

# IMAGES OF NOTHING

## The Graphic Art of Herbert Brün

Richard Howe

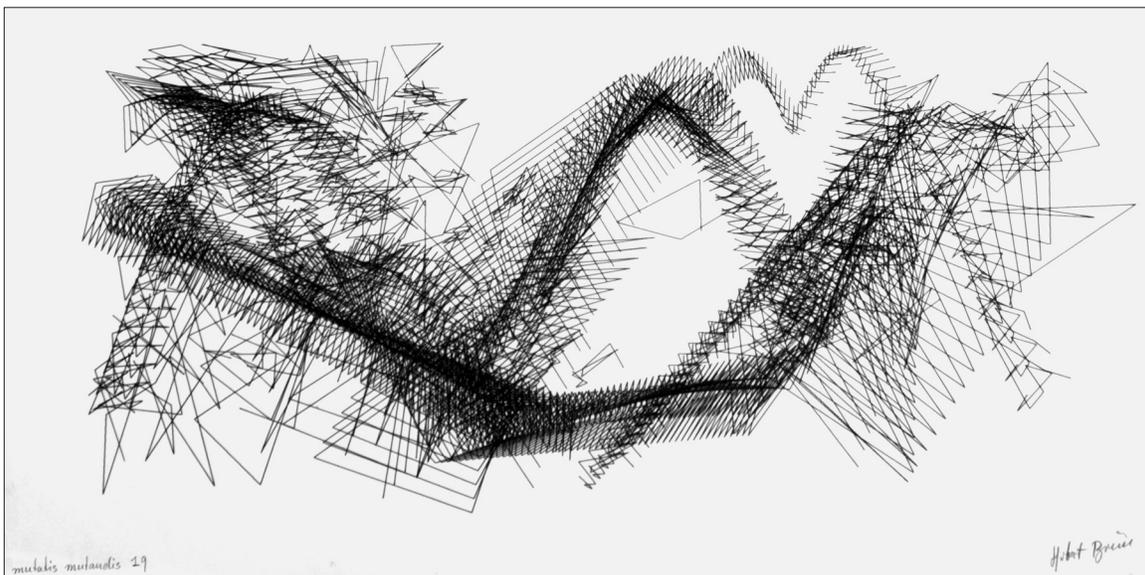
DRAFT 2.1

לֹא-תַעֲשֶׂה לְךָ פֶסֶל, וְכָל-תְּמוּנָה, אֲשֶׁר בַּשָּׁמַיִם מִמַּעַל, וְאֲשֶׁר בָּאָרֶץ  
מִתַּחַת—וְאֲשֶׁר בַּמַּיִם, מִתַּחַת לָאָרֶץ. לֹא-תִשְׁתַּחֲוֶה לָהֶם, וְלֹא תַעֲבֹדֵם:  
שְׁמוֹת כ.ג.ד

Thou shalt not make unto thee any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth. Thou shalt not bow down thyself to them, nor serve them . . .

Exodus 20:4-5

The graphic work of Herbert Brün comprises some two thousand “ink graphics drawn by a plotter controlled by a computer programmed by the composer” over the thirty-year period 1967–1996. Plotters were electro-mechanical drawing machines that moved pen and paper relative to one another in accord with instructions generated by the computer in order to record or “plot” a visual representation of a program’s output on paper. The exact number of graphics made by Herbert in this way is unknown and would in any case be difficult to determine in some meaningful

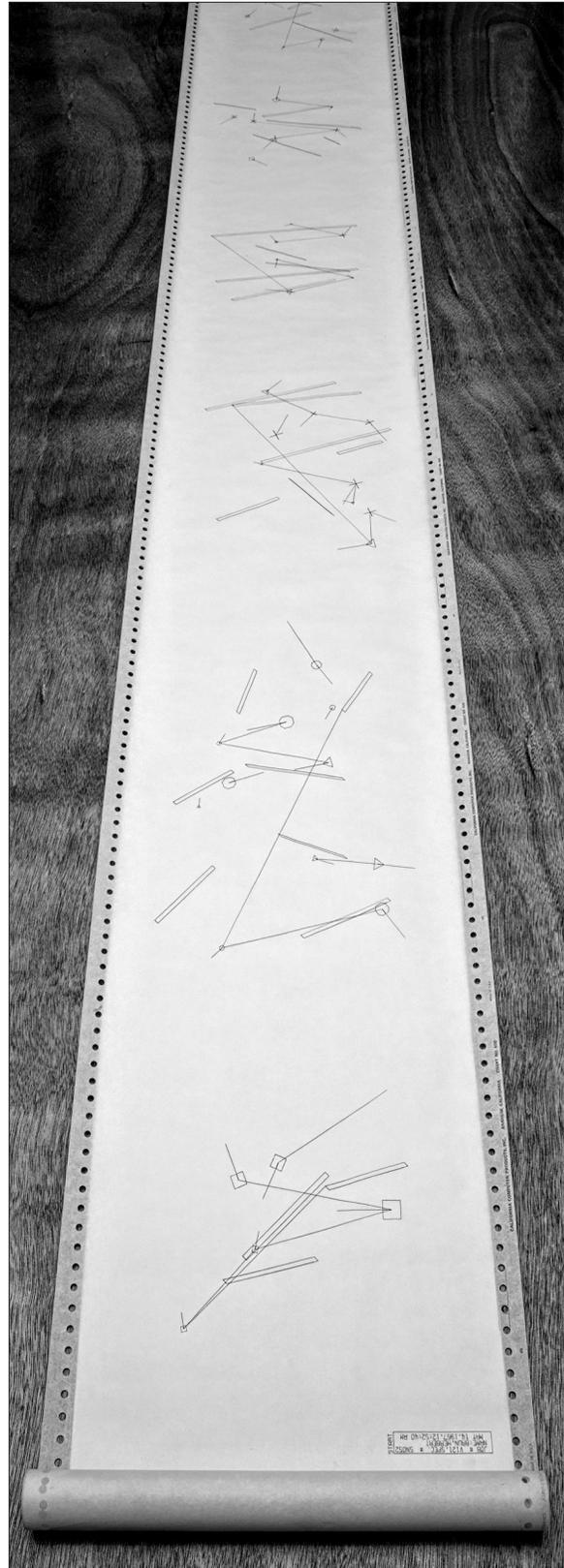


*Mutatis Mutandis 19* (1968)

way, owing to the large number of preliminary or draft versions, duplicates made at different sizes, and close variants, barely distinguishable from one another. Dating is also problematical: a great many of the graphics are undated, and even when the date is known, it bears no necessary relationship to when the graphic was conceived or even executed for the first time, other than of course to be later. The earliest of the finished graphics, *Plot for Percussion*, is signed and dated March 30, 1967, though there exists an earlier version dated February 18, 1967; there are almost certainly none earlier than the fall of 1966. The latest I have seen is dated February 25, 1992, though the published folio of his *Floating Hierarchies* bears the date 1984–1996.

Preliminary versions of the graphics were usually made with ball point pens installed in the plotter; higher quality but less reliable technical drawing pens were generally reserved for final versions intended for display or eventual publication. The unreliability of the plotters was a serious problem: “something always goes wrong,” Herbert wrote to the Munich gallerist Helga Orny in April, 1980, “either the ink runs out, or the pen clogs, or the paper has defects into which the ink bleeds, or the machine vibrates and makes unwanted ornaments, or even just sits there and makes one big blob.”

With very few exceptions, the graphics are in black or, less often, blue ink; the exceptions include a few drawn in red ink as well as at least two drawn in red, green, blue, and black inks. The graphics were usually made on a thin



The first six feet or so of a draft of *Touch and Go* dated May 14, 1967

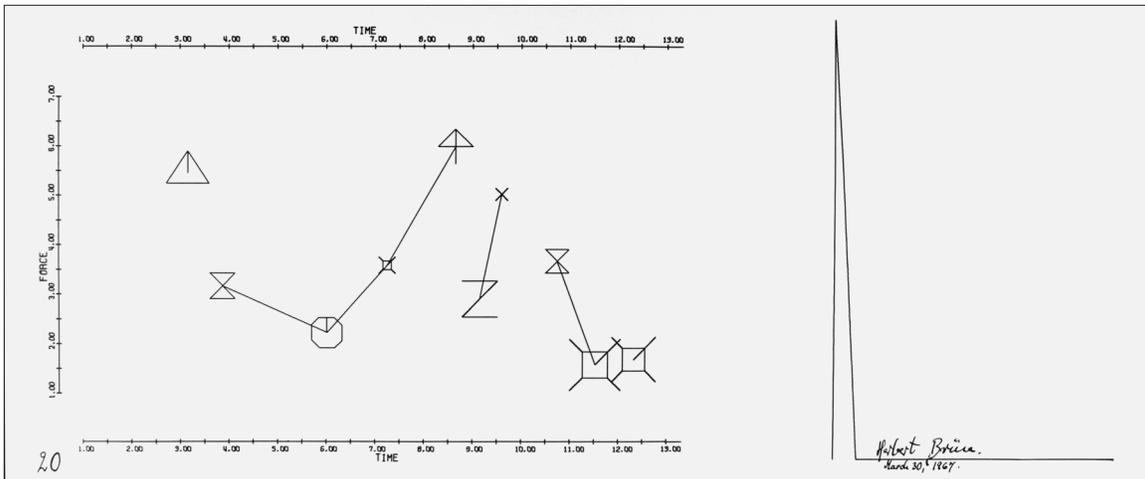
but hard-surfaced translucent recording paper manufactured specifically for use with the plotters and supplied in rolls or, later, fan-folds. This paper, though surely not archival in the strong sense of the term, is not the ordinary computer paper that was used in line printers for printing reports, program listings, etc., but was designed to withstand repeated exposure to the chemically hostile blue print processes often used for making copies at that time, and mostly shows relatively little deterioration of the kind readily observed in ordinary pulp papers after even a few decades, though the graphics that have been continuously exposed to daylight without UV protection have yellowed and darkened substantially. The plotters also accepted higher quality drafting vellum, which was used for final versions of some of the later, larger graphics.

Pen motion and paper motion on the plotters were perpendicular to one another, with the result that only lines that are exactly parallel or perpendicular to the pen and paper motions are smooth: lines drawn at any intermediate angle are slightly jagged owing to the fact that the devices moved both pen and paper in discrete increments: 0.01" on the earliest of plotters used; later models reduced this to 0.01 mm, *i.e.*, 0.004". The jaggedness is most pronounced when the lines are at angles of  $\pm 45^\circ$  to the axes of motion. All lines drawn are of equal thickness, about 0.02".

No definite boundaries are defined for the graphics except by the dimensions of the paper, typically 12" to 33" wide; the rolls ran to 120 feet in length so this was not a limiting factor; the fan-folds were, however, limited in both dimensions, with the distance between the folds less than the width between the sprocket perforations for any given size, *e.g.*, 8.5"  $\times$  11" or 11"  $\times$  17". The graphics were generally trimmed into sheets ranging from as little as about 7"  $\times$  12" to as much as roughly 36"  $\times$  58". The drawn figure(s) sometimes very nearly reach the edges of the paper, sometimes are embedded in a largely blank space, and of course all the variations in between. They also vary as to their aspect ratio and orientation: some are quite wide relative to their height, others are more nearly square, and some are taller than they are wide.

As many as 300 of the graphics may have been intended for performance: each of the three 1967 pieces: *Plot for Percussion*; *Touch and Go*; and *Stalks and Drops and Trees and Clouds*, is a single, extended, graphical composition, comprising, respectively, 20, 18, and 31 consecutive iterations of the program that produced them. Nearly 200 if not more were considered part of the 1968–1989 series *Mutatis Mutandis* for unspecified interpreters, though not all were named as such. At least two dozen graphics and probably a great many more were produced in the 1984–1996 series *Floating Hierarchies* for unspecified duos, trios, and quartets. The remainder — and by far the majority — were apparently not intended for performance, among them the *Density Variations*, *Ensemble Analogues*, *Letters to the Present*, *Links*, *Polyplots*, *Webs*, and many others as well.

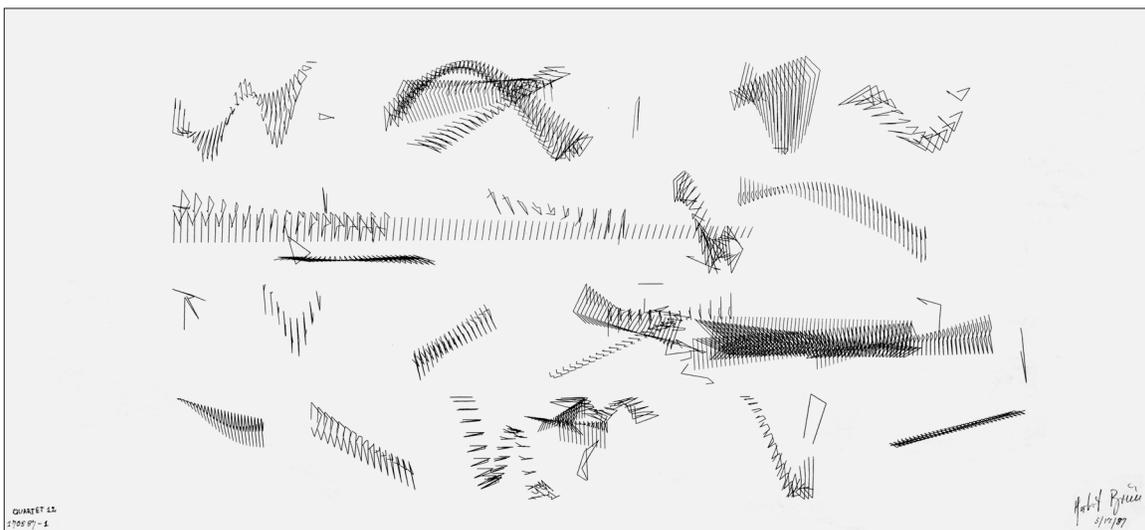
The three percussion pieces of 1967 were the first musical scores ever to be made with the assistance of a computer and a graphical output device, and as such have a place in the history



*Plot for Percussion*, the last page, with Herbert's signature, dated March 30, 1967

of music's encounter with 20th century technology in addition to their significance as moments in the evolution of one of the characteristic lines of thought in the art of the 20th century. The graphics that make up the three pieces for percussion differ from those that followed primarily in their use of the plotter's library of pre-programmed symbols. Though conceived from the outset as notations to be used by the performer to denote instruments, actuators, and a range of musical gestures, these pieces are not, however, guides to improvisation but, like the *Mutatis Mutandis* graphics that followed them, are compositional frameworks to be completed by the performer prior to performance.

