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# NOTATION, TRANSMISSION, AND COMPROVISATION: A CASE STUDY OF THE ONCEIM IMPROVISATION ORCHESTRA

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## ABSTRACT

ONCEIM is a collective free improvisation ensemble consisting of 30 musicians. Beyond free improvisation, the orchestra also performs new comprovisation works, commissioned from a variety of composers such as Eliane Radigue, Stephen O'Malley, John Tilbury, or Jean-Luc Guionnet. In this paper, we present a case study based on the 23 pieces commissioned by ONCEIM over a period of ten years, from 2012 to 2022. We first give an account of the different approaches encountered, illustrated by some examples of pieces. We then show how ONCEIM's musicians use re-notation strategies in the process of rehearsing such comprovisation pieces. Finally, we reflect on the role and use of electronics, as imagined by the composers with whom ONCEIM has collaborated, within a mostly acoustic setting.

## 1. INTRODUCTION

This article presents a case study of the use of notation in comprovisation [1, 2] pieces written by 24 composers over more than 10 years for the large musical ensemble *Orchestre des Nouvelles Créations, Expérimentations, et Improvisations Musicales* (ONCEIM).<sup>2</sup> The Paris-based ensemble was created in 2011 by the pianist Frédéric Blondy and is made up of some thirty instrumentalists with various musical backgrounds (jazz, improvised music, classical and contemporary music, noise music, music informatics, etc.). Its artistic activities are based both on large-ensemble “free improvisation” and on commissions from various composers —works that typically combine a written score with improvised material, and that, as such, raise the typical issues associated with comprovisational creative processes [3, 4]. In both cases, ONCEIM performances are characterized by a high level of indeterminacy, which calls for modes of organizing and working that are unusual for large instrumental ensembles (i.e. a relatively fluid distribution of roles, an emphasis on a “work-in-progress” approach, etc.), resulting in a tension that structures all of

ONCEIM's activities [5]. Such activities have been the subject of musicological studies [5, 6, 7] dealing in particular with the question of coordination and aesthetic negotiations in this kind of large, leader-less, improvisation orchestra.

ONCEIM has so far created 23 pieces by 24 composers, aiming at exploring a large spectrum of compositional practices —and thus acting as a sort of artistic laboratory for new ways of creating and composing music. The complete list of pieces is given in table 1. Note that the last line of table 1 stands for the 20 free improvisations ONCEIM has performed in concert so far, which are deliberately considered to be a series of pieces called *Laminaire*, collectively created by ONCEIM's musicians themselves, without leader nor any predetermined structure. A certain number of these are available on video<sup>3</sup> and on a forthcoming double CD. For the comprovisation pieces, ONCEIM primarily chooses to commission composers whose aesthetics is broadly compatible with the sonic framework of electro-acoustic improvisation (EAI), and, as such, who are able to benefit from the diverse backgrounds of its musicians, and the propositions they can bring forward in terms of sonic material and extended techniques. Another important point is that the composers are expected to be willing to enter a preparatory phase of exchange with the musicians, in order to discover their specificities and elaborate a shared musical ground. Such a participatory approach can open up the possibility of commissioning works from composers from non-academic backgrounds such as improvised music, metal, noise, turntablism, electronic music, by removing the barrier of having to use conventional score notation as the privileged way to communicate with ONCEIM's musicians.

In the remainder of this article, we will first give an account of the different approaches encountered (section 2), illustrated by some examples of pieces, discussing the various ways in which composers chose to transmit their intention to the orchestra and the extent to which they allowed for indeterminacy and drew upon the sonic and musical specificities of the up to 30 improvising musicians of ONCEIM. We will then show how the ensemble's musicians used re-notation strategies in the process of rehearsing such comprovisation pieces (section 3). Finally, we will reflect on the role and use of electronics, as imagined by the composers (section 4).

