

Composing Open Forms for Orchestra

From Morton Feldman's *Intersection #1* (1951) to Henri Pousseur's *Les Fouilles de Jéruzona* (1995)

“Our so-called Atonality opened the door to an overwhelming amount of possibilities. There can no longer be one way, and if a certain note is not more right than a certain other note then we must make all right notes available. Is this not the main reason behind the intentional ambiguity in much new notations?”¹

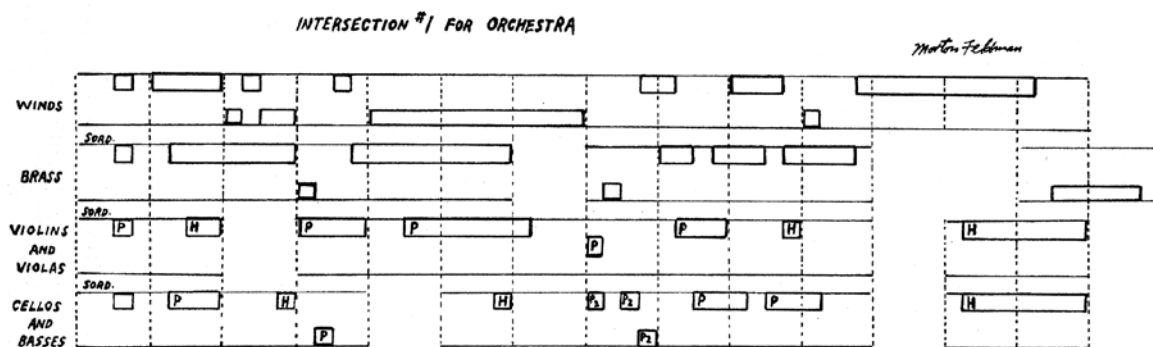
Since the fifties, a strong wave of open compositions emerged in Western music. Composers started to explore new ways in order to propose music that would change at each performance, while sticking to the same piece with common characteristics. One of the consequences of this new way of composing music is that musicians gain independence, becoming involved not only in the interpretation of the music, but also in its creation.

However, this type of composition was mostly used for small soloist ensembles. Leaving some freedom for each musician in a large orchestra is a real challenge, because of the huge number of musicians, and the associated risk of chaos that it may generate.

Historically, the first open piece for orchestra is Morton Feldman's *Intersection #1* for symphonic orchestra (1951). Feldman (1926–1987) is an American composer close to the “New York school”. He began to experiment open notation in 1950 with *Projection #1* for cello, and composed different open scores for orchestra from 1951 to 1967.

The principles of his open compositions are mostly to build series of “on/off switches” to indicate when players should play or not, associated with short indications (like the number of elements allowed, the register or the playing techniques).

Figure 1. First page of Feldman's *Intersection #1* for orchestra, ed. Peters, New York, 1951



In *Intersection #1*, Feldman divided the orchestra into four groups: winds, brass, high strings (violins and violas) and low strings (cellos and double-basses). There are no percussions in this piece.

The score is a timeline with some squares that indicates when a group should play or not. There are some measures symbolized by dot lines. There are three positions for the squares: high, medium and low, which correspond to the register of the instrument. For example, in the first measure, all the orchestra must play together a short section in the high register. There are also additional indications for the strings: *P* (sul ponticello), *H* (harmonics), and *Pz* (pizzicati), and *sord.* (con sordino) for the brass and the cords.

Inside these rules, each musician of the orchestra is free to choose the notes, the intensities, etc. But it is not the freedom of the performers that Feldman aimed at in this piece:

¹ Lukas FOSS, *Good*, notice of the score, ed. Carl Fischer Music, New York, 1969.

