

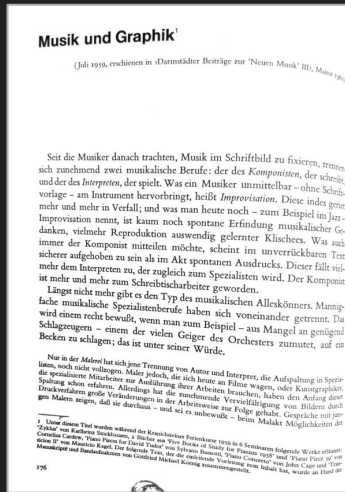
Theorizing Notation:

Darmstadt, 1959 – 1965

Isaac Otto | io@isaacotto.com

Two fledgling notation theorists:

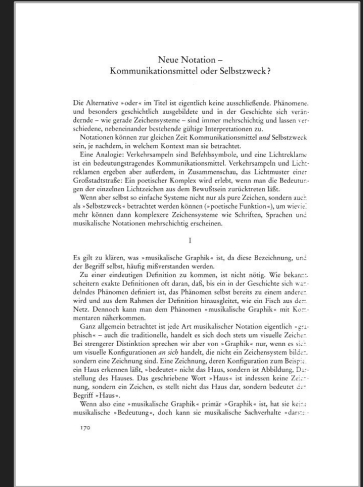
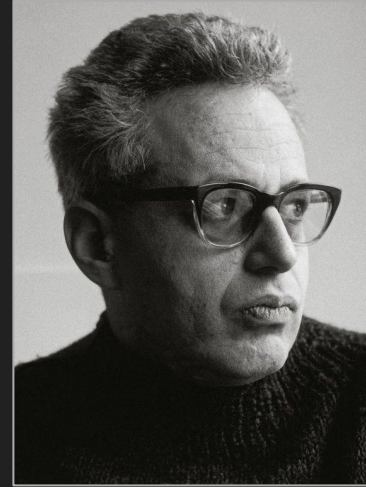
„Musik und Grafik“ (1959)



Stockhausen, Karlheinz. 1963. "Musik und Graphik" In *Texte zur Musik 1*, edited by Dieter Schnebel, 176–88. Köln: DuMont Buchverlag.

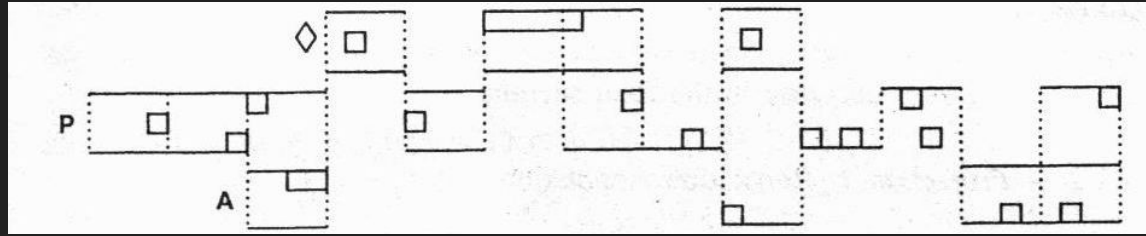


„Neue Notation — Kommunikationsmittel oder Selbstzweck?“ (1965)



Ligeti, György. 1965. "Neue Notation — Kommunikationsmittel oder Selbstzweck?" In *Notation Neuer Musik (Darmstädter Beiträge zur Neuen Musik 9)*, edited by Ernst Thomas, 175–84. Mainz: Schott.

The first wave of new notations:



Morton Feldman — *Projection 1* (1950), p. 1.

Earle Brown — *November 1952* from
FOLIO and 4 SYSTEMS (1952–4)

A page of handwritten musical notation for Earle Brown's 'November 1952'. The notation is spread across several staves, featuring a complex and abstract arrangement of notes, rests, and other musical symbols. The handwriting is dense and intricate, with many notes and symbols overlapping. The notation is written on a grid of horizontal lines. In the bottom right corner, there is a signature that reads 'Earle Brown (Nov. 52)'.

...and the European response:

7 vedi NOTE

XIV piano piece for David Tudor 4
 disegno del 1949
 adozione pianistica: 27.3.1959

1 { S
M
P

2 Battuto
Muto
Capotasto
Tastiera

3 { sequenza
frequenza
timbro
durata
intensità

4 { U
O
C
dentato
il piano

5 (G-clef, note)

6

Sylvano Bussotti — *Five Piano Pieces for David Tudor* (1959), No. 4.

Questions for a robust "notation theory":

What does notation *represent*?

Must notation reference *sound*?

Must notation be a *code*?

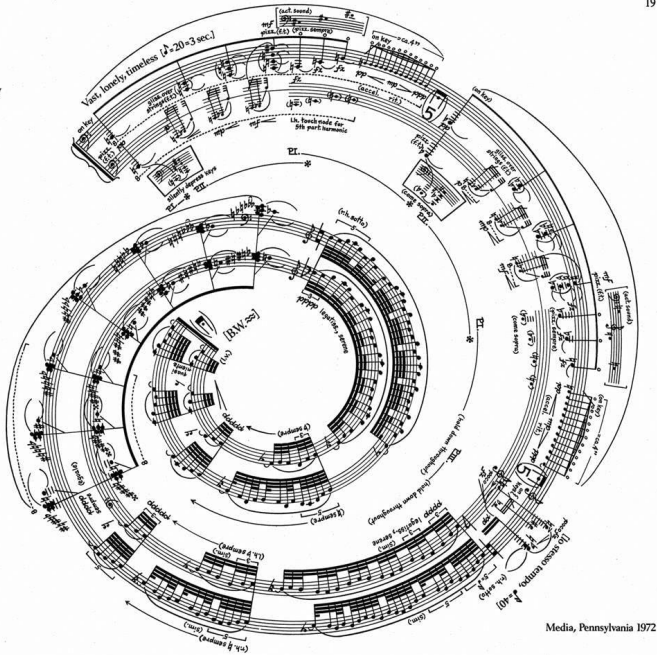
Is any *inscription* a *notation*?

Graphic notation: revolution or evolution?

"Graphic" notation?

12. Spiral Galaxy [SYMBOL]

Aquarius

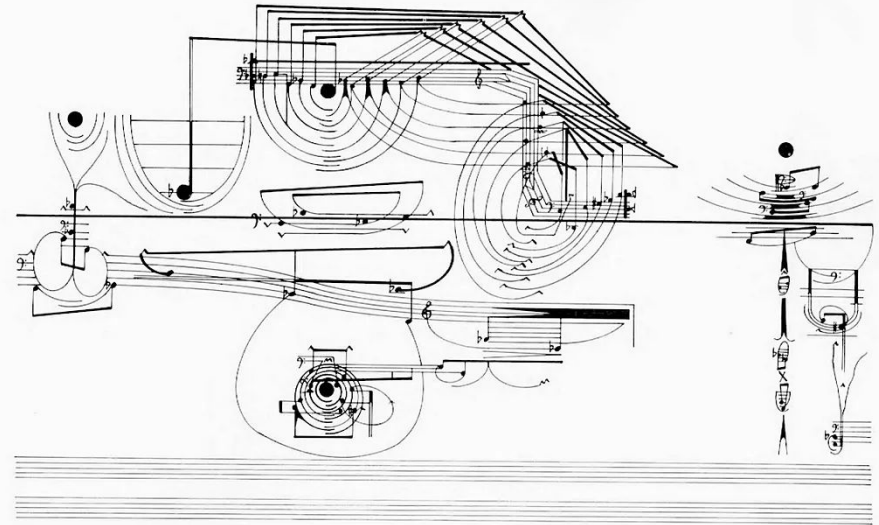


19

Media, Pennsylvania 1972

This image shows a complex musical score for the piece "Spiral Galaxy" by George Crumb. The score is arranged in a spiral pattern, starting from the center and moving outwards. It features multiple staves with various musical notations, including notes, rests, and dynamic markings. The score is titled "12. Spiral Galaxy [SYMBOL]" and is associated with the zodiac sign "Aquarius". The piece is from the collection "Makrokosmos, Vol. I (1972-9), No. 12, p. 19." The page number "19" is visible in the top right corner, and "Media, Pennsylvania 1972" is printed at the bottom right of the score.

