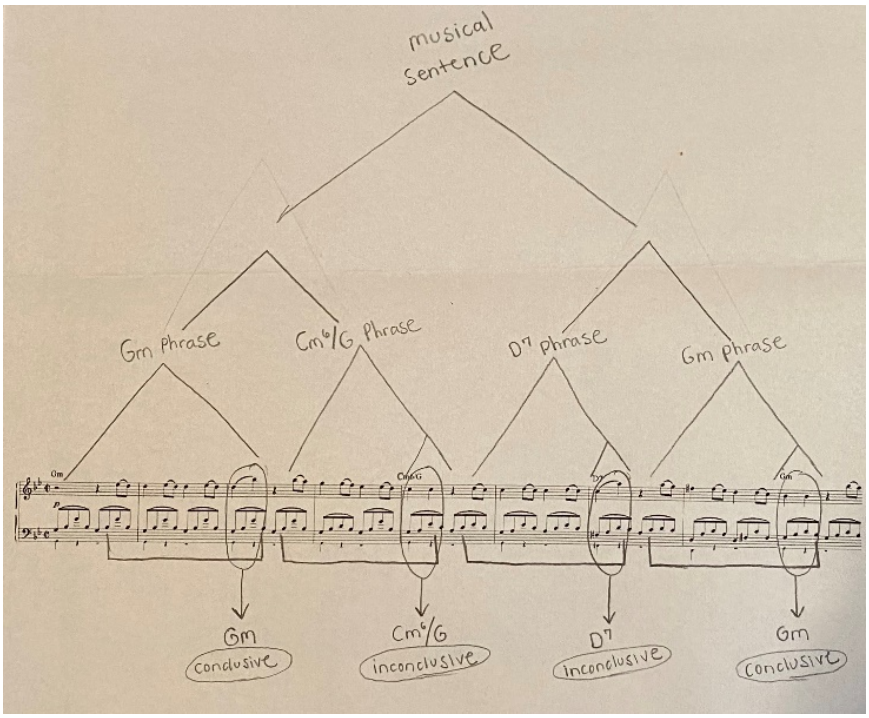
**Tonal Structure and Hierarchy:**

Within a sentence, words are grouped together into larger structural units called phrases (O'Grady et al., 2017, p. 172).




As we see in the syntax tree, demonstrating what I found to be an acceptable linguistic interpretation of Mozart's theme, language phrases may either stand on their own as independent

clauses, or they can be joined together to form an even larger unit (O'Grady et al., 2017, p. 182). This concept is replicated almost exactly in music. "… additional phrases can be embedded within sentences and sentences can be combined to produce conjoined sentences… it will be shown that similar processes exist in music whereby complete and incomplete phrases can be combined in ways that produce larger complete syntactic structures. It is at this meta-syntax level that the similarity exists between music and language" (Sutcliffe). A musical phrase can be defined as "a substantial musical thought, which ends with a musical punctuation called a cadence. Phrases are created in music through an interaction of melody, harmony, and rhythm" (Benward & Saker, 2015 p. 97). We have already addressed the four-phrase structure of Mozart's theme. Here, it is clear to see that a musical phrase is comprised in the same manner a sentence is- building blocks, in this case, pitches and chords, rather than lexical items, are grouped into sub-phrases which come together to form a complete, or, conclusive phrase. We may call this a musical "sentence."