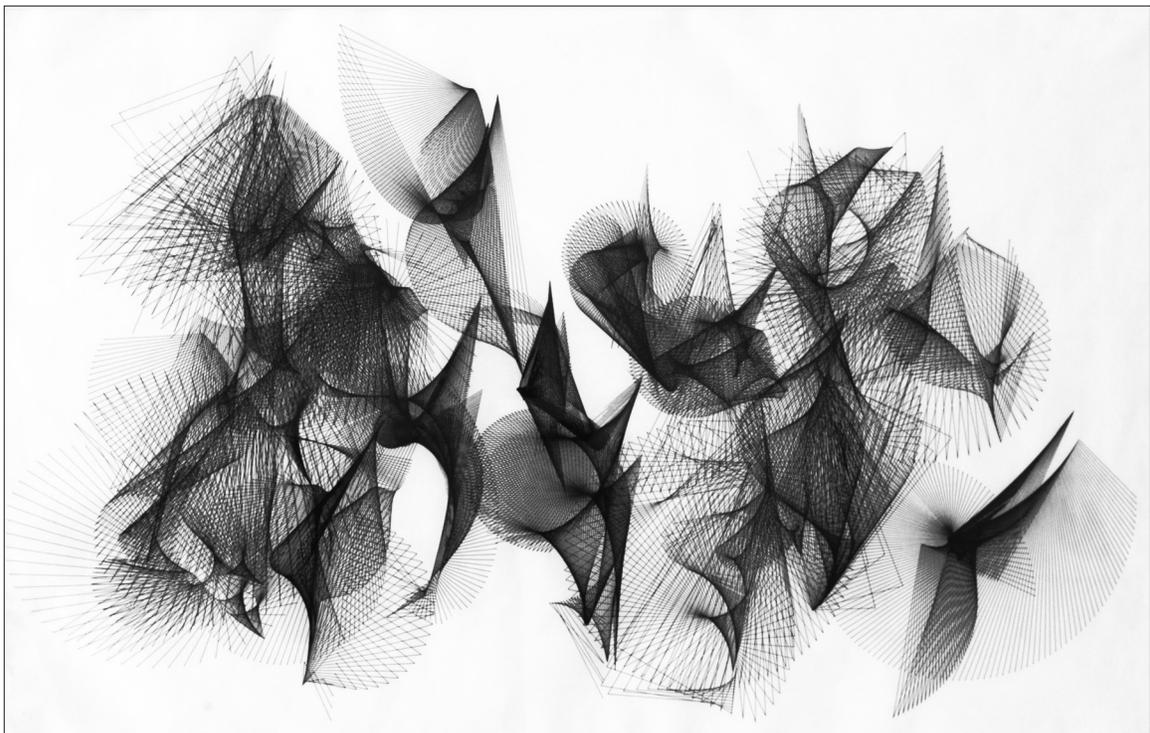
The graphics in the later series *Floating Hierarchies* are again visually *sui generis* in that each graphic, *i.e.*, each *Hierarchy* juxtaposes multiple program runs on a single sheet. The *Floating Hierarchies* also represent a return to Herbert's original conception of the graphics as meta-scores,



*Floating Hierarchies: Quartet 12-1* (1987)

after a decade or so 1973–1983 of his work being more oriented to graphics intended for viewing as works of art rather than for performance. The graphical vocabulary of the *Floating Hierarchies* series is a simplification of the *Mutatis Mutandis* graphics, but although the *Mutatis Mutandis* graphics themselves are often complex and at times border on the chaotic, the graphics in the *Floating Hierarchies* are considerably less coherent (and are also clearly distinct from the earlier pieces for percussion).

The *Mutatis Mutandis* graphics and those in the other series that are akin to them in their overall visual coherence and sophistication can be viewed as finished works of art in their own right or as close variants or experiments that might or might not have been discarded eventually. Some but by no means all of the graphics are signed “Herbert Brün” in the lower right hand corner, sometimes with a date below the signature, and some, but again by no means all, have titles or other identifiers written into—usually—the lower left corner. Apparently he did sign works that were to be exhibited. The anecdotal evidence is that like most working artists Herbert was less concerned about signing his work than were the people to whom copies were given or sold: sometimes he signed them and sometimes he didn’t, and often he did so only when asked. So it is not, in general, possible to privilege the signed works over the others as being finished or approved, and it may well be that they are all, or almost all, to be regarded as having been of equal stature in the artist’s eyes.



*Links III “all”* (1987)

Over a hundred of the graphics are in the Herbert Brün archive of the Akademie der Künste in Berlin. The 31 graphics exhibited September 10 through October 16, 2004, at the Kentler International Drawing Space in Red Hook, Brooklyn, are on long term loan to the Kentler's highly regarded Flat Files collection of contemporary work on paper. The majority remain in family and other private collections and are still being catalogued. The number lost over the years is also unknown and moreover almost assuredly unknowable. Herbert was many things: pianist, composer, conductor, artist, writer, lecturer, and teacher, but though he archived nearly 13,000 pages of materials related to his work as a composer — manuscripts, scores, notes, letters, concert programs, newspaper clippings, etc. — a bookkeeper he was not, and many questions, even the simplest, about his graphic *oeuvre* are likely never to be answered.

## DRAWINGS

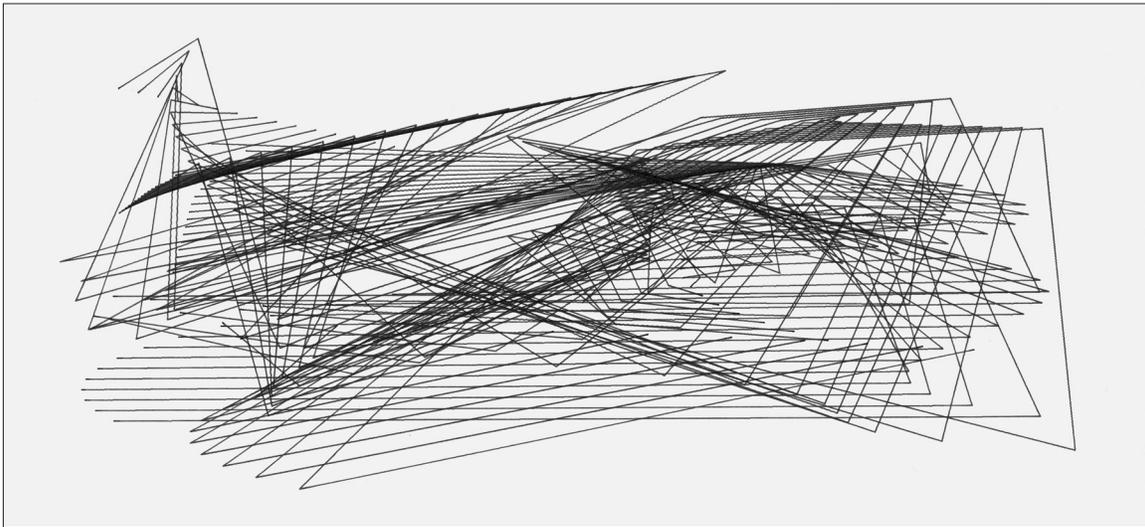
A work of morality, of politics, of criticism, perhaps even of literature, will be finer, all things considered, if made by the hands of a geometer.

Bernard Le Bovier de Fontenelle, *Preface on the Utility of Mathematics and Physics*, 1699.

All of Herbert's graphics are drawings in the ordinary sense of the word, but the art sense of the word would probably exclude the early (1967) pieces for percussion, which were in any event never intended to be regarded as anything other than graphical scores. The art sense of the word would also tend to exclude the much later (1984–1996) *Floating Hierarchies*, which represent a return, albeit with greatly increased sophistication, to the earlier graphics intended for performance. All the rest, with the exception of the series *Mutatis Mutandis*, were intended as art, as drawings to be looked at rather than performed. The *Mutatis Mutandis* graphics that followed directly (1968—) on the percussion pieces may be regarded as transitional: intended as a more open-ended species of score for eventual performance — the earlier ones even making use of the same visual lexicon — they nevertheless strongly prefigure the art drawings proper and may legitimately be considered to be such as well.

But are any of Herbert's graphics legitimately to be called drawings in any sense of the word other the ordinary one? They do certainly raise the question of the ontological locus of a work of art produced with this technology: is it the physical object of ink and paper, the abstract constellations of lines in an abstract plane, or the program that generated them, so that even a first physical realization of any of them with ink on paper must be regarded as a copy rather than an original?

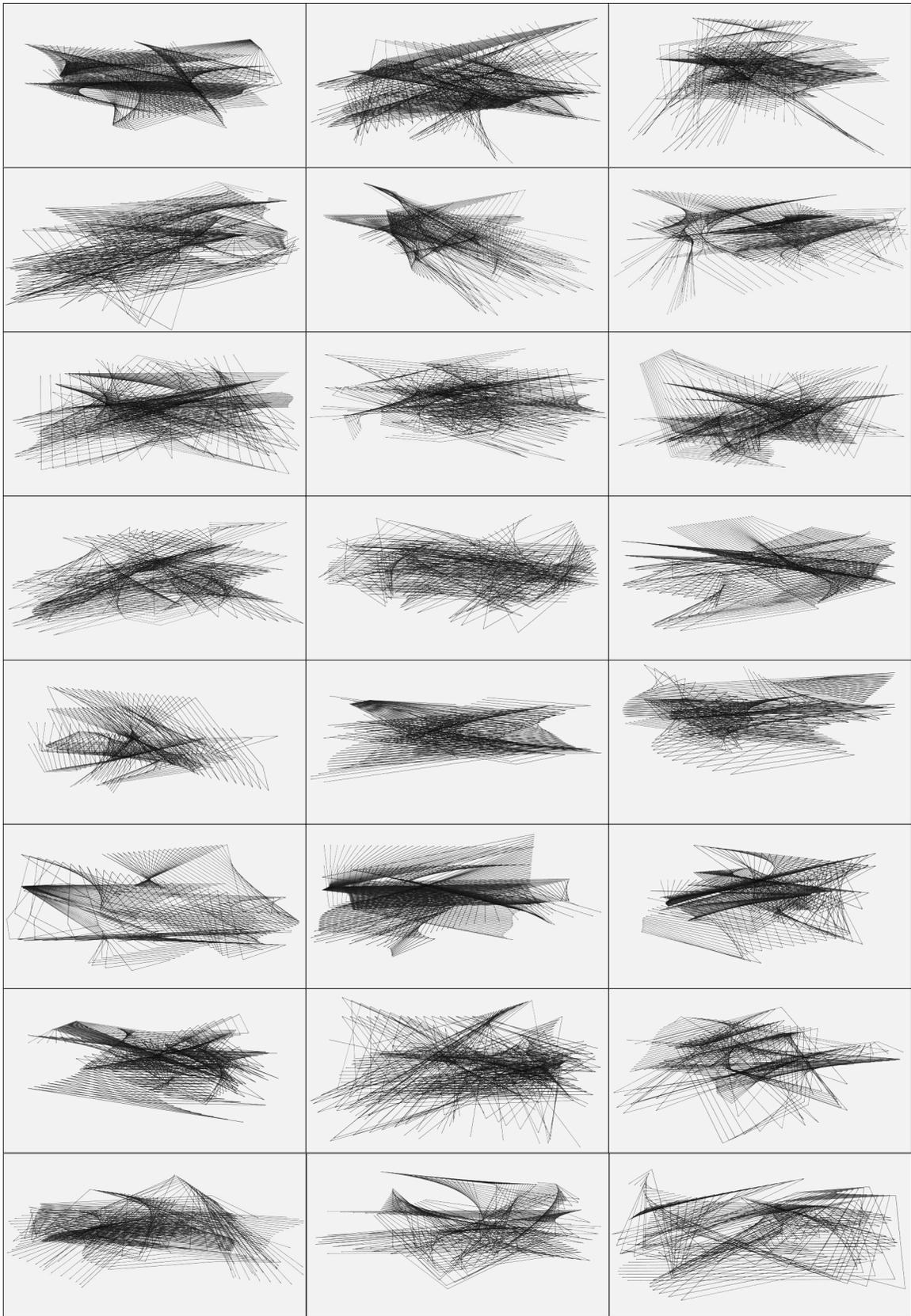
But the question, though interesting as a conundrum akin to the one of whether the ontological locus of a piece of music is the score, the performance, or the listener's experience, is something of a red herring: for all their apparent complexity and mechanical precision, the graphics could in principle have been made by hand without much difficulty, however tedious the actual work might have been. Even the most complex of them amount to no more than a few hundred lines, so even the calculations could have been done by hand, or at least with a slide rule and a set of trigonometric tables.



Untitled (1981)

What the computer and the plotter offered was not the ability to draw something that could not be drawn by hand — though not, of course, free hand — but the ability to produce in a relatively short period of time and with comparatively little effort a great many variations of the same theme, that is to say, a great many drawings based on the same program, with variations resulting only from changes in the initial program values and from the introduction of different and by definition only statistically predictable random values supplied by the computer at each iteration of the program.