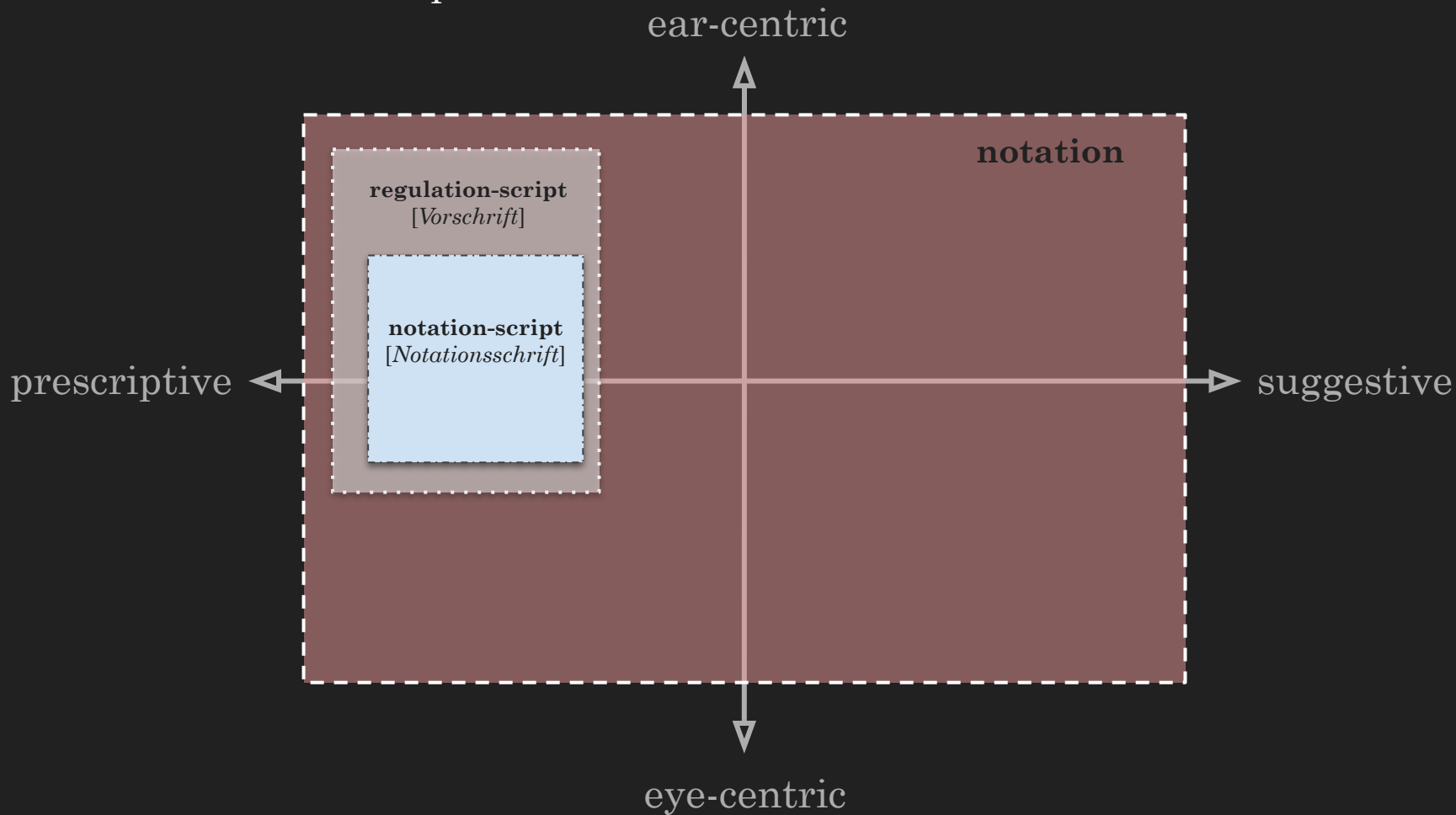
Cornelius Cardew — *Treatise* (1963–7), p. 183.



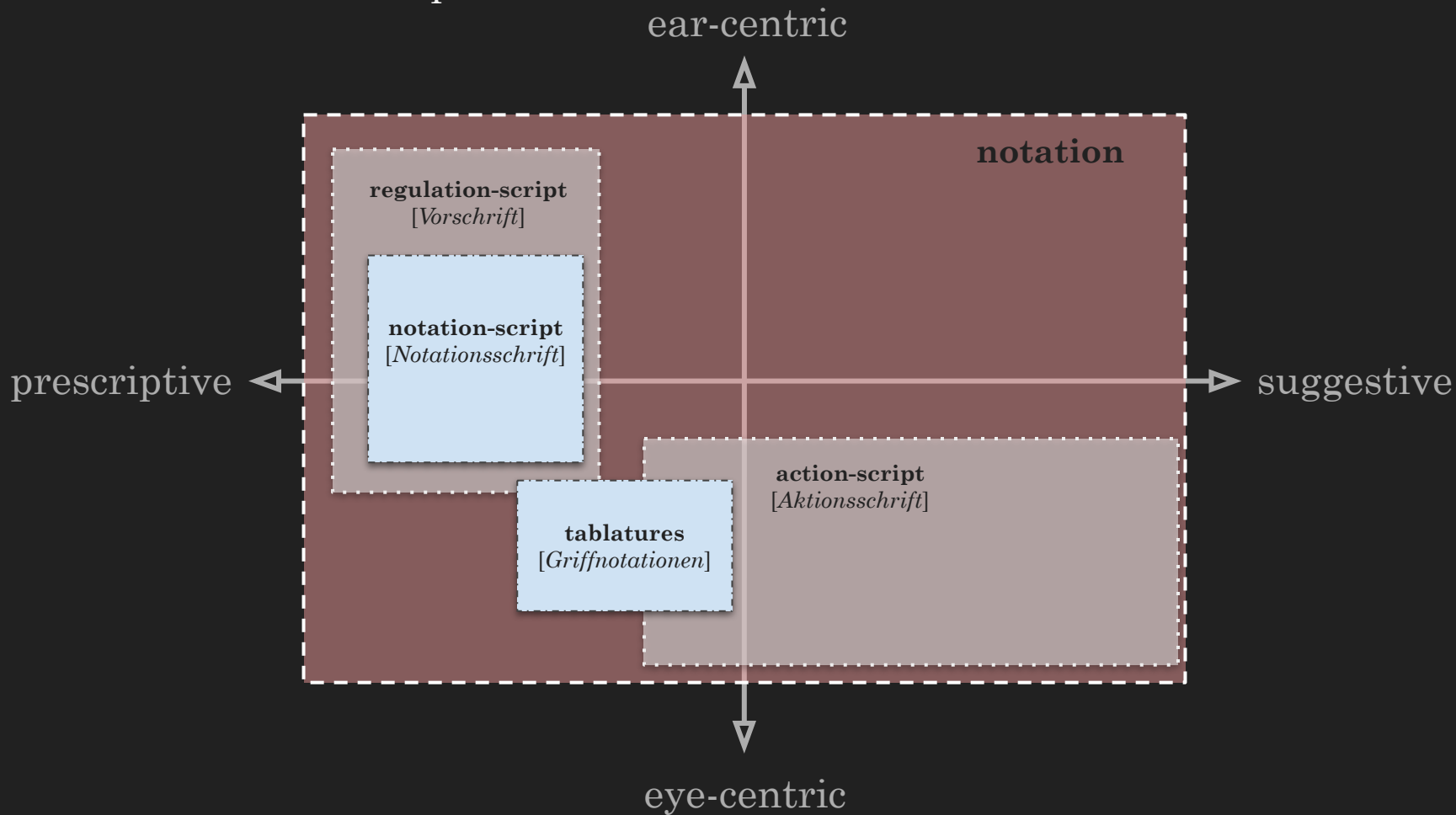
This image displays a page of graphic notation from Cornelius Cardew's "Treatise" (1963-7), page 183. The notation is highly abstract and non-traditional, featuring a variety of symbols, lines, and shapes. It includes several staves with notes and rests, as well as large, complex diagrams that resemble musical instruments or abstract forms. The notation is arranged in a way that suggests a sequence of events or a specific musical structure, but it is not easily interpretable as traditional musical notation. The page number "183" is visible in the bottom right corner.

