

## Bebop Space/Leap Frog

Bennett Robert Neiman, Associate Professor University of Colorado at Denver

### Abstract

*The project consists of a series of improvisational “takes” that spontaneously manipulate and articulate disparate links, connections, joints and transitions. Musical structures pertaining to a jazz vehicle are transposed into architecture. Issues of formal consistency and flexible ordering systems (constants and variables) regulate intuitive moves. The intention of the project is not to study jazz music, but to apply the vehicle as a potentially inventive and individualized formal language of architecture. The study ultimately reinterprets, analyses, translates, and applies jazz improvisation to architecture and urban form.*

*First you learn your instrument.*

*Then you learn music.*

*Then you forget both of those and just blow.*

–Dizzy Gillespie

### The Vehicle: Jazz and Architecture

The emergence of bebop (roughly 1940-50) is considered the beginning of modern jazz. The movement grew directly out of the small swing groups. Bebop was characterized by fast tempos, placing a much higher emphasis on technique and complex harmonies than on recognizable melodies. Bebop tunes were often labyrinthine; full of surprising twists and turns.(1) Bebop was not intended to be dance music. The development of bebop led to new approaches to accompanying as well as improvisational soloing. Alto saxophonist Charlie “Bird” Parker is considered the originator of this movement, and trumpet player John Birks “Dizzy Gillespie” was his primary collaborator and theorist. Small group recordings (mostly quintets) featuring Parker and Gillespie formed the foundation of bebop and most modern jazz.(2)

The term, vehicle, was first applied in jazz by Gillespie as a near-synonym of tune, describing the improviser’s use of the tune as a sort of machine on which he rides during his improvisation.(3) This study interrogates the fundamental constraints, conventions, preconceptions, and foundations of traditional design methods through the examination of an external vehicle.

The formal elements and principles that govern jazz improvisation parallel similar concepts in architecture. The parallel between these two disciplines is the guide behind the fabrication of the project. The term parallel means to bring into comparison in order to show a likeness. Parallel is also a musical term; instrumental or vocal parts moving so that the interval between them remains the same. These architectural studies maintain a parallel interval by resisting overt metaphorical, literal, or symbolic interpretations of the music or jazz culture. Thus, the product does not look jazzy or resemble musical instruments, notes, etc.

The project consists of a series of improvisational “takes” that spontaneously manipulate and articulate disparate links, connections, joints and transitions. The studies are additive and incremental. Architectonic structures are transposed from jazz concepts such as: composition, rhythm, interplay, counterpoint, progression, interpenetration, tension-release, theme and variation, ascending-descending, contraction and dilation of scale, etc.

The intention of the project is not to study music, but to apply the vehicle as an inventive and individualized formal language of architecture. The work, as any jazz performance, is evaluated on the basis of the seriousness, rigor, spontaneity, and passion of the thought and exploration of the take. The study ultimately reinterprets, analyses, translates, and applies jazz improvisation to architecture and urban form.(4)

### Four Stage Improvisation

A series of two-dimensional drawings and relief models extend the structural and thematic aspects of the musical vehicle. The ordering concepts of constants and variables regulate intuitive moves. In effect, the designer fabricates a series of graphic representations of the musical vehicle.(5) Soon after the game has begun, the original musical vehicle, *Leap Frog* (6) becomes a point of departure. The jazz vehicle starts to fade and the logic of the architectonic composition takes over. A consistent language of spatial jointure, articulation, and conceptual detailing becomes the focus of the study. As discussions revolve around the integrity of the visual compositions themselves, the performer begins to think about architecture instead of music.

### Stage One: Spatial Manipulation Device

The spatial manipulation device combines analog (video, collage, drawing, physical modeling) and digital (scanning, video-capture, image manipulation) design techniques. This experiment introduces external visual material from an anonymous construction site documented on videotape. Hundreds of video still frames are digitally captured. Sticky-back laser prints of the digital video captures are cut into fragments and strips, applied to a series of rigid transparent panels. Various arrangements and configurations of the panels are documented on videotape. The resulting digital captures are exponentially more complex than the original captures. The captures contain not only fragments of the collaged construction site material, but also reflected light and shadow.

