Article

Pitch Inverted Songs as Affirmation of Panpsychism Based on a Theoretical Mirror Universe

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Abstract

Every song that carries a melody can be pitch inverted to uncover a dual song that is different to the original song and where the pitch-inverted melody also relates to our emotions. This is creating music for the minor cost of pitch inversion, and without a lot of creativity beyond technical skills. The principle is demonstrated on 50 songs, with 100% success. As a general principle this implicates a reflective property that is necessarily part of human psychology. Moreover, this discovery affirms the belief in panpsychism where the reflexive property is active as part of a broader mirror universe.

Keywords: Song, pitch inversion, panpsychism, mirror universe, reflective property.

1. Introduction

Panpsychism is a philosophical theory of consciousness that is gaining acceptance today (Skrbina 2017). This theory stipulates that consciousness is a fundamental property of matter. Because matter cannot be disconnected from the entire universe, panpsychism also asserts that consciousness is a fundamental property of the universe.

Smith (2018, 2019) described a panpsychism that relates to a fundamental symmetry described by physics, the charge-parity-time symmetry (or CPT symmetry), and also connects it to a mirror universe theory described as a two-sided CPT inversion. As a logical necessity for a comprehensible universe, it must be that the universe holds a reflective properly that permits comprehension, otherwise the world would not be comprehendible (Langan 2017). This logical necessity resembles photographic prints that are made from negative film, where the negative film equates to the reflective property in the universe as an analogy. Moreover, while the negative film is found necessary, there remains an undeclared middle-term that takes the negatives and does the work of making the prints, agreeing with Trinitarian philosophy (Smith 2008). Therefore, evidence that supports the belief in such a mirror universe comes in the form of discovering the negative film, or reflections, that are found after looking for them.

This paper entertains the theoretical possibility that songs also carry a negative, or dual song, and these songs are represented by pitch-inversion. To the extent that every song that has ever been composed comes with such a dual song, that is also recognized to carry a distinct melody that evokes an emotional response to some degree, then this would constitute evidence of a mirror universe that encapsulates the emotive source. The theory predicts a 100% success rate in finding

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a dual song that carries a melody, not that all such melodies will be found pleasing. This is a testable prediction that is reported in this paper on 50 different attempts to create dual songs.

Section 2 describes pitch inversion in music, and how to pitch-invert songs. Appendix A provides more details on how to pitch-invert sheet music by hand. These instructions were used to pitch invert 50 popular songs, using a music note editor (Cresceno, made by NCH Software). Section 3 describes the information content in songs, and how songs carry a relativity that makes them invariant to transposition. Section 4 explains how the relative information contained in a song pertains to panpsychism and the mirror universe. Section 5 summarizes the results for 50 songs, including links to YouTube videos where the songs can be heard. All 50 attempts were found successful in generating a distinct melody, most being very different from the initial song, and these findings support the belief in the mirror universe. Concluding remarks are presented in Section 6.

2. Pitch Inversion

The pitch inversion of musical notes have been studied in musical set theory (Forte 1977). Pitch inversion is defined as the flipping, or reflecting, of a note around a second note that represents the center note. The center note is selected once[1] but can be selected anywhere, but various keys have natural center notes that do not complicate the notation. For example, using the note D as the center note returns notation in C major given that the original song is in C major, where the pitch-inverted notes will have accidentals only when the original notes have accidentals.

Like the transposition of notes, pitch inversion maps a song into a class without changing the tempo while making a second song. In the case of transposition, which is the raising or lowering of notes a specified number of chromatic steps, the same melody is returned. That is, melody is found invariant to transposition, even as the tone changes. Pitch inversion changes the melody, but not necessarily to an extreme extent even as extreme changes are found in particular examples. Therefore, the pitch-inverted song represents a dual song that shadows the original melody, and only when the melody and its dual are defined equivalent is a broader equivalence or invariance (representing a class) meaningful.