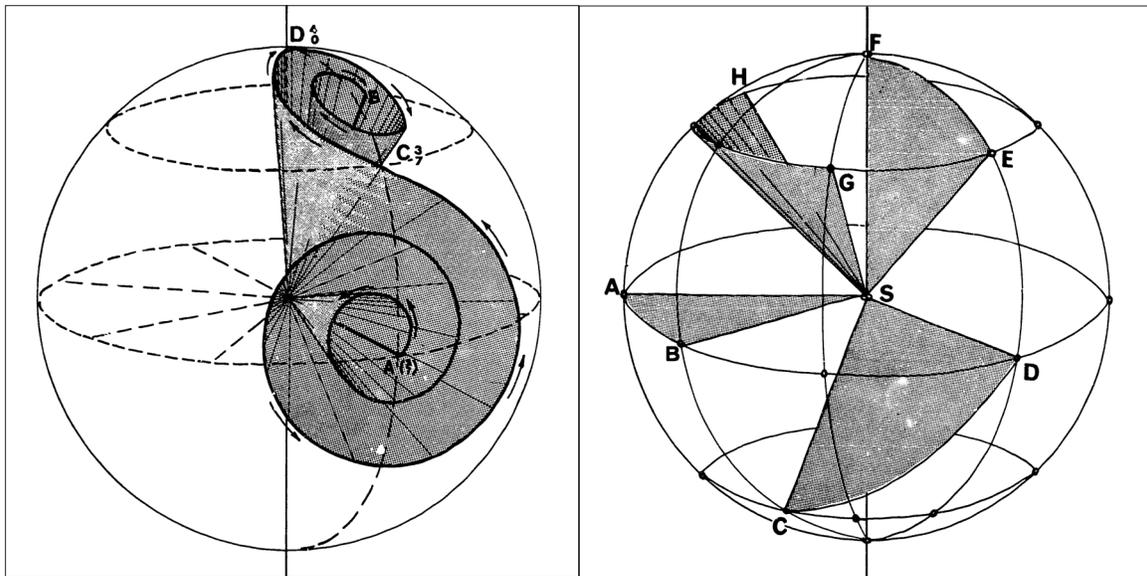
If Herbert's graphics are drawings in the ordinary sense of the word because they are ink on paper, and more specifically ink conveyed to the paper by a pen, albeit a pen installed in a mechanical device rather than held by the hand of the artist, it is their relationship to touch and gesture that brings them into the fold of traditional drawing. The pen touches the paper to convey the ink to it, and the result is a record of the movements of the pen relative to the paper, here resulting from the plotter's moving both pen and paper, but in traditional drawing resulting from the combined



27 variations out of a set of a 86 (1981)

movements of the artist's motions of fingers, hand, wrist, arm, legs, and even torso while touching the pen — or pencil or brush or needle or crayon or even the fingertips directly — to the paper. These combinations of movements are gestures, which are to movement what words are to vocalization: repeatable complexes that have become intelligible as entities in their own right. It is this relation to movement and gesture that is so prized for its own sake in the pen and ink drawings of Rembrandt, the brush and ink drawings of the Sumi masters, the etchings of Goya, Picasso's lithographs, and some of the later paintings of Pollack and De Kooning. As even this short list suggests, it is not owing to the pen or pencil or brush or needle or lithographer's crayon *per se*, nor to the ink or graphite or paint, nor even the paper or silk or canvas or metal or stone on which the work is executed, that these works are perceived and understood as drawings, rather it is that as records of touch they allude to the world of gestures, large and small, in which and through which they were made.

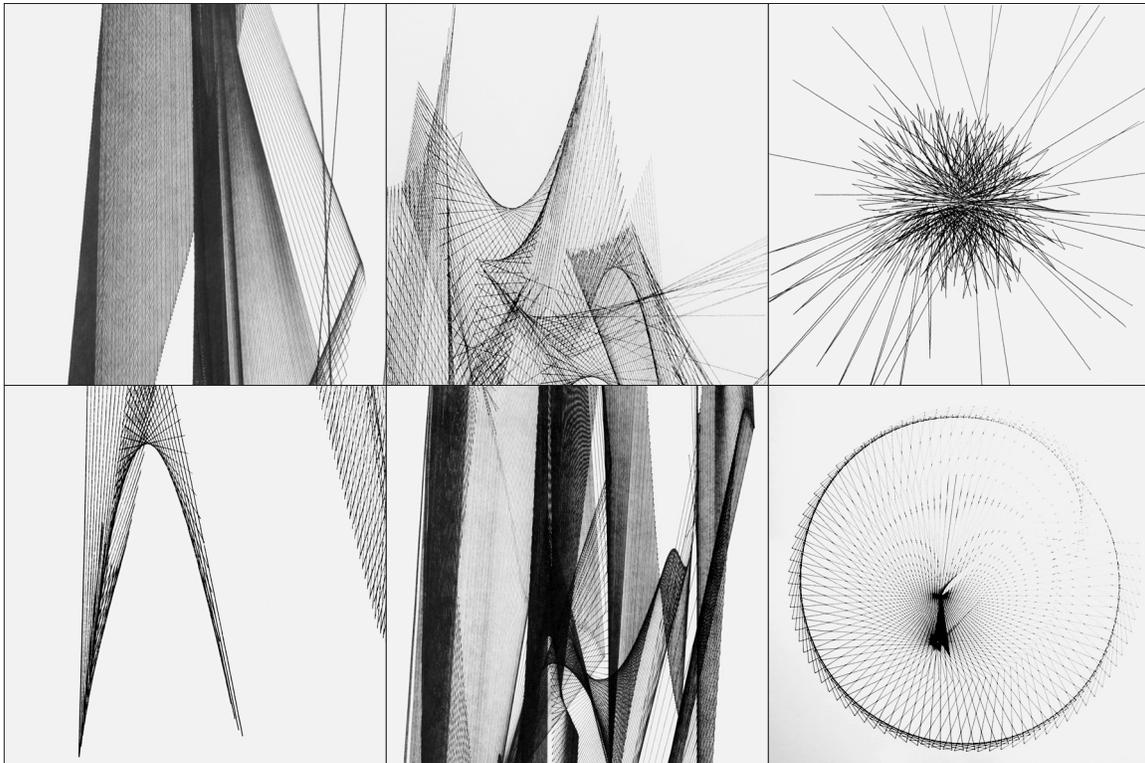
Herbert's graphics were not drawn by the hand of the artist, but the repertory of geometric curves—in particular those derived from the trigonometric functions: sine, cosine, tangent, arc tangent, and so on—that generate their implicit shapes are also those required to describe the movements of the body's limbs in the complex paths taken by, *e.g.*, moving fingertips while all the other parts of the body are also all moving simultaneously, whether in a dancer's choreographed movement or in an ordinary person's walking down the street. Of course the graphics are not constrained in the way movements are, by the physical limitations imposed by bones, joints, ligaments, tendons, and muscles, but it is nonetheless this shared descriptive geometry of shape and movement that links the graphics to drawing, and invites the viewer to see in them a vision of an



The abstract geometry of movement. Left: the path of a fingertip describing two spirals while the arm rises; right: arms and legs in simultaneous motion.

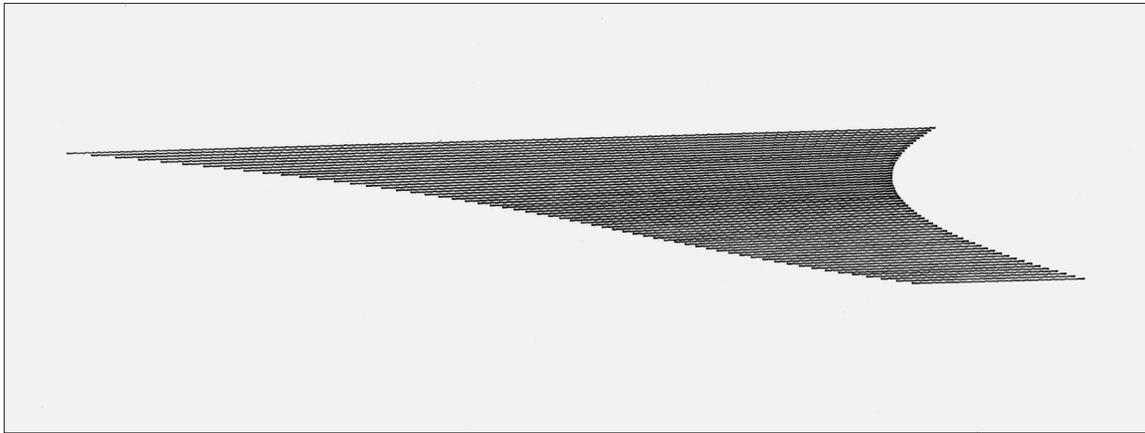
unseen — or as yet unseen — world of touch and gesture. Considered in this light, the facts of ink and paper become less relevant, though certainly not altogether irrelevant, for perceiving and understanding the graphics as drawings.

Though the drawings are geometric and abstract, their allusions to touch and gesture result in conceptual cousins of the musical characters studied by Kolisch, not characters in a literal, mimetic sense, but in the sense of recurring and meaningful constellations of elements. The *dramatis personae* of the drawings comes to at most a few dozen such characters, which — for simplicity and vividness of expression, not to imply any such ideas on Herbert's part — might be dubbed, *e.g.*, the fold, the tent, the star burst, the arch, the undulant curtain, the eye, and so on. Though the seeing eye involuntarily parses the drawings into its characteristic figures — the names I have just offered are not so important — the basic element of the drawings is the straight line connecting two end points: overall the drawings consist of nothing but such line segments. The characteristic figures that dominate the middle ground of the drawings' intelligibility are entirely compounded out of line segments: the internal curves of these figures as well as the larger curves defining their spacing and scaling are those visually implied by the lengths, angles, and spacings of what are, in fact, simply so and so many straight lines. As drawings go, the number of



A few of the characteristic figures. Top, left to right: the fold, the tent, the starburst;  
bottom, left to right: the arch, the undulant curtain, the eye.

lines is generally not so many: the apparent complexity of the drawings results from the relationships among their elements and not from the sheer number of lines, which rarely total more than a few hundred at most, and often far fewer than that.



Untitled fragment (1981)

More often than not, the drawings consist of multiple overlays and compounds of the characteristic figures and sequences of them into more complex compositions; where the figures overlay one another shadings of cross-hatching appear. In conjunction with the implicit generative curves, these shadings give drawings both a three dimensional aspect and a rhythmicity that in turn gives rise to a sense of motion, and in keeping with a culture that reads and writes from left to right, a sense of the drawings often emerges in which time is also felt to be passing from left to right, as it would be in any ordinary Cartesian graph in which ascending values on the horizontal axis are meant to represent later and later points in the passage of time, as indeed they do and are labelled as such in the three percussion pieces. In many, even most of the drawings, the figures or characters seem literally to dance or float or ripple through a space that exists somehow apart from the physical drawing, which is thus, in the classic way of figurative drawing since the Renaissance, a window to a world apart from and beyond itself and its viewers.

The drawings might summarily be described as comprising rhythmically scaled sequences and overlays of visually coherent figures that interact to evoke a sense of movement in three dimensions. Despite their complexity, almost all the drawings are highly legible in the sense that nothing appears to be withheld from the viewer: as abstract as they are, as much as has been left out, they still appear complete in themselves, nothing is missing. And as allusive to the real world as they often seem, the allusions soon prove to be so many faces and figures in the clouds, so many images — memories, dreams — projected onto them by the viewer, sometimes voluntarily, more often not, but in either case brought to the drawings to complete them rather than inhering in



*Neither/Nor I (1973)*

the drawings themselves, despite their connections to world of touch and gesture. Legible and intelligible as they are, the drawings are never more than tangentially mimetic, though I am quite certain that Herbert delighted in the faces and figures in the clouds as much as anyone.

But there is more to it than that: besides materials, touch, and gesture, Herbert's drawings share a further three traditional characteristics of the purely visual arts: they are silent, they do not change, and whatever they may imply in the way of movement, they themselves do not move. They do not force themselves onto or in any way intrude on someone who wants to disregard them for a day or a decade, but are nonetheless completely available the moment someone wants to look at them. And if a drawing appears to change over the course of a look or a lifetime, it is certain that

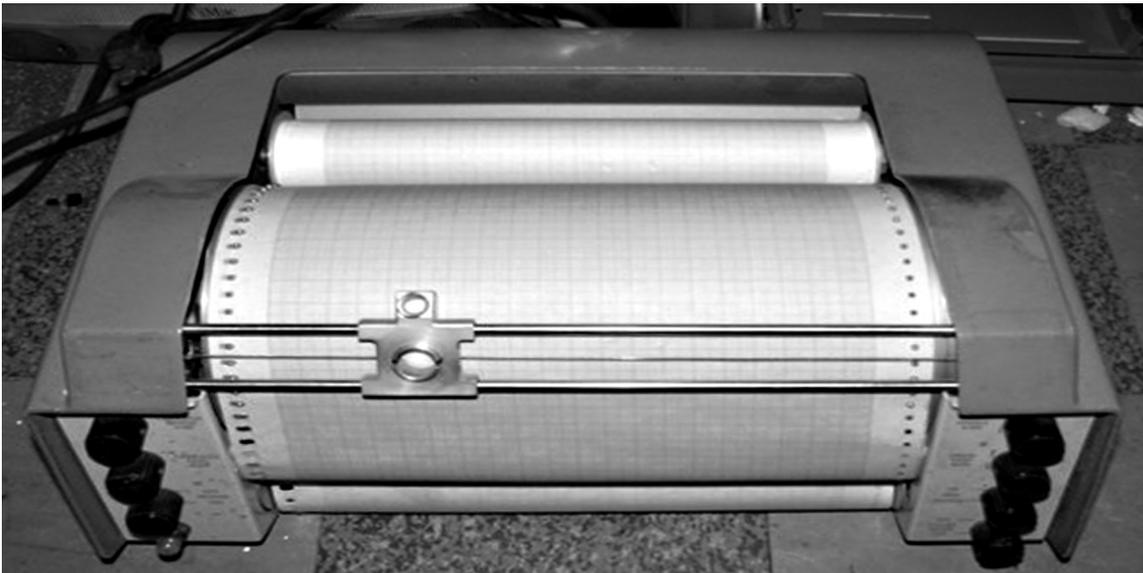
it is not the drawing that has changed but rather the viewer, perhaps — but only just perhaps — in part as a result of looking at them. In these respects, at least, Herbert's drawings are no different from any other traditional artifacts of the visual arts.

## ORIGINS

The places we have known do not belong only to the world of space on which we map them for our own convenience. None of them was ever more than a thin slice, held between the contiguous impressions that composed our life at that time; the memory of a particular image is but regret for a particular moment; and houses, roads, avenues are as fugitive, alas, as the years.

