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## Chapter 26

# Inscrutable Harmonies: The Continuous and the Discrete as Reflected in the Playing of Jascha Heifetz and Glenn Gould

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We owe the Pythagoreans the revelation that the harmonies of music derive from number, that is, from the discrete. This must be seen as a triumph of inscrutability. Inscrutable indeed is the resulting subsumption of music within mathematics, a colourless, forbidding subject to most, indeed the polar opposite of music, whose gaudy, yet profound, epiphanies offer a striking contrast. The Pythagoreans are to be blamed for the fact that music came to find itself in the embrace of such unlikely bedfellows as arithmetic, geometry and astronomy, the other members of the mathematical *quadrivium*.

Still, this evidence might cause a Marxist to respond that, while the basis of musical *organization* is to be located in the discrete, its *means of production* originate in the realm of the continuous. For is not sound itself nothing more or less than a continuous vibratory excitation of the atmospheric envelope, whether induced by blowing, plucking, or striking a tensed string, beating a drum, blowing down a tube, or straining one's vocal cords? The Pythagorean discovery, at bottom, is an instance of *ex continuo discretum*.

Musical instruments may be classed as continuous or discrete according to the manner in which individual notes are sounded. Thus the voice, bowed string instruments, and slide trombones are naturally identified as continuous, while valved wind instruments such as the clarinet or oboe, plucked or struck string instruments such as the lute or dulcimer, and keyboard instruments such as the harpsichord or piano may be classified as discrete.

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**Editors' note:** The musicologist and composer Joel Bennhall was briefly, when very young, a pupil of the Danish composer Dag Henrik Esrup-Hellerup. Later he studied with Schoenberg. His fascination with the relationship between music and mathematics led him to create topomusicological analysis, at one time a rival in musicological circles to Hans Keller's better known functional analysis. In his old age Bennhall met the man celebrated in this volume at a meeting of the London Melomaniacal Society, at which he read the present paper; sadly he was prevented from publishing it owing to his sudden demise (at the age of 98). The Editors are pleased to provide it with a suitable resting place.

Accomplished vocalists and players of continuous instruments have considerable freedom both in determining the quality of individual notes and in the shaping of the “line” engendered by the succession of notes. This freedom is manifested above all in the case of the violin. In the violin the continuous and the discrete are truly united. For while the violinist’s bow is the source *par excellence* of continuous sound, of a variable intensity controlled by subtle alterations in pressure of the fingers on the strings, in the hands of a virtuoso that very bow is also employed to spectacular effect in engendering discreteness: witness, for example, *spiccato*, *staccato* and *col legno* bowing.

With the violinist’s left hand the order of continuity and discreteness is reversed, since the violinist’s digits are employed in the first instance to produce separate discrete notes through “stopping” the strings. But just as the bow can generate discreteness, so can the left hand generate continuity, e.g. through *vibrato*, the continuous minute oscillation of pitch of a single note<sup>1</sup>; the *portamento*, the subtle continuous movement from one note to another by gently gliding the finger along the string; and the *shift*, the violinist’s equivalent of the mathematician’s continuous change of coordinate system.

While the discrete instruments lack these refinements, they have one great advantage over their continuous counterparts, namely, their capacity to support *simultaneity*. A mere tyro on the guitar plays multiply voiced chords as a matter of course, while even a competent violinist may have difficulty in playing double-stops in tune. With the keyboard instruments this natural capacity to engender simultaneity has achieved its highest development in the polyphonic structures created by the composers of the Baroque period, and above all by J.S. Bach. Bach raises keyboard polyphony to undreamt-of heights, and certainly to a level far surpassing that achievable on any single stringed instrument. Even that most elaborate four-part fugue in the C major solo sonata cannot compare in complexity with the cyclopean edifice of the Art of Fugue!

Now let us turn to consider two modern masters of their respective instruments—Jascha Heifetz, the violinist whose technical command of the instrument is widely regarded as supreme—and Glenn Gould, the wizard of piano polyphony. The one, the master of the continuous, the other, the master of the discrete.

Jascha Heifetz—a name with which to conjure. For the present writer the name evokes a cluster of associations, each of which involves the continuous in one way or another. One recalls for example the famous exchange at the young Heifetz’s New York debut between two members of an audience packed with musicians eager to hear the new *Wunderkind*—Mischa Elman, great violinist, and Leopold Godowsky, equally great pianist. To Elman’s ingenuous observation, “It’s hot in here, isn’t it?”, no wittier response is conceivable than Godowsky’s “Yes, but not for pianists!” In this instance the discrete could afford to smile at the embarrassment of

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<sup>1</sup> The *trill*—the rapid alternation of the main note with that a tone or semitone above it—is of course a discrete effect.

the continuous. (And yet it must be recalled that pianist-composers such as Liszt and Chopin were strongly influenced by the virtuosity of Paganini.)

Consider also Heifetz's celebrated definition of a Russian: one Russian—an anarchist; two Russians—a game of chess; three Russians—a revolution; four Russians—the Budapest String Quartet. Here one sees a striking progression from the pure discreteness of the unit to the continuity of stringed instruments.

Even Virgil Thomson's nastily dismissive description of Heifetz's repertoire as "silk underwear music" brings the continuous to mind.

But in truth Heifetz was the supreme master of silkiness, indeed of that ultimate form of continuity that mathematicians call *smoothness*. This quality is best heard in his recordings of the 1930s and 1940s, most arrestingly in encore pieces and lightweight concertos such as those of Korngold and Gruenberg. In these latter works the silky smoothness of Heifetz's tone—endlessly imitated but never duplicated by generations of violinists under his spell—almost surpasses belief.

