

Babbitt's Beguiling Surfaces, Improvised Inside

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Joshua Banks Mailman (Columbia University)

This file includes the abstract, notes, extensive keyword list, acknowledgements, and bibliography for the three-part video essay, “Babbitt’s Beguiling Surfaces, Improvised Inside” by Joshua Banks Mailman, *SMT-V* 5.1, 5.2, and 5.3 (2019). This three-part essay may be found at

<https://vimeo.com/societymusictheory/videocast5-1mailman> ,

<https://vimeo.com/societymusictheory/videocast5-2mailman> , and

<https://vimeo.com/societymusictheory/videocast5-3mailman> . *

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General Abstract for “Babbitt’s Beguiling Surfaces, Improvised Inside” by Joshua Banks Mailman, *SMT-V* 5.1–5.3 (2019). *

This three-part video essay explores the surprising indeterminacy between pre-compositional structures and composed surfaces in Milton Babbitt’s music, and in doing so identifies significant affiliations with music (such as jazz) that is predominantly improvised. It thereby suggests a different way of understanding and appreciating the nature of Babbitt’s creativity.

Abstract for “Babbitt’s Beguiling Surfaces, Improvised Inside: Freedoms” by Joshua Banks Mailman, *SMT-V* 5.1 (2019).

Milton Babbitt has been a controversial and iconic figure, which has indirectly led to fallacious assumptions about how his music is made, and therefore to fundamental misconceptions about how it might be heard and appreciated. This video (the first of a three-part video essay) reconsiders his music in light of both his personal traits and a more precise examination of the constraints and freedoms entailed by his unusual and often misunderstood compositional practices, which are based inherently on *partial ordering* (as well as pitch repetition), which enables a surprising amount of freedom to compose the surface details we hear. The opening of Babbitt’s *Composition for Four Instruments* (1948) and three recompositions (based on re-ordering of pitches) demonstrate the freedoms intrinsic to *partial ordering*.

Abstract for “Babbitt’s Beguiling Surfaces, Improvised Inside: Diversities” by Joshua Banks Mailman, *SMT-V* 5.2 (2019).

Babbitt's pre-compositional structures (partial orderings) serve as a series of game-like rules affecting the composition of surface details we hear. Especially in Babbitt's late works (post-1980) these partial ordering rules vary drastically in terms of how much freedom they allow. This variance can be modeled mathematically (a computational formula is explained and visualized). This video (the second of a three-part video essay) reveals, in an excerpt from Babbitt's 1987 sax and piano work *Whirled Series*, an intricate web of referential details (serial and tonal) that are improvised from the trillions of possibilities enabled by its background structure (partial ordering). The advantages of this peculiar improvisatory compositional situation in which Babbitt places himself are compared to visual art, chord-based bebop jazz improvisation, and to current ethics-infused philosophies of improvisation.

Abstract for “Babbitt’s Beguiling Surfaces, Improvised Inside: Opportunities” by Joshua Banks Mailman, SMT-V 5.3 (2019).

Babbitt's relatively early composition *Semi-Simple Variations* (1956) presents intriguing surface patterns that are not determined by its pre-compositional plan, but rather result from subsequent “improvised” decisions that are strategic. This video (the third of a three-part video essay) considers Babbitt's own conversational pronouncements (in radio interviews) together with some particulars of his life-long musical activities, that together suggest uncanny affiliations to jazz improvisation. As a result of Babbitt's creative reconceptualizing of planning and spontaneity in music, his pre-compositional structures (partial orderings) fit in an unexpected way into (or reformulate) the ecosystem relating music composition to the physical means of its performance.

Notes (referenced by number on the upper right corner of the video screen)

1 (video 1, 0:09-0:20). Generally in the scholarly literature there's been somewhat of a disconnect between consideration of Babbitt's compositions and Babbitt the person. That is, connections between these have been somewhat neglected. A counterexample to this disconnect is the recent work of Alison Maggart (2017), which is pioneering for exploring ways in which Babbitt's generic and particular life circumstances may have contributed to key facets of his compositional style.