George Crumb — *Makrokosmos, Vol. I* (1972–9), No. 12, p. 19.

Stockhausen's notational poles:



Stockhausen's notational poles:



Twentieth-century action-script:

denotes physical gesture via spatial metaphor

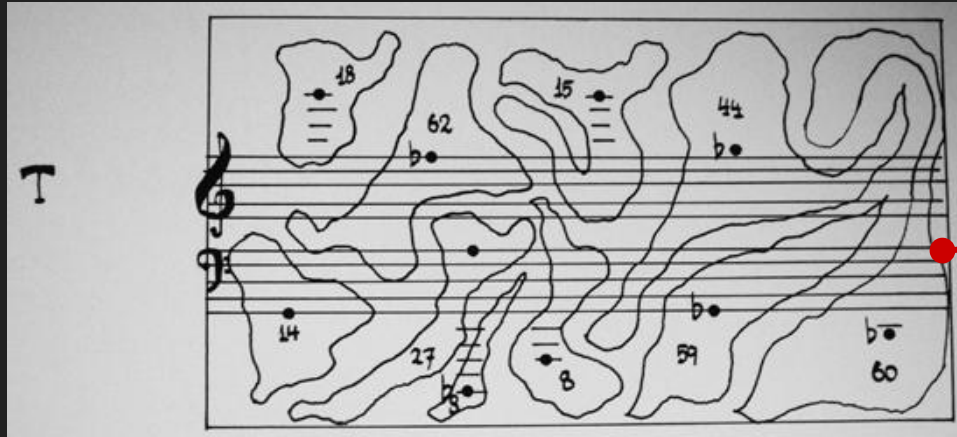
graphicality no longer incidental to function

95.

96.

- 9 -

Draft-script [*Entwurfsschrift*]:



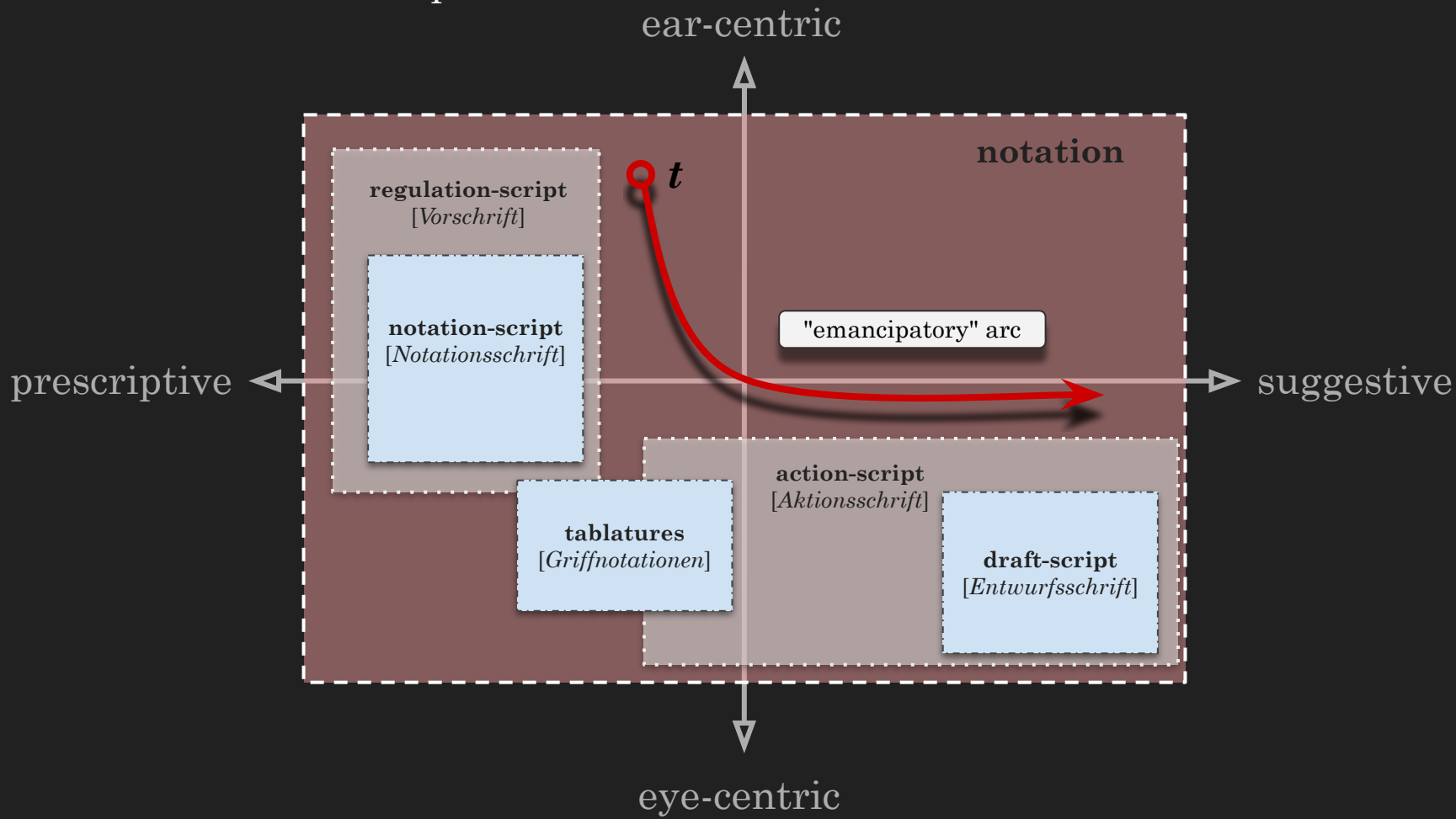
J. Cage — *Concert for Piano and Orchestra* (1958), module T.

