The Systematic Translation of
Musical Compositions into Paintings

Jack Ox with Peter Frank

Abstract—Jack Ox describes how she paints systematically from music. Selected musical compositions, which have included pieces by J. S. Bach, Stravinsky, Debussy and Bruckner as well as Gregorian Chant, are analyzed according to traditional music theory. Visual procedures are then determined in order to embody the musical information that emerges from the analysis. Imagery deemed appropriate to each composition is painted and then subjected to extensive reformulation. Ox has maintained a consistent procedure since she began rendering her music-to-painting translations in 1977. Her methods have become more complex as a result of her musical training and as she translates music of greater technical and conceptual complexity.

I. INTRODUCTION
Since 1977 I have based my paintings and drawings on musical compositions of the Western tradition. These have included Gregorian chants, an 8-measure fugue by Johann Kaspar Ferdinand Fischer, vocal and keyboard compositions of Johann Sebastian Bach, Igor Stravinsky’s Symphonies in Three Movements, the “Nuages” from Claude Debussy’s Nocturnes and, currently, Anton Bruckner’s Symphony No. 8 [1].

I work more systematically than intuitively. I have devised a method for translating musical scores into paintings. I paint imagery appropriate to the composition on misaligned sequences of fiber glass strips attached to the wall (Fig. 1), and then realign and glaze the strips (Fig. 2) [2]. Although my initial familiarity with the pieces is aural, I do not paint impulsively to musical sound. My formal translations are made from the composer’s scores and are informed by my readings in music theory and history.

II. THE BASIC SYSTEM
Only my choice of the initial imagery is not dictated by this system. Even in this decision, logical association plays as much a role as poetic license. For example, while Bach’s keyboard works conjured mountain scenes for me, I rendered his Cantata No. 80 (“Ein fester Burg ist unser Gott”) as an example of baroque architecture (Fig. 3). Stravinsky’s neoclassic interpretation of this century’s mechanistic rhythms were equated with urban American architecture (Figs 1, 2, 4). And Debussy’s “Nuages” was inevitably depicted with clouds (Figs 5, 6).

The Bruckner paintings and drawings that currently engage me (Figs 7, 8 and Color plate No. 1) combine Alpine imagery with views of St Florian’s monastery, the small Austrian baroque cathedral and school outside Linz where Bruckner once played the organ and studied and is now buried. Bruckner’s preoccupation with Bach’s counterpoint makes the baroque church stylistically apposite.

All other formal decisions are tied directly to the translation method. This method generates a system that is modified continually according to the peculiarities of each composition. It could be argued that the method itself is set in motion by my arbitrary decisions. But these decisions are bound by the method’s overriding operation. If I equate certain formal displacements of the imagery with the shape of certain melodic lines, the proportional relationships are what is important, and the actual displacement—½ inch or 2 inches, upward or downward, continuous or spaced—is related only to the size of the painting (a size close to a dimensional standard of about 4 feet (1.2 meters) high by a length determined by considerations such as the length of the phrase being rendered).

My method does not feature the color-to-pitch equations on which music-art investigation has traditionally been based. I feel that synthetic experiments of
symbolists, constructivists, and other early twentieth-century theorists, with their focus on hue-to-pitch equation, are irrelevant to my own investigations. These approaches have always attempted a universally quantifiable, verifiable, and fixed transposition of basic unitary value from one medium to the other. No such transposition has finally been deduced from intuitive association (such as Alexander Scriabin determined [3]), from structural parallel (such as Morgan Russell proposed by aligning the 12 notes of the well-tempered scale with the tertiary divisions of the color wheel [4]), or from physical proportion (as investigated by several researchers who tried to identify the wavelengths on the color spectrum as multiples of those on the sound spectrum [5]). Any such transposition would portray only one aspect from two vast universes of experience. Music and visual art are predicated on the responses of particular senses, mental states and associations. Each is a language unto itself, with particular rules, characteristics and literatures.

The linguistic metaphor is not just a metaphor. My method takes into account the 'vocabularies', 'grammars', 'rhetorics', and even the personal inflections of composers within their musical traditions as I translate music into visual form. (Absolute relationships are not deduced and exploited; relative relationships are.) My method must be flexible with regard to the peculiarities of each composition without abandoning its underlying structural approach. The hue-to-pitch equation is not one of my approaches. The imagery I incorporate is not abstract and thus bears its own color considerations. The basic colors in which I render the imagery are more or less true to life. I do modify color according to notation, but this is a secondary step, carried out in the glazing process to which I subject the already rendered imagery.