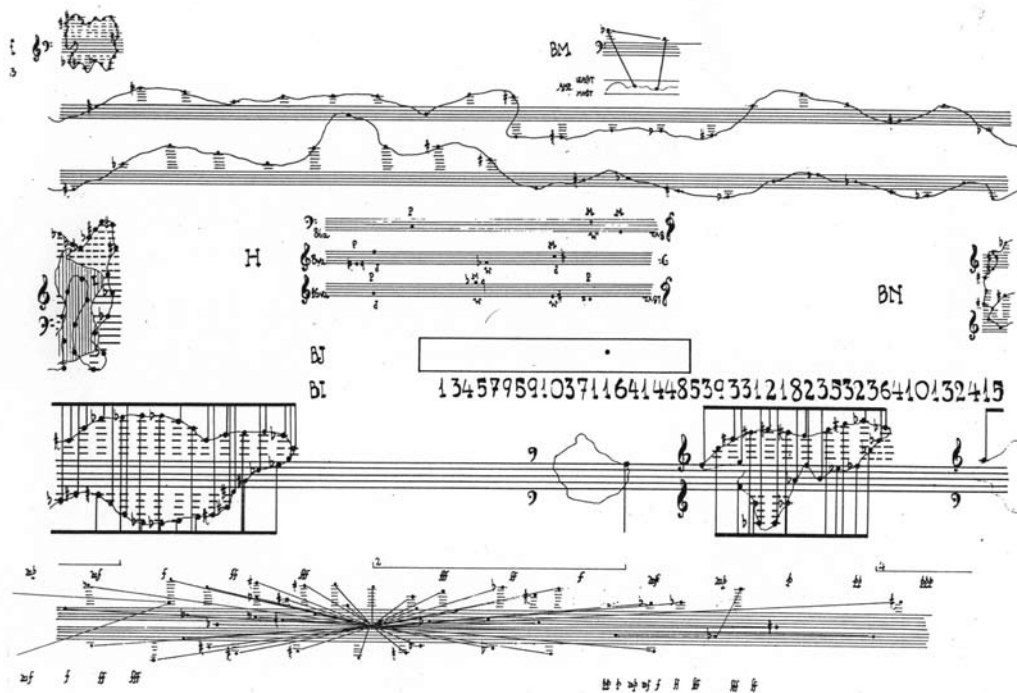
“I never thought of the graph as an art of improvisation, but more as a totally abstract sonic adventure.” “After several years of writing graph music, I began to discover its most important flaw. I was not only allowing the sounds to be free; I was also liberating the performers.”²

For him, this liberation of the performer is more a kind of «collateral damage». He thinks of these open compositions as an abstract organization of sound blocks.

Following the release of Feldman’s piece, other western composers started to imagine other ways for composing open piece for orchestra, mostly with different purposes and approaches.

One of the most famous open pieces is the John Cage’s *Concert for piano and orchestra* (1957–58). John Cage (1912–1992) is the principal composer of the “New York School”. This piece is composed with random procedures, like the Chinese *I Ching*, and the result leads to an original graphical notation:

Figure 2. Example of a piano page in the Cage’s *Concert for piano and orchestra*, ed. Henmar Press, New York, 1960



Each instrument has a dedicated specific set of pages. For example, figure 2 is one of the 66 piano pages, which is the more open part of the score. The pianist may choose any of the pages and play anything he wants in the page in any order and length. The freedom is really important, and the result is deliberately indeterminate. Like Feldman, Cage’s research is not aimed at pushing performers to improvise. The scores are only present to ensure that performers will play from abstract structures composed by random procedures, and will not perform a free improvisation (a collection of “clichés” for Cage). As an analogy to the “integral” or “generalized” serialism concept given to the research of composers from the “Darmstadt school” in the early fifties, we can speak about “generalized randomness” in this piece, from the basic material to the global form through the way the composition works. Moreover, the scores of this piece could be combined with other scores, like *Aria* (1959) or the *Song Book* (1970). Between 1961 and 1962, Cage composed *Atlas Eclipticalis* for 1 to 86 musicians, created by superimposing staves to a star atlas (the organization of the stars creates the musical notes), which is also a random-composed piece for orchestra that could be combined with other scores.