non-prescriptive graphically,
presents an "idea" of some
performance practice

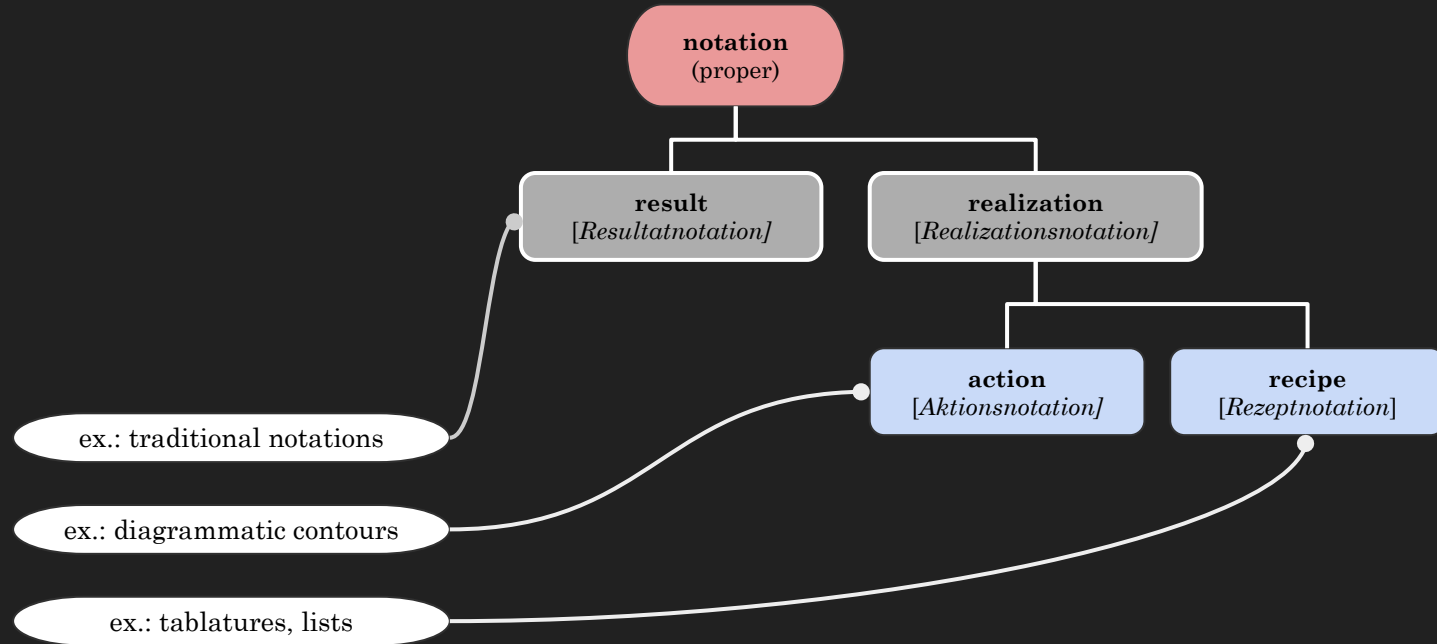
A complex musical score for piano, titled "V(b) piano piece for David Tudor I". The score is written in a draft-script style, featuring multiple staves (MD, MS) and a dense network of lines and shapes. The notation is highly graphical and abstract, with many notes and rests represented by small circles and lines. The score is divided into three sections, labeled 1, 2, and 3. Section 1 is marked "Tutto nell'orbita del pp, sempre" and has a duration of 30". Section 2 has a duration of 15". Section 3 has a duration of 45". The overall appearance is highly complex and non-prescriptive, focusing on the spatial arrangement of notes and rests.

S. Bussotti — *Five Piano Pieces for David Tudor* (1959), No. 1.

Stockhausen's notational poles:



Ligeti's notation typology:



Ligeti's types *in situ*:

result

action

recipe

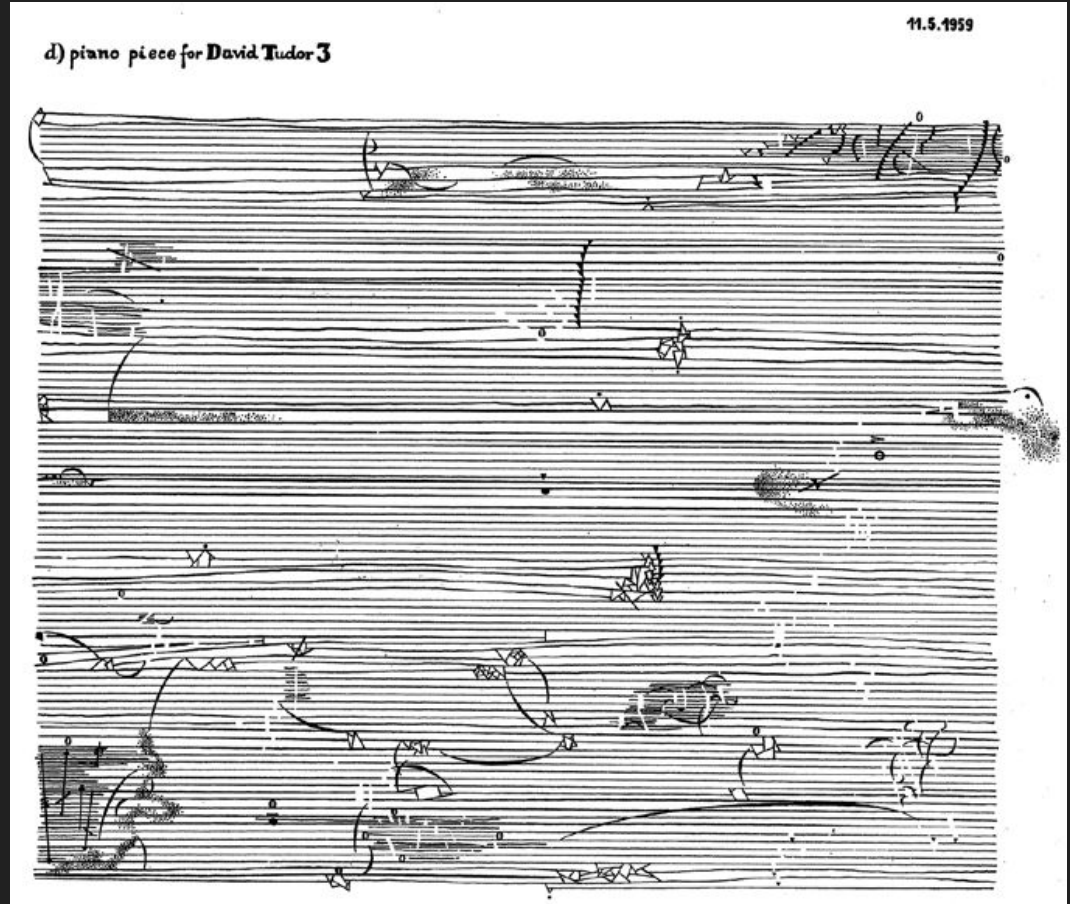
Ligeti's graphics (narrowly-defined):