III. SOURCES—IMAGERY AND MUSIC

All the images in the paintings shown here were based on photographs taken by myself or by photographers with whom I have worked including Lisa Kahane and Robert McKeever. They were painted across arrangements of fiber glass strips on the wall (Fig. 1). Depending on its width, each strip represents a particular note of a particular duration. The strips originally aligned to form rectangles, but when affixed to the wall they were realigned upward or downward according to information provided by particular aspects of each composition. After the strips were repositioned into their original alignment, other information was incorporated through the glazing process, fracturing the images (Fig. 4). Each strip thus embodies an entire orchestral chord from whatever piece is being interpreted.

Any variables within the application of this consistent method depend on the theoretical and historical factors characteristic of the musical piece being translated. Thus, the process of glazing the three Stravinsky paintings took into account that Stravinsky's unresolved dissonances are ends in themselves. The more dissonant the chordal relationships become, the less neutral—the brighter—the glazing. Conversely, Debussy's highly
chromatic tonal language seeks resolution of true dissonances. The more dissonant chords and passages in "Nuages" are therefore greyed rather than brightened by the glazes [6]. In all cases the glazing of each strip is determined by the numerical values given to each note in all the musical lines that do not dictate the positioning of the fiber glass strips themselves. Chords are summations of these values. The numerical values have been assigned varying intensities of glazes, which are superimposed to provide equivalents to the chordal summations. Beyond the shift in hue intensity, which depends on consonant–dissonant relationships, the general pattern of equivalence associates higher notes and chords with lighter glazes and lower notes and chords with darker ones.

IV. DEVELOPMENT OF THE PROCESS

The basic fracturing and glazing systems have evolved considerably since my first musically grounded paintings. These early paintings developed from the imaginary landscapes suffused with a surrealist or expressionist intensity that I was painting in 1976, while a graduate student. I began to experiment with the arbitrary vertical displacement of my imagery. The resulting patterns of displacement suggested the simple archi-

tectonic lines of Gregorian chants. I then decided to fracture the entire picture in vertical strips. I enrolled in a course in medieval music to acquire an understanding of Gregorian plainsong and the rudiments of music theory and practice. I subsequently studied the harpsichord to further this understanding. The fracturing—and the color of the background in my paintings as well—became entirely determined by the profile of the chants’ melodic line.

In my last painting based on Gregorian monody I introduced the glazing factor. Here the glazing only reaffirmed the chant’s single line, already described by the fracturing. But when I turned to polyphonic compositions, beginning with the J. K. F. Fischer fugue, the new glazing technique allowed me to explicate melodic lines other than the line that determined the fracturing pattern. I based the systematic layering of glazes on general hue intensity, so that lower notes indicated darker glazes. When I turned to more sophisticated compositions by J. S. Bach, I determined the glaze hues by instrumentation as well as relative pitch. Each instrument was assigned a glaze color appropriate to the range and timbre of its sound.

As I painted more complex compositions, glazes proved increasingly useful for clarifying the music’s complexity, particularly the simultaneous occurrence of different pitches voiced by different instrumental lines. In the most complex music thus rendered, the first movement of Stravinsky’s Symphony in Three Movements, it was necessary to consider dissonant–consonant relationships as well. I approached these relationships by regarding them as situated on a grade between pure dissonance and pure

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Figure 4. Igor Stravinsky, Symphony in Three Movements: First Painting from the First Movement (right half), oil on fiber glass mounted on wood, entire painting 167.6 x 533.4 cm, this section 167.6 x 266.7 cm, 1979. The interspersal of two views of the same building, one receding towards the right and one advancing, serves among other things to represent the alternation of two dominant-seventh chords, each based in a different key. (Photo: Lisa Kahane)

Figure 5. “Nuages” from the Nocturnes of Claude Debussy, panels 19, 20, 21, oil on fiber glass mounted on wood, this section, 119.4 x 350 cm, each panel 119.4 x 117 cm; the entire sequence attains a length of 3150 cm, 1981-82. This is approximately one-ninth of the Debussy sequence, the one instance so far of an entire composition being rendered into painting through my method. This passage embodies Debussy’s introduction, late in the piece, of a winsome pentatonic tune. (Photo: Lisa Kahane)
consonance and thereby deriving proportional combinations of hue and complement. With all these factors coming to bear, I found myself struggling as much against as with the system to articulate various aspects of the composition.

From my work with the harpsichord (which necessitates tuning the instrument constantly) and the 2 years of traditional music theory I undertook while working on the Stravinsky and Debussy paintings I learned about dissonant–consonant relationships and the range of intricate relationships involved in musical harmony. Thus schooled, I introduced a new level of systematization to my approach and was able to articulate some of the complex structures inherent in music of the last 300 years.