Marcel Proust, *Swann's Way*, concluding sentences.

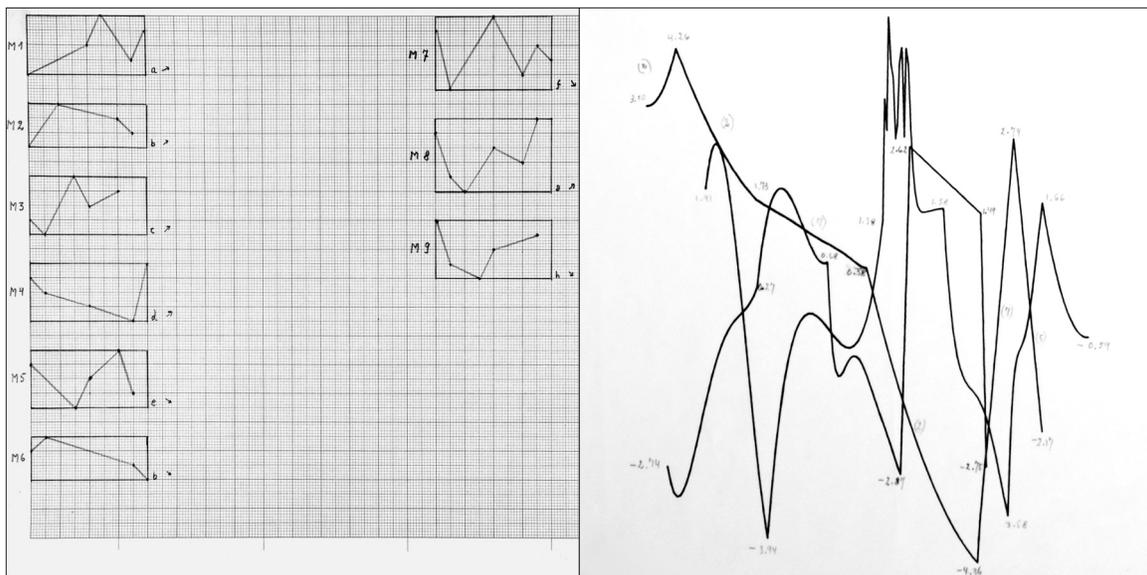
The proximate technological impetus for Herbert's turn to the graphic arts was the University of Illinois' acquisition of a California Computer Products — “CalComp” — plotter, probably in the academic year 1964–1965. Herbert had come to Illinois from Munich at the start of academic 1963–1964 at the invitation of LeJaren Hiller, whose 1955–1957 *Illiad Suite* for string quartet had established the potential of the computer as more than just a useful device for working out the dauntingly complex permutations and combinations of tone rows and the like with which the



Front view of a Calcomp 565 plotter, the model likely used for Herbert's first graphics, or one very similar to it. The pen moved back and forth over the paper on the horizontal rails while the paper moved up and down around the drum; pen contact with the paper was controlled by a simple solenoid switch. The paper rolls were 12" wide and 120' long; the usable width of the paper was 11" between the perforations.

“Darmstadt School” composers were concerned in those years: uses already known to Herbert by way of Gottfried Michael Koenig, with whom he had worked in the electronic music studio in Cologne. Herbert too had become frustrated by the number of calculations required for his tape pieces *Anepigraphé* (1958) and *Klange unterwegs* (Wayfaring Sounds, 1962), and especially for his *Non Sequitur III* for instrumental ensemble and tape (1962, never finished), as well as by the inherent limitations of analogue electronic equipment for sound synthesis. Even if used only as a kind of better desk calculator, the computer could help with these difficulties.

Herbert also had bigger ideas, which were what interested Hiller when he heard about them in the course of Herbert’s 1962 lecture tour of the United States, and so Herbert came to Illinois to pursue the wider application of computers to problems of musical composition, including sound synthesis, which was one aspect of his initial efforts at computer-assisted composition: the 1963–1964 *Sonoriferous Loops* and the 1965–1966 *Non Sequitur VI*. It was in the course of this



Left: hand-plotted wave forms for *Anepigraphé* (1958); right: a relatively simple plot from 1979 with the values of the inflection (turning) and end points written in by hand.

work that Herbert would have first seen the plotter in operation and no doubt understood at once what it could do: it could for instance draw the new acoustic waveforms he was synthesizing on the computer, though as far as I know he never actually used the plotter to draw them, despite having made a number of attempts over the years to make such plots by hand. Herbert was not given to doing something just because it could be done.

As the spring, 1967, dates of the earliest finished graphics would suggest, it is unlikely that Herbert began working with the plotter until after *Non Sequitur VI* was finished, that is, practically speaking, no earlier than the start of academic 1966–1967. Nevertheless, the concepts that

had gone into his programming for *Sonoriferous Loops* and *Non Sequitur VI* anticipate aspects of the later graphic work, and it is not difficult to imagine that the plotter was on his mind from the moment he first saw it in operation. Herbert later said of *Non Sequitur VI* that it was the result of “an algorithm that by trial and error learns how to proceed by trial and error, a heuristic algorithm that learns to make multi-valent choices under stochastic conditions” — a description that is at least indicative of where his ideas were already heading. Seeing the plotter and what it could do was, however, just the beginning: working out what its capabilities implied for computer-assisted composition was something else entirely, something that over the coming years would gather up the disparate strands of his life and give them — and him — a new direction.

Ideas are not disembodied bubbles floating in an ethereal bath of virtual history: they are inseparable from the intertwining lives and circumstances of the people receiving, holding, and passing them on, always transforming them, sometimes more, sometimes less. Herbert arrived in British Mandate Palestine from Berlin in September, 1936, to study piano at the Jerusalem Conservatory of Music and Dramatic Arts, on the strength of a scholarship arranged by the Conservatory’s Director, Emil Hauser, who was working with the virtuoso violinist Bronislaw Huberman to get as many Jewish musicians as possible out of central Europe ahead of the catastrophe that they, at least, foresaw in Hitler’s “national socialist” government. Insofar as their efforts were successful, Mandate Palestine became a refuge for many of Europe’s best musicians, in particular those whose leftist leanings and involvement with “degenerate art” had made them triply undesirable back home — their being Jewish having been, of course, the fundamental problem. Herbert was just 18 when he arrived in Palestine by way of Genoa, having given his parents only a week’s notice of his intention to emigrate immediately in order to be able to enroll for the fall term at the conservatory. He never saw them again, nor they him.

At the conservatory Herbert studied piano with the Russian virtuoso and Zionist of the previous generation of immigrants, Leonid Nisvitzky, who had adopted the Hebrew name Arieh Abilea, and who tried, apparently unsuccessfully, to teach him how Chopin should be played. But Herbert’s interests lay elsewhere, and he soon became a student of Eli Friedmann, the assistant to the head of the conservatory’s piano department, Irma Wolpe, whose husband, Stefan, was also on the faculty, teaching composition. Wolpe was a true polymath whose interests encompassed all the arts, and this together with his radicalism was regarded with suspicion or worse by the rest of the conservatory faculty. There is little doubt that Wolpe was a difficult colleague as well, and he and his wife were fired from the conservatory in September, 1938, following an acrimonious exchange with Hauser. Herbert briefly studied composition, privately, with Wolpe in the fall of 1938 — later on he was rather careful to say that he had studied *at* the conservatory and *with* Stefan Wolpe, and not *with* Wolpe *at* the conservatory — before Wolpe left for America at

the end of 1938, yet he later acknowledged Wolpe as his most important teacher. Well before then, however, a regular circle of avant-garde musicians, writers, and artists had established itself in Jerusalem with the Wolpes' apartment as its center, a circle that included both Herbert and Wolf Rosenberg, from whom Herbert learned most of what he knew about the history of music and its literature — Rosenberg's collection of recordings was already legendary, even then — and the two were to be life long friends thereafter.

Wolpe was an extraordinarily forceful and sharp edged individual, and nearly everyone who knew him remembered him in sharply profiled terms. Herbert was no exception, recalling that

You could not find Wolpe not hollering . . . . you approached the street in which Wolpe lived . . . . and you were still quite far away and you heard his voice . . . . loudly proclaiming something, singing, hollering, screaming, all the time making enormous noises. Everything was significant; everything was of the greatest importance right now . . . .

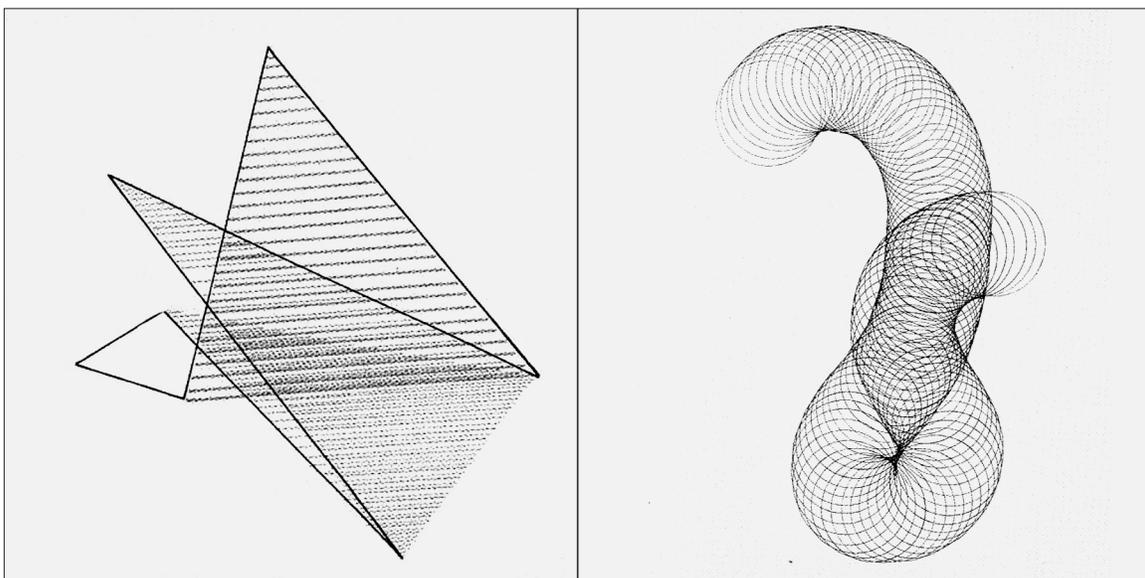
Herbert also remembered how

[Wolpe] loved pictures, and [later, in New York] he and de Kooning were friends, and some others. I mean he had always painters. He talked about Klee, and he made great friends in Palestine with the painters. And he always had paintings hanging all over the place. And [painters] gave him paintings because he knew what he saw, and he knew to say it. So painters were simply eager. And he taught us, too, in his funny way, when he didn't mean to, sort of by delegat[ing], to watch [!] them, and to see them, and to look more carefully. Touch. Touch with the eyes, touch with the ears, touch with the fingers. Everything's touch.

As a young man, Wolpe had harbored ambitions as an artist: he studied intermittently 1920–1924 at the Weimar Bauhaus, the “anything goes” Bauhaus of 1919–1925, where he took Johannes Itten's already famous *Vorkurs* (basic course) 1920–1921 and got to know the other Weimar Bauhaus faculty as well: Lyonel Feininger, Walter Gropius, Wassily Kandinsky, Paul Klee, Gerhard Marcks, László Moholy-Nagy (who replaced Itten in 1922), Oskar Schlemmer, and Theo van Doesburg; he probably also met El Lissitzky, the visiting Russian Constructivist and teacher at the Vkhutemas, the early, and radical, Soviet design school. Wolpe married Ola Okuniewska, one of Itten's first students, and stayed in touch with her and other Bauhaus friends for many years. Later on he also got also to know Kurt Schwitters and Hanns Eisler, becoming something of a Dadaist as well as a socialist.

While the Bauhaus in its later years in Dessau (1925–1930) and Berlin (1930–1933) became virtually synonymous with the clean look of modern design and, in particular, the spare style of architecture associated with Walter Gropius, Hannes Meyer, and Mies van der Rohe, the Weimar Bauhaus community was known for its political radicalism, its fervent commitment to the idea that art and artists can and should be actively engaged in the creation of a just society, and its certainty that formalism and abstraction represented the best available means for achieving these ends while avoiding contamination by the old ideas about art that had been thoroughly discredited by the social catastrophe of the 1914–1918 war. The Weimar Bauhaus was a magnet for like-minded people, and Wolpe arrived at the Bauhaus in 1920 already determined “to build a house in which one would want to dwell,” as he so concisely formulated the social import of the Bauhaus program a few years later, in 1924. Herbert’s intense conviction that art derives its essential meaning and significance from the artist’s intention to further the creation of a society in which one *could* want to live was in direct line of descent from the Weimar Bauhaus via Wolpe; when the two met at Darmstadt again in the early 1960s, it was Wolpe — still living in New York — who persuaded Herbert to come to the United States, on the grounds that he, Wolpe, needed someone else who could represent his kind of thinking in America, and Herbert, if anyone, would be able to do that.