<sup>1</sup> Equal contribution

<sup>2</sup> <http://onceim.fr>

<sup>3</sup> <https://onceim.fr/media/> and [https://www.youtube.com/results?search\\_query=onceim+laminaire](https://www.youtube.com/results?search_query=onceim+laminaire)

Composer	Year	Title	Release
Blondy, Frédéric	2012	<i>Reflets de sillons</i>	
Beliah, Sébastien	2012	<i>Garden of Sounds</i>	
Mariage, Jean-Sébastien	2013	<i>La haine de la musique</i>	
Riviere, Arnaud	2014	<i>Encore</i>	
O'Malley, Stephen	2014	<i>Gruidés</i>	Vinyl [8]
Denzler, Bertrand	2014	<i>Morph</i>	CD [9]
Badaroux, Pierre Antoine	2015	<i>Composition No. 19</i>	
Radigue, Eliane	2015	<i>Occam Océan XXV</i>	CD [10]
Noetinger, Jérôme	2016	<i>Les machines orphelines</i>	
Normand, Eric	2016	<i>Jeu de cartes pour orchestre d'improvisateurs</i>	
Tilbury, John	2017	<i>Sans</i>	
Walker, Deborah	2017	<i>Gonesse extension</i>	
Galiay, Frédéric	2018	<i>Time Elleipsis</i>	
Ablinger, Peter	2018	<i>Notes &amp; Bloc-Notes</i>	digital album [11]
Beins, Burkhard	2018	<i>Ambush</i>	
Bosshard, Patricia	2018	<i>Sillons</i>	CD [12]
Duboc, Benjamin	2019	<i>Volumes</i>	
Naegelen, Karl	2019	<i>Concerto</i>	
Tetreault, Martin	2019	<i>Octaves</i>	
Charles, Xavier	2019	<i>Court-Fauve-Circuit</i>	
Laubeuf, Vincent	2021	<i>L'appel de l'océan</i>	
Guionnet, Jean-Luc	2021	<i>Tournures cessent orchestrales</i>	
Liu, Germaine & Sorbara, Joe	2022	<i>Quarantine Playground</i>	
ONCEIM	ongoing	<i>Laminaire</i> collective improvisations	forthcoming CD

**Table 1.** List of works composed for ONCEIM in chronological order, with the last line standing for the ongoing series of pieces collectively improvised by ONCEIM itself.

## 2. A CARTOGRAPHY OF ONCEIM'S COMPROVISATION PIECES

When reviewing the corpus of 23 pieces composed so far for ONCEIM, we can identify five principal, highly independent dimensions along which the pieces vary. These feature dimensions are:

**Transmission:** The mode of transmission of the piece to the orchestra can mainly use a material support of notation (a *score*), be *oral*, or use *audio* examples. Of course, and contrary to what can happen in more traditional settings—in which the score is usually seen as standing in for the composer, ideally encoding the composer's musical intentions so clearly that performers do not require any further interaction with him or her [13]—there is always an oral component in the process of explanation and elaboration of these pieces. But here, we are interested in where the bulk of defining information lies.

Interestingly, material transmission based on a notated score is still the most common practice, playing a crucial role in 19 of the pieces performed by ONCEIM. The most extreme example of oral transmission is Radigue's 2015 piece for ONCEIM which is elaborated and transmitted purely orally—a procedure that is typical of all Radigue's work for instrumentalists. Tilbury's 2017 piece also importantly relied on oral transmission, with the second part of the piece consisting of a few broad verbal

instructions provided by the composer during the rehearsals [5]. An example of audio transmission is given by Noetinger 2016, where the composer uses a text-based score giving the sections of activity for each musician (figure 10), but the material within each section is here prescribed by electro-acoustic audio loops produced by the composer, which the musicians have to emulate (or at least reinterpret) using purely instrumental means. Audio transmission was also involved to some extent in Guionnet 2021, in which the composer chose to transcribe 13 of 15 sections of an earlier electro-acoustic tape piece into a graphic score for the orchestra (figure 2). However, the original sound elements were here presented as verbal descriptions within the score, with all the decisions on how to “orchestrate” this for the available instruments having already been made beforehand by the composer, together with ONCEIM's artistic director. Only for the last two sections the musicians heard and had to acoustically render the original sound excerpts.

**Notation:** In score-based transmission, we can identify three main types of notation *textual*, *graphic*, *staff*, and their combinations. (See Blondy's 2012 piece in figure 1 for an example of combined text and graphic notation.)