2 (video 1, 0:21-0:37). As Babbitt's Princeton colleague Paul Lansky says: “He was one of a kind. He was a nonstop conversationalist -- he could chat up anyone... I never saw him at a loss for words.” (Quinones 2011) to which another Princeton colleague Steve Mackay adds “He was a hoot. ...Milton kept several thoughts going at once and used his vocal register to clarify punctuation. He would juggle six or seven thought balls at a time when he spoke, and it was

amazing to listen to.” (Quinones 2011). His Juilliard colleague Joel Sachs (2016) remarks that he “had known [Babbitt] since the 1970s and retain[s] extremely fond memories of our endless chats. His great sense of humor, ...his love of schmoozing, and his triple role as artist, intellectual, and Southern Gentleman were always a source of joy. His passion for old popular music often surprised the uninitiated. I shall never forget a Columbia Music Department Christmas party in the 1970s when he sat down at the piano and spun off cocktail music with incredible elegance.” Babbitt’s love of popular music (musical theatre, Broadway showtunes, the American songbook) is further described by his former student Nathan Shields (2011) and well documented in Babbitt’s breezy interview with Frank Oteri (2001). (Babbitt was also the teacher of Stephen Sondheim and Stanley Jordan.)

Robert Morgan (2011) characterizes “Babbitt [as] a flamboyant and scintillating lecturer, much admired for his delivery even by those (and there are those who claimed this included almost everyone) who had little idea what he was talking about; and he was frequently invited to speak outside the classroom. His talks were full of personal asides, jokes and barely veiled references to prominent figures both within and outside the field. His ability to pursue a line of thought relentlessly, often spinning off into unexpected byways, letting words, sentences and paragraphs follow one another without break, never failed to impress. (A singer once came up to him after a lecture and told him how much she admired his breath control.)”

Babbitt’s love of baseball, beer, and Chinese food is mentioned by many (Abbey 2011, So 2011, Robin 2016a, Mohr-Pietsch 2016) and recounted by David Rakowski (2011), who also describes Babbitt’s sense of playful irony and wit. Babbitt’s chatty dry sense of humor is witnessed in his interview with Bruce Duffie (1987) when Duffie asks Babbitt for a list of recent recordings to broadcast on the radio, and Babbitt offers “Hope you don’t mind a hand-written letter. I’ve run out of secretaries.” When speaking at the first *Bang on a Can* festival, which emphasizes “downtown” music and was held in downtown Manhattan (Soho), Babbitt poked fun at his own association with “uptown” music, as when introducing his piece he joked, “sorry I got here late, but I got lost—I’ve never been this far downtown before.” See Will Robin (2016b).

In response to Steve Layton (2011), several friends and acquaintances describe Babbitt’s charming, amusing, witty, friendly personality. “His wit was legendary and provided a much-needed levity to the sometimes tense composers’ forums and juries,” writes one of his Juilliard students. Another writes about a masters degree panel in which another composer “attacked [the student’s] conducting skills, in the most un-warranted fashion and would just not let up. Mr. Babbitt very calmly cleared his throat and then asked [the student] in the most serious manner, ‘Jeff, having lived in Louisiana, what’s the secret to a good Jambalaya?’ I almost cracked up from the relief of the situation and calmly replied, ‘It’s all about the Roux... it has to be burnt a bit.’” Stephen Soderberg’s recounts Babbitt’s self-effacing mischievous side; Babbitt told this story: “Whenever I fly on an airline I find myself sitting next to a stranger, of course. And we introduce ourselves. I always introduce myself as Arnold Schoenberg. I have yet to meet anyone who questions this or thinks it’s strange or even shows any indication this is a name they’ve heard before.” (To hear some Milton Babbitt’s wit drawing laughs from an audience, here are two examples: <https://soundcloud.com/daniel-plante-511223801/babbitt-kpfa-interview-pt-1-1984-11-15-speaking-of-music> and <https://soundcloud.com/daniel-plante-511223801/babbitt-1994-no-longer-very-clear-marshall>)

Notice that none of these above-mentioned qualities of Babbitt’s personality and public style bear a resemblance to those of the European post-war avant-garde composers, such as Boulez, Stockhausen, Nono, Berio, or even Messiaen. Whereas the European composers

maintained a somewhat more self-serious mystique, Babbitt's persona is full of jovial self-aware irony, wit, and humor.