This idea of "conclusiveness" is brought to us by way of functional harmony and *cadences*- "musical punctuation that closes a phrase or section of music" (Benward & Saker, 2015, p. 97). In tonal music, a cadence is classified by chord progressions, usually referring to the final chord plus the chord or two leading up to it (musictheory, 2012). As we can see in Mozart's excerpt, cadences may differ in their musical strength, with some signifying the end of the entire phrase, and others bringing incomplete ideas to an end while still suggesting more to come. For cadences to serve this function, the music must be centered around a *tonic pitch*- "the tone of complete relaxation, the target toward which other tones lead" (Benward & Saker, 2015, p. 39). A conclusive cadence, which ends on the tonic, like the one we see in the third and eighth measures, can be compared to the period (.). Other types of cadences, those that do not mark a complete conclusion, may be compared to a comma (,) or colon (;) (Benward & Saker, 2015, p. 97). I propose that they may also be likened to conjunctions or complementizers, as these too seem to suggest more to come. Three chords- the tonic, subdominant, and dominant, represent the pillars of hierarchical organization in Western tonal music, and have been referred to as its "harmonic core." "This hierarchy is inherently linked to the tonal scale, in which every tone within an octave has a specific function. The first tone of the scale, called the tonic is the 'head of the hierarchy' and represents the auditory and cognitive reference point" (Asano & Boeckx, 2015). In this way, we can say that language sentences and musical phrases both have hierarchy due to elements marking subordinate clauses or sub-phrases. Tonal music appears to have a "Universal Grammar" that draws upon a deep structure of perfect symmetry, and that gives way to syntactical hierarchy due to harmonic punctuation.

This correspondence between linguistic and musical phrases, resting upon the notion of a tonal center and its resulting conclusive and inconclusive harmonies, will seem to fall apart as we

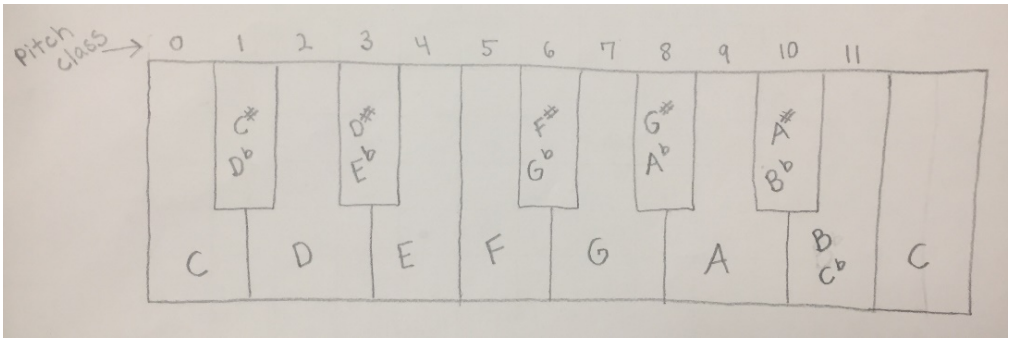
begin discussing the syntax of atonal music, which contains no tonal center whatsoever (Benward & Saker, 2015, p. 101), and thus, has no possibility of structural hierarchy based upon any harmonic punctuation.

**Transitioning to Atonality:**

As music shifted out of the organized and symmetrical Classical tradition and into the Romantic, composers began experimenting with greater musical subjectivity, independence in style, chromaticism and non-functional harmonies. Then, in the twentieth century, the Romantic interest in tonal instability transitioned into an utter abandonment of tonality- at least for some composers. Of those that chose to create music in this new atonal idiom, some chose to do so using the *twelve-tone technique*. This style, otherwise known as dodecaphonic composition, was developed by Arnold Schoenberg, who recognized that the new innovations at the end of the Romantic period had weakened the constructive force of tonal harmonies (Benward & Saker, 2015, p. 321). Of this he said:

> "The method of composing with twelve tones grew out of necessity. In the last hundred years the concept of harmony has changed tremendously through the development of chromaticism. The idea that one basic tone (the root) dominated the construction of chords and regulated their succession- the concept of *tonality*- had to develop first into the concept of *extended tonality*. Very soon it became doubtful whether such a root still remained the center to which every harmony and harmonic succession must be referred. Furthermore, it became doubtful whether a tonic appearing at the beginning, at the end, or at any other point really had a constructive meaning" (Benward & Saker, 2015, p. 321).