Indetermination in scores for orchestra was also used by composers from the “Polish school”, like Krzysztof Penderecki’s *Tren ofiarom Hiroszimy* for string orchestra (1959–60) or Witold Lutoslawski’s *Jeux vénitiens* (1960–61). *Jeux vénitiens* was composed by Lutoslawski (1913–1994) after hearing Cage’s *Concerto for piano*

² Morton FELDMAN, *Intersection #1*, notice of the score, *op. cit.*

and orchestra on the radio. But in *Jeux vénitiens*, random procedures are less important than in Cage's work. For example, the global development and all the pitches are fixed in the score. The indetermination is more in the way that different musical structures come together, in some parts with no common pulse, what Lutoslawski called an *aleatory counterpoint*.

A different and original way to create open forms for orchestra was proposed by Iannis Xenakis (1922–2001) in his games for orchestra, like *Duel* (1958–59) for 56 musicians or *Stratégie* (1962) for 82 musicians.

In these pieces, musicians are divided into two orchestras with two conductors.

The performer's scores are fixed, but the way that the conductor uses them is determined by fixed game rules, ending with a winner and a loser for the orchestras.

The rules of these games are simple: each conductor has a choice between different sections of the orchestral score that Xenakis calls "tactics", each "tactic" being composed by stochastic techniques (mathematical equations that made "sound clouds").

For example, in *Duel*, each conductor can ask his orchestra to play with one of these six "tactics"³:

- I) Percussive sounds with the strings (like pizzicati, strokes with the wood of the bow, etc.)
- II) Strings playing sustained notes with some fluctuations
- III) Strings glissandi
- IV) Percussion section
- V) Wind section
- VI) Silence

These score sections are long enough to be played several times without too much repetition (at each new calling of a "tactic", the orchestra can play the next part of the corresponding score section).

When an orchestra plays a "tactic", the other orchestra must respond by another one that allow him to win the maximum of points, according to a pre-determined matrix for counting the points:

Figure 3. *Duel's* matrix⁴

		Conductor Y					
			I	II	III	IV	V
Conductor X	I	-1	+1	+3	-1	+1	-1
	II	+1	-1	-1	-1	+1	-1
	III	+3	-1	-3	+5	+1	-3
	IV	-1	+3	+3	-1	-1	-1
	V	+1	-1	+1	+1	-1	-1
	VI	-1	-1	-3	-1	-1	+3

For example, if the first conductor (*X*) calls her/his orchestra to play the "tactic" number I (percussive sounds with the strings), the second conductor (*Y*) must respond by calling her/his orchestra to play the "tactic" number III (strings glissandi) to win a maximum of points (three points in this case). A referee counts the points and attributes a prize to the winning orchestra at the end of the performance (the number of points required being decided before the competition).

In these Xenakis's pieces, the compositional aim is, inspired by the John von Neumann and Oskar Morgenstern's "Game Theory", to create a "external conflict"⁵ (with an extra-musical aim), that could stimulate the performance and create a new type of musical rhetoric.

Another kind of open orchestral score is François-Bernard Mâche's *Répliques* (1969) for orchestra and audience, created at the Royan festival in France. Mâche (1935) is a French composer at the origin close to the "Concrete School".

This composition is also a sort of game. This game is not between two orchestras like in Xenakis's pieces, but between the orchestra and the audience, the objective being now to play together and no longer to win. The audience must participate in the performance with birdcalls, directed by a conductor. According to the way

³ Iannis XENAKIS, «Musiques formelles», *La Revue Musicale*, n°153–154, Paris, ed. Richard-Masse, 1963, p. 141.

⁴ *Ibid.*, p. 148.