3 (video 1, 0:38-0:48). Babbitt's idealistic view of music composition is summed up in his remark that he included himself among those who "...attempt to make music as much as it can be rather than as little as one can get away with..." (Babbitt 1987, 182-83. Also see Harker 2008, 365-67.) His undogmatic view of music is manifested in various ways. For instance, one of Babbitt's Juilliard students replying to Layton (2011) "As a teacher, [Babbitt] was surprisingly laissez-faire. He didn't make value-judgements or say 'this is wrong' or 'this is bad.' He wasn't looking for converts, as most of his students were working in completely different styles." Former student Nathan Shields (2011) also attests to Babbitt's "openness and catholicity of taste."

In his interview with Duffie (1987) Babbitt remarks: "I have never felt that when I wrote about music I was ever speculating as to what music might be or could be, certainly not what it should be. Imperatives do not suit me." He also explains "the notion that the piece has to do something is one that I would totally and completely reject. I may think that this is what it has to do today, and tomorrow I'll think it has to do something which I now find better." The story that's been circulated several times is the one about the publication and performance of his *Music for the Mass* (1941) in the 2000s. As Harold Rosenbaum recounts it (See Layton 2011) "About four or five years ago, Milton handed me a piece he wrote at Princeton about 70 years ago entitled *Music for the Mass*, asking me to have it published. I was stunned. It is a FABULOUS piece. I submitted it to G. Schirmer, which recently did publish it. They sent copies to him ON his 94th birthday in a carton stamped "HAPPY BIRTHDAY" all over it. He was beyond happy! Here is the funny part: A few months after he handed me the music, I decided to conduct a movement from the work. I dug it out, and found the Kyrie, Gloria, Sanctus and Agnus Dei, but alas, no Credo. I sheepishly called him and told him, thinking I might have lost the only copy of it. He replied: 'My boy, I don't believe in Credos. I didn't write one!'"

4 (video 1, 0:49-1:01). Some aspects of Babbitt's influence on music academia are discussed by Harker (2008) but Girard (2007, 2010) provides a more thorough account of exactly how Babbitt (and others) played a role in shaping professions of music theory and composition in academia. As examples of Babbitt's formidable prose writings one should consult *The Collected Essays of Milton Babbitt*, edited by Stephen Peles, including "Some Aspects of Twelve-Tone Composition" (1955), "Twelve-Tone Invariants as Compositional Determinants" (1960), "Set Structure as a Compositional Determinant" (1961), and "Twelve-Tone Rhythmic Structure and the Electronic Medium" (1962).

5 (video 1, 1:01-1:15). *Integral serialism*, a mid-20th century extension of Schoenberg's 12-tone serialism, can be defined as a compositional practice of using a series of numeric values to organize not only pitch but also rhythm, dynamics, or other features. Babbitt in 1947 in America and Olivier Messiaen in 1948 in Europe are credited with having innovated *integral serialism*, (Grant 2001, Whittall 2008) although significant aspects of it are forecasted in some 1930s compositions of Anton Webern and Ruth Crawford Seeger, as well some speculations expressed in Henry Cowell's 1930 *New Musical Resources*. (See Straus 2009 for a discussion of Ruth Crawford Seeger's (proto-) serialism, as well as an extensive account of the variety and flexibility of serial practice.)

6 (video 1, 1:28-1:36). Two of Babbitt's legendary essays of the early 1960s contain the word 'determinant' in their title. And the word 'structure,' which he and many others at the time relied on repeatedly, associates much more readily with rigidity, permanence, and determinism than with fluidity, flux, and agency. Bryan Simms's (2005, 158) account of Babbitt's writings draws attention more generally to Babbitt's terminology: "[Babbitt's] choice of terms to characterize the relation between musical system and compositional process is the most problematic element of his theory it separates him most distinctly from the earlier composer-essayists of twelve-note music—Schoenberg, Krenek, Perle—and it allies him most strongly with the music and aesthetic outlook of the 1950 and 1960s—that of John Cage and Steve Reich among others—in which compositional freedom is an illusion that is readily abandoned to system and process." Simms's conclusion, that Babbitt abandons compositional freedom or suggests it's an illusion—although it may at one time have been Babbitt's deliberate rhetorical strategy as an essayist—does not at all fit the facts of his compositions, as I demonstrate.