Mathematicians have introduced the concept of a smooth topos, a mathematical "world" in which all correlations are arbitrarily many times differentiable, there are no jagged edges and in which, in Leibniz's words, *natura non facit saltus*. There is no question that Heifetz would be the canonical fiddler in such a world.

But Heifetz was also a master of the discrete effects achievable on the violin; above all he could play detached notes on his preferred Guarnerius with blinding celerity. A remarkable example of his facility in this respect is provided by his recording of the Sinding *Suite*, in which the first, *presto* movement is despatched with truly hair-raising speed and accuracy. There could not be a more striking contrast between this glittering flurry of notes and the smooth, yet sweetly earnest and heartfelt manner in which Heifetz delivers the second, *adagio* movement.

The present writer did not have many opportunities to see Heifetz on the concert platform, but they remain treasured experiences. Especially memorable was the recital at the Royal Festival Hall in the 1950s at which Heifetz was due to begin with the Vivaldi *Chaconne*. This piece, familiar to all violinists, begins with a G minor chord, so when Heifetz picked up his violin and struck a G major chord the ranks of violinists occupying the first few rows of seats fell back in shock. Heifetz nonchalantly went on to play the English national anthem in G major.

Fortunately there are in existence a handful of filmed performances of Heifetz. One of the most remarkable of these is the rendition of that famed encore piece the *Hora Staccato*, transcribed by Heifetz from a Rumanian original. The writer once had the experience of hearing this exacting morsel played by a gypsy fiddler in an Amsterdam restaurant. While adequate, the performance could not compare with that of Heifetz, who contrives to make the staccato effect *sound* discrete but *appear* to the eye as continuous.

Now let us turn to Glenn Gould. While he was of course a master of the keyboard, with an unexampled command of polyphonic technique, one suspects that he may have envied the string player and the singer their immediate contact with the continuous. Grounds for this surmise are provided by his admitted inability to suppress the vocalise which invariably accompanied his piano playing, and which was such a source of vexation to critics and listeners alike.

On the other hand, for Gould, in the final analysis, polyphony was all, and polyphony, on the piano at least, is achieved by the systematic exploitation of discreteness. So it is reasonable to suppose that at some point Gould made the conscious decision to celebrate the discreteness of the piano, to avoid the mimicking of continuity by what he saw as contrived and hackneyed effects such as overpedalling and the gratuitous use of legato. Thus he strove for a *secco, détaché* sound, with each individual note rejoicing in its separateness. This approach is extraordinarily effective in Baroque works; and also with the twentieth century composers Gould most admired: Schoenberg, Webern, Krenek, Hindemith. In the present writer's opinion, the approach is also effective in Beethoven, especially in the early works of that master. With Mozart, however, the result is, to this writer's ears at least, nothing short of disastrous—but this was, of course, exactly what Gould, who disliked Mozart's music (with the conspicuous exception of the early sonatas K. 279–284 and the Fantasy and Fugue K. 394) was trying to achieve. Here Gould carried discrete deconstruction to the point of destruction.

It is to Gould's transcendent performances of works by composers he esteemed that one turns again and again. And above all, of course, to the compositions of J.S. Bach. Although Gould was most famed for his recordings of the *Goldberg Variations*—a fame that led this work to be identified by his fans as the "Gouldberg" Variations—the composition of Bach's he revered above all others was the *Art of Fugue*. And yet Gould produced no complete recording of this supreme, but alas, unfinished, masterpiece of the polyphonist's art. For this writer the most exciting rendition of any part of this work is Gould's 1967 Canadian radio broadcast of Contrapuncti IX, XI and XIII. Here Gould's playing achieves what can only be described as an ecstatic seamlessness fusing discreteness and continuity in an almost Hegelian *Aufhebung*.

Finally, we must consider the question of how Heifetz and Gould would have sounded had they played together. Would these supreme exponents of continuity and discreteness have achieved a harmonious union?

The vast majority of Heifetz's duo recordings were made with contract pianists—able, but somewhat colourless. An exception is the magnificent recording of Brahms' op. 108 sonata Heifetz made in the 1950s with the brilliant American pianist William Kapell (who died tragically young). Here the power of the pianist's playing comes close to matching Heifetz's, driving the latter to peaks even he did not always attain with his usual accompanists.

As for Gould, he made only a handful of recordings with violinists. One recalls the curious *rencontre* with Yehudi Menuhin during which Gould persuaded the violinist to play the Schoenberg *Fantasy* op. 47, a work to which, like all of Schoenberg's output, Gould was partial, but which Menuhin later said he found totally incomprehensible. In this connection it is pertinent to recall Heifetz's similar antipathy to Schoenberg's *oeuvre*. Heifetz actually commissioned Schoenberg's Violin Concerto op. 36 but on seeing the score instantly rejected it, giving the scarcely credible excuse that to play it would require him to grow a sixth finger. "I can wait," Schoenberg is reputed to have replied.

Gould did record the Bach violin and keyboard sonatas with Jaime Laredo, a good violinist, but who takes a back seat to Gould. The one string player who really stood up to Gould in duet performance was the cellist Leonard Rose, who, in their recording of Bach's sonatas for cello and keyboard gives a robust performance fully matching Gould's powerful rendition.

The upshot is that we can only imagine the sound of a Heifetz/Gould recital. One's musical tongue waters at the idea of recordings by these two masters of the Bach, Beethoven, or Brahms sonatas. The nearest approach we can make to this ideal is to listen to the pair of Bach violin concertos (in E major and A minor) and their keyboard transcriptions (in D major and G minor) as recorded, respectively, by Heifetz and Gould. It is a rare treat to hear Bach's sublime lines played first continuously, and then with discrete elaboration.

If only Heifetz and Gould had collaborated! That would have been the ultimate synthesis of the continuous and the discrete.