When working with an audio file, it is possible to use software (e.g., Patrick Feaster's software described on griffonagedotcom.wordpress.com) to pitch-invert a song around a selected pitch (if not a note). The evolution of sound from notes played by a musical instrument are impacted by time creating a waveform signature that's asymmetrical in its presentation (changes in amplitude), and in any regard, pitch-inverting sound is not as pristine as pitch-inverting notes before they are played. The bigger challenge is that the chromatic scale is exponentially spaced, where frequency must be log transformed to make a linear scale for direct pitch inversion of sound. Its more straightforward to invert notes before they are turned into sound, using the natural exponential chromatic spacing. C++ Software (Craig Stuart's MIDI file parsing library, part of GitHub) is available for pitch-inverting a midi file around a center note. If not careful, however, reflecting midi files can lock the process into making all notes on the bass clef high

1. When inverting notes in one staff.

notes and while making all notes on the treble clef low notes, and this creates an inflexible method that is not desirable. It is preferable to break a song into multiple staffs (which is tantamount to making multiple midi files), pitch-invert each staff individually using a center note that's natural for the key but in the middle of the staff (more or less), then transpose each staff up or down one octave to present the most desired arrangement for all the staffs together. Therefore, pitch-inversion of a song does not necessarily lock the process into a single center note. The added flexibility is actually preferred with a process that is otherwise highly automatic, and the process can now be done by hand using a good music note editor (See Appendix A). The disadvantage of doing the inversion by hand with a note editor is that the operation can introduce errors.

3. Information Contained in a Song and Relativity

The exponential spacing (given by the factor $^{12}\sqrt{2}$) that typifies the chromatic scale is remarkable. The implication is that the human ear not only can distinguish among these notes, but actually prefers this arrangement when notes are set to music. Because the normal scale with seven notes represent a subsequence of the 12 chromatic notes, the same preference given to exponentially spaced notes is again realized. Its unclear how this preference can be explained in mathematical terms, but there is a vague hint that this preference connects to the probabilistic concept of entropy, or to the scale invariant prior and utility function of Bayesian statistics, all of which incriminate multiplicative transitions. The fact that this preference connects to consciousness makes the spacing very mysterious. Nevertheless, pitch inversion will be taken to pertain to this unusual spacing, which is not linear in pitch, it is multiplicative.

The fact that a transposition of notes in a song leaves the melody intact while changing the tone, implies that the information that is recognized as a melody is contained in the relative changes of notes as time unfolds according to the tempo. Only the tempo and transitions between notes define the melody, not the absolute frequency that defines any particular note. This represents a type of relativity given by the representation of melody as the transitions given in the exponential scale. This is not saying that the melody is relative, only the representation of melody is relative. The representation does not stand in isolation to its reception in mind, i.e., something must receive the representation, and something must hold the representation to its reception. The strict application of relativity only applies to the song's representation, and perhaps the song's reception, but not to the undeclared middle-term that holds the representation to its reception. Imposing relativity on the middle-term is to imply that everything is relative, which is to confuse the thing-in-itself with appearance and is a mistake that Kant recognized in the *Critique of Pure Reason*.

The observation that representation is relative, as is the representation's reception, is presumably a condition of consciousness. Information showing the middle-term gets left out of appearance by necessity, and must be apprehended by something other than simple appearance. We cannot see the middle-term for the same reason that our eyes cannot see the back of our head without the aid of a mirror; i.e., the blind spot is caused by self-referral. A mirror, or frame of reference, must always be provided in order to detect something closer to the middle-term. Likewise, a popular science turned folk philosophy might leap to the false conclusion that everything is relative (radical relativism) based on the findings of special and general relativity (if not postmodernism),

but clear thinking shows that something fundamental and non-relative may go unnoticed in the possible eather that never finds experimental detection. It is not accidental that Einstein's theories postulated a frame of reference as a first step in his thought experiments. However, a frame of reference (even those described in physics) implies a self-referral that carries its own blind spots.