7 (video 1, 1:36-2:54). Pyrrhic victory is one that seems like a victory in the short run but which inflicts such a heavy toll on the victor that in the long run it somewhat negates the profit intended by the victory. This aspect of the reception of Babbitt's music is exemplified in Eric Salzman's (1961) *New York Times* article title "Disks: Babbitt; American's 'Totally-Organized' Works Predate Any European Attempts" which includes the sarcastic misleading remarks: "'Totally organized' music has been a big bugaboo on the recent musical scene. Within less than fifteen years it has been hatched (several times) and buried (innumerable times). But it refuses to stay quite interred." Then also in the *New York Times*, the curmudgeon critic Harold Schonberg (1967) disparagingly, confusingly, and misleadingly refers to a "Boulez-Babbitt axis...declining as the younger composers become increasingly impatient with the serial movement." Contrary to Salzman's and Schonberg's journalist glosses, there was never any alliance between Babbitt and Boulez. Rather, if anything there was mostly misunderstanding and mistrust between them (Peysner, 1976, 91-93). In regard to their serial compositional practices, there was always a wide gulf, with some of Boulez's early compositions being legitimately describable as 'totally-organized' or 'total serialism,' but not Babbitt's, which can instead be called 'integral serialism' (Whittall 2008).

8 (video 1, 3:28-4:31). Taruskin's role in all this is troublesome. His terminology, his characterizations, and his polemical stances have cast a dark shadow over an important 20th century repertoire whose offshoots continue to flourish, and continue to be admired. Taruskin, more than any other musicologist, has thrust himself into the forefront of attempting to reduce and diminish serialism as a Cold-War aberration, and a worst-case of musical modernism to be deplored. This has included high-profile public attacks on Babbitt's proteges. (Taruskin 1994, 1996, 2014) Though Taruskin's tastes and views run parallel to those expressed by various music critics since the mid-20th century, it is Taruskin's stature as a scholar that has added a (false) air of credibility to simplistic exaggerations and far-fetched embellishments such as those of musicologists Gloag and Chua. The Chua quote (regarding "disenchantment..." etc.), in particular, is chosen to provide a vivid realistic sense of how dubious ideas about determinism and serialism are actually synthesized, extended, compounded, and disseminated in high-profile musicological discourse.

Troubling is Taruskin's (2005) repeated characterization of serialism as "algorithmic." When compared to the actual nitty-gritty of most serial music composition, this characterization is highly misleading and damaging. Generally the word 'algorithm' connotes a process carried out independently by a machine, specifically without human intervention, devoid of creative

discretion. By the second decade of the 21st century, we encounter algorithms more and more in our daily lives, often in ways that are mysterious and sometimes inconvenient or untrustworthy. So there's a rhetorical slant to Taruskin's use of the term, especially to the extent the actual musical facts resist being characterized as such. There is a subfield of computer music that is legitimately called *algorithmic composition*, in which the creativity of the composer is channeled into designing the algorithm itself, which then auto-composes the sonic details; generally this is not serial music. Taruskin's (2005) retroactive application of the idea of algorithmic composition to the early minimalist experiments of Young, Riley, and Reich indeed seems apt, since, in those pieces, the transparency of the algorithmic process (predetermined rule) is meant to shine through to the listener. Yet Taruskin's application of the same concept to serialism leads to folly, because in almost all serial composition, the pre-compositional plan devised by the composer merely provides a set of constraints for the next stage of compositional choice. It's like building a vehicle by which to travel: sure, that partly conditions where you can and can't go (you can't drive an automobile on the sidewalk or across an entire ocean) but the vehicle design doesn't completely determine your route or your destination.