result

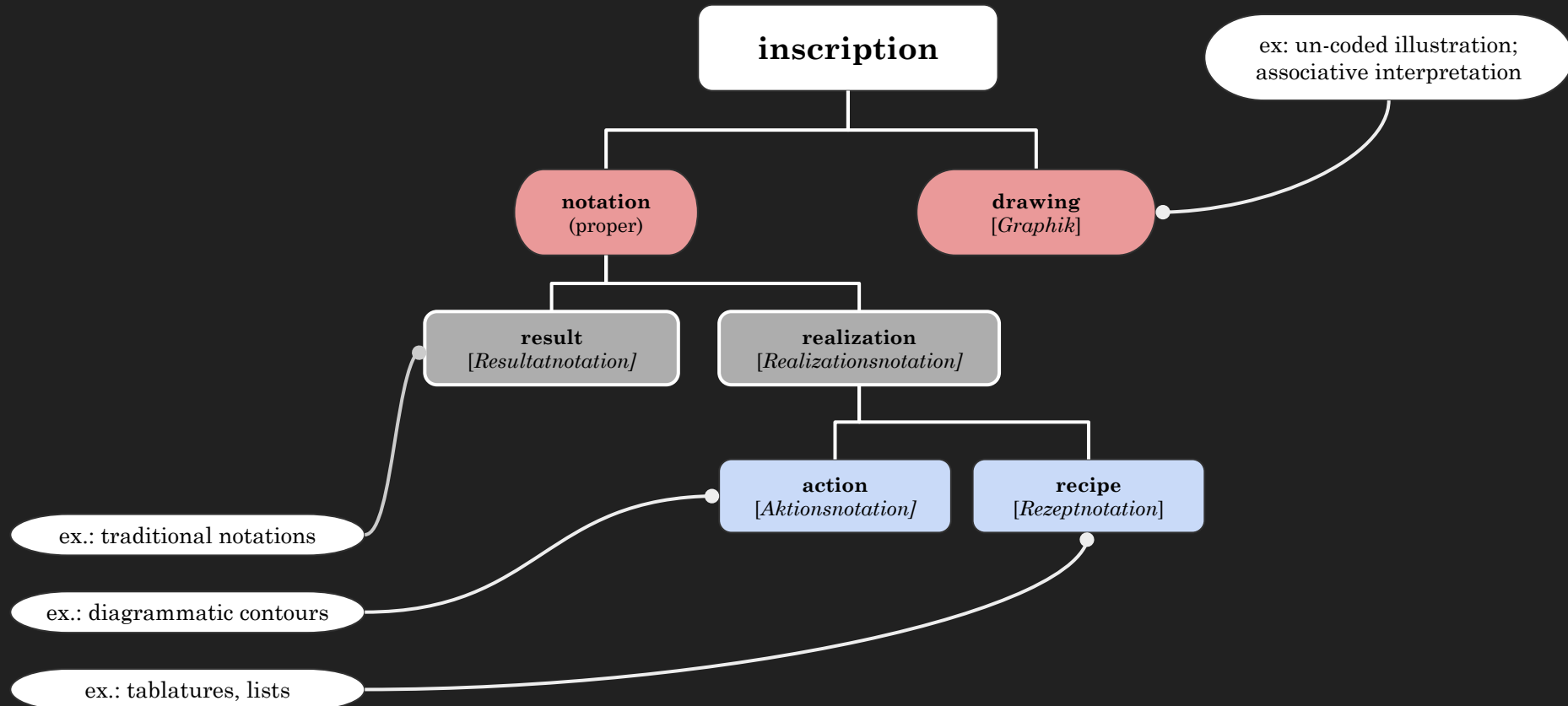
action

recipe

asemantic



Ligeti's notation typology (cont'd):

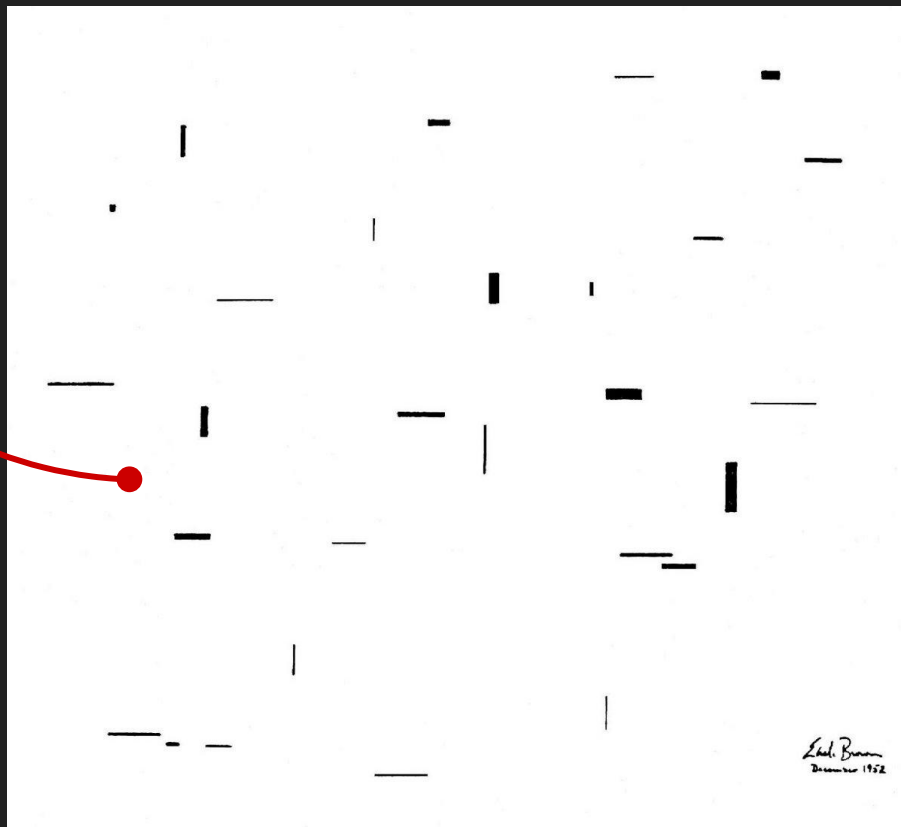


Mixed forms [*Mischformen*]:

action

+

asemantic



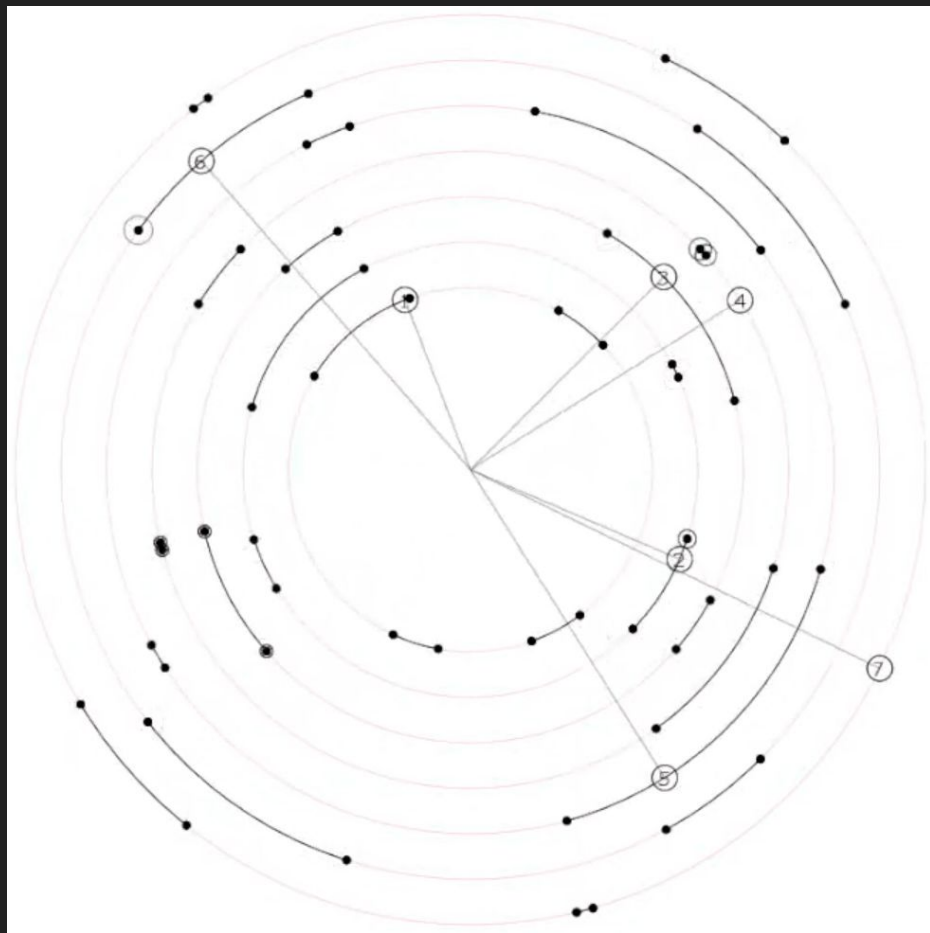
performance directions:

- "[coefficient of] intensity and duration [is] space forward and back."
- "...may be performed in any direction from any point in the defined space..."
- "In a performance utilizing only three dimensions ... the thickness of the event indicate the relative intensity and/or ... clusters."
- "Where all four dimensions are active ... relative thickness and length of events are functions of their conceptual position on a plane perpendicular to the vertical and horizontal plane to the score."
- **"It is primarily intended that ... no further preliminary defining of the events, other than an agreement as to total performance time, take place."**

"Vividly descriptive result notation":

performance directions:

- "For 7 triangles and electronics."
- "Each concentric circle contains 4 pairs of attack/mute event nodes connected by an arc."
- "Each time a player's respective attack cursor crosses the first event node in each pair (attack node), strike the triangle with the metal beater."
- "The triangle should ring until the second event node (mute node). When the attack cursor crosses the mute node, the mute the triangle."