*Analog-digital crystals* (see Figure 1) are constructed from the re-captured video material. These studies combine and accrue as an aggregation of crystals, stretched and compressed, repeated and varied. These re-combined crystals (see Figure 2) imply reciprocal plans and sections. The end product holds peripheral resemblance to the original video image.

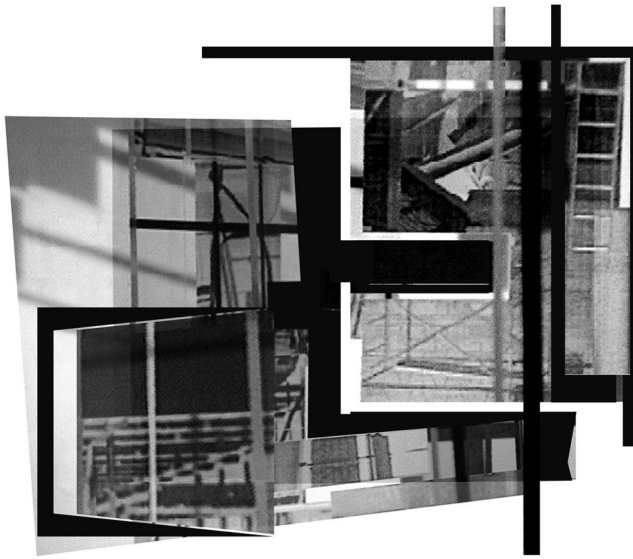
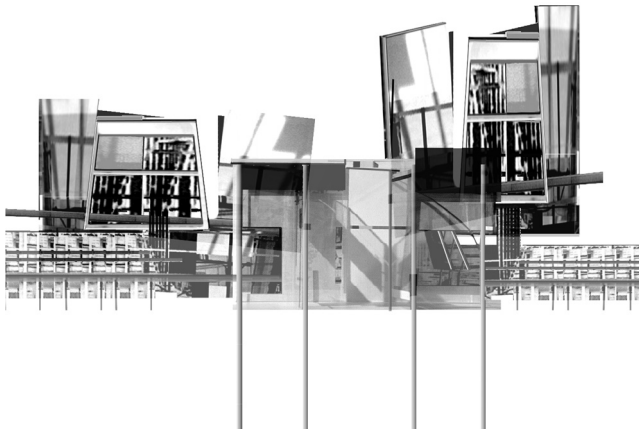


Fig. 1. Analog-digital crystal.

Fig. 2. Analog-digital crystal combination.



### Stage Two: Spatial Encodings

The process of improvisation encodes the photo-collage image as a diagram. The most important elements of the photo-collage are traced into discrete shapes. Regulating lines reveal an underlying reference system. The progressive development of extension lines emphasizes the evolving internal structural reference system. Every traced element generates an extension line. Articulated solids and voids establish interpenetrating primary, secondary and tertiary precincts. The drawing is a redefinition of the originating photo-collage. The drawing is read in terms other than a literal flatness. This phenomenon becomes more provocative when each edge of repositioned elements generate additional extended trace lines. This complex network of extension lines is the regulatory guide for discovering cross-precinct relationships. The drawing evolves into a diagnostic test of alignments, and thicknesses in space. Constant and variable relationships of the system and its interdependencies (parts and whole) are studied during the construction process.

Discrete elements are separated by a compositional gap or joint. Other events are handled with adjusted extension lines. Elements can nest within elements. Elements can overlap elements. The

compositions are predominantly orthogonal with respect to the overall reference frame. However, certain angular and curvilinear elements begin to work in contrast to the overall orthogonal underpinnings of the piece. The drawing begins as a collection of disparate hybrid shapes, curves, angles, squares and rectangles. A rigorous process of re-alignment is applied. The adjustment of individual elements attempts to resolve formal conflicts, thereby establishing a dynamic underlying order. Slight angular elements are redefined as orthogonal elements creating a greater contrast between obviously angled elements and the orthogonal reference system. The incessant manipulation and articulation of elements suggests that other elements be revised or removed, thereby causing the addition or removal of extension lines.