4. Panpsychism and the Mirror Universe

Information of any kind presupposes the existence of consciousness. Or if consciousness is to be taken for granted, attempts to turn information into a one-sided measure (such as Shannon's information given the thermodynamic quantity called entropy) pushes consciousness out of the window of appearance and into a metaphysics that may get completely ignored. In the worst case this is to confuse appearance with the thing-in-itself again, as Kant warned. Nevertheless, the push of consciousness out of the one-sided appearance leaves it fully in reality as the other side of appearance, consciousness carries the appearance that is reflected off the other side, and carries an undeclared middle-term again. Consciousness becomes a fundamental substance in reality, something that is not a derivative of one-sided causation, and even if it is not admitted by those confused by appearances. This view of consciousness that connects to a fundamental is the definition of panpsychism, and because this view also carries a realty that is two-sided with an undeclared middle-term this view indicates a rediscovery of the Logos that makes a particular type of panpsychism and implies a mirror universe.

The Logos that represents the absolute mover[2] of the universe acts now as a strange attactor, and forms a fractal pattern in evolution by leaving behind a reflection of itself on all levels. The mirror universe leaves behind lesser mirrors that may serve as evidence for the theory of the mirror universe.

Information that represents a melody, given as tempo and the relative spacing of notes, must somehow meet the representation's reception (the reflection). The hypothesis of this paper is that the organic reception, or the song's reflection, is none other than the pitch inversion of the melody. This is not to say that there are not deeper reflections, perhaps going all the way to CPT-inversion that's described in physics. However, its very ambitious to dig this deep, and a deeper reflection may be unintelligible to the human mind. The deeper search is unnecessary, however, as the proof in the mirror universe is the finding of lesser mirrors that are all necessary; we are permitted to make incremental discoveries.

So finding ourselves sitting at a piano we may also find our self-looking into a near-by mirror. Playing the piano while looking into the mirror we discover that the right hand is playing on the low-pitched keys while the left hand is playing on the high-pitched keys, the complete reverse of what normally happens, but matching perfectly the operation of pitch-inversion using the chromatic scale with its exponential spacing. The pitch-inverted song matches perfectly the mirror reflection of ourselves playing the piano that's unified through the unspecified middle-term. Could this be the organic mirror we are looking for, a lesser mirror that's found necessary?

2. As in motivation and the source of all that is emotive.

Songs carry a remarkable connection to emotion, and less so to intellect. A possible panpsychism is better described as a vitalism because its emotion that we look for, not so much consciousness. To seek is to be motivated, and that's an emotional requirement. To seek is futile if there was no awareness of fulfilment, and so consciousness in some degree is also required and therefore goes hand in hand with emotion. A song is like a language that connects with emotion and takes us somewhere with a motivated direction. The mirror image of the song should also take us somewhere as it necessarily does if the original song is faithful to a direction representing the melody. Therefore, all pitch-inverted songs should carry a hidden melody, the dual song, provided pitch-inversion is the actual organic mirror, a lesser mirror, that is necessary for the mirror universe where the middle-term represents the source of all that is emotive. This is a testable prediction, 100% of the inverted songs should carry a melody if the hypothesis is true. Finding one song that is little more than random noise would indicated that the organic mirror is not yet discovered.

5. Fifty Pitch-Inverted Songs

All the songs were pitch-inverted following the method in Appendix A, for the present investigation, and are identified in Table 1. The 50 remade songs are presented in a YouTube play-list and are found with this internet link:

https://www.youtube.com/playlist?list=PLdHv1duZhJ8-NhMv2wxEVVUHPi-56Bp5q

Simply match the video named in Table 1 to the video in the play-list.

Table 1. List of pitch-inverted songs.