S/L overview:

Stockhausen, 1959:

Emphasis on **visual trace**.

Emphasis on **unity** of form/function.

Notation moves historically **toward performer liberation, eye-centricity**.

The graphic is notation which composes space rather than time.

Reading and "gazing" folded into **one communicative gesture**/mode of engagement.

Ligeti, 1965:

Emphasis on **semanticity**.

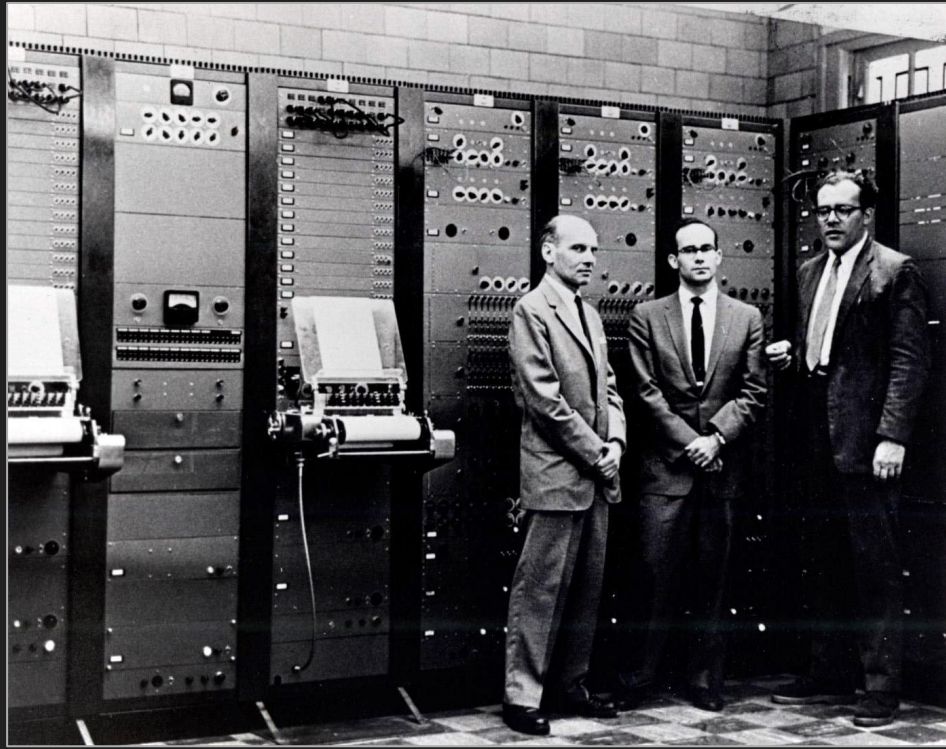
Emphasis on **duality** of form/function.

Notation is chosen to **fulfill users' needs** throughout history.

The graphic is by definition **anti-notation**.

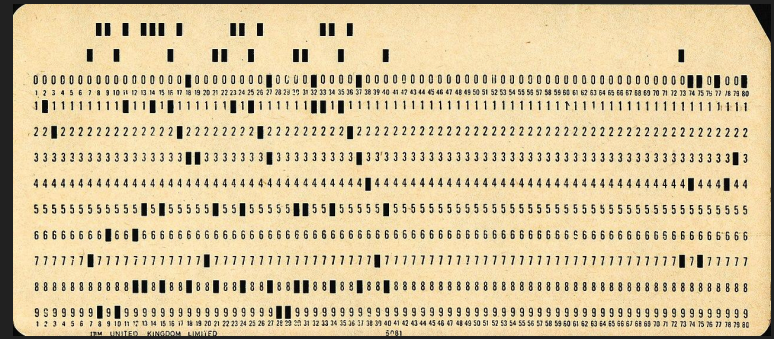
Reading is communicative; graphic "translation" is purely associative.
Two modes of engagement.

Punch card notation?:



Polysemous, therefore
nonrepresentational?

Translatable, therefore
representational?



RCA Mark II Synthesizer, Princeton (1958) and generic punch card.

Per-module instructions provided with Cage's *Concert*:

PIANO

EACH PAGE IS ONE SYSTEM FOR A SINGLE PIANO. IT TO BE PLAYED WITH OR WITHOUT ANY OR ALL PARTS WRITTEN FOR ORCHESTRAL INSTRUMENTS. THE WHOLE IS TO BE TAKEN AS A BODY OF MATERIAL PRESENTABLE AT ANY POINT BETWEEN MINIMUM (NOTHING PLAYED) AND MAXIMUM (EVERYTHING PLAYED), BOTH HORIZONTALLY AND VERTICALLY: A PROGRAM MADE WITHIN A DETERMINED LENGTH OF TIME (TO BE ALTERED BY A CONDUCTOR, WHEN THERE IS ONE) MAY INVOLVE ANY READING, I.E., ANY SEQUENCE OF PARTS OR PARTS THEREOF.

A FOLLOWING THE PERIMETER, FROM ANY NOTE ON IT, PLAY IN OPPOSITE DIRECTIONS IN THE PROPORTION GIVEN. HERE AND ELSEWHERE, THE ABSENCE OF INDICATIONS OF ANY KIND MEANS FREEDOM FOR THE PERFORMER IN THAT REGARD.

B AN AGGREGATE MUST BE PLAYED AS A SINGLE TONE, WHERE THIS IS IMPOSSIBLE, THE UNPLAYABLE NOTES SHALL BE TAKEN AS HARMONICS PREPARED IN ADVANCE. HARMONICS MAY ALSO BE PRODUCED WHERE THEY ARE NOT SO REQUIRED. RESONANCES, BOTH OF AGGREGATES AND INDIVIDUAL NOTES OF THEM, MAY BE FREE IN LENGTH. OVERLAPPING INTERPRETATIONS, ARE ALSO FREE. THE SINGLE STAFF IS PROVIDED WITH 2 CLEF SIGNS, WHERE THESE DIFFER, AMBIGUITY OBTAINS IN THE PROPORTION INDICATED BY THE 2 NUMBERS ABOVE THE AGGREGATE, THE FIRST OF THESE APPLYING TO THE CLEF SIGN ABOVE THE STAFF, AN X IN A RECTANGLE ABOVE A BAR OF NOTES INDICATES A CHROMATIC CLUSTER.

C M = NOTE. P = PIZZ. ALL SINGLE TONES.

D LIKE B, BUT WITH VERTICAL AREGGATION AND TIME TENDENCIES MAKING USE OF HARMONICS UNNECESSARY, THE AREGGATION IS INDICATED BY DOUBLE ARROWS ACCOMPANIED BY A SERIES OF NUMBERS. THE SIGN $\frac{1}{2}$ 1.4 MEANS 1 NOTE IN THE MIDDLE FOLLOWED BY 1 NOTE HIGHER OR LOWER, FOLLOWED BY 1 NOTE LOWER IF THE 2ND WAS HIGHER, HIGHER IF THE SECOND WAS LOWER. $\sqrt{2}$ 1 MEANS TWO NOTES OF WHICH AT LEAST 1 IS THE HIGHEST OF THE THREE FOLLOWED BY A THIRD LOWER NOTE.

THE HORIZONTAL ARROWS REFER TO TIME AND THE TENDENCY OF THE TONES TO SOUND SOONER, LATER, OR AT THE POINT OF NOTATION.

E PLAY WITH HANDS INDICATED, WHERE CLEFS DIFFER, A NOTE IS EITHER BASS OR TREBLE. THE NOTES HAVING A SINGLE STEM ARE TO BE AREGGATED (UP OR DOWN). PLAY NOTATIONS FROM LEFT TO RIGHT.

F NUMBERS ARE SECONDS OR OTHER TIME UNITS.