In Mandate Palestine Herbert soon met the dancer Noa Eshkol, who taught him Hebrew; later they lived together in Holon, just south of Tel Aviv. Herbert had apprenticed to a firm in Berlin that produced stage effects for the opera after being expelled as a Jew from his school in 1933, and in Mandate Palestine — possibly through the polymathic Wolpe — he had become interested in

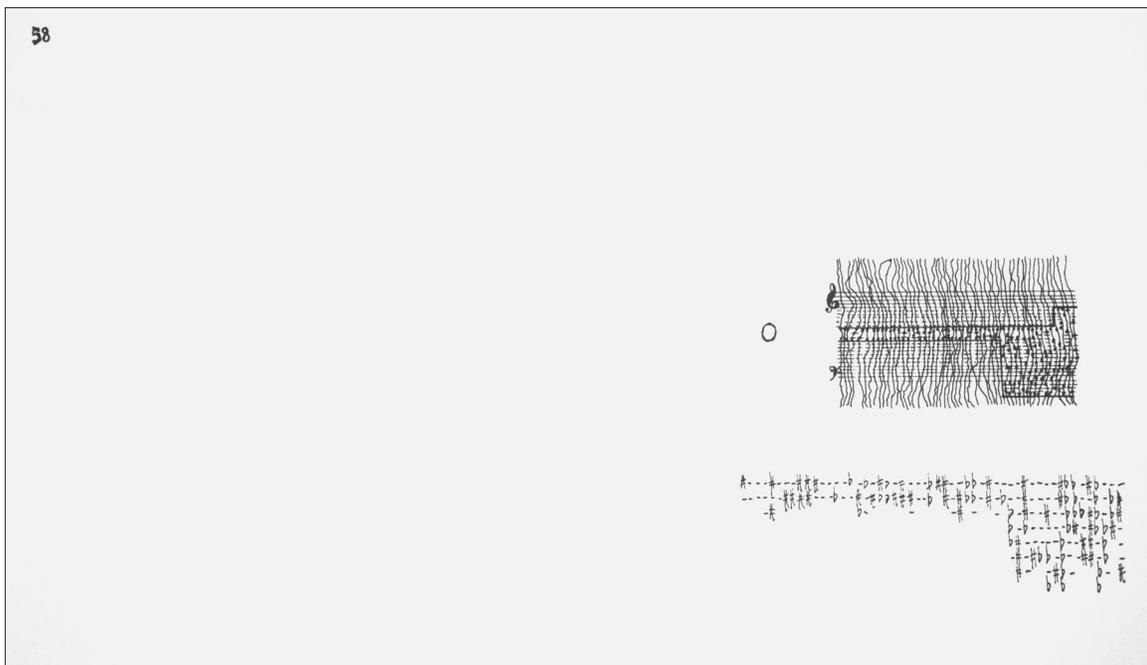


Two drawings by Frieda Kessinger for Joseph Alber’s 1929 *Vorkurs* (basic course) at the Dessau Bauhaus.

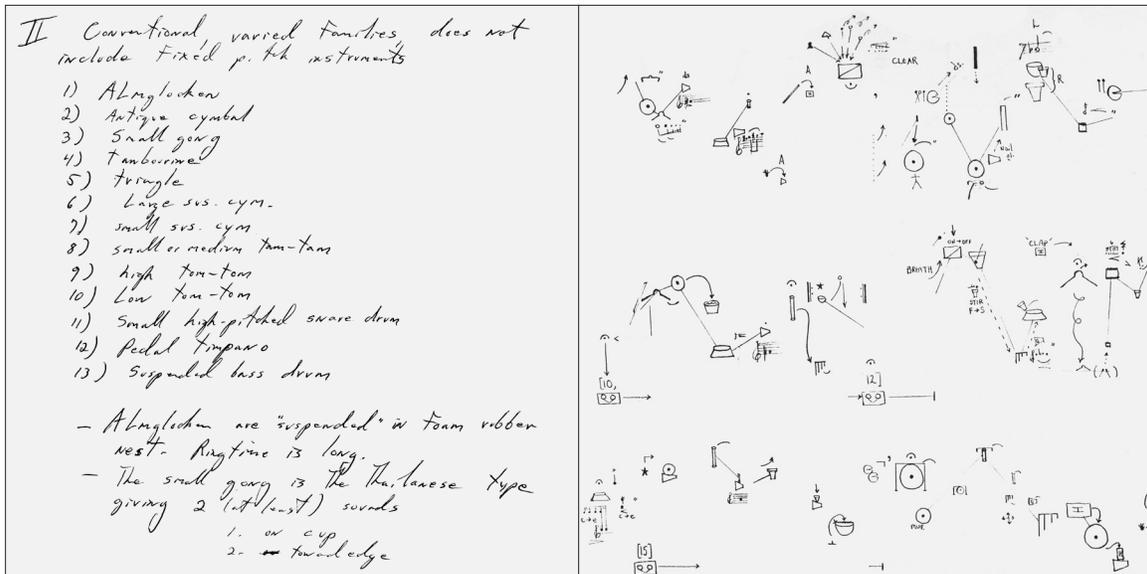


The emergence of graphical notation in the music of Earle Brown, John Cage, Cornelius Cardew, Morton Feldman, and others in the 1950s and 1960s surely provided a legitimating context — at least within the small world of avant-garde music — for the graphic work Herbert undertook in 1966–1967, but Herbert was not someone who was inclined to do something just because other people were doing it and it was now the in thing to do. His initial work with the plotter was occasioned above all by the presence of a number of first rate graduate student percussionists at the University of Illinois whose boundless enthusiasm for new music gave Herbert an exceptional opportunity to have his developing ideas about composing with the assistance of a computer and a plotter realized in brilliant and sympathetic performances by Michael W. Ranta, G. Allan O'Connor, and William Youhass, for whom in turn *Plot for Percussion*, *Touch and Go*, and *Stalks and Trees and Drops and Clouds* were written, and to whom each in turn was also dedicated.

The three percussion pieces were finished in 1967; the first of the *Mutatis Mutandis* “compositions for interpreters” in 1968. Though the *Mutatis Mutandis* graphics share some of the visual lexicon of the earlier pieces, the leap beyond them is enormous. It is of course a visual leap: even with the shared visual elements, the *Mutatis Mutandis* graphics look nothing like any of the three percussion pieces: they have become, or are fast becoming, drawings. The visible differences are due to the differences in their underlying conception. Typical of many of the graphical scores at that time, each of the three percussion pieces leaves a number of decisions open to the performers: they are to decide what instruments, actuators, physical movements, and musical gestures are to be assigned to the lexical elements of the scores, thus completing the composition process at this level and pro-



1950s graphical notation: page 58 of Cage's 1958 *Concert for Piano and Orchestra*



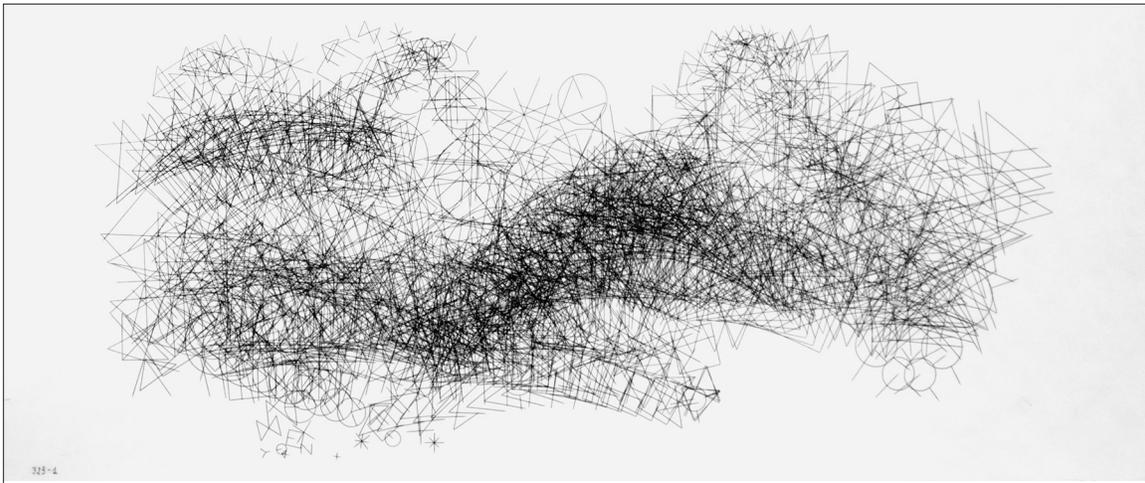
Left: page from Michael Ranta's letter to Herbert discussing alternatives for the assignment of instruments to the lexical elements of *Plot for Percussion* (no date but surely from April–May 1967 when he was preparing to give the piece its premiere); right: detail from Allen Otte's later (1987–1988) realization of the piece.

ducing a specific and unique rendering—though never an improvisation—for performance. The scores themselves define only the larger invariant structures and their relationships, both temporal and physical—in the set up of the instruments on stage and the performer's movements among them—and thus specify not a particular rendering of a given score but an equivalence class of all the renderings derived from it.

For all the innovations—plotter, computer, program—in how they were produced, the percussion pieces remained within the conceptual frame of the traditionally notated score, which defines an equivalence class of its possible performances. *Mutatis Mutandis* broke out of this traditional framework, eliminating any references to instruments or gestures, whether musical or not, and thus leaps into the realm of wholly abstract and atemporal structures, made visible perhaps as records of abstract processes, but in any case devoid of any elements of denotation. Compositions derived from *Mutatis Mutandis* in accord with Herbert's instructions cannot be traced back to them without captioning by the interpreters; the same holds for any reading of the subsequent series of drawings. From *Mutatis Mutandis* onward, Herbert's drawings are, however paradoxically, only themselves: his gracefully hard edged images of, very precisely, nothing.

*Mutatis Mutandis* did not arise, however, as an abstraction of an abstraction, as a conceptual outgrowth of the percussion pieces. The underlying conception had been worked out by Herbert more or less concurrently with his first efforts at computer-assisted composition, starting in 1963–1964, and represents his discovery of a relationship between abstract machine theory and the concept of analogy he found in his reading of Kant's *Kritik der reinen Vernunft* (*Critique of Pure Reason*), in

which Kant defines analogy not as an imperfect correspondence between two similar things but rather as a perfect correspondence between two dissimilar things. This crisply good-humored definition had struck Herbert as much as it did me when I first encountered it reading the copy of the *Kritik* he had lent me, and I shall never forget the look of sheer delight that lit up his face when I mentioned it one late afternoon in the fall of 1974 as we were sitting in his living room talking and drinking cheap red wine and, of course, smoking — the memory of those days is redolent of cigarette smoke, and even a hint of second-hand smoke is by now madeleine enough to conjure up for me a whole world that is rapidly disappearing into the abstraction that we call the historical past.



*Mutatis Mutandis 323-1* (no date)

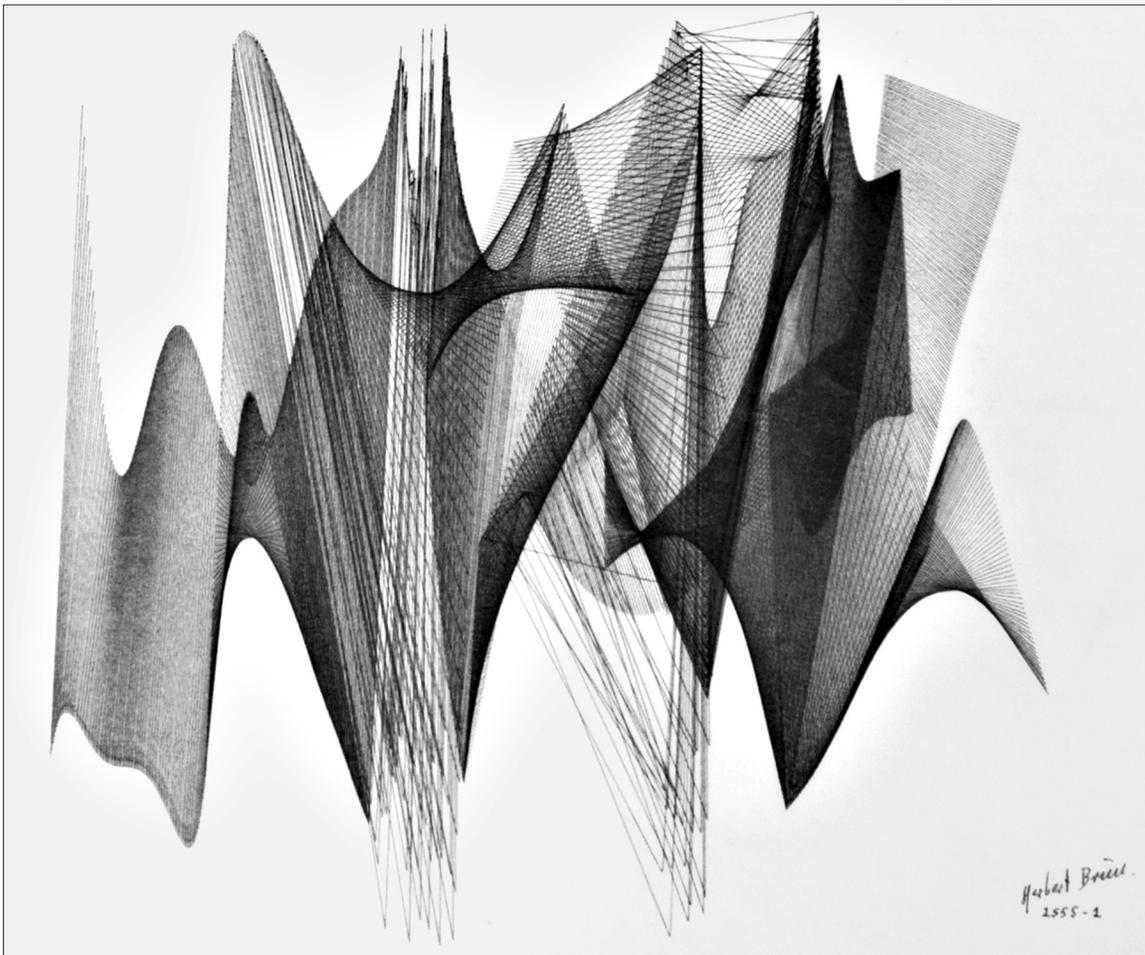
In 1936 the British mathematician and logician Alan Turing had conceptualized an abstract machine able to mime the operation of any other machine or machine-like process, including its own. Turing’s abstraction, applied not altogether properly to the computer, nevertheless made it possible, I argued that afternoon, to regard the computer as an ultimate analogical device, a universal analogue of all possible analogies in Kant’s sense, which could be programmed to become an analogue of any and every other thing, real or imagined, to any desired degree of specificity or, conversely, abstraction. I was still absorbing the strenuous course in formal languages and automata theory I had taken from visiting MIT professor Gordon Matthews a few years previously, and it was a heady afternoon rapidly becoming hazy with the Almaden “burgundy” and the *Gauloises bleues*. It is only now, forty years later, that I realize that Herbert had made that connection already a decade or more ahead of me, and as much as several years before he began to exploit the plotter as a vehicle for exploring what was to become this singular idea in his music and in his art: to compose one term of an analogy without composing the other, and to search for or invent structures or processes for it — at this level of abstraction there is no distinction — that would at a minimum have no analogues in war.