V. CURRENT METHODS
The hue factor in the glazing is no longer determined by instrumentation, but by key modulation—not just pitch change, but modulation according to key, thus clarifying and amplifying the pitch's harmonic context. Beginning with Debussy's "Nuages", a rendition of the entire composition reaching 104 feet (31.5 meters) in length, I grounded the glazing method in two systems which change according to the piece. One system is a key–hue modulation equivalent, for which I have devised color wheels appropriate to each composition. The other system is a chart of mathematical values derived exponentially from the complete range of pitches employed in the composition. While the Debussy and the Bruckner series—the two so far realized by interfacing these systems—generated different color wheels, they share a common number chart, as their pitch ranges are about equal. The Bruckner color wheel (Fig. 9), a rotatable chart based on the circle of fifths intervals, is applicable to other composers as well, because it fixes key-to-key and color-to-color relationships but allows key-to-color relationships to vary [7]. The Debussy wheels, fixed diagrams based on fifth-interval mediants (middle notes), are not so universally applicable.

I now determine the glazing process by one of two methods, both of which are connected to the charting systems described above. The glazes can be applied according to melodic line, as in earlier work, but the degree of lightness and darkness is now determined by the proportional formula noted in the charts rather than by eye [8]. This method emphasizes the horizontal relationship between consecutive strips. Or glazes can be applied according to chordal relationships. This method emphasizes that each fiber glass strip embodies not just a note of a particular duration, but a chord of that duration, i.e. a vertical pitch relationship. The root note of the chord is determined, its valuation on the chart is located, and the valuation of the notes in the chord are derived from their proportional relationship to the root note and to each other. Thus, the glazing formula for a B-major triad in the third octave (that of middle C) would be determined by locating the value of the root b' on the chart, or 40; determining the next note upward, a D#, as 1/3 of that, thanks to the third interval; and determining the final note, an F#, as 1/6 of the B. The glazing intensity would thus be based on the sum of 40 + 40/3 + 40/6, or 60 [9].

VI. PARTICULAR PROBLEMS
These systematically derived decisions often yield results that obscure other formal aspects of the music. In such cases compensating decision processes must be introduced. The most significant problem so far has been articulation, the clarification of repeated notes that determine neither fracturing nor glazing differentiation and yet are notationally, or at least sonically, distinct. Choice of imagery can partially offset the problem, but in recent paintings this has not been enough. The hard, precise lines of modern urban architecture provided some clarification of the repeated staccato notes in Symphony in Three Movements, but these had to be articulated further by upending certain strips and by interspersing...
Figure 7. Drawing and Fracturing Scheme of St. Florian’s Church for Anton Bruckner, Symphony No. 8: First Painting from the First Movement, pencil, colored pencil, ink on rag paper, 65.4 x 125.1 cm, 1983. The smaller sections to the left appear just as they will in the painting, but the extended passage at right will be realigned and thus fractured. (Photo: Lisa Kahane)

Figure 8. Music, St. Florian’s Image, Two Alps Images and Fracturing Scheme for Anton Bruckner, Symphony No. 8: First Painting for the First Movement, charcoal pencil on rag paper, coloured ink on acetate, photocopy on mylar, 65.4 x 125.1 cm, 1983. The fracturing patterns for both images are fitted together in an overlay on a rendering of the St Florian’s image, while the Alpine images are arranged above in a manner indicating the relative shifts to which they will be subject. (Photo: Lisa Kahane)

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dispersal of images was also employed. This entire musical composition—the interplay of the Fischer paintings to encompass a disparate images (Figs 2, 4). [10] In the Debussy sequence—the only work since the Fischer paintings to encompass an independent, moving melodic lines in the Debussy sequence. At a certain point in “Nuages” there is a confluence of all melodic, harmonic, dynamic and articulative ideas: the pizzicati notes are articulated by the glazing, the expansion—contraction motion of the first theme is captured in the alternation of near and far images, but there is no place to express clearly a tritone melody played by the oboe. Using the particular cloud images that represent that motif in its previous occurrences throughout “Nuages”, I inserted an unfractured image in the midst of the fractured images. The contours of the unfractured image are themselves fractured, embodying the shape of the tritone melody. The motif is thus represented in shape and spirit despite all the other simultaneous musical events.