⁵ *Ibid.*, p. 138.

the audience participates (disciplined, undisciplined, quiet, etc.), Mâche composed some “replicas” to be played by the orchestra. For example, if the public made a lot of noise (like in the case of a scandal), the conductor can make a counterattack by calling a section where three percussionists play fortissimo in an attempt to stop the insurrection of the public.

In the same year, Lukas Foss (1922–2009), an American composer pioneer in the domain of Western improvisation (he created for example the first “non-jazz” improvisation ensemble in 1957 in California), composed *Geod* (1969) for a large orchestra with optional choir that he defined as “*music without beginning or end, without development, without rhetoric, without ‘events’*.”⁶

Like in Feldman and Xenakis’s pieces, the orchestra is divided into groups. According to the notice of the score, the four groups are:

- I) Strings: Overlapping string clusters, each having an inner life (performers’ choices).
- II) Woodwinds/Harp/Keyboard: Overlapping patterns (like raindrops), chance-formations.
- III) Brass: Overlapping sustaining chords. Each player chooses one out of the three notes of major chords (never resulting in major chords, if executed correctly).
- IV) Folk instruments/Percussions/optional Choir: twelve folk songs of the country of performance, one on each note of the chromatic scale, played by eleven instruments (preferably folk instruments of the country of performance) plus a small vocal choir, and accompanied by four percussionists, choosing from a repertory of 36 textures.

In this piece, each group has its own conductor, with a principal conductor who decides which groups should be heard at a time. When the principal conductor makes a hand signal to one of the group conductors to fade out for a moment, this group conductor sits down on a chair and continues to conduct, but silently, what Foss calls *inaudible playing*⁷. The principal conductor also decides when he ends the piece, by cutting successively all the four groups in a fade out.

Each score is like a circle. The groups can start the piece at any measure, and when they reach the end of the score, they go back to the first page.

All the scores are made with the same 132 notes row. The rules that Foss uses for creating this row are that a note could never succeed to itself or a note that it succeeded before. This 132 note row ending logically when all the twelve notes have succeeded to all the other eleven notes, and the 133rd note is the first note of the row, in attempt to make a circle. In a sense, this creates eleven dodecaphonic row interlaces in a special way to make a larger circle that creates pitch coherence for the entire piece. So, each group turns inside the same circle (the *Geod*), but at different positions and speeds from the other groups.

This research about creating pitch coherence into an open orchestral score was also experimented by Henri Pousseur. But for Pousseur, the coherence must not only be in a horizontal polyphonic way, like Foss did, but also in a vertical harmonic way.

Pousseur (1929–2009) is a Belgian composer, close to the “Darmstadt School”. He began to compose open forms with *Mobile* for two pianos in 1957, and the opera *Votre Faust* (1961–1968) is one of his most famous open compositions. In this opera, the audience was involved in the evolution of the intrigue by voting at different important moments.

Les Fouilles de Jéruzona (1995) is his first entirely “mobile” piece for orchestra (I mean without any precisely fixed part). This piece works close to Feldman’s open pieces, with “on/off” indications, but with the difference that Pousseur, like Foss, organizes the pitches inside the global timeline. Another strong difference with Feldman, Cage or Xenakis, is that for Pousseur, this piece is “*a collective improvisation exercise*”⁸. Speaking about such research, he said that he “*tried to combine two researches*:

- *The research about variable forms results in an improvisational liberty for the performer, which can work if there is a stable compositional basement.*
- *The research about the reactivation of the harmonic energies, rejected by the experimental music, especially serial music.*

These two research directions are motivated by an utopian conception of the role of the music in social life, and the social life itself.”⁹

⁶ FOSS, *Geod*, notice, *op.cit.*

⁷ *Ibid.*

⁸ Henri POUSSEUR, *Les Fouilles de Jéruzona*, notice of the score, CeBeDem, Bruxelles, 1995.