## WATCHING

- 2.1514 Likeness consists of the match-ups between the elements of an image and the things depicted.
- 2.1515 These match-ups are, as it were, the feelers of the image elements, by means of which the image touches reality.

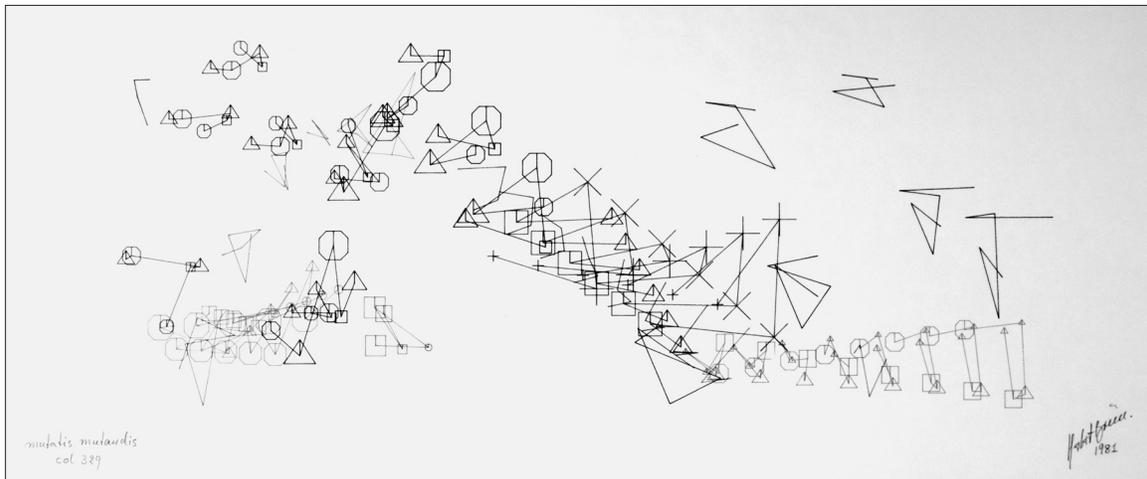
Wittgenstein, *Tractatus Logico-Philosophicus*

The three graphically notated pieces for percussion from 1967 are conventional insofar as Herbert provided specific instructions, suggestions, and hints for their interpretation, that is, for assigning instruments, actuators — “beaters,” in the vernacular — gestures, etc., to the symbols drawn by the plotter. This is a long way from, *e.g.*, Cornelius Cardew’s famous 1963–1967 *Treatise*, which offers the interpreter no instructions, suggestions, or hints beyond the vague allusion to Wittgenstein in its title. Herbert later said of the 1967 percussion pieces that they were “aim[ed] at



*Polyplot A 1555-1 (1969)*

eliciting from the musician a ‘musical’ response which combines instrumental action and coherent interpretation” in such a way as “to transform commonplace contortions on an apparently ill-conditioned time scale.”



*Mutatis Mutandis col 329* (1981; original in black, blue, green, and red inks)

In contrast to the percussion pieces, Herbert instructed the interpreters of *Mutatis Mutandis* not to treat them as scores, “as some symbolic representation in a new notation, as sets of instructions which, if obeyed, would lead a performer to ‘execute’ the shapes, symbols, and configurations, as they follow one another, according to his reading habit, on the page.” Instead, the interpreter was told “to construct, by thought and imagination his version of a structure that might leave the traces which the graphic displays ... not to reconstruct my computer program ... [but] to construct the structured process by which he would like to have generated the graphics.” The instructions for the later *Floating Hierarchies* are even more broadly stated and open-ended: “Each member of the ensemble is top or center, yet also initial interpreter and linguist, of one movement: a temporary, therefore acceptable hierarchical structure.”

Herbert said almost nothing about how to interpret the drawings that were not intended for eventual performance, though he liked to suggest that they were abstract utopias, analogues of a society he would wish to live in. But he said nothing specific about how to look at them that is not implicit in his instructions for the graphics that were intended for performance. Is the viewer to look at the drawings as an interpreter or even a composer would? To puzzle them out, to imagine a structured process which he or she would like to have been the one that generated them? Perhaps, but the effort involved would be every bit as demanding, as strenuous and time-consuming, as preparing a performing version, although of course anyone with the time, energy, and inclination could certainly do so. I think such an exercise would, however, miss the point of the drawings,

which arises from their essential difference from music: if music lives in performance, then it is essential to its life as such that it is, like life itself, ephemeral — from this perspective a recording is no more than a death mask — whereas every, or almost every, drawing or other physical artifact of the visual arts conveys to the viewer by its very nature a paradoxical glimpse of an eternity — by turns alluring and threatening — that remains forever out of reach though we hold it in our hands and touch it with our eyes.

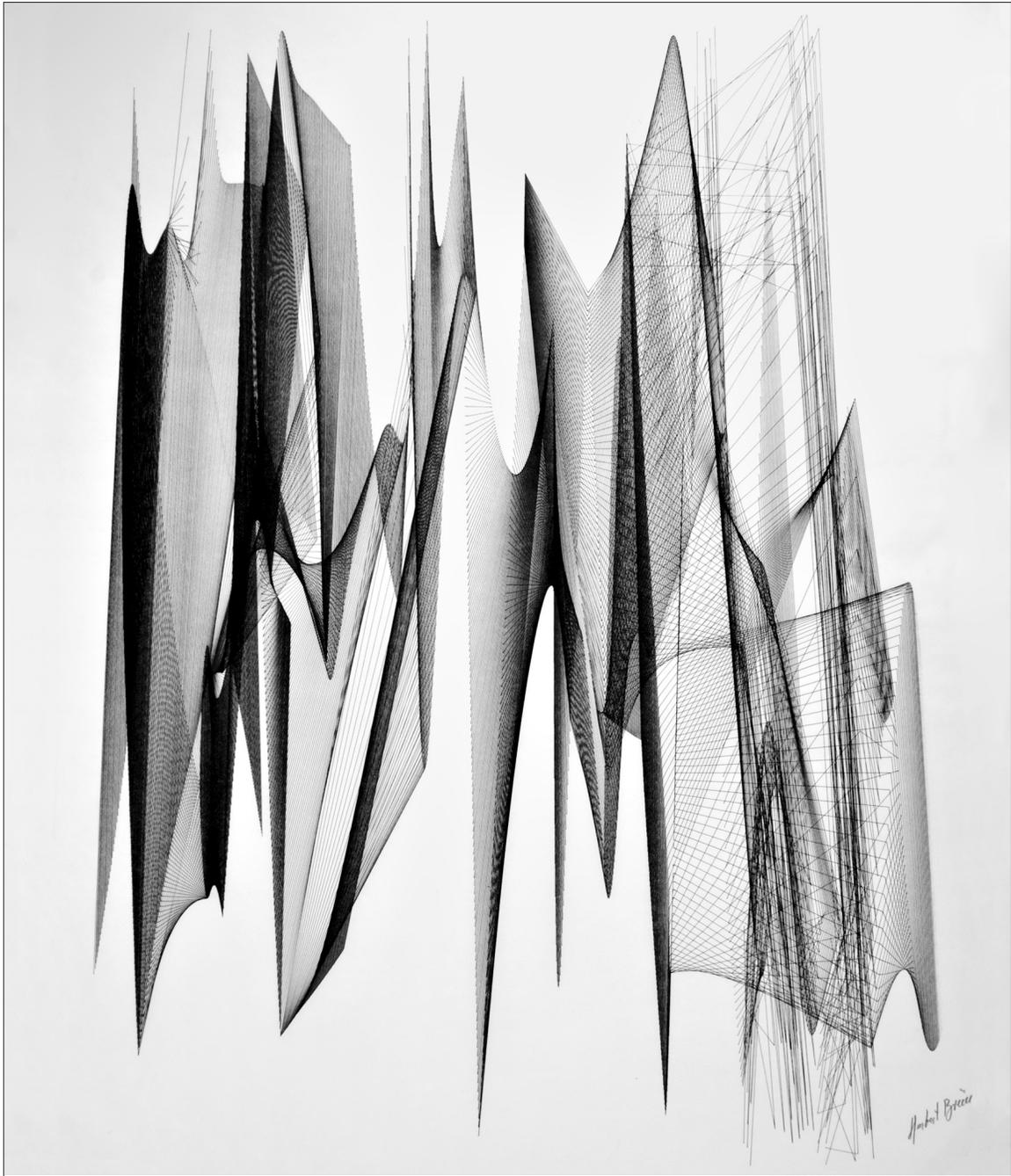


*Floating Hierarchies Quartet 16-170587-4 (1987)*

There are as many ways of looking at a work of art as there are ways of looking at anything we encounter in life: the quick look, lasting only an instant or at most a second or so; the longer stare, a matter of seconds to minutes; the long look of many minutes or even an hour or more. Attentive, deliberate looks, inattentive or even happenstantial looks, incidental to some other activity, even some other looking. Looking at originals in a museum or gallery or on the wall at home or at the office or at someone else's home or office, or looking at reproductions in a book or catalog or as posters or prints or postcards. Looking for the first time, the second time, the third, the thousandth; seeing this work as a stranger or as a new or casual acquaintance, that one as an old friend, a lover, an ex-lover; looking inquisitively, erotically, dismissively; looking alone, looking in the company of friends or family or strangers or all of these together; looking in exceptional circumstances or in the ordinary circumstances of everyday life; looking with affection or disgust or sorrow or anger, and so on and on. So there is a question antecedent to the question of how to interpret Herbert's drawings, and that is, first of all, how to look at them.

LeJaren Hiller applied the concept of information — which in its technical definition is nothing

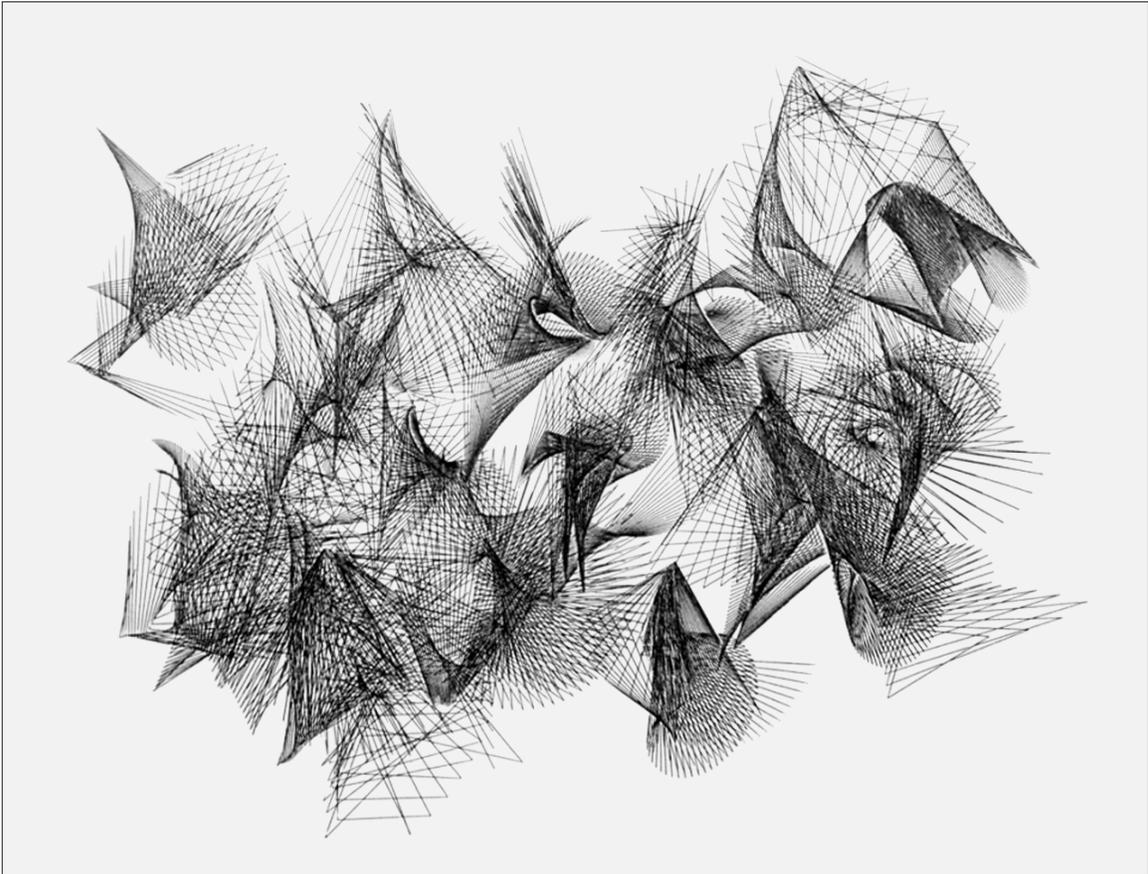
more than a measure of variety — analytically to the typical progression in many classics of the musical repertory from less to more complex and, sometimes, back again, metaphorically from order to disorder and back, as defined by the shifting local balance of regularity vs. irregularity in the musical events objectively defined by the score. Herbert applied the concept to the subjective experience of listening, relating order and disorder to familiarity and unfamiliarity — for what is order but, as one of Herbert's favorite writers, Walter Benjamin, suggested, a disorder to which



*Ensemble Analogue 4 (1974)*

memory has become accustomed? — wherein by definition nothing is less familiar than what is new and thus appears unpredictable or disorderly, and nothing is so completely orderly and predictable as what has become completely familiar, completely known. In this framework, Herbert described the life-cycle of a piece of music as one of a “decay of information,” as listeners become more and more familiar with a piece, until it is known completely, at which point it has nothing more to offer and need not be heard again at all: its life as a functioning work of art is over. All things, Herbert argued, are subject to this process which — it cannot be over-emphasized — is a property of cognition in relation to its objects and not a property of the objects themselves. It is, he proposed, the task of the artist to make objects that resist becoming familiar, to “retard” — his term — this inevitable decay.