In his quest to replace the lost power of functional harmonies and return order to music, Schoenberg crafted a new compositional method, the basis of which is formed by the set of all 12 tones contained within the octave in a particular *tone row*- a non-repetitive ordering of a set of pitch classes (Cryer, 2019). A *pitch class* is any particular pitch, including its octave duplications and enharmonic spellings (Benward & Saker, 2015, p. 305). To demonstrate this, I have represented the pitch classes on a keyboard here:




As you can see, each pitch class corresponds to a number and each number is equal to a particular pitch class. In twelve-tone technique, all the 12 pitches in a row are sounded just as often as one another which gives them all equal importance, thus avoiding any tonal center (Cryer, 2019).

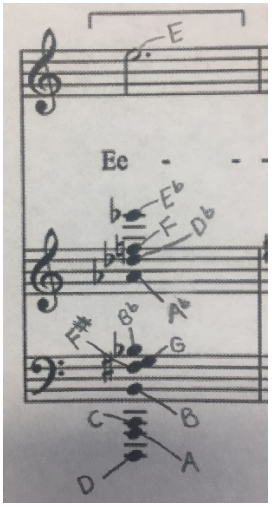
In discussing the syntax of atonal music, we will examine “Philomel,” a 12-tone work by music theorist Milton Babbitt, who aided in developing this set theory meant to “analyze compositions that are not based on diatonic scales but exhibit a great deal of internal consistency of musical materials” (Benward & Saker, 2015, p. 309). It should become clear that, because of this great attention to internal consistency, atonal music, though it might sound unstructured and “ungrammatical,” may actually surpass tonal music in its demonstration of a deep structure.

**Generative Grammar in Atonal Music:**

https://www.youtube.com/watch?v=6Rd5_9hyWm0

Upon listening to “Philomel” for the first time, it is hard to imagine any underlying, perfectly symmetrical deep structure from which the piece is derived. Unlike Mozart’s work, “Philomel” is chaotic and unpredictable, and it is obvious that there is no tonal reference point, and thus, no hierarchy based on easily perceivable cadences. However, if generative grammar is to provide us with insight into the way we think, as Bernstein believed, then we should be able to find some sort of deep structure in *all* music that, without relying on symmetry, still reveals our brain’s established attraction to order (Berezin, 2014).

I propose that “Philomel,” like equally atonal, and likely “unattractive” 12-tone works, contains a deep structure that is even more definitive than that of tonal music. We must work backwards to uncover it. The first step is to identify the first row of pitch classes- made up of the piece’s first 12 tones:

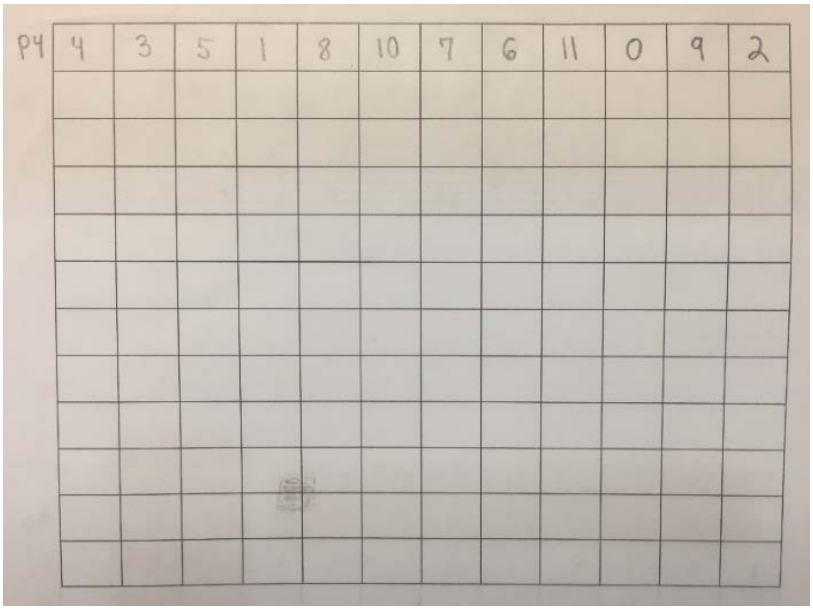



| Row Pitch Classes | 4 | 3 | 5 | 1 | 8 | 10 | 7 | 6 | 11 | 0 | 9 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Row | E | E♭ | F | D♭ | A♭ | B♭ | G | F♯ | B | C | A | D |