G OF NOTES WRITTEN PLAY NUMBER GIVEN IN ANY MANNER (CRY, HARD) BEGINNING AND ENDING AS INDICATED BY ARROW. DYNAMIC INDICATIONS ACCOMPANY EACH CIRCLE ON THE OCCURRENCE OF WHICH THE NOTES ARE HAZED. (SCALE $\frac{1}{2}$ - $\frac{1}{3}$)

H ANY ONE OF THESE, AS IN C, OR ANY NUMBER (INCLUDING ALL) IN SEQUENCE, MAINTAINING, IN THE LATTER CASE, THE CLEF SIGN OF THE ONE FIRST PLAYED.

I PIZZ, WHERE INDICATED, A SINGLE TONE, INTERVAL, OR A 3 NOTE AGGREGATE, REAPPEARANCES OF TONES TO BE PLAYED AS ORIGINALLY.

J NUMBERS ARE OF NOTES TO BE PLAYED BETWEEN LIMITS CONNECTED BY LINES. ARROWS INDICATE DIRECTION IN SPACE TIME BACKWARDS AND FORWARDS. A STRAIGHT LINE ABOVE A NUMBER, MEANS ASCENDING OR DESCENDING GAMMUT. \curvearrowright MEANS ASCENDING AND DESCENDING.

K DISREGARD TIME. PLAY ONLY ONE OR EVEN NUMBER OF TONES IN A PERFORMANCE, USING OTHERS OF A GIVEN 3, 4, 5 OR 6 SIDE FIGURE AS GRACES OR PUNCTUATIONS.

L PLAY FROM LEFT TO RIGHT WITH HANDS INDICATED. CLEF AMBIGUITY AS IN D. PERIMETERS WERE COMPOSING MEANS AND DO NOT HERE AFFECT TIME, AS THEY DO IN A.

M BEGIN AT LEFT END AT RIGHT, CHANGING DIRECTION AT INTERSECTIONS, IF DESIRED, MAY BE EXPRESSED AS ONE VOICE, A COUNTERPOINT OR, AS 3 OR 4 VOICES. PEDALS ONLY IN AREAS INDICATED, NOT OBLIGATORY. $\frac{1}{2}$ - $\frac{1}{3}$ - $\frac{1}{4}$ - $\frac{1}{5}$ - $\frac{1}{6}$ - $\frac{1}{7}$ - $\frac{1}{8}$ - $\frac{1}{9}$ - $\frac{1}{10}$ - $\frac{1}{11}$ - $\frac{1}{12}$ - $\frac{1}{13}$ - $\frac{1}{14}$ - $\frac{1}{15}$ - $\frac{1}{16}$ - $\frac{1}{17}$ - $\frac{1}{18}$ - $\frac{1}{19}$ - $\frac{1}{20}$ - $\frac{1}{21}$ - $\frac{1}{22}$ - $\frac{1}{23}$ - $\frac{1}{24}$ - $\frac{1}{25}$ - $\frac{1}{26}$ - $\frac{1}{27}$ - $\frac{1}{28}$ - $\frac{1}{29}$ - $\frac{1}{30}$ - $\frac{1}{31}$ - $\frac{1}{32}$ - $\frac{1}{33}$ - $\frac{1}{34}$ - $\frac{1}{35}$ - $\frac{1}{36}$ - $\frac{1}{37}$ - $\frac{1}{38}$ - $\frac{1}{39}$ - $\frac{1}{40}$ - $\frac{1}{41}$ - $\frac{1}{42}$ - $\frac{1}{43}$ - $\frac{1}{44}$ - $\frac{1}{45}$ - $\frac{1}{46}$ - $\frac{1}{47}$ - $\frac{1}{48}$ - $\frac{1}{49}$ - $\frac{1}{50}$ - $\frac{1}{51}$ - $\frac{1}{52}$ - $\frac{1}{53}$ - $\frac{1}{54}$ - $\frac{1}{55}$ - $\frac{1}{56}$ - $\frac{1}{57}$ - $\frac{1}{58}$ - $\frac{1}{59}$ - $\frac{1}{60}$ - $\frac{1}{61}$ - $\frac{1}{62}$ - $\frac{1}{63}$ - $\frac{1}{64}$ - $\frac{1}{65}$ - $\frac{1}{66}$ - $\frac{1}{67}$ - $\frac{1}{68}$ - $\frac{1}{69}$ - $\frac{1}{70}$ - $\frac{1}{71}$ - $\frac{1}{72}$ - $\frac{1}{73}$ - $\frac{1}{74}$ - $\frac{1}{75}$ - $\frac{1}{76}$ - $\frac{1}{77}$ - $\frac{1}{78}$ - $\frac{1}{79}$ - $\frac{1}{80}$ - $\frac{1}{81}$ - $\frac{1}{82}$ - $\frac{1}{83}$ - $\frac{1}{84}$ - $\frac{1}{85}$ - $\frac{1}{86}$ - $\frac{1}{87}$ - $\frac{1}{88}$ - $\frac{1}{89}$ - $\frac{1}{90}$ - $\frac{1}{91}$ - $\frac{1}{92}$ - $\frac{1}{93}$ - $\frac{1}{94}$ - $\frac{1}{95}$ - $\frac{1}{96}$ - $\frac{1}{97}$ - $\frac{1}{98}$ - $\frac{1}{99}$ - $\frac{1}{100}$

N LIKE I, BUT WITH VARYING DYNAMICS.

O AUDIBLE (AS GROSS LINES AREGGATIONS) AS IN D BUT FREE, ETC.) ONLY BETWEEN HORIZONTAL LINES. PEDALS AS IN M.

P ANY NOISES (INCLUDING AUXILIARY), DYNAMICS OF WHICH ARE NOTATED.

Q LIKE M, BUT IN TIME (ANY UNITS); GOING BACK IN TIME NEED FOR INCREASED SPEED.

R RIGOROUSLY IN TIME. NOTES ABOVE STAFF, TREBLE; BELOW, BASS; ON AMBIGUOUS LINES WERE PART OF COMPOSING MEANS, THE INTERSECTIONS PRODUCING TONES OTHER THAN THE EXTREME PIANO KEYS.

S LIKE C, BUT WITH NOISES ABOVE LINES INSIDE PIANO CONSTRUCTION; BELOW - BUT SIDE PIANO CONSTRUCTIONS.

T INFLUENCES IN PITCH AND TIME NOTATED AS SHAPES WITH CENTER POINTS TO BE AUDIBLE AS CLUSTERS, A SINGLE ONE CHANGING IN ITS COURSE. NUMBERS REFER TO LOUDNESS (1-64) (SOFT TO LOUD OR LOUD TO SOFT)

U CHOOSE ONE OF 3 MUTUALLY EXCLUSIVE AREAS, BOUNDED BY STRAIGHT LINES. PROCEED L. TO R. USING NUMBER OF TONES GIVEN WITHIN DOTTED PARTS.

V PERFORMANCE INDICATIONS ABOVE (READING DOWN) ARE DEGREE OF FORCE, MOST LEAST; VERTICAL DISTANCE OF ATTACK BAR CLOSE; SPEED OF ATTACK, SLOW-FAST. ANY NOISES (BELOW LINE BETWEEN STAVES).

W LEGATO (TRIANGLES) AND STACCATO (ISOLATED NOTES).

X PS ARE PUNCTUATIONS (BEFORE AT, DURING, OR END OF INTERVAL THEY ACCOMPANY. N MEANS REPEAT SOMETHING OR ALL OR ANY AMT.) PLAYED BEFORE, BUT CHANGING AMPLITUDE. PEDALS ARE OPTIONAL.