Pound famously said that art was news that stayed news; Herbert countered with the observation that since no art stayed news forever what defined it as art was not that it stayed news but how long it did so and what happened while it did. In this framework the question of how to look at Herbert’s drawings can be answered quite simply: slowly, repeatedly, and closely, attentively. Which is to say that Herbert’s drawings are not so much for looking at as they are for watching.



Untitled (no date)

To watch something — in the sense relevant here — is to look at it not only attentively but with a special alertness to any events or changes that may occur during the watching, which may be subtle and occur only gradually or occasionally, so that repeated close watchings may be necessary in order not to miss them. In this framework the ontological locus of the work of art is in the dialectical relationship of viewers and work, a Fichtean struggle of the viewer with an object that resists all efforts to absorb it into the domain of the familiar, the known, a struggle in which the changes induced in viewers by their ongoing encounter with the object are often, even usually, perceived by them as changes in the object rather than as changes in themselves. — And so, Hegel would and did add, history continues to move, sight unseen, behind their backs, and behind ours too.

Sustained watching over the course of months and years, even decades, in relatively unchanging circumstances such as those that may obtain when an art work is hanging on its viewer's wall may eventually though give rise — whether gradually or all at once, it makes no difference, really — to the insight that it is the viewer who is changing and not the work of art, and from there it is just possible that the viewer may advance to the inference that the world and all who live in it are neither apart from it nor from one another, that we and it are inextricably bound up together not only in a *κόσμος*, a cosmos, but also in a *πόλις*, a polity, of which we are both the inheritors and the progenitors, the victims and the perpetrators, the creators as well as the creations of all that is constitutive of the so-called human condition. Such watching is potentially subversive, and art works made to be watched in this way may very well be called subversive too.

So then how to interpret the drawings? The answer is, simply: don't. The drawings, other than those explicitly designated for eventual realization in performance, are neither scores to be completed by performers nor “compositions for interpreters”; and the most Herbert himself had to say about them was that

My graphics are not the society

I wish to live in.

An analogy is not that to which it is analog.

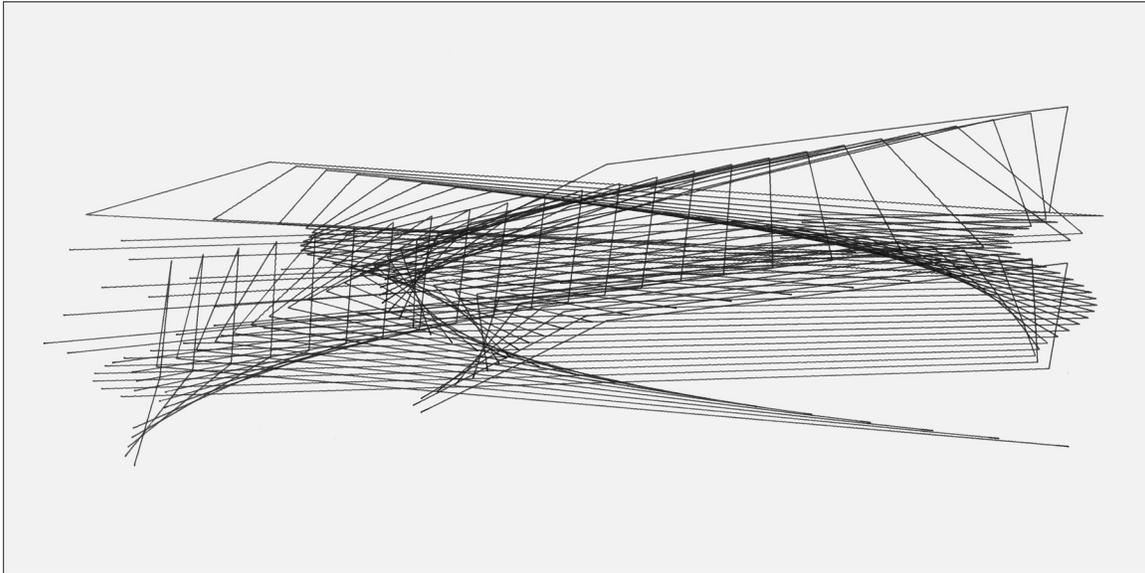
It points, however, to that which it is not.

My graphics are analog to the society I wish to live in.

Therefore: I should like to see them understood as socio-political statements.

“To build a house in which one would want to dwell,” as Wolpe had put it some 60 years prior to this statement, but without actually undertaking to build the house? To measure the world against the yardstick of an abstract utopia and find it wanting? To create one term of an analogy without the other? Herbert's drawings are indeed drawings but they are not on that account images, they

do not reach out to reality to depict it by matching-up with it like Wittengstein's pictorio-logical propositions but rather to judge it by their very mismatch. Whatever they are, his drawings are not likenesses of any thing, wherever or whatever it may be, so that if they are images in any sense of the word at all they are indeed images of nothing, albeit a nothing that is by no means intended as some ultimate repose but rather as a pointed critique of everything that merely is.



Untitled (1981)

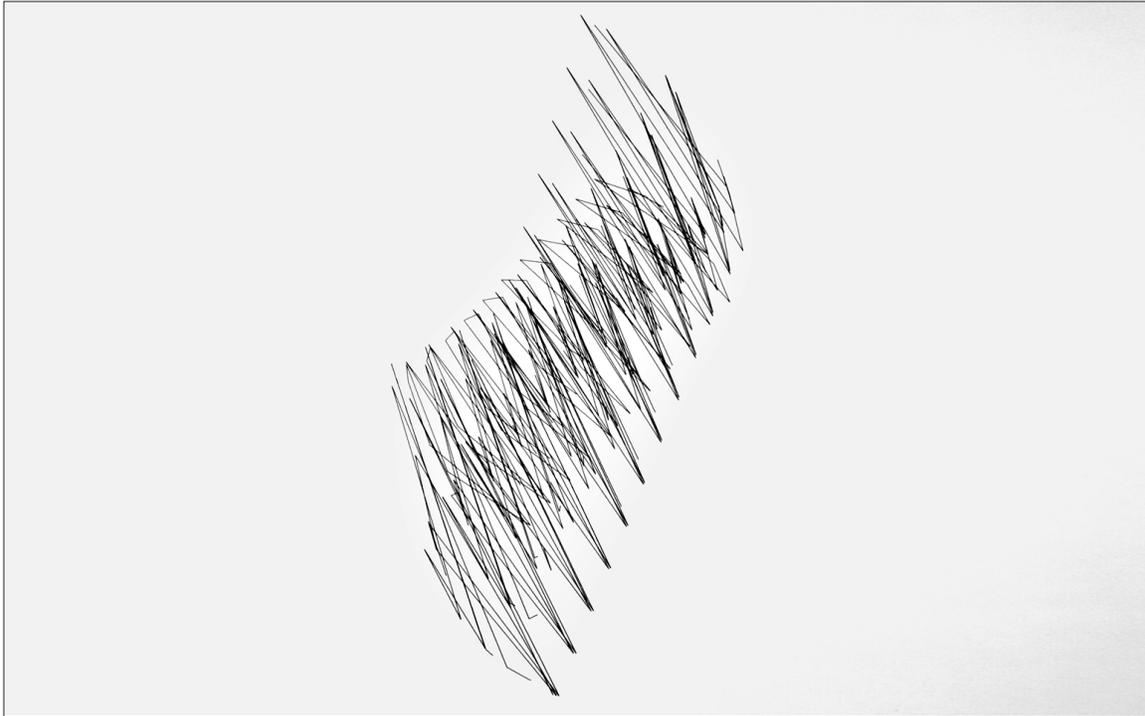
## ***REBBE***

Because she is mute, Nature, fallen, mourns — but how much deeper into the essence of Nature the converse of this proposition leads: her sorrow makes her mute. There is in all grief a tendency to speechlessness which is infinitely more than inability or disinclination to communicate. Grief feels itself known, absolutely, by what is unknowable. To be named—even if the namer is the image of God and blessed — that brings with it perhaps always a trace of sorrow. But how much worse not to be named but merely to be read, to be read uncertainly as allegory and only through allegory to become highly significant . . . .

Walter Benjamin, *Source of the German Sorrowplay*

Historians, like trial lawyers, are — or certainly should be — professional skeptics, in particular when it comes to the evidence of memory and testimony, and should keep in mind at all times the familiar proverb: “he lies like an eye-witness.” I would not want to suggest that Herbert was

a liar, or that he didn't mean what he said about his work, or that what he said about it shouldn't be taken seriously. But I would argue that what he didn't say is at least as important for the understanding of his work as what he did say, and I would argue further that what he otherwise left unsaid found its most moving and possibly its most important expression not in his music or his writings or his teaching but in the eloquent silences of his graphic work.



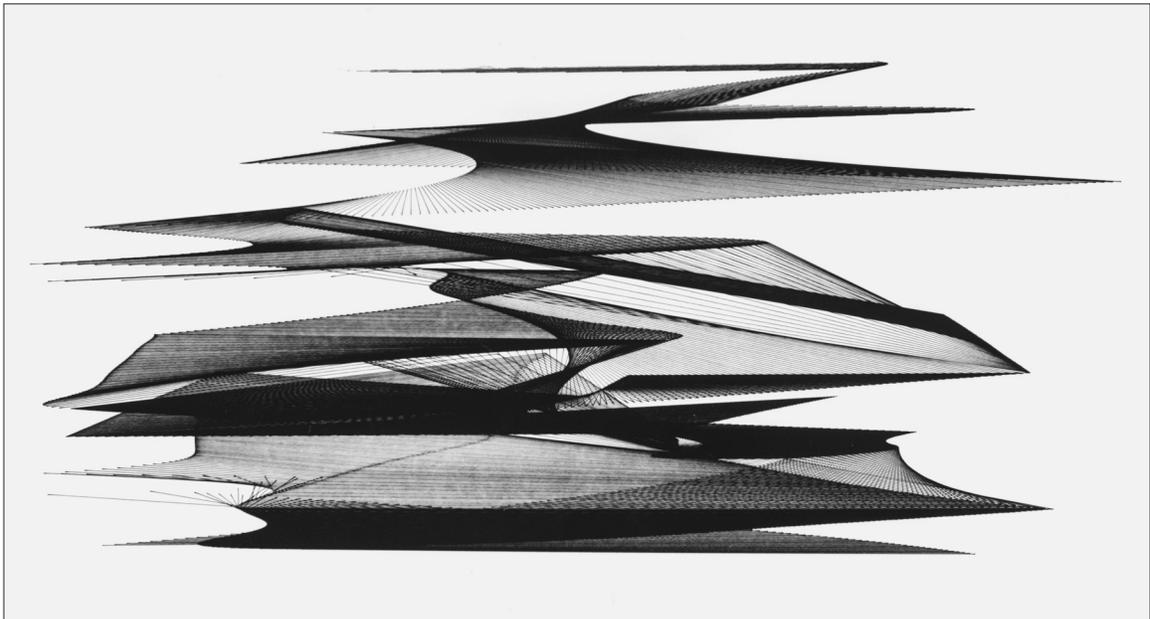
*Web 1* (no date)

Herbert was born into the last generation of European Jews for whom emancipation meant more than escaping the stifling oppression of the ghetto, the shtetl, and the Pale: for many it meant emancipation from Judaism itself and even from religion altogether via a self-conscious assimilation into the life of the rapidly expanding commercial-industrial cities of Europe, of which Berlin, together with Paris and Vienna, represented the avant-garde of an emerging post-Christian culture. His was also the last such generation, due to the success of the contemporary neo-pagans in emancipating themselves from *their* alleged oppression by the Jews — by killing them.

Like many survivors and refugees, Herbert didn't say much about it or even allude to it except in rather guarded terms. He claimed that he left Israel owing to his disgust at the establishment of the state of Israel, as if what the world really needed was yet another state with the power to make war and otherwise murder and oppress people, including its own: he did not appreciate having escaped persecution in Germany only to find himself now among the oppressors, first in the Mandate and then in the new state. But there were surely less high-minded considerations in play

also: life in the new state of Israel was painfully chaotic, in consequence of the influx of a million immigrants within the space of a very few years, especially from the Arab countries, from which they were being expelled *en masse*; the economy was a shambles, and the threat of war was constant. For an ambitious composer, Israel at that time was still a very small pond and a very isolated one too, and new music in Israel even more so, despite the efforts of musician-entrepreneurs like Peter Gradenwitz to overcome this isolation.

But there was, I would venture to suggest, another difficulty, more personal and more painful. Refugees like Herbert in Mandate Palestine were often disparaged as *yekkes* — slang for German Jews, often with a derisory inflection — and after the war the word took on an even more negative connotation. The great pogrom of the Nazis was regarded by many Israelis in the years after the war as a shameful episode in the history of the Jews: survivors and refugees were weaklings who had let themselves be herded like sheep into the death camps or who had fled to the safety of Palestine without putting up a fight; what was needed now was a new kind of Jew, a strong Jew, a warrior Jew, a Jew modelled on the biblical Joshua and David. *Yekkes* were just so much *sabon* — soap: a sarcastic reference to the reusable bars of fake soap in the fake showers of the all too real gas chambers. Whatever Herbert was, he was not, then or ever, “the new Jew” who would proudly restore the lost glory of Israel: he left for Paris towards the end of 1954 and never went back. — Later, in Illinois, Herbert would sometimes say that he didn’t want to be “a people,” neither in the sense of a nation nor a race nor, I often felt, even in the sense of being a human being; this was, I think, as close as he ever came to acknowledging what the 22 years of his life between 1933 and 1954 had cost him.