Taruskin seems allergic to the possibility that Babbitt's music is legitimately admired by some in ways that he doesn't as yet appreciate. For instance Taruskin implies that because he doesn't appreciate the merits of Babbitt's time-point system, no one else possibly could. He has a tendency to reduce the achievement of Babbitt's compositions to Babbitt's polemics, which in retrospect seemed aimed at gaining a creative space to pursue a legitimate long-term project, without having to answer to the short-term (and short-sighted) demands of critics and musicologists. That is, despite their breadth, Taruskin's explanations of Babbitt's activities seem oblivious to the prospect that Babbitt's polemical efforts may have been motivated by a reasonable desire to simply avoid or minimize the reductivism that critics and musicologists are prone to apply to ambitious creative pursuits.

I want to caution that, in the fine print, Taruskin (2005) does not describe Babbitt's music specifically as being algorithmic. Also, he does describe many of the nuances of European serialism (including for instance the only aspect of Boulez's *Structure 1a* that is *not* determined *a priori* by the compositional plan) and also writes admiringly and informatively about some of Babbitt's achievements. Taruskin also correctly distinguishes Babbitt's serialism as "integrated" and European serialism as "total" (although he discusses them in different places, thus somewhat obscuring this crucial distinction). Furthermore Taruskin provides a plausible account of what prompted Babbitt's post-war polemics, that includes an acknowledgment that "[u]nlike the European avant-garde, Babbitt sought anything but 'automatism,' the abject extinction of the self, in extending the purview of serialism." Nevertheless, unfortunately, (1) by using the word "algorithm" in relation to European serialism, (2) by associating Babbitt primarily with European serialism more than with any other musical movements or tendencies (such as jazz or experimental music); (3) by emphasizing "fixity and exactness" in Babbitt's use of electronic media; and (4) by entirely ignoring the more freely composed superarray compositions of Babbitt's late period (*Canonical Form*, *Whirled Series*, *Allegro Penseroso*, *Around the Horn*, *Quartets 5 and 6*, and so forth, which are no less *integral serial* than Babbitt's mid-century works), Taruskin has tacitly allowed the broad-brush of "total serialism" to tar Babbitt's reputation, thus preempting serialism from being listened to with an open mind. Such reductivism apparently fuels the sort of self-serving rhetoric that Chua, Gloag, and some other musicologists engage in.

9 (video 1, 4:56-5:06). Mead (2009) refers to the "spirit of play." Although 'play' and 'playfulness' can mean different things, are also productively associated with each other. Theory of cognitive

metaphor (Lakoff and Johnson, 1980, 1999) convincingly argues that metaphors work as clusters of individual (potentially separable) words or concepts that tend to group together by habits of association. Hypothetically, the playful (or even jazzy) sound of some of Babbitt's music could be held conceptually distinct from the inherent flexibility in the manner of its creation. But on the contrary, both aspects are easier to digest and understand through their mutual association, forming a comfortably assimilated cluster as it were, known as a cognitive metaphor.

10 (video 1, 5:44-5:52). Dubiel (1997) previously offered a more understated and less extensive argument along the lines I offer here, when he suggests we "set aside our habit of trying to show how great the system's reach is, and emphasize just how little [the 12-tone system] specifies in circumstances in which it operates." At one point he also provides one instance of the result of a completed calculation of something totally different (seemingly the number of distinct initial 3-note segments that can be formed from an aggregate partition). In both cases *partial ordering* is what is at work, behind the scenes, enabling such flexibilities. Dubiel, however, does not actually discuss partial orderings, and does not explain their central role in enabling the flexibilities of 12-tone array composition; nor does he offer any mathematical (quantitative) model for the varying degrees of constraint that different partial orderings impose. Though overlapping in certain details, Dubiel's focus differs from mine, although I fully acknowledge Dubiel (1992, 1997) for conditioning much of my own thinking on these issues. (For an account of the deterministic features of Boulez's *Structures 1a*, see Ligeti (1958/60) and Whittall (2008).)