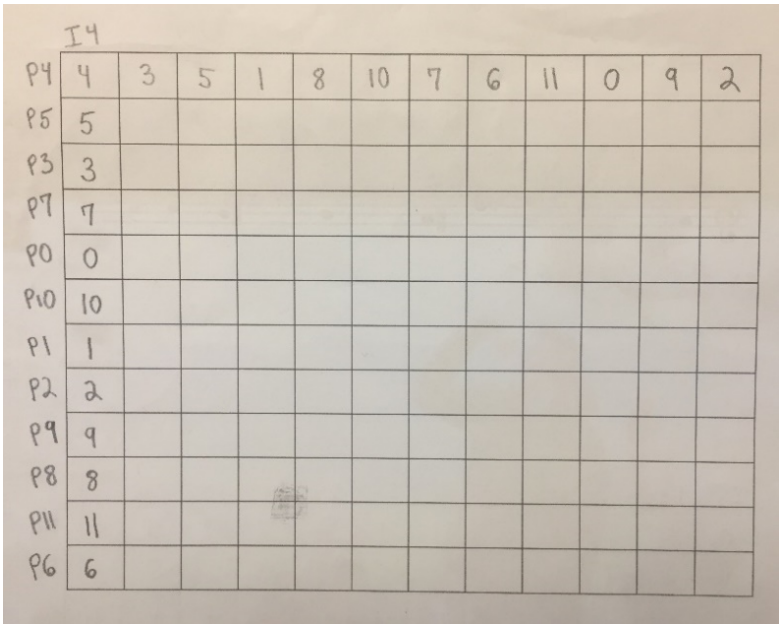
We will call this tone row, prime row 4, or, “P4,” as it has been transposed up four half steps from original, deep structure row P0- which begins on pitch class 0. Therefore, P4 is one surface level realization of P0. As we will soon see, in 12-tone music, P0 may undergo a series of

transformations and manifest itself in a variety of surface structures- 48 to be exact, just like *Jill is loved by Jack* is only one surface level realization of the deep structure *Jack love Jill.*

Now, we may begin constructing a *matrix*- "a convenient analytical device for showing all the forms and transpositions of a row" (Benward & Saker, 2015, p. 322). To do this, we will first write the first row of pitch classes, P4, at the top of the matrix:

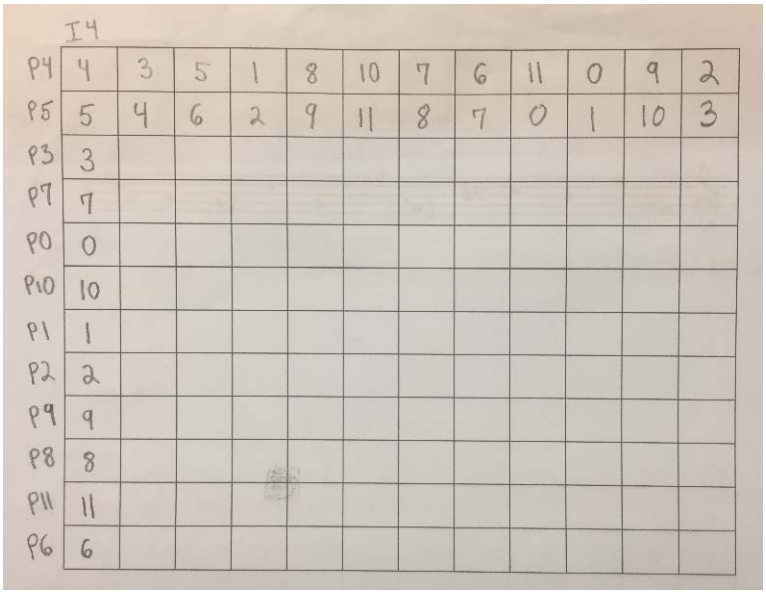



We have applied a transformation to deep structure P0 to get surface structure P4. Each of the prime forms of a row, including P1 through P11, are transpositions of original, untransposed P0. Each prime form may also exist as either an: *inversion* (I)- in which the direction (up or down) of each successive interval, starting with the first tone of the row, is inverted, a *retrograde* (R)- in which the row is sounded in reverse order, and as a *retrograde inversion* (RI)- in which the inversion of a row is sounded in reverse order (Benward & Saker, 2015, p. 322). To complete the matrix, we can begin by writing the inversion of P4, named I4, down the first column. This will give us the first pitch class of each transposition:



| | I4 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P4 | 4 | 3 | 5 | 1 | 8 | 10 | 7 | 6 | 11 | 0 | 9 | 2 |
| P5 | 5 | | | | | | | | | | | |
| P3 | 3 | | | | | | | | | | | |
| P7 | 7 | | | | | | | | | | | |
| P0 | 0 | | | | | | | | | | | |
| P10 | 10 | | | | | | | | | | | |
| P1 | 1 | | | | | | | | | | | |
| P2 | 2 | | | | | | | | | | | |
| P9 | 9 | | | | | | | | | | | |
| P8 | 8 | | | | | | | | | | | |
| P11 | 11 | | | | | | | | | | | |
| P6 | 6 | | | | | | | | | | | |

Next, we may fill in the pitch classes for row P5. Each pitch class will be one half step higher than those in P4:



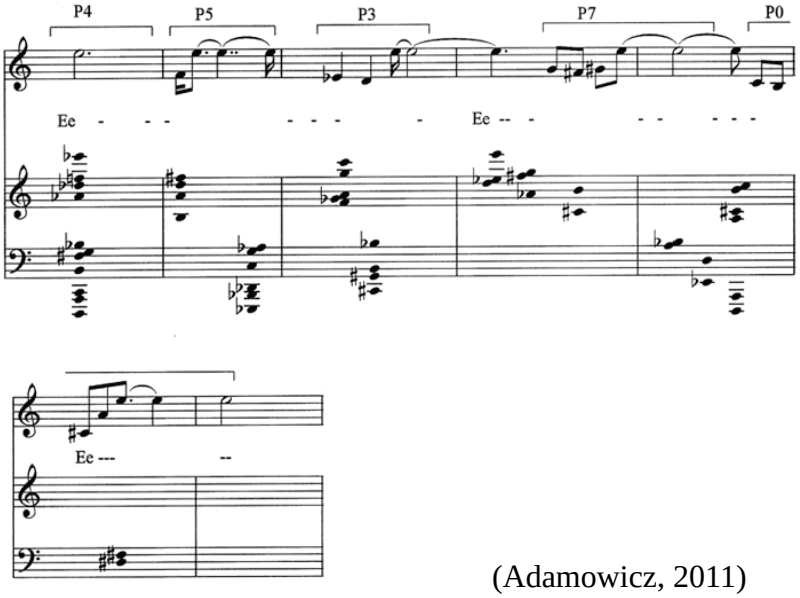
| | I4 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P4 | 4 | 3 | 5 | 1 | 8 | 10 | 7 | 6 | 11 | 0 | 9 | 2 |
| P5 | 5 | 4 | 6 | 2 | 9 | 11 | 8 | 7 | 0 | 1 | 10 | 3 |
| P3 | 3 | | | | | | | | | | | |
| P7 | 7 | | | | | | | | | | | |
| P0 | 0 | | | | | | | | | | | |
| P10 | 10 | | | | | | | | | | | |
| P1 | 1 | | | | | | | | | | | |
| P2 | 2 | | | | | | | | | | | |
| P9 | 9 | | | | | | | | | | | |
| P8 | 8 | | | | | | | | | | | |
| P11 | 11 | | | | | | | | | | | |
| P6 | 6 | | | | | | | | | | | |