The *chromatic encodings* (see Figure 3) redefine the underlying spatial encoding as a series of second-generation improvisations. These variations take their cues and clues from the underlying theme established in the encoded diagram. Using black, gray, red, yellow, and blue fills, these drawings are articulated in terms of, solid and void; figure and field; thick and thin; open and closed. A distinction is established between fields (as shades of color) and figures (as white or black). The chromatic encoding implies an equivocal depth within the structure as a gateway to three-dimensionality. The resultant rhythmic improvisation entices the eye to search for interconnections and redefined precincts.

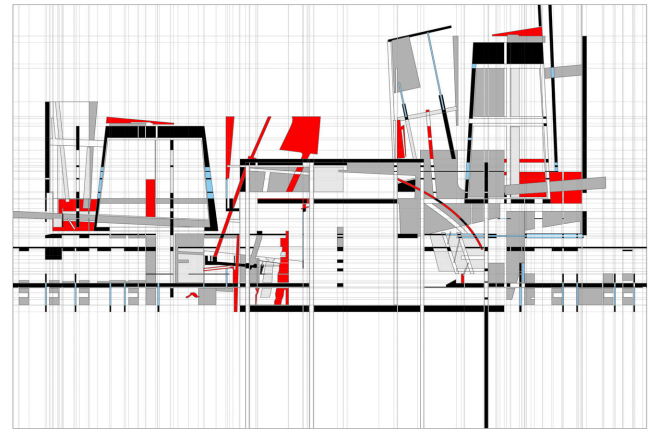


Fig. 3. Chromatic encoding.

### Stage Three: Analog-Digital Relief.

The next stage is the projection of an *improvised physical relief model* (see Figure 4) from sets of interrelated encodings. Physical modeling (instead of digital) is determined as necessary for fluid improvisation of depths and thicknesses. The designer can make decisions more effectively by viewing and testing a physical model with the hands and eyes as opposed to “virtual” manipulation within a computer screen. The designer can look at and in between to make instantaneous decisions.

In a sense, the production of the improvisational relief model is a reductive process. There is an ambiguity between the resultant models and the generating drawings. The translation from color to white, shade and shadow, transforms and unifies the form and space of the encoded structures. The models are more intriguing architecturally than the drawings, although one could argue that the ambiguity of the drawings leaves issues open for further interpretation.

The *digital relief model* (see figure 5) is not improvisational. It directly follows the moves of the physical relief. In effect, the digital model becomes a recording of a previous performance. The underlying structural drawings for the encoded studies are all vector based files. Each file is used as a generative template, transforming two-dimensional information into three-dimensions. Once constructed, the digital model can be examined in terms of sequential section cuts. A series of precisely cut plans and sections can be generated from the model as an analysis. The designer can see how the relief transforms from one end to the other.

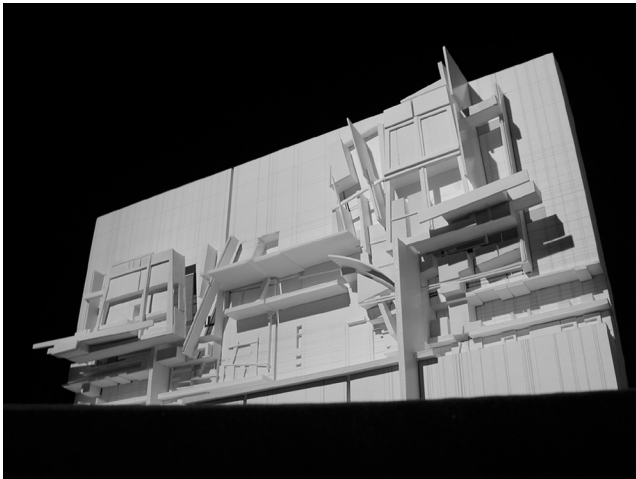


Fig. 4. Improvised physical relief model.