⁹ « *Je m’étais en effet efforcé de faire converger deux voies de recherche antérieures : celle, déjà bien connue, des formes « variables » (et de la liberté d’improvisation qui en résulte pour les interprètes, liberté réellement efficace si elle peut s’appuyer sur une base composition-*

For Pousseur, the orchestra is like a micro-society, and he composed rules that allowed each citizen of this micro-society to live in harmony, with a possibility of individual freedom of creation.

In this piece, the orchestra is also divided into groups. There are six groups of six musicians (the orchestration could change from one performance to another one). Figure 4 shows the organizations of the orchestral groups for the first performance:

Figure 4. Groups and instrumentation uses for the first performance of Pousseur’s *Les Fouilles de Jéruzona* at the Beethoven Academy in Anvers (France), 1995

	I	II	III	IV	V	VI
1	Piccolo	Violin 5	Violin 8	Violin 10	Violin 12	Viola 5
2	Violin 1	Violin 6	Vibraphone	Violin 11	English Horn	Cello 3
3	Violin 2	Flute	Violin 9	Harp	Viola 4	Bass Clarinet
4	Violin 3	Violin 7	Trumpet	Viola 3	Cello 2	Cello 4
5	Oboe	Clarinet	Viola 2	French Horn	Bassoon	Double Bass 3
6	Violin 4	Viola 1	Cello 1	Double Bass 1	Double Bass 2	Contrabassoon

As we can see, Pousseur does not use the traditional orchestral sections (strings, brass, woodwind and percussions) for creating the groups, and tries to mix the timbres.

Figure 5 shows the beginning of the score. The Roman numbers on the left hand side specifies which group should play, and the Arabic numbers inside the squares (one square equals one measure) indicates which musicians of the group should play (according to Figure 4):

Figure 5. First seven measures of Pousseur’s *Les Fouilles de Jéruzona*

R1 4/4 ♩ = 60

	1	2	3	4	5	6	7
I	[pp 1]	[p 1 - 2]	← p X →	[mp 1 - 3]	← mp X →	← p X →	[mf 1 - 4]
II	-	-	[pp 1]	← mf X →	[p 1 - 2]	← p X →	← f X →
III	-	-	-	-	-	[pp 1]	← f X →
IV	-	-	-	-	-	-	-
V	-	-	-	-	-	-	-
VI	-	-	-	-	-	-	-

For example, at the first measure, musician n°1 of the group n°I (the piccolo for the first performance) should play pianississimo for one measure, then, musicians n°1 (piccolo) and n°2 (violin 1) of the group n°I should play piano at the second measure, etc. The cross and the arrows at the third measure mean that the whole group n°I should play short pointillist sounds for one measure.

In addition to this, Pousseur gives musicians melodic and harmonic materials based on what he called the “network technique”. A network is made by one intervallic cycle transposed by another one.