Staff-based notation is in fact often used by the composers with whom ONCEIM has collaborated, ei-

Composer	Year	Figure	Transmission	Notation	Construction	Impl.	Det.	Role of Electronics
Blondy	2012	(1)	score	text, graphics	timeline	high	high	record+transform
Beliah	2012		score	text	deontic	mid	mid	
Mariage	2013		score	text, graphics	timeline	mid	mid	menace
Riviere	2014		score, oral	graphics	timeline	high	high	
O'Malley	2014	(3)	score	graphics	timeline	mid	high	
Denzler	2014		score	text	deontic	mid	low	
Badaroux	2015		score	text	deontic	mid	mid	remanence
Radigue	2015	(12)	oral	none	subjective	high	mid	no electronics
Noetinger	2016	(8)–(11)	audio, score	text, audio	timeline	low	high	record+transform
Normand	2016	(6)	score	text	deontic	low	low	
Tilbury	2017		oral, score	text, graphics	subjective	high	low	
Walker	2017		score	graphics	subjective	mid	high	ambience
Galiay	2018	(7)	score	graphics	timeline	mid	high	
Ablinger	2018		score	staff	timeline	low	high	
Beins	2018		score	text, graphics	timeline	low	high	
Bosshard	2018	(5)	score	staff	subjective	high	high	
Duboc	2019		score	graphics	timeline	high	high	
Naegelen	2019	(13)	score	staff	timeline	mid	high	record+reduce
Tetreault	2019		score	staff	timeline	low	high	
Charles	2019		score	text, graphics	timeline	mid	mid	
Laubeuf	2021	(4)	score	graphics	timeline	low	high	
Guionnet	2021	(2)	score, audio	graphics	subjective	mid	high	record+transform
Liu & Sorbara	2022		score	text, staff	deontic	low	mid	
ONCEIM	ongoing		audio	none	subjective	high	low	

**Table 2.** Classification of the works composed for and by ONCEIM according to the 5 feature dimensions (defined in section 2) and role of electronics (see section 4). The last line stands again for the ongoing series of collective improvisations.

ther at a local level (to prescribe selected snippets or cells (Bosshard 2018, figure 5), or, more rarely, at the level of the whole piece, akin to what would be observed in a classical score (Naegelen 2019, figure 13). As for graphic notation, it can be used synoptically, to describe the temporal organisation and evolution of musical parameters (see for example Blondy 2012, figure 1, Guionnet 2021, figure 2, O'Malley 2014, figure 3), or iconically, to suggest textures and materials (Laubeuf 2021, figure 4). Finally, while textual notation is present to some extent in most of the pieces (providing written explanations, rules, or sound descriptions), only Tilbury 2017 takes the form of a purely textual score.

**Construction:** The type of construction encountered in ONCEIM pieces is either *time-based* or *deontic* (based on rules). The time-based pieces can be either based on a fixed *timeline*, referring to a timer clock visible to all musicians (Blondy 2012, figure 1, O'Malley 2014, figure 3, Laubeuf 2021 figure 4), or on *subjective time*, where either the orchestra musicians or the artistic director (thus de facto acting as a conductor) can decide when it is time to move to a new cue or section (Guionnet 2021, figure 2, Bosshard 2018, figure 5). Note also that the short-scale temporal organisation within the larger sections can rely on *metric time* based on standard measures and tempo indications (Bosshard 2018, figure 5).

The deontic pieces are constructed around a set of rules and an approximate duration. The rules are usually given textually, but can contain snippets of notation, or be embodied in game props (e.g. playing cards in Normand 2016, see figure 6).