This device of inserting unfractured but contoured imagery in the midst of fractured yet aligned imagery is extended in the Bruckner series, where portions of a depiction of St Florian’s Cathedral are introduced into alternating patterns of Alpine images (Fig. 8). The device allows me to handle many voices, and encourages me to emphasize the relationships between particular images and musical motifs and ideas. The introduction of multiple images in the Stravinsky series led naturally to this device, and its application is especially appropriate to Bruckner’s Wagnerian use of the leitmotif (albeit in an abstract, non-narrative manner). Even so, it brings my highly quantified system into the realm of more idiosyncratic interpretation. However, such interpretation is itself codified and incorporates consistent theoretical considerations even beyond the mere appropriateness of associative imagery to romantic-era music.

One notable theoretical consideration is the equating of perspective with tonality, an equivalence proposed by several critics and theorists, including Donald Francis Tovey [11] and Victor Zuckerkandl [12]. I have not yet devised any systematic equation between tone and perspective formulas, but I have in effect articulated the presence of multiple tonalities in Stravinsky and Bruckner by engaging different perspectives among the different images. In my work with Bruckner’s 8th Symphony I am also examining the potential of perspective as at least a metaphorical equivalent for dynamics. I am expanding or contracting the size of the interior St Florian image according to the growth or diminution of its loudness (a prominent factor in the piece). The area the St Florian image occupies in the painting is also adjusted accordingly.

![Diagram of the color wheel devised for the paintings in the Anton Bruckner Symphony No. 8 series. The diagram is fixed here in the position chosen for the series, but is in fact rotatable, allowing other color-to-pitch equivalents to be selected for other compositions. What is fixed even in the rotatable chart is the sequential relationship of colors to the sequential relationship of notes. The tertiary divisions of the traditional color wheel (counting 12 hues) are aligned with the 12 notes of the diatonic scale. The latter sequence is not ascending, however, but is arranged in the circle of fifths; that is, each note is a fifth interval higher than the last. This is based on the fact that keys a fifth apart are most closely related. The relative minor keys are inscribed on an inner orbit.](image)

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VII. CONCLUSION

As I encounter more sophisticated musical compositions and become more aware of the complexity of Western orchestral music of the last 300 years, my ability to generate single cohesive systems, even systems substantially altered for application to different musical styles and approaches, is severely tried. I must employ not simply a flexible system, but an ever-changing constellation of interfacing systems. The consistency of any one system is modified only according to requirements of the music and kept as systematic and coherent as possible so as to maintain the relative stability of the initial system or combination of systems.

My method can grow, change and bend because I do not seek to develop a universal formula for translating music into visual imagery, but only to devise methods for translating *particular pieces* of music into optical form. The painting sequence based on Debussy’s “Nuages” does not look like music. It looks like—or
suggests—Debussy’s “Nuages”. The sequence replaces the haphazard response of most paintings from music with a style that emulates the formal rigor of the music itself. I have attempted to reformulate both the technical and the poetic-imagistic aspects of the particular composition into visual terms; my initial formula has been modified according to the requirements of that composition. I do not want to reduce music to my style, but to expand my style to the music. I want to modulate flexibly between given languages, in other words, to translate. As in any translation, what is important is not which language is being translated or which language is ‘receiving’ the translation, but what is being translated and how its particular characteristics can best transfer across the formal and contextual gaps between the original language and the new.

What seems like point-to-point formulating, the constant accruing of exigencies, exceptions and errors of convenience, is in fact a recognition that both music and painting are governed by inherent structural and contextual factors and that such factors can be aligned. They do not align naturally, but they can align approximately with a certain amount of intervention and interpretation. Such intervention and interpretation is my personal achievement, not a universal formula. I do not wish merely to invent a formula for translation or, conversely, to create beautiful paintings that happen to be grounded in music. I want to explore the complexities of music as an art form that is foreign to my own, and apparently infinite in its richness. This exploration could well occupy me for the rest of my life.

REFERENCES AND NOTES

1. Editions I have employed in the derivation of paintings since 1980 are as follows: Igor Stravinsky, Symphony in Three Movements (Mainz: B. Schott’s Sohne, 1974); Claude Debussy, Nocturnes (New York: International Music Co., n.d.) pp. 1-17; Anton Bruckner (ed. by Robert Haas); Sinfonie Nr. 8 c-Moll (Leipzig: VEB Breitkopf & Hartel Musikverlag, 1980) pp. 3-38.

2. The first painting thus created was based on the Bach cantata (Fig. 1). Previous to that I had painted on canvas or cardboard.

3. Consideration of Scriabin’s color organ, which was scored into the composer’s Fifth Symphony, Prometheus: Poem of Fire (1910), occurs in various articles in the catalogue Für Augen und Ohren (“For Eyes and Ears”), Berlin: Akademie der Kunst, 1980.