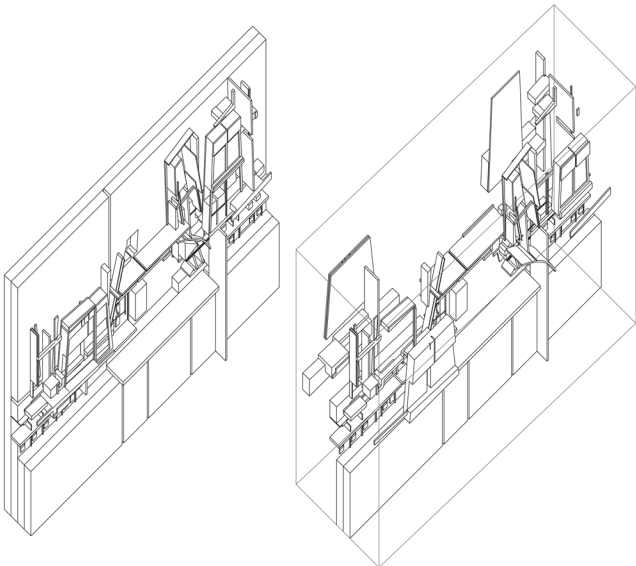


Fig. 5. Digital relief models (normative and expanded).

#### Stage Four: Liquid Improvisations

The digital relief is manipulated into an *expanded digital relief model* (see figure 5). This “incomplete” digital model allows for the free interpretation of transverse-sectional encodings. The digital model is twisted and distorted about the axis of the cross-section. A series of transverse section cuts reveals similar spatial complexities analogous to the principle view. The complexity is pushed further as a series of *liquid improvisation encodings* (see figure 6). Strategic distortions such as pinch and fade(7) are ap-

plied to key locations in order to test possibilities within the initial cut. The most potent distortions are incorporated into the drawing just as jazz musicians use clichés (frequently played ideas such as military tunes or children’s nursery rhymes) as points of wit within an improvisational solo.