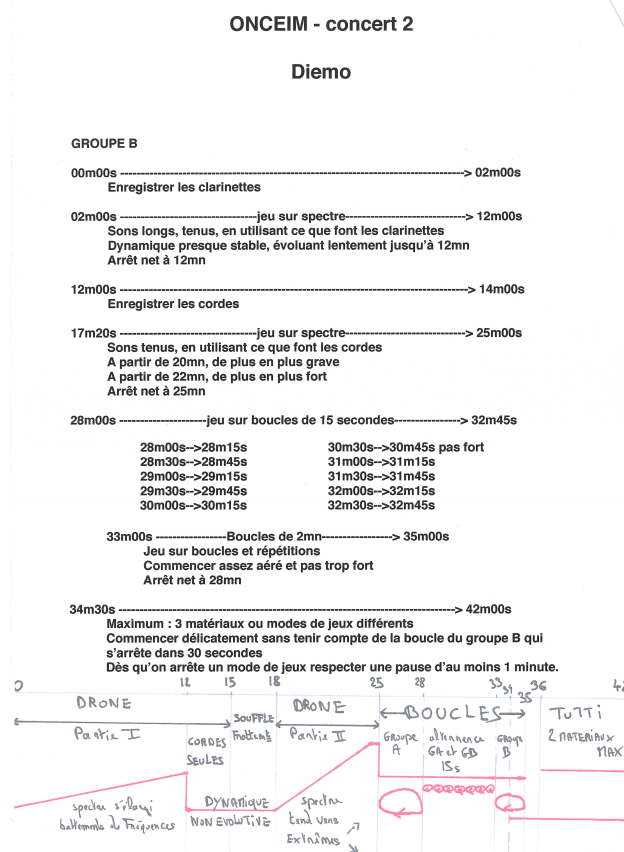
**Musicians' involvement:** ONCEIM musicians are more or less involved in the compositional process of such improvisation pieces. In particular, the source of the musical material can either be *endogenous* (coming from inside the orchestra) or *exogenous* (provided by the composer). Notable extremes include, on the one hand, Radigue 2015 and Bosshard 2018 (figure 5), where all the musical material was proposed by the orchestra, and subsequently worked into a composition, and, on the other hand, Tetreault 2019 and Ablinger 2017, where the musical material was entirely determined by the composer prior to the rehearsing sessions —a process more akin to what can be observed in classical or contemporary music ensembles. In most cases, however, the tension that might arise between the elicitation of endogenous material and the composer's own wishes is usually resolved through a participatory composition process, as in Tilbury 2017 [5].

**Determination:** The degree of (in)determination of a improvisation expresses the amount of choices the musicians have to make when rehearsing or performing the piece, from fully composed pieces such



as Tetreault 2019 or Ablinger 2017, to the obviously more open deontic pieces. A highly common solution, here, is to aim for some sort of fertile middle ground, with the choice of acoustic and musical material (timbre, texture, notes, chords, pulsation) being either completely free, or broadly constrained by a more or less precise range of options (as in O'Malley 2014, see figure 3), and the overall temporal and dynamic structure being more fully determined.

The 23 works created by ONCEIM so far are ranked on the five feature dimensions introduced above in table 2.



**Figure 1.** Example of a mix of textual and graphic notations in Blondy 2012. The lower graphic part is the conductor score giving the overall structure and dynamics of the piece. The textual part above is the score for electronics 1, giving instructions for when to record certain instruments of the orchestra (e.g. 0–2min “Enregistrer les clarinettes”), and instructions for when and how to use such recordings.

### 3. NOTATION BEYOND THE WORK

A striking aspect of ONCEIM’s improvisation output is that notation extends well beyond the works and scores transmitted by the composers.

Similarly to what can be found in most score-based musical practices, scores are often annotated by ONCEIM’s