4. As per drawings and diagrams, dating from 1913-1917, now in the Morgan Russell archives at the Whitney Museum of American Art. (I am grateful to Gail Levin, curator of the archives, for showing me this material.)


6. Greater or lesser neutrality in the chroma depends on the mixture of a particular hue and its complement. An entirely consonant chord requires a glaze composed of 50% basic hue and 50% complementary hue in the Stravinsky paintings, but requires an entirely pure-hued glaze in the Debussy. A 50-50 combination in the Debussy would indicate total dissonance, conversely represented in the Stravinsky pieces by pure hue.

7. For instance, the key of C-major may be assigned any color, but the color assignment of other keys will be determined entirely in relation to this initial assignment. The inner wheel displays minor keys and moves independently, so that major-to-minor key relationships can be either complementary or based on intervals. If C-major is yellow, A-major can only be blue-green, as per the circle of fifths, but A-minor—the relative minor key to C-major—can be either orange (an interval of two steps) or purple (complementary).

8. When I began employing glazes I was translating simple polyphony, but I was arriving at the glaze intensities through a laborious layering of equally light glazes directly on the strips. The strips representing the highest notes in the particular passage of music were given one layer of glaze, those representing the next highest notes were given two layers, and so on, until as many as 15 layers accumulated. The color wheels, and a sequence of plexiglass chips I prepared with carefully calibrated glaze intensities, now help me mix the proper glaze intensities before applying them to the strips. The surface of the painting is much more even and delicate, and the glaze more clearly elucidates polyphonic relationships.

9. I have recently realized that the same process can be applied to a chordal evaluation based entirely on the root note, in which proportions would be fractioned according to their relative distance from the root alone. B-major triad would then become 40 + 40/3 + 40/5, or 61 1/3. This system would in fact be less arbitrary than the present one, in which the particular pitch determines less than does the nature of the chord as a whole. However, unless the chords in question ranged over several octaves, the two ways of determining chordal glazes tend to yield similar proportional values.

10. Two differing views of the same building are interspersed in the First Painting, while three alternate in the Second Painting. This interspersal of views articulates tonal shifts in the passages. The First Painting is derived from a passage of dominant 7th chords which alternate diatonically between G-major and B-flat major. No such convenient alternation occurs in the passage represented by the Second Painting, but another factor presents itself for this kind of articulation: the three octatonic (alternating whole step-half step) scales which run through the entire symphony. All three scales are presented in the Second Painting’s passage, and have been equated with three different views of the same building.


No. 1. Top. Jack Ox. Anton Bruckner, Symphony No. 8: First Painting from the First Movement, oil on fiberglass mounted on wood, 119.4 x 462.3 cm, 1983.

No. 2. Center left. Scott Daly. Example of an observer wearing ping-pong balls as a ganzfeld. Computer-generated imagery is projected onto the surfaces of the ping-pong balls.

No. 3. Center right. Richard Alpert. Twist, oil on fiberboard, 62 x 93 x 73 inches, 1981.

JACK OX

8. Symphonie von Anton Bruckner
Meas. 1-24, Fracturing Pattern, Alps & St. Florian's Images for Anton Bruckner, Symph. nr. 8: 1st Ptg. from 2nd Mvt. Electrostatic transfer on mylar, oil on mylar, charcoal pencil on paper, 29 × 41⅝" (105.4 × 73.7 cm.) Photo: Lisa Kahane

Original St. Florian's Inner Courtyard Image for Anton Bruckner, Symphony nr. 8: 1st Painting from the 2nd Movement. Pencil & colored pencil on linen mylar 36 × 48" (96.5 × 121.9 cm.) Photo: Lisa Kahane

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Anton Bruckner, Symphony nr. 8: Third Painting from the Second Movement
Oil on fiberglass mounted on dacron, 47 x 124" (119.3 x 315.2 cm.)
Photo: Lisa Kahane
Florian’s Inner Abbey Courtyard for Anton Bruckner, Sym.
#8: 3rd Painting from the 2nd Movement.
Electrostatic transfer and oil on mylar; charcoal pencil on
rag paper, 32 x 38" (81.3 x 96.5 cm.)
Photo: Lisa Kahane

Original St. Florian’s Inner Courtyard Image for A. Bruckner, Sym. #8: 3rd
Painting from the 2nd movement.
Pencil and colored pencil on mylar triplex paper. 25 x 38" (63.5 x 96 cm.)
Photo: Lisa Kahane
Anton Bruckner, Symphony nr. 8. First Painting from the Third Movement
Oil on fiberglass mounted on dacron, 47 × 154" (119.3 × 391.2 cm.)
Photo: Lisa Kahane