Video	Original Song	Composers
1. Beautiful Dreamer	Beautiful Dreamer	Stephen Foster
2. Southern Swamps	Bonnie Blue Flag	Harry McCarthy
3. Swan Lake and its Echo	Swan Lake	Peter Ilyich Tchaikovsky
4. Abducted by the Mirror	Man in the Mirror	Glen Ballard and Siedah Garrett
5. Wanderlust	America	Paul Simon
6. Broken Ties	Castles in the Air	Don McLean
7. Once Upon a Time in the Mirror	Once Upon a Time in the West	Ennio Morricone
8.Brothers in Repose	Brothers in Arms	Mark Knopfler
9. The Big Mirror	The Big Country	Jerome Moross
10. Polished Corn	Popcorn	Gershon Kingsley
11. The Magnificent Mimic	The Magnificent Seven	Elmer Bernstein
12. Do You Know the Way?	Do You Know the Way to San Jose	Burt Bacharach

13. The Reflection of Love	The Look of Love	Burt Bacharach
14. Don't Wake in a Dream	Don't Sleep in the Subway	Tony Hatch and Jackie Trent
15. Burning Daylight	The Hustle	Van McCoy
16. Hot Death Valley	Hot Hot Hot	Alphonsus Cassell
17. Ride the Train	Locomotive Breath	Ian Anderson
18. Ode to Joy and its Echo	Ode to Joy	Ludwig Van Beethoven
19. Ipanema	The Girl from Ipanema	Antonio Garlos Jobim
20. Gun Fighters	The Man Who Shot Liberty Valance	Burt Bacharach
21. Sailor's Dream	Daydream Believer	John Stewart
22. Painted Desert	This Guy's in Love with You	Burt Bacharach
23. Internet Killed the Shopping Mall	Video Killed the Radio Star	Bruce Woolley, Trevor Horn and Geoff Downes
24. Cover of Darkness	The Sun Ain't Gonna Shine Anymore	Bob Crewe and Bob Gaudio
25. Saturday's Travel	Come Saturday Morning	Fred Karlin
26. Everybody's Leavin' Town	Good Time Charlie's Got the Blues	Danny O'Keefe
27. New Beginnings	Goodbye	John Lennon and Paul McCartney
28. Empty Places	Brandy	Elliot Lurie
29. Dancing in the Garden	Dancin' in the Moonlight	Sherman Kelly
30. Baja California	Come Monday	Jimmy Buffett
31. God's Will be Done	God Only Knows	Brian Wilson and Tony Asher
32. Empty Streets	Downtown	Tony Hatch
33. Sweeter Song than the Birds	My Girl	William "Smokey" Robinson and Ronald White
34. Wabash Cannonball and its Echo	Wabash Cannonball	A.P. Carter
35. Armidale by Afternoon	Amarillo by Morning	Terry Stafford and Paul Frasier
36. The Master's Tapestry	Coat of Many Colors	Dolly Parton
37. God's Sanctuary	Amazing Grace	John Newton
38. Where Have They Gone	Abraham, Martin and John	Richard Holler
39. On Straight and Narrow	The Only Daddy that Will Walk the Line	Ivy J. Bryant
40. The Fast Track	Lost Highway	Leon Payne
41. Is Anybody Goin' to Shangrila	Is Anybody Goin' to San Antone	Dave Kirby and Glenn Martin

42. How 'Bout them Memories	How 'Bout them Cowgirls	Casey Beathard and Ed Hill
43. Time Reversal	Time Passages	Al Stewart and Peter White
44. Waiting for a Sign	Waiting on a Friend	Mick Jagger and Keith Richards
45. My Front Pages	My Back Pages	Bob Dylan
46. Ghost Returning from other Side	Wuthering Heights	Kate Bush
47. Megaliths and Geoglyphs	No One to Depend On	Gregg Rolie, Michael Carabello and Thomas Escovedo
48. Music from the Other Side	Both Sides Now	Joni Mitchell
40. Pyroclastic Flow	Landslide	Stevie Nicks
50. From Flower to Seed	From Hank to Hendrix	Neil Young

All 50 remakes produced melodies, supporting the belief that pitch-inversion is more than just an interesting generation of musical notes. By comparison, playing notes backward can create interesting sounds sometimes, but these are unlikely to generate interesting melodies; playing notes backward may only generate uninteresting sounds. What has been demonstrated here is more of a general principle, a demonstration that all songs that have a defined melody also carry a hidden song by necessity, a dual song that can be recovered by pitch-inversion. This is not to say that the pitch-inverted songs are necessarily beautiful, or as beautiful as the originating song. Its only that an emotion connecting melody is guaranteed by the principle that's now found validating the hypothesis of a mirror universe, as described.