11 (video 1, 6:12-6:21). For instance some people assume that the more intricate and systematic a serial structure is, the more it determines the details of the music (or other artwork) for which it serves as a basis. The assumption is folly. And likewise is assumed the contrapositive: that if the details of John Cage's compositions are random or indeterminate then his method of composition must have been simplistic and unsystematic. This contrapositive is folly as well. In the case of Babbitt, as I will argue, the complexity of his system enables the freedom of choice he enjoys when composing the note-to-note details one hears.

12 (video 1, 6:41-6:48). A *lyne* is a totally ordered series of pitch classes that forms a contrapuntal strand in a pitch-class array, the type of structure that serves as a background for Babbitt's music. (Following Babbitt's notational practice, in both score and array excerpts presented here, each accidental affects only the note it immediately precedes.)

13 (video 1, 6:50-7:00). Among the features are that the first three pitches <B, E-flat, C> are chosen from a single lyne so that trichord types subsequently represented within each register are forecasted immediately, and the entire six-measure melody forms an all-interval row which is echoed in every other aggregate of the clarinet solo. Additionally the ascending-skip-then-descending-skip contour of melodic melody's second trichord echoes the contour of its first trichord. Likewise the consecutive wide ascending leaps of the last three notes echo the contour of the previous three. All of these features, however, are extra-systematic, in the sense that Babbitt could have composed the melody in a completely different way without breaking the rules of his system. This attests to the flexibility of Babbitt's system, a flexibility that allows him to make long-range strategic choices, given the specific options available in a local context.

14 (video 1, 7:00-7:30). This and the next two recomposed passages are performed by clarinetist Marianne Gythfeldt. (The performance of the original opening phrase of *Composition for Four*

Instruments is drawn from a recording of a live performance by Charles Neidich. Other excerpts heard are drawn from Robert Taub's recordings of *Semi-Simple Variations* and *Canonical Form* and from Marshall Taylor and Charles Abramovic's recording of *Whirled Series*.)

15 (video 8:13-8:34). Since a lyne is a series of pitch classes (rather than specific pitches), the register (octave) in which each pitch class will ultimately be heard is considered flexible (undetermined); deciding on it can be deferred until the final stage of composition. Generally Babbitt assigns each lyne (or a pair of lynes) to a particular register, especially in his earlier array compositions (see Hanninen 1996 on "realization rules"). In his late period works, an array's distinct lynes can be realized within the same register or in overlapping registers.

16 (video 1, 8:35-8:48). And *partial ordering* isn't even the only relevant freedom. The surface realization is unspecified in multiple ways actually. The mapping of pitch events to time point events is very much unspecified. The relation of arrays within a superarray is also unspecified. This is on top of the unspecified nature of the inter-lyne ordering of pitches. Additionally, the variegated rhythm and texture of Babbitt's music does not immediately come across as organized. That impression of it being organized arises rather through nuanced sophistication.

17 (video 2, 0:27-0:47). Lewin (1976) proposed the notion of "linear indeterminacy" as a way of describing the degree of ordering constraint of a "system" of row segments, but did not offer a formal procedure for calculating the number of possible orderings available from a partial ordering. Starr and Morris (1978) are dealing with a somewhat different situation, which they call the "linearization" of a cell in a *combinatorial matrix* (CM), which they describe as the number 12-tone rows that could be formed within any columnar aggregate cell. And they present a more specific (less general) version of the mathematical formula I present, with mine being general enough to accommodate Babbitt's sub-aggregate (split aggregate) practice employed in such works as *Whirled Series*. Dubiel (1997) provides no mathematical models whatsoever, provides one instance of the result of a completed calculation of something totally different (seemingly the number of distinct initial 3-note segments that can be formed from an aggregate partition). Dubiel (1997) also suggests, as already stated in note 10, that we "set aside our habit of trying to show how great the system's reach is, and emphasize just how little it specifies in any circumstances in which it operates." But none of the three articles (neither Lewin, Starr and Morris, nor Dubiel) connects these threads together to provide a mathematical model that demonstrates (or in a sense mathematically proves) just how much choice Babbitt's system allows in regard to ordering his aggregates (and subaggregates as often occur in *Whirled Series*). Actually none of these three articles even reference each other. The purpose of discussing *linear indeterminacy* in the present article is to tie these threads together and fill in a gap in regard to theorizing the analysis of Babbitt's music.