Y 8 PITCH AREAS, CHROMATICALLY ADJACENT, AND HAVING NUMBER OF CHROMATIC TONES GIVEN (LARGE NUMBERS BELOW STAFF), WHEN NOTES ARE ON A LINE THEY BELONG TO EITHER THE UPPER OR THE LOWER AREA. TIME IN SPACE SECONDS AS INDICATED. LOUDNESS GIVEN BY POSITION OF NOTE WITH RESPECT TO AREA VERTICALLY. HIGH IS $\frac{1}{3}$, LOW IS $\frac{1}{64}$.

Z CLUSTERS ENDING AS SINGLE TONES, DYNAMICS AS IN T.

AA CLEF AT ALL TIMES AMBIGUOUS. 'AA' STICKS' TO BE PLAYED FREELY (SINGLE TONES, INTERVALS, AGGREGATES, EVENTS, ETC. WITHIN PITCH LIMITS AND RELATIVE TIME LIMITS INDICATED BY THEIR EXTREMITIES (NOTES) USING GAMES

AS ASSISTANCE. GIVE EMPHASIS BY DYNAMICS, HARMONIC REPETITION OR OTHER MEANS TO CIRCLED TONES AND MORE EXTREMELY TO THOSE CIRCLED TWICE OR 3 TIMES.

AB CLUSTERS AS IN Z, SOMETIMES BEGINNING AS SINGLE TONES (NUMBERS ARE DYNAMICS)

AC NOISES, OF THOSE NOTATED PLAY ONLY THAT NUMBER GIVEN 1: IN-TERIOR PIANO CONSTRUCTION, A: AUXILIARY NOISES, O: OUTER PIANO CONSTRUCTION. THE POSITION OF THE NOTE VERTICALLY GIVES ITS LOUDNESS (HIGH - $\frac{1}{3}$) (LOW IS $\frac{1}{64}$).

AD SINGLE TONES INTERVALS AND THREE NOTE AGGREGATES WITH AMBIGUOUS STAFF LEGER LINES ABOVE TREBLE, BELOW THE

AE PITCH-TIME AREAS SILENT NOTES ACCOMPANIED BY NUMBERS MEANING NUMBER OF TONES (AND) TO BE PLAYED.

AF EACH EVENT (LINE CONNECTED) IS TO BE PLAYED BY ONE HAND ONLY. THE CLEF SIGNS ABOVE ARE FOR THE RIGHT HAND, BELOW FOR THE LEFT.

AG OMIT ANY 2 NOTES OF EACH AGGREGATE.

AH CLEFS FREE (TREBLE OR BASS) HANDS GIVEN, FOLLOW LINES IN DIRECTIONS GIVEN BY ARROWS.

AI PLAY 'WHEEL' OR 'AXLE' USING ONE(S) NOT PLAYED AS HARMONIC(S). PLAY FROM LEFT TO RIGHT.

AJ NUMBERS ARE PROPORTIONAL OF NOTES TO BE PLAYED IN DIRECTIONS GIVEN BY ARROWS CHANGING CLEF AT POINTS WHERE SIGNS APPEAR.

AK PLAY ANY 1 NOTE IN EACH 'UNIVERSE' ACCORDING TO TIME AND AMPLITUDE GIVEN.

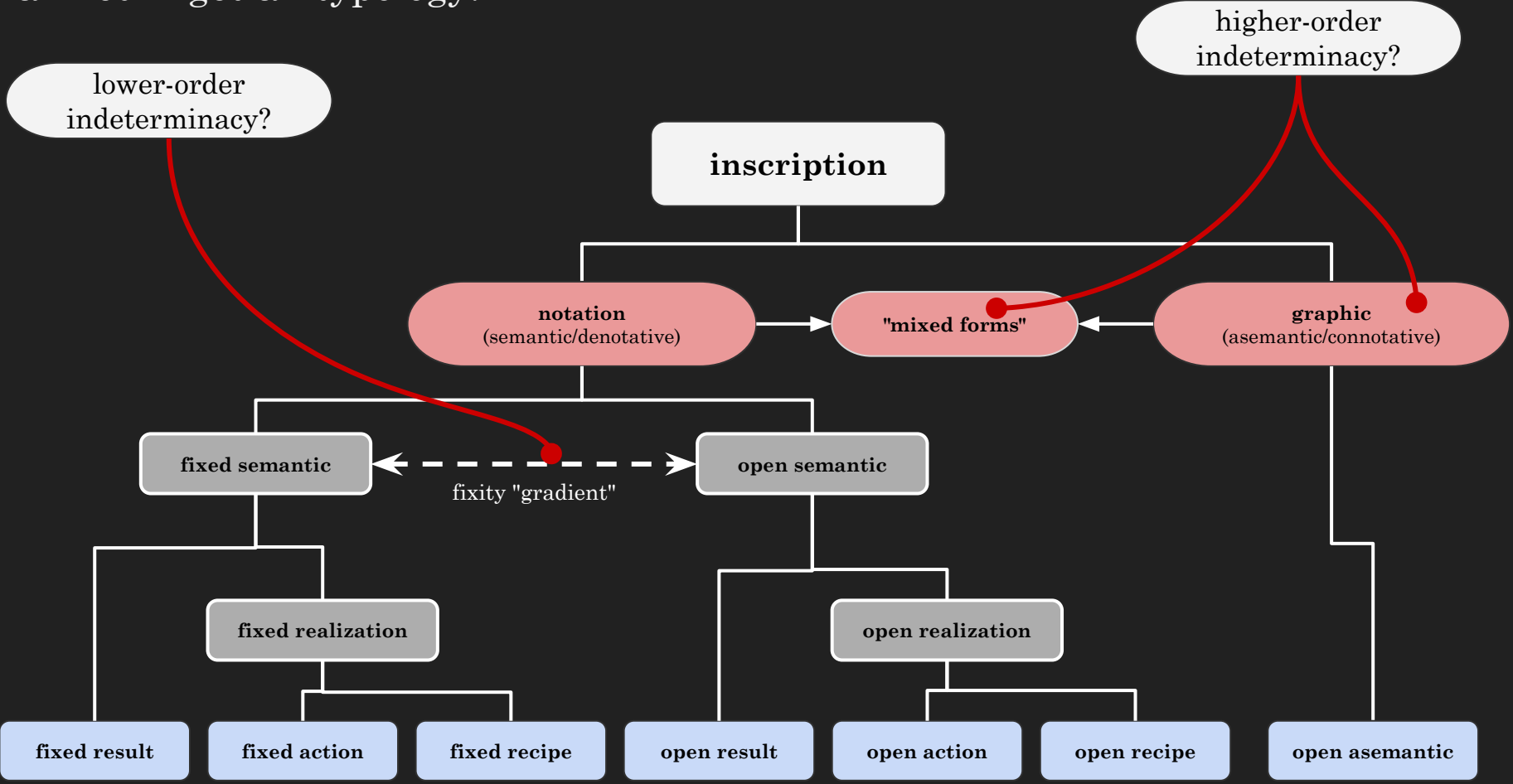
AL ANY 8 TONE GAMMUT, LARGE NUMBERS ARE PROPORTIONAL TIME BETWEEN SOUND EVENTS. = LEGATO = STACCATO

AM SINGLE TONES AND INTERVALS EQUAL LENGTHS OF TIME BETWEEN MARKS ABOVE AND BELOW STAFF.

AN CLEFS REFER TO HANDS, FOLLOWING INTO THE LINE FROM LEFT TO RIGHT PLAY ANY NUMBER OF NOTES WITH ONE HAND FOLLOWED BY A DIFFERENT NUMBER WITH LEFT (ETC. IF NUMBERS) CANNOT DO BUT USE ALL THE NOTES).

(please do not attempt to read)

Clarified Ligetian typology:



Strengths of the Ligetian framework:

Clarifies muddy terminology.

Moves toward an account of notational representation.

Develops a function-centric notation typology.

Differentiates *semantic* and *asemantic* inscriptions.

Differentiates *degree of fixity* and *degree of semanticity*.

Works referenced:

Essays

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