Some of the pitch-inverted songs are quite beautiful, however. The author finds the songs (5, 21, 25, 27, 30, 41, 42, 48 and 50) very beautiful, and quite striking. Other songs (4, 5, 8, 10, 15, 16, 20, 38, 39 and 46) are very interesting, and beautiful in an unconventional way. Most of the pitch-inverted melodies bear little resemblance to the originals, but there are dual songs (9, 10, 12, 15, 19, 28, 30, 34, 46 and 47) that hold some minor similarities with the original song. These appraisals are likely to show subjective variation.

When first investigating pitch-inversion, very simple songs were considered, limited to one staff showing mostly single notes, with few or no chords. But to avoid the selection bias of only showing interesting examples, these few simple songs (Videos 1 and 2) have a listing in Table 1. Video 1 plays the original song followed by the pitch inversion, followed again by an improvisation that has little to do with pitch-inversion. Video 2 also plays the original melody followed by the pitch inversion, but it also experiments with overlaying a two melodies which actually worked for that particular song. Overlaying the song with its pitch-inversion, however, was in general found to generate dissonant sounding notes and was abandoned in the later productions. Videos 3 and 34 also plays the original song and its pitch inversion. The remaining videos only play the pitch-inverted songs, but versions of the original melodies can easily be found on YouTube if a comparison is needed.

It was found that the method of Appendix A was very robust, and worked best for more complicated songs that had several staffs. The staffs for a more complicated song can all be

inverted independently, then transposed up or down to make a harmonious synthesis of all the inverted staffs. Most of the 50 songs listed in Table 1 came with four staffs: for a guitar; the chords, and the piano's bass and treble clef. These staffs were then borrowed by different musical instruments (by the computer synthesizer) to create more interesting productions.

Something must be strangely said about the very unusual experience of hearing a pitch-inverted song for the very first time. In some cases the music comes out as not sounding right, confusing, and more like a failure showing less than the expected 100% success rate now reported. Some of this is due to small errors that end up getting corrected, and doing the inversion by hand can introduce errors. However, this can't be the only reason for the initial confusion. Its like looking at the Figure 1 below, and getting confused about seeing a vase or two opposing faces.

Figure 1. Optical Illusion.

Having recognized the melody for the very first time, then the confusion goes away like magic! The melody becomes a rote that's first learned, but this is where the experience becomes inexplicable because I doubt that any of my YouTube viewers find an initial confusion while listening to these 50 songs! The implication is that the learned rote becomes part of the collective memory, a sort of Mandela effect that rewrites history, or a type of morphic resonance that becomes available to the collective. Extraordinary claims demand extraordinary evidence, and no one should adopt this speculation as certain. Something unusual happened when listening to some (not all, but including 8, 13, 31, 40, 43, 45 and 46) of the pitch-inverted songs for the first time, that's all that is being claimed. Fortunately, the experience can be repeated if its real. If any investigator wants to pitch invert different songs in the future, be looking for this experience. There is no shortage of songs that can be inverted, and so its possible to bring clarity to this issue.

6. Conclusion

The attempts to make melodies by pitch inverting 50 songs was 100% successful. Interesting songs of all types were generated using the robust method presented in Appendix A, and most of the remade songs showed little resemblance to the originating song even when the tempo was maintained. This strongly implies the validity of a general principle, that all songs that carry an identifiable melody can be pitch inverted to make new melodies with 100% success. This conclusion is firm because the results are highly reproducible. Doubters will find the identical melodies reported here following independent attempts at pitch inversion with any of the same 50 songs. Moreover, new songs can be inverted to further test the general principle, but it is now doubtful that the conclusion will change.