18 (video 2, 3:20-3:32). See Mead (1994).

19 (video 2, 4:40-4:55). See Mead (1994) and Dubiel (1997). Although it is meant to represent a hypothetical array having the all-partition property, the diagram indeed corresponds to the actual array of *Whirled Series* (and other works, such as *Canonical Form*, *Around the Horn*, and *Quartet No. 5*).

20 (video 2, 11:22-12:05). I thank Scott Murphy for noticing and drawing my attention to this blues progression during the editorial process.

21 (video 2, 14:17-14:28). George Lewis is primarily responsible for bringing philosophically elevated discussion of improvisation into musicological discourse. One could also look to his collaborations with philosopher Arnold Davidson, as represented in their joint lecture “Improvisation as a Way of Life: time, technology, ethics” June 3, 2010, at the American Academy in Rome, excerpted here: <http://www.youtube.com/watch?v=NYPIPlQzyc>. Lewis presents another version of this lecture in 2011 at Columbia University: <http://www.youtube.com/watch?v=3cswYCMOnl4> Davidson (2016) more recently expands on the topic, in terms of a spiritual exercise and moral perfectionism. Significant earlier writings on philosophy of improvisation include Bruce Benson (2003) and Gary Peters (2009).

22 (video 2, 16:23-16:52). Although there are thousands or infinite choices fitting “inside” the rules, that doesn’t imply that anything goes. There are infinite novels to be written in English, yet this infinity still excludes novels to be written in gibberish.

23 (video 2, 16:52-17:07). I do not suggest that a fully composed Babbitt piece should be heard as fully improvised. Rather the surface is improvised from the opportunities provided by the array (or superarray). That means we should hear surface details as having been chosen by Babbitt specifically for how they would sound in that moment, rather than as being pre-determined by the underlying structure he designed.

24 (video 2, 17:07-17:52). We should imagine Babbitt’s compositions as improvisatory in a few interrelated ways: (1) The note-to-note details are chosen by him in the immediate context in which they occur, rather than being entailed by an overarching top-down systematic prescription; his creativity, his choices, are there for our ears to witness in each little moment that goes by. (2) His creative process divides into more or less discrete phases loosely analogous to the difference between composing a tune harmonized with chords and then later improvising over (“inside”) that chord progression. (3) the overall playful rhythms and textures that arise through his Time Point system seem cognitively consonant with (intuitively resonate with) some of our expectations of well-known jazz styles—and it seems doubtful that this is a coincidence or that Babbitt failed to be aware of it. (In regard to Babbitt’s earlier *All Set* for jazz ensemble (1957), Elaine Barkin (2001) refers to what Babbitt calls “jazz-like properties ... the use of percussion, the Chicago jazz-like juxtapositions of solos and ensembles recalling certain characteristics of group improvisation.”) His later integration of tuplets into his Time-point system may have been motivated partly by the effect of spontaneity they bring as well as the possibilities of additional choice they underwrite. Most importantly we should hear surface details as having been chosen by Babbitt specifically for how they would sound in that moment, rather than as being pre-determined by the underlying structure he designed. And we shouldn’t be embarrassed by the impression that these details sometimes sound playful or quirky.

25 (video 3, 0:44-1:12). *Semi-Simple Variations* has even been performed in a jazz trio rendition by the Bad Plus.

26 (video 3, 1:25-1:33). Rhythmic attack points are shown at the bottom of the screen because they prompt an aspect of the *situatedness* in which Babbitt is “improvising”: in order to present all

16 binary state patterns of four 16th notes, there must be 32 attacks. Since this is more than the 24 pcs of the two successive aggregates, some pitches have to be repeated; this is therefore another variable Babbitt has to work with when composing the surface.

27 (video 3, 2:33-2:06). The quarter note is the duration whose 32 possible divisions are maximally represented. Without there being a quarter-note macro-pulse, there would be no sense to Babbitt's presenting all 32 ways that duration can be divided into 16th note micropulses (subdivisions).