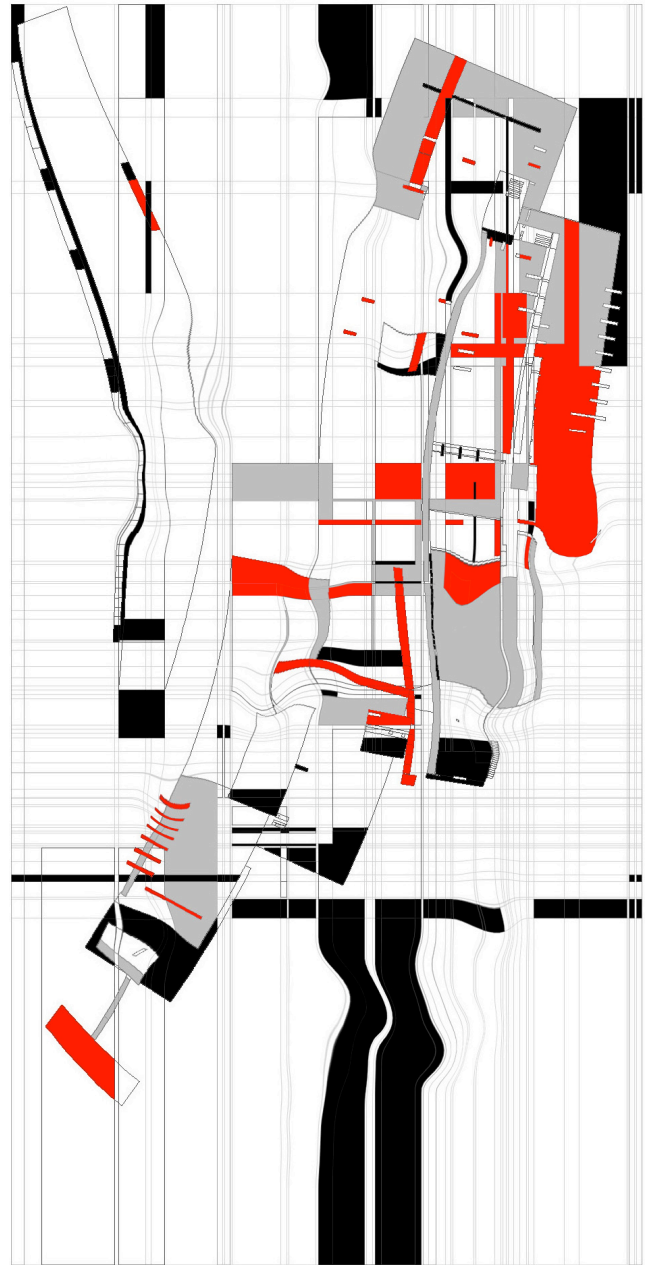


Fig. 6. Liquid improvisation encodings: pinch and faded pinch distortions.

#### Conclusion: Improvisation and Architecture

The Bebop Space/Leap Frog project examines the structural and thematic aspects of a jazz vehicle through an interpretive analysis. The project begins with a complex vocabulary derived from an analog-digital collage. The collage is seen as analogous to the tune/vehicle in a Bebop piece. Structural ideas referring back to the vehicle are transposed from the vocabulary into a series of interpretive two-dimensional compositions that define underly-

ing organizational strategies and conditions of spatial jointure. Jazz concepts are translated into architecture. The project emphasizes that jointure of elements and articulation of space can emerge from the act of visually abstracting and re-interpreting jazz improvisation. The analytic strategies, tactics, and techniques generated from iterative two-dimensional drawing and collage improvisations are synthesized into a complex three-dimensional structure.

*As I was listening to multiple takes of Leap Frog, I heard the three-dimensional space of interpenetrating movements. The music is a series of improvisational layers. Individual parts were layered and projected into three dimensions. I saw my two dimensional compositions being re-composed into three-dimensions. Primary and secondary precincts juxtaposed subtleties. I saw my scheme in the music. I saw simultaneity and complex geometries. I saw the architectonics of the music. The craftsmanship of the musical structure has references to other sources outside of the music. There are volumetric representations in the music.(8)*

The jazz “vehicle” is used as a point of departure for the generation of architectural form that is inherently structured and ordered. The attitude presented is that potent formal meaning can emerge from the analysis, manipulation and transformation of external references, whether it comes from jazz music or one’s own prior work.

**Notes:**

1. David H. Rosenthal, *Hard Bop* (New York: Oxford Paperbacks, 1992).
2. Martin T. Williams, ed., “Bebop,” *The Art of Jazz : Essays on the Nature and Development of Jazz* (New York: Da Capo Press, 1979).
3. Jerry Coker, *Listening to Jazz* (Englewood Cliffs, NJ: Prentice-Hall, 1978).
4. Bennett Neiman. “Improvisation and Articulation: The Jazz Studio.” *Constructions of Tectonics for the Postindustrial World, ACSA European Conference*, Copenhagen (1996): 161-167.
5. John De Cesare, “The Theory of Visual Space in Music,” *Precis 6*. (New York: Rizzoli, 1987): 83-187. In this example, the author translated musical scores to graphic representations.
6. *Leap Frog*. Recorded June 6, 1950 (New York: Verve Records Inc.) Personnel: Charlie Parker, alto sax; Dizzy Gillespie, trumpet; Thelonious Monk, piano; Curly Russell; bass; Buddy Rich, drums. Original sessions produced by Norman Granz.
7. See the *Adobe Photoshop 5.0 User Guide*. Manual Distort filters geometrically distort an image, creating 3-D or other reshaping effects. Pinch Squeezes a selection. A positive value up to 100% shifts a selection toward its center; a negative value up to -100% shifts a selection outward. The Fade command fades the effect of a filter such as pinch. You choose a blending opacity and a mode to determine how pixels are modified. Applying the Fade command is similar to applying the filter effect on a separate layer and then using the layer opacity and blending mode controls.
8. Thoughts recorded using IBM ViaVoice while in the process of creating chromatic encodings.