With this knowledge, we can then fill in the remaining transpositions (P6, P7, etc…). The pitch classes in each row will all be one half step above those in the previous row (Benward & Saker, 2015, p. 327). The completed matrix for “Philomel” will look like this:

| | $I_4$ | $I_3$ | $I_5$ | $I_1$ | $I_8$ | $I_{10}$ | $I_7$ | $I_6$ | $I_{11}$ | $I_0$ | $I_9$ | $I_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $P_4$ | 4 | 3 | 5 | 1 | 8 | 10 | 7 | 6 | 11 | 0 | 9 | 2 | $R_4$ |
| $P_5$ | 5 | 4 | 6 | 2 | 9 | 11 | 8 | 7 | 0 | 1 | 10 | 3 | $R_5$ |
| $P_3$ | 3 | 2 | 4 | 0 | 7 | 9 | 6 | 5 | 10 | 11 | 8 | 1 | $R_3$ |
| $P_7$ | 7 | 6 | 8 | 4 | 11 | 1 | 10 | 9 | 2 | 3 | 0 | 5 | $R_7$ |
| $P_0$ | 0 | 11 | 1 | 9 | 4 | 6 | 3 | 2 | 7 | 8 | 5 | 10 | $R_0$ |
| $P_{10}$ | 10 | 9 | 11 | 7 | 2 | 4 | 1 | 0 | 5 | 6 | 3 | 8 | $R_{10}$ |
| $P_1$ | 1 | 0 | 2 | 10 | 5 | 7 | 4 | 3 | 8 | 9 | 6 | 11 | $R_1$ |
| $P_2$ | 2 | 1 | 3 | 11 | 6 | 8 | 5 | 4 | 9 | 10 | 7 | 0 | $R_2$ |
| $P_9$ | 9 | 8 | 10 | 6 | 1 | 3 | 0 | 11 | 4 | 5 | 2 | 7 | $R_9$ |
| $P_8$ | 8 | 7 | 9 | 5 | 0 | 2 | 11 | 10 | 3 | 4 | 1 | 6 | $R_8$ |
| $P_{11}$ | 11 | 10 | 0 | 8 | 3 | 5 | 2 | 1 | 6 | 7 | 4 | 9 | $R_{11}$ |
| $P_6$ | 6 | 5 | 7 | 3 | 10 | 0 | 9 | 8 | 1 | 2 | 11 | 4 | $R_6$ |
| | $RI_4$ | $RI_3$ | $RI_5$ | $RI_1$ | $RI_8$ | $RI_{10}$ | $RI_7$ | $RI_6$ | $RI_{11}$ | $RI_0$ | $RI_9$ | $RI_2$ | |

(Adamowicz, 2011)

As we can see, the completed matrix perfectly displays all the possible surface structure manifestations of deep structure prime form 0. For prime row forms we read from left to right, for inverted row forms we read down, for retrograde row forms we read from right to left, and for retrograde inversion row forms we read upwards (Benward & Saker, 2015, p. 328). Any of these transformations of original P0 may appear in the final product:




(Adamowicz, 2011)

In language, any of the transformations we apply to an underlying deep structure- which exists in our brains due to Universal Grammar, necessarily exhibit themselves in a surface structure type of communication (Wijaya, 2018). Even now, as I write this paper, I am generating surface structure thoughts and sentences out of abstract deep structures. We may likewise consider prime forms, inversions, retrogrades, and retrograde inversions, conveniently called "transformations," to be surface level manifestations of original deep structure P0, which is waiting to undergo transformations. A problem with this idea arises, however, as P0 is perhaps not a perfect illustration of deep structure since it is not abstract enough to be equated with linguistic deep structures and tonal music deep structures of absolute symmetry. After all, P0 may also appear in the final, artful product. However, we *can* consider the matrix to be a more abstract deep structure of a final product like "Philomel," as all row forms in the final structure, which are derived from P0, are represented in it. So, P0 and the matrix combine to form a comprehensive deep structure, or, "prose" for 12-tone music.