28 (video 3, 6:04-6:52). A significant caveat is that the shadings work in a different way in Variation I as compared to the theme, which might be justified by the fact they are in different registers, with Variation I being in a much higher register, with therefore significantly less sustain for each note. Whereas the theme's interval class shadings operate in a more murky way in terms of sheer prevalence, the shadings in Variation I are more delicate, being effective through surgical placement in relation to the upper lyne's notes—again Babbitt “improvising” with the given circumstances, which arose from a systematic choice at an earlier stage of compositional planning.

29 (video 3, 8:14-8:59). See Duffie (1987). In this interview, when discussing this question about revisions and hearing his music performed, Babbitt also remarks: “what I'm really thinking at that moment is that this is the way the piece was. Am I dissatisfied with things? If I am, I let them affect the way I'll think about my next piece.” Strictly speaking, Babbitt did revise his *Composition for Twelve Instruments* (1948), although before it was ever performed. The revision of 1954 substitutes harp for guitar, for the purely logistical reason that, at the time, it seemed impossible to find a skillful guitarist who could follow intricate cues of a conductor. (The version with guitar was never performed.) The difference in the capacities of the harp prompted substantive revisions beyond orchestration. Babbitt's revision of his *Composition for Twelve Instruments* is an exceptional case. The fact that the change of orchestration led to other changes indicates that Babbitt did not maintain non-revision as a rigid rule or even as a matter of principle. The revision is itself an improvisatory move: responding to the contingencies of a situation, and also to the new opportunities arising from this response (the capabilities of the harp as opposed to guitar).

30 (video 3, 10:02-10:33). For instance Babbitt's *Whirled Series, Around the Horn*, String Quartet No. 5, *Canonical Form* and *My Complements to Roger* are all based on the same four-part all-partition array. For further discussion of this see Mead (1994), Dubiel (1997), and Lake (1986). The heyday of jazz contrafacts coincided roughly with the beginning of Babbitt's compositional career. For instance, considering just those based on Gershwin's “I Got Rhythm,” there were, first in the swing era, Goodman and Sampson's “Don't Be That Way” (1934), and Young's “Lester Leaps In” (1939), followed by numerous bebop tunes such as Gillespie's “Salt Peanuts,” Monk's “52nd Street Theme,” Rollin's “Oleo,” and Parker's “Chasin' the Bird,” “Dexterity,” “Anthropology,” “Moose the Mooch,” and many others. For more on the practice of contrafact in jazz, see Patrick (1975).

31 (video 3, 10:59-11:10). A classic example of Babbitt's jazzy sounding music is his *All Set*, for jazz ensemble (1957), here heard performed by Arthur Weisberg leading the Contemporary Chamber Ensemble. Also see note 24 above.

32 (video 3, 13:45-14:18). I thank Steven Reale, who, in response to my *posetinomium*, drew my attention to an intriguing account, in Roger Moseley's *Keys to Play* (2016, 109), of a discussion between Diderot and d'Alembert in the 18th century. Diderot proposes a hypothetical keyboard that acts recursively by being aware of its own state, remembering what was played on it and being "capable of representing [its] own representational functions."

* The three essay parts can be viewed uninterrupted as one continuous 44-minute video here: <https://vimeo.com/societymusictheory/videocast5-1-2-3mailman>

Extensive Keyword List

Improvisation, jazz, blues, bebop, contrafact, rhythm changes, chord changes, major triad, Gershwin, games, ludomusicology, ludic, play, wit, humor, 12-tone, twelve-tone composition, serialism, integral serialism, total serialism, structure, row, dodecaphony, cold war, partial ordering, poset, partition, lyne, array, superarray, time-points, system, aggregate, linear indeterminacy, determinism, mathematics, probability, repetition, visualization, Kandinsky, George Lewis, Gilbert Ryle, Robert Morris, David Lewin, the Bad Plus, precompositional, compositional design, compositional space, voice-leading space, Boulez, revision, recomposition, historiography, baseball, spontaneity, creativity, *Composition for Four Instruments*, *Whirled Series*, *Semi-simple Variations*, Diderot.

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