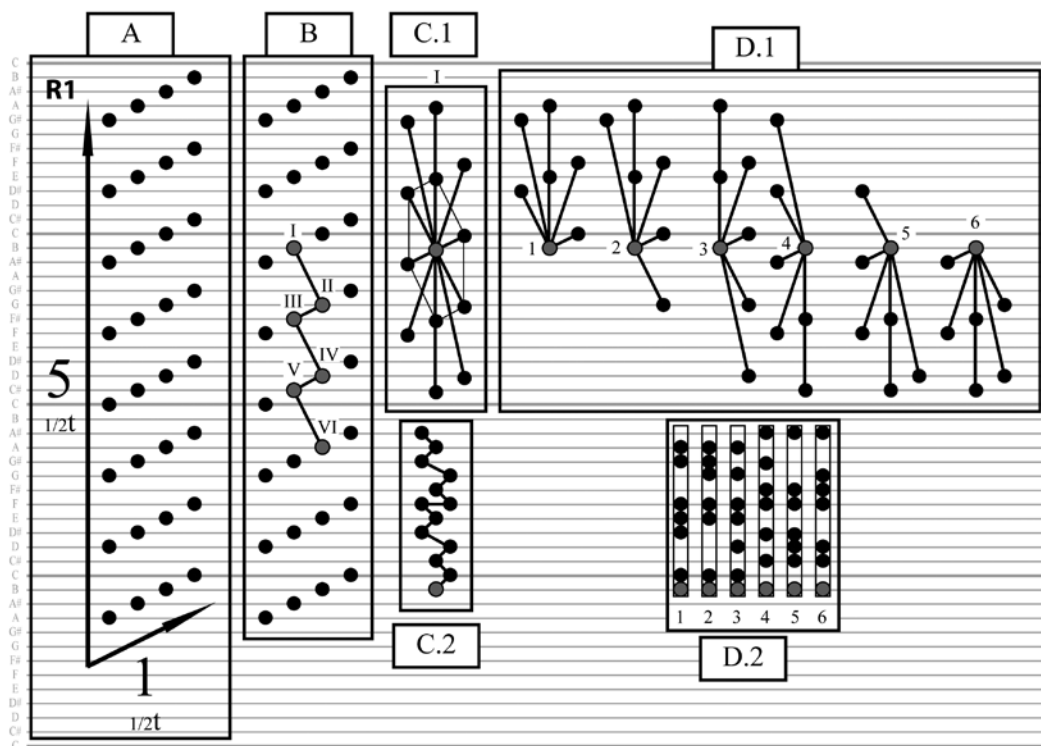
nelle différenciée comme sur une assise naturelle stable et fertile), et celle, plus récente, d’une réactivation des « énergies » harmoniques rejetées par toute la musique expérimentale précédente, en particulier la musique sérielle. (...) Les deux voies, on le devine, sont animées par un souci qui déborde largement le seul domaine technique, elles sont orientées par une certaine conception (utopique) du rôle de la musique dans la vie sociale – voire de la vie sociale elle-même. » Henri POUSSEUR, Invitation à l’Utopie, unpublished text, Paul Sacher Foundation, Basel, Switzerland, probably 1970.

For this piece, Pousseur creates five intervallic networks ($R1 = 5$ semitones transposed by 1 semitone, $R2 = 7/2$, $R3 = 8/3$, $R4 = 10/3$, $R5 = 11/3$).

In Figure 5, all musicians play inside the intervallic network n°1 (called R1).

Figure 6 explains in details how Pousseur built this network:

Figure 6. Pitch organization in the first page of Pousseur's *Les Fouilles de Jéruzona*. Intervallic network R1



A network has two dimensions composed by two intervals. In this case, an interval of 5 semitones (a perfect fourth) and an interval of 1 semitone (in fig. 6 A, each line means a semitone). This is a cycle of fourth transposed by a cycle of semitone.

First, Pousseur attributes to each of the six groups (I to VI) a starting note inside the network (fig. 6 B).

From this starting note, Pousseur creates a symmetrical figure (fig. 6 C.1), composed from the starting note plus 12 notes. If we make a reduction of these notes on one octave (fig. 6 C.2), we can see that we have a chromatic chain.

Then, the notes of this figure are dispatched inside each group between the six musicians (fig. 6 D.1).

The result is that at the end, each musician has only a reservoir of seven notes. If we make a reduction (fig. 6 D.2) to one octave, we can see that each musician plays in a sort of heptatonic scale.

Figure 7. The six heptatonic scales corresponding to the fig. 6 D.2



With this pitch organization, Pousseur could give to each musician a different scale for improvising together, without having a chaotic result, thanks to the logics of the system that creates a kind of new polymodality.

To conclude this overview of the different ways for composing open forms for orchestra, we can note that many different possibilities have been explored since the fifties: randomness, abstract block structures, participation of the public, rules for improvisers, etc. For composers, this was a challenge, and they began by composing open scores for soloist or small ensemble before trying to compose scores for orchestra. This repertoire is not often played today, probably because of the difficulty that it results for musicians of the orchestra that are not familiar with improvisation, and also because of the important number of rehearsals that this kind of compositions requests.