Hopefully it is clear now that while atonal works, like "Philomel," do not initially sound coherent, they are actually crafted with a highly sophisticated degree of structure and complexity, just like both tonal music and language. Unlike in tonal music though, we do not have to rely on a hypothetical, though probable, perfectly symmetrical deep structure to provide us with musical "prose." Instead, 12-tone works provide us with a clear, tangible deep structure in the form of a matrix crafted from an original tone row from which all other row forms in the piece are derived.

**Conclusion:**

There is incredible diversity of style in music, and therefore, we require more than one system of analysis, as demonstrated in this paper. "In the face of such diversity, it becomes important to choose analytical methods that reveal the underlying structure of a given work"

(Benward & Saker, 2015, p. 287). While all human languages can be analyzed using the same system of Universal Grammar, we cannot apply the same Universal Grammar to all music. This is where Bernstein's theory of a "worldwide inborn musical grammar" falls a tad short. He fails to take into account music that does not adhere to tonal constraints. So, I would counter his idea and argue instead that all music has *a* Universal Grammar, but not necessarily the *same* Universal Grammar. Interestingly enough, to illustrate this point, it may help to visit the discussion of alien languages. Dr. Martin Haspelmath from the department of Linguistic and Cultural Evolution at the Max Planck Institute for the Science of Human History says, "We wouldn't expect aliens to have the same representational (=UG) constraints as humans, because presumably they have different brains and minds. But their languages would be expected to be subject to very similar functional-adaptive constraints as human languages, if the languages are used for communication in much the same way as humans use their language" (Haspelmath, 2018). What he is saying here is that, in the hypothetical instance in which we discover aliens and study their language, we could not expect to analyze and understand it using our own human system of linguistic parameters because the aliens would likely have their own set of Universal Grammar constraints. Therefore, to make sense of this new language, we would need new rational modes of analysis that adhered to their Universal Grammar, but in the end, we would likely find the alien language to be just as structured as our own languages. It would just be designed *differently*, resulting in a logical, but possibly very foreign-sounding, surface structure. This is likely how you perceive "Philomel" and any other musical works that do not adhere to the same Universal Grammar as the tonal music to which you are most accustomed.

Language and music, both highly structured means of expression, each undergo transformations to their deep structures to create more grammaticality and balance, these words

meaning different things depending on what type of music we are dealing with. In the case of tonal music, balance may refer to symmetry and establishment of a tonal center, while atonal music creates balance by treating all tones equally. Each type of music employs its own unique-to-style parameters to achieve these things. We have established that atonal music, at least that of the 12-tone variety, appears to have a more tangible deep structure than tonal music- even though it sounds nowhere near as coherent and aesthetic. We do run into the problem that 12-tone surface structures are not derived subconsciously from deep structures in the same way that linguistic and tonal music final products are (Bernstein, 1973). Instead, composers of 12-tone music transform P0 into other row forms very intentionally, which may weaken my argument for an atonal "Universal Grammar." Regardless of the complications, hopefully this paper has made it clear that the discussion of linguistic syntax as it relates to musical structure should not be limited to tonal music, for it is reasonable to assume that all music is crafted from *some* kind of basis– a statement with which you may disagree if your definition of music is different from mine. Nevertheless, I propose that this is because music, like language, has its origins in the human mind, which research has evidenced has an attraction to order (Berezin, 2014). We have seen how this may manifest itself in music- both in the tonal symmetry of Mozart's symphony and in the organized chaos of Babbit's "Philomel." So, Bernstein appears to have been onto something when he said that transformational grammar could provide us with a model for the way we think. We may go on creating rough parallels between language and music, which of course *are* separate cognitive domains, but at the end of the day, it should not be surprising that the human mind would leave its mark on what it creates.

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