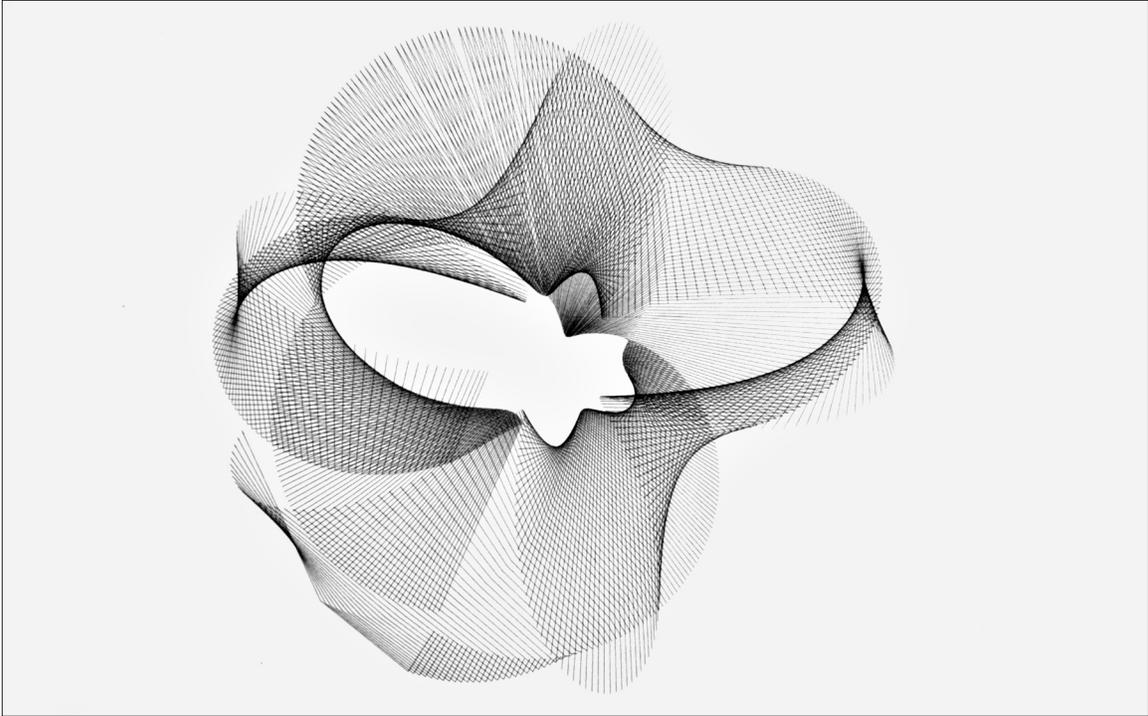
Untitled (no date)

In a lecture he gave at Darmstadt in 1965 under the title, “The Second Commandment and that of Our Age and the Whole Unspeakable Mess,” Herbert wrote that

... [w]hat distinguishes all serious prophets, the biblical ones included, from fortune tellers is that prophets don't predict the future, rather what they predict is future knowledge of the present. The threat that is so often found in the words of the prophets expresses the view that the future knowledge of the present will be a knowledge that has come too late. The threatened catastrophe consists of a future helplessness vis-a-vis knowledge that has been acquired too late. But since for those addressed by the prophets concepts like knowledge, acquired knowledge, and therefore also knowledge acquired too late are just so much intellectual nonsense and are therefore effectively neither saleable nor adequately cautionary, the threat has to be expressed in popular terms and catastrophes like war, hell, famine, plague, and so on. The fact that all of this, including the knowledge acquired too late, eventually comes to pass just as predicted, doesn't make the prophets extraordinary [for their prescience] but rather their audience [for its deafness] . . . .

One can only suppose — or at least hope — that Herbert's audience at Darmstadt 20 years after the end of the war didn't have to have the catastrophe that had come to pass and the knowledge that had come too late spelled out for them. The situation was different in America, where he and his family had gone to live in August, 1963, as it had been different already 15 years earlier when he went to Tanglewood in the summer of 1948. Herbert spoke of what a shock Tanglewood had been to him that summer: the grass, he said, was green — in Israel the grass is green in the winter, in the rainy season, and not in the scorching dry heat of summer — but what he really meant by this was, I think, that there had been no war here, or there might as well not have been one, as far as the other students were concerned, and the staff too, except for Leonard Bernstein, who at least knew something about it, even if his energetic American Zionism didn't sit easily with Herbert. And it was no different 15 years later in a Middle Western farm town in 1963, even one with a great university: there were few if any listeners for what Herbert had to say, either directly — which was not his inclination — nor indirectly, in the language of a culture and its cadences that no longer existed except as a nagging memory, so to speak as the bad conscience of a history that was otherwise held to be best forgotten, in the great American tradition of “getting over it” and “moving on.”

Herbert was very much a teacher at heart, and as his sojourn in Illinois extended from year to year — it is unlikely that he came to Illinois with any real inkling that he would spend the rest of his life there — and as he settled into the life of a professor in the School of Music, he undertook

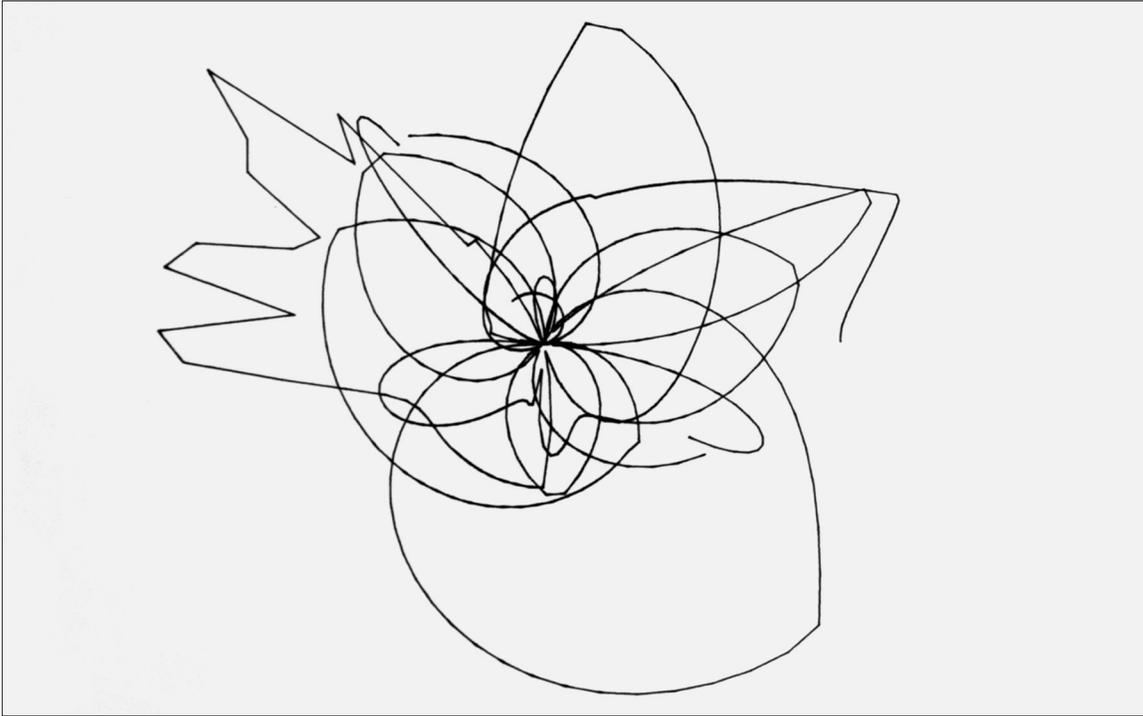


*Early Eye* (1981)

to teach what his life had taught him, and if this could not be done in the American, Hebrew, or German languages, or with the expectation that his students knew anything of history of the 20th century as he had known it or even of the history of the ideas that had become so essential to his own thinking about music, art, language, and society, then he would gradually make up a language of his own with the old words redefined to say what he would have them say rather than what they had said before or would otherwise be understood as saying now. And so he did, introducing his terms and their definitions in his seminar, in lessons, in conversations, and in public lectures and writings, taking a year or more to establish just a few of them at a time, sometimes even only one, but over the course of many years it came to be quite a vocabulary, as well as a quite distinctive marker of his thought and of the group of students who were drawn to him.

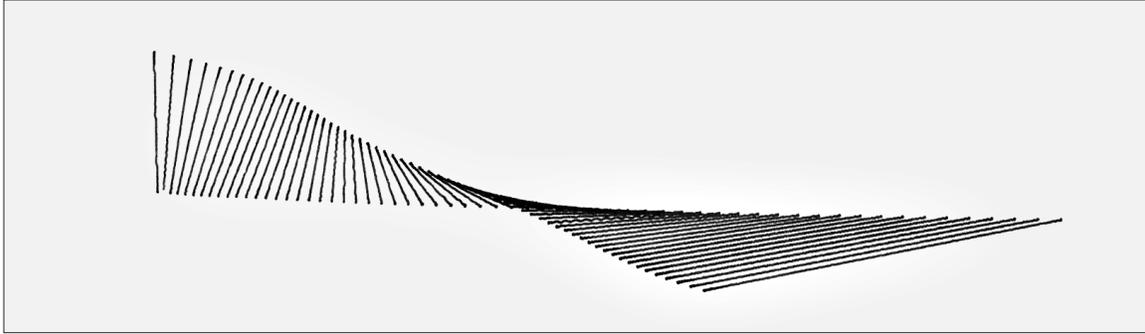
Herbert took his students seriously, perhaps more seriously than anyone had ever taken them before, very often themselves included. He demanded of them that they think about what they were doing and be able to articulate it, and he offered them a language in which to do so. He insisted that they take seriously his conviction that artists could and should participate through their art in the creation of a better world. Through his seminar and his language and his later Performers Workshop Ensemble he created a community that gave meaning to the efforts of his students and even to their lives — like his teacher Wolpe, everything was significant to him, everything was of the greatest importance right now. Above all, he gave them hope: hope for a better world and hope for themselves to play a part in the creation of it. He was, in short, a teacher

of life, of a way of living, which he himself practiced as well, as part of, not apart from, his community, however much he remained its leader and authority. And so with the passing of the years what had begun as his seminar in experimental music became his *beit midrash*, his house of study, and he himself became in effect a *rebbe*, the spiritual leader of his community, and his students, his *talmidim*, loved him for it, in the way of *talmidim* everywhere.



Sketch for *Scatter, Bundle, Caper, Dance* (1979; showing the paths that will be left implicit in a final version)

Though certainly not unheard of, it is nevertheless somewhat unusual for a composer to turn to the visual arts and even more unusual for such a turn to be successful. Schönberg, who made this turn in 1906, was, frankly, a terrible painter, and after a few years went back to writing music and acerbic essays on the follies of his contemporaries — he was an excellent writer too, in his own fierce way. And Wolpe's efforts as an artist, though not terrible, still don't measure up to his music, to say nothing of his importance as a teacher. Whatever the sources of the difficulty, the turn from music to painting or drawing is not simply a turn from one medium to another, from the world of the ear to the world of the eye: it is a turn from sound to silence. Herbert's graphics are by their very nature silent, of course, and while the temptation is near to read them, by analogy with his graphics intended for performance, as unheard melodies, they are not a transposition of his music into the sighted world but rather an expression of something else, akin to the Keatsian melancholy perhaps, but of a different order, neither romantic nor in Schiller's sense naive, but almost nostalgic, if anything of the kind, for a future we have yet to see.



Untitled fragment (1981)

The silence of Herbert's drawings is a double silence, compounded out of silence as the reticence of suffering and silence as a refusal to propose any constraint on the future except that it not be what it was before, what it was for him, what it has been for anyone. The silences of his drawings, however, are not silences for listening, they are silences for touching, for touching with the eyes and touching with the mind, they are a sensuous philosophical art, a paradoxical take on Diotima, fearing understanding and fleeing its lovers. It was perhaps Herbert's deepest wish to be the namer, not the named, to be the interpreter, not the interpreted, though he did answer to many names: he was a man, a Jew, a pianist, a composer, an artist, writer, lecturer, son, brother, lover, husband, father, friend, teacher — he was all of these things, and many more besides. But above all else he was a man on fire, a man who burned with all the fires of his time in all their horror and brilliance, to which his drawings bear his silent, infinitely ambiguous, and endlessly alluring, witness.

Rabbi Dov Baer, the Great *Maggid* — preacher — of Mezhiretch went to visit Israel ben Eliezer, the *Baal Shem Tov*, the Master of the Good Name, in his room in Medzibozh. Israel asked Rabbi Baer to read aloud the passage on the nature of the angels in the book *Etz Chaim, The Tree of Life*. Dov Baer read. "Now think!" He thought. "Interpret!" He interpreted. "Stand up!" He stood up. Then Israel ben Eliezer read the passage aloud himself and with his own eyes Dov Baer saw the room burst into flames and through the flames he heard the angels surging until his senses forsook him and he swooned and fell unconsciousness to the floor. When he came to, the room was once again just as it had been when he got there. Israel ben Eliezer said to him: "Your interpretation was correct, but you have no true knowledge, because there is no soul in what you know." Rabbi Baer went back to the inn, told his servant to go home, and stayed in Medzibozh.

Freely adapted from Martin Buber, *Tales of the Hasidim*

## ACKNOWLEDGEMENTS & SOURCES

This slight mix of scholarship and memoir would not have been possible without the generosity in particular of percussionist Allen Otte, whose interest was piqued from the outset and whose contributions ranged from his loan of a number of Herbert's earliest graphics as well as some of his latest, and many between, to his extensive experience with performing Herbert's music, to his willingness to read and comment on the many drafts. Otte's visit to New York in early July, 2013, and the conversations we had over the span of those three days were an invaluable boost at an early and still rather shaky stage of my work. Jeff Glassman lovingly undertook the immense job of photographing Herbert's entire personal archive a number of years ago and not only sent me the whole set of some 13,000 images but cheerfully responded to my many questions about them and about Herbert. Lisa Faye provided a copy of her exhaustive catalogue-in-progress of Herbert's graphics. Marianne "Manni" Brün thoughtfully and promptly responded to my endless stream of inquiries about Herbert's life and corrected numerous inaccuracies in my reading of the often somewhat ambiguous and even contradictory sources. Susan Parenti provided access to the collection of graphics and other materials in Urbana, Illinois. Charles Lipp was a patient and responsive sounding board for many of my ideas about Herbert and his work and contributed many of his own recollections as well. The surely too numerous remaining errors are, of course, my own.

In addition to my personal recollections of Herbert and the recollections of Allen Otte, Jeff Glassman, Lisa Faye, Manni Brün, Charles Lipp, and Michael Kowalski, together with the available archive materials, I have relied on the following sources:

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The Stefan Wolpe Society's oral history materials available on-line at wolpe.org were also consulted extensively.