The only possible controversy is with what these findings mean, including the general principle that's now uncovered. As argued in this paper, these results affirm the belief that we live in a mirror universe that is a necessary adjunct of panpsychism of a sort that endorses Trinitarian philosophy. The proof of the mirror universe is in the lesser mirrors that are discovered, and one such lesser mirror is the pitch-inverted song that equally brings the listener on an emotion laden journey like all songs. Moreover, the middle-term that holds the song to its reflection is the emotive source that connects to the absolute mover or motivator for the entire universe. Such a system act as a strange attractor that generates the lesser mirrors out of necessity and on all levels of a fractal pattern, and so finding these mirrors constitutes evidence that affirms this speculation. Yes, this last paragraph is speculation, but it now falls into testable science because there are many kinds of mirrors beyond music that can be gathered as evidence.

Appendix: Robust Method to Pitch Invert Songs with Multiple Staffs

A.1 General Protocol

1. Rewrite the sheet music using C major notation.

An attempt might be made to pitch invert a song directly in the key its written in (sheet music notation) by following the instructions given under Section A.3. But this will lead to unwanted complexity for those notes that come with accidentals. Therefore, its better to rewrite the sheet music into the key of C major (or A minor). Music note editors may provide this operation as part of software, and a transposition of notes is also needed to minimize the creation of accidentals when going into C major. Those required transpositions are presented in Section A.2.

2. Identify and separate out all the staffs, and transpose all the notes down making bass clefs.

Songs come with multiple staffs, and these will all have to be treated separately. In addition to the staffs that are explicitly represented with the sheet music, it is sometimes recommended to break a staff into sub-staffs when notes are found running over a few octave levels. These sub-staffs can all be inverted separately (jumping ahead to Step 3), and brought back together after inversion by resetting them on preferred octave levels (jumping ahead to Step 4) and this need not mimic pitch inversion of the originating staff and had the staff not been broken up. This lets the composer stir the process better based

on preference rather than being locked into an automatic protocol.

More generally, all the notes and staffs (and possible sub-staffs) will be in the key C major, where the note D is the reflective center as found in Section A.3. The note D is right in the center of the bass clef, running longitudinally down the middle, making an ideal platform to pitch invert by hand. Therefore, its preferable to transpose all staffs down by octave steps and express them as bass clefs.

3. Pitch invert all the staffs around the note D that's in the middle of each bass clef.

The precise instructions for pitch inversion are given in Section A.3, with reference to music in the key of C major notation. However, it is now very easy to see pitch inversion in Figure 2.

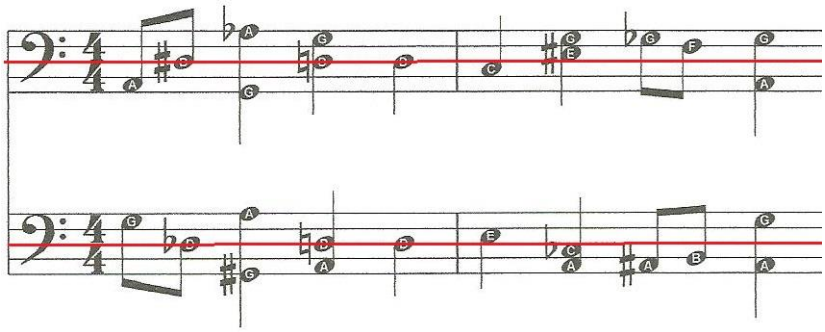

Figure 2. Showing two staffs in C major notation, where the top staff is the pitch inversion of the bottom staff, and visa versa. The note D that serves as the center note, is indicated by the red line that runs through the middle of each staff. The notes are flipped around the red line making the pitch inversion. Sharps are turned into flats, and flats into sharps, and the natural accidental is carried without adjustment.

4. Transpose up and re-express the preferred key.

Transpose all the pitch-inverted staffs up by octave steps to reestablish treble clefs, perhaps leaving only one bass clef for the piano. By following Section A.2, its also possible to change the music key (for all the staffs) into something other than C major, noting the further transpositions in Table 2 that may be preferred.