However, the development of new network technologies that allows musicians from all over the world to play together (currently mostly used for videogames) is offering a new future to this kind of compositions, able to create new types of musical relationships among emerging virtual orchestras.

Santrauka

Atvirųjų formų orkestrinių kūrinių komponavimas: M. Feldmano „Intersection I“ ir H. Pousseuro „Les fouilles de Jeruzona“ analizė

Nuo XX a. 6-ojo dešimtmečio Vakarų muzikoje kilo didelė susidomėjimo atvirųjų formų kompozicijomis banga. Viena iš šio naujo komponavimo būdo atsiradimo pasekmių yra ta, kad atlikėjui ne tik suteikiamas savarankiškumas interpretuojant muziką, bet kartu jis yra įtraukiamas ir į jos kūrimą. Tokio tipo kompozicijos dažniausiai skiriamos nedideliems solistų ansambliams. Todėl tikru iššūkiu tampa laisvės suteikimas didelio kolektyvo muzikantams, pvz., 26 narių orkestras Henrio Pousseuro kūrinyje „Les fouilles de Jeruzona“ (1995) ar simfoninis orkestras Mortono Feldmano kompozicijoje „Intersection I“ (1951).

Pranešimo pradžioje pateikiama istorinė įvairių eksperimentavimų, komponuojant atvirų formų orkestrinius kūrinius, apžvalga nuo 6-ojo dešimtmečio – Johno Cage'o Koncertas fortepijonui ir orkestrui (1957), Krzysztofo Pendereckio „Rauda Hirošimos aukoms“ (1960), Witoldo Lutosławskio „Jeux vénitiens“ (1961) ir Iannio Xenakio „Stratégie“ (1962). Po to, remiantis Mortono Feldmano „Intersection I“ ir Henri Pousseuro „Les fouilles de Jeruzona“ pavyzdžiais, analizuojama, kaip tai praktiškai įgyvendinama.

Mortonas Feldmanas (1926–1987) – amerikiečių kompozitorius, artimas Niujorko mokyklai. Jo eksperimentai su atvirosiomis formomis prasidėjo 1950 m. nuo kompozicijos violončelei „Projection I“, o 1951–1967 m. jis sukūrė įvairių šios formos kūrinių orkestrui. Jo atvirųjų formų kompozicijos pagrįstos „įjungimų/išjungimų“, nurodančių, kada atlikėjai turi groti ir kada ne, ir su tuo susijusi trumpų nurodų principu (pvz., leistini naudoti elementai, registrai, grojimo technika).

Henri Pousseuras (1929–2009) – belgų kompozitorius, artimas Darmštato mokyklai. Pirmąją atvirosios formos kompoziciją – „Mobile“ dviem fortepijonams – jis parašė 1957 m., o 7-ąjį ir 8-ąjį dešimtmečiais išbandė daugybę galimybių, įkvėptų jo paties „tinklo teorijos“. Jo pirmasis „mobilus“ kūrinys simfoniniam orkestrui „Les fouilles de Jeruzona“ yra artimas Feldmano atvirųjų formų kompozicijoms su „įjungimo/išjungimo“ nuorodomis, tačiau skiriasi nuo jų tuo, kad, nepaprastai rūpindamasis harmoniniu rezultatu, Pousseuras atlikėjams duodavo tam tikrus garsaeilius, kuriuos jie turėjo naudoti muzikos kūrimui.

Pateikta istorinės apžvalgos kontekste, šių dviejų kūrinių analizė parodo atvirųjų formų orkestrinių kūrinių komponavimo ypatumus. Tai, kad atvirųjų formų orkestrinės kompozicijos yra retos ir skiriasi nuo tokios pat formos kūrinių nedideliems solistų ansambliams, lemia pastarųjų specifika: instrumentinių grupių formavimas ir atlikėjų skaičius.