One uses preference to determine the octave levels for each staff, and the overall key for all staffs, and this is different than using a single center note across all staffs where a literal pitch inversion is found unnecessarily restricted. The recommended inversion described here provides for multiple center notes[3] that permit a harmonious union over all the staffs.

A.2 Instructions for Changing Sheet Music Notation

Rewrite the notation into the new notation; either C Major or one of the other keys if starting from C Major. This may introduce many accidentals. Then transpose the notes up or down the prescribed steps as given by Table 2. The transposition will remove all of the newly introduced accidentals.

3. That's suitable for the key. As an example, the note D can be found in several places and is suitable for the key of C major.

Table 2. Transposition steps needed to change sheet music notation from a given key into C Major (or A Minor), or from C Major into the key.

	Transposition Steps		
Key in Sharps	#'s → C Major C Major → ♭'s	♭'s → C Major C Major → #'s	Key in Flats
#	-7 or +5	+7 or -5	♭
# #	-2 or +10	+2 or -10	♭ ♭
# # #	-9 or +3	+9 or -3	♭ ♭ ♭
# # # #	-4 or +8	+4 or -8	♭ ♭ ♭ ♭
# # # # #	-11 or +1	+11 or -1	♭ ♭ ♭ ♭ ♭
# # # # # #	-6 or +6	+6 or -6	♭ ♭ ♭ ♭ ♭ ♭
# # # # # # #	-1 or +11	+1 or -11	♭ ♭ ♭ ♭ ♭ ♭ ♭

A.3 Instructions for Manual Pitch Reflection of Musical Notes

Identify the key that the music is written in, thus finding the note representing the reflective center in Table 3. Locate one note position on the staff corresponding to the reflective center, selecting from suitable choices merely by preference. Reflect all the notes in a measure around the reflective center, as if this center note represents a mirror going down the length of the measure. Notes that happen to equal the reflective center are left unreflected.

Special treatment is given to notes that may rarely come with accidentals. First observe that if sharps (#) always increased the impacted note by one semitone, and if flats (♭) always decreased the impacted note by one semitone, and if the natural accidental (♮) always reset the impacted note to the default for the selected key, then pitch reflection would be an easy extension. However, these conditions are only satisfied for C major (or A minor) notation. These conditions are not stickily enforced for the other keys, a fact that is sometimes missing off introductory accounts of sheet music notation pertaining to accidentals.

Fortunately, Table 2 permits a transformation of music into C major that's followed by the specified transposition to minimize accidentals, and this transformation can be made for music written in any of the keys. Its in C major that pitch inversion is made following these straightforward instructions: first, it is recommended simplifying the notation by removing multiple expressions of enharmonic equivalence, so that each note inside one measure is represented only by one of the variants that come as the natural accidental (♮), sharp (#), flat (♭), or an adjacent scale note, making sure any ties are correctly indicated; accidentals are reflected like regular notes, but in the reflection show a flat if starting from a sharp, or show a sharp if starting from a flat, or show a natural accidental if starting from a natural accidental; ties are transferred automatically. This pitch reflection is made around a central note D that is well positioned in the staff. Once this is completed for all the measures, the entire staff can be transposed up or down one octave to improve appearance. Table 2 is also used to return the reflected notes back into the originating notation or key.

Table 3. Center note that permits pitch reflection while maintaining the notation (without the need of accidentals)

within a key.		
Key	Sheet Music Notation	Reflective Center
C Major or A Minor	Default	D
G Major or E Minor	#	A
D Major or B Minor	2 #'s	E
A Major or F# Minor	3 #'s	B
E Major or C# Minor	4 #'s	F
B Major of G# Minor	5 #'s	C
F# Major or D# Minor	6 #'s	G
C# Major or A# Minor	7 #'s	C
F Major or D Minor	b	G
Bb Major or G Minor	2 b's	C
Eb Major or C Minor	3 b's	F
Ab Major or F Minor	4 b's	B
Db Major or Bb Minor	5 b's	E
Gb Major or Eb Minor	6 b's	A
Cb Major or Ab Minor	7 b's	E

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