#### E/ ERUPTIONS (~3 mn)

CUE 10 Alvisse donne le cue de départ et le cue d’arrêt, 4 fois et puis la suite

#### F/ DÉNUDÉ (~3 mn)

CUE 1

#### G/ PLASMA (~5 mn)

CUE 3 : ne restent que 2 sax et 2 clarinettes CUE 4 : tempo

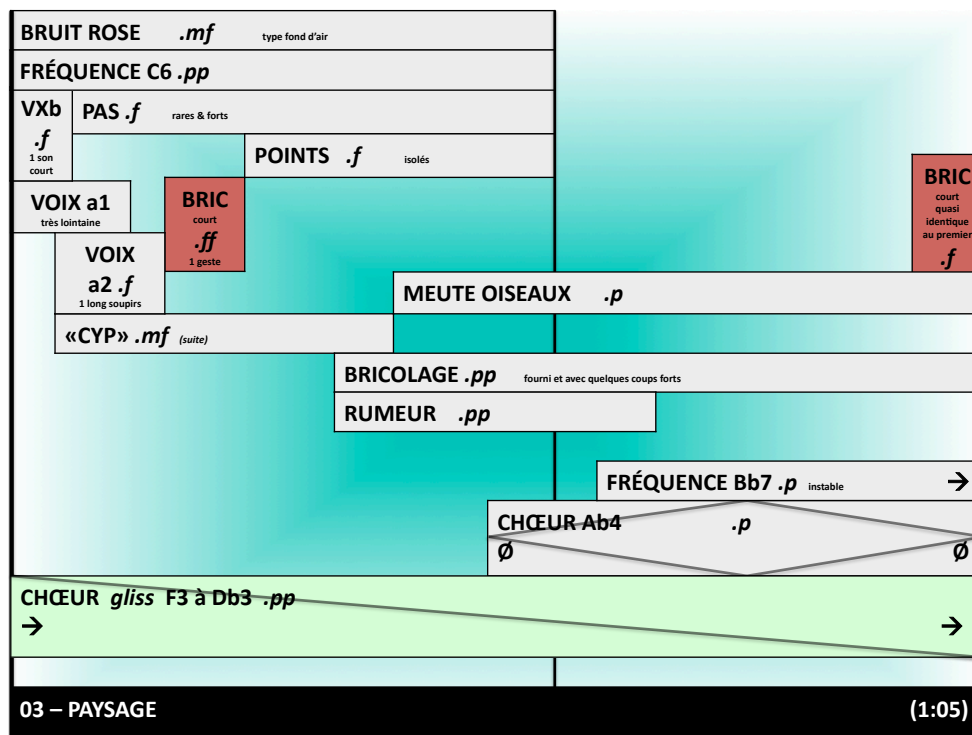
CUE 5 Départ pour compter, avec Julien

#### H/ RÉSIDUS (~2 mn)

CUE 6

**Figure 5.** Snippets of staff notation in Bosshard 2018, showing the arrangement of the “preferred phrase” of each musician, symbolised by a heart. The overall construction is based on cues given by a conductor (subjective time) with metric timing in the individual sections.

musicians [14]. Beyond the usual indications of clarifications, fingerings, and dynamic markings, one can also find markings that are more specifically tied to the indeterminate nature of the works performed. For example, in O'Malley 2014, which allows at various points the performers to spontaneously choose from a given set of pitches, most musicians in fact chose to explicitly notate in their scores the precise pitch they were going to play — first as a way to avoid what musicians would perceive as infelicitous pitch arrangements within a given instrumental group, and, second, to allow the musicians to focus on fine-grained acoustic coordination. In that perspective, it should be noted that, according to Frédéric Blondy in the preliminary interview conducted by the second author for the present research, the general tendency when rehearsing improvisation works was to go towards more and more determination. This is of course due to the often-limited rehearsing time which, when combined with the intrinsic difficulty of coordinating actions and decisions within such a large ensemble, certainly pushes musicians to determine the various aspects of the piece early in the process. For example, an early version of Guionnet 2021’s piece was



**Figure 2.** Page 3 from Guionnet 2021. Each rectangle transcribes an element of the pre-existing electro-acoustic piece, determined by its material (described in the instructions of the piece), dynamics and its temporal evolution. Each block is to be played by one or more pre-determined musicians. Red blocks are synchronization points, grey blocks are started with subjective timing.

GRUIDÉS

Stephen O'Malley

pour Orchestre ONCEIM, Paris  
SEP 2014 v4

PP1/4

ROUGE	BLEU	VERT
F#	E3+	D4
C#	Bb3+	E4
F#+	B3+	B4
F	E4+	C5
Fb	B4+	

Freely choose one pitch from list  
In longer phrases players may change notes one time if they wish, when they like, suddenly, no gliss  
No vibrato or modulation, all tones as monotonic as possible with steadiness, calmness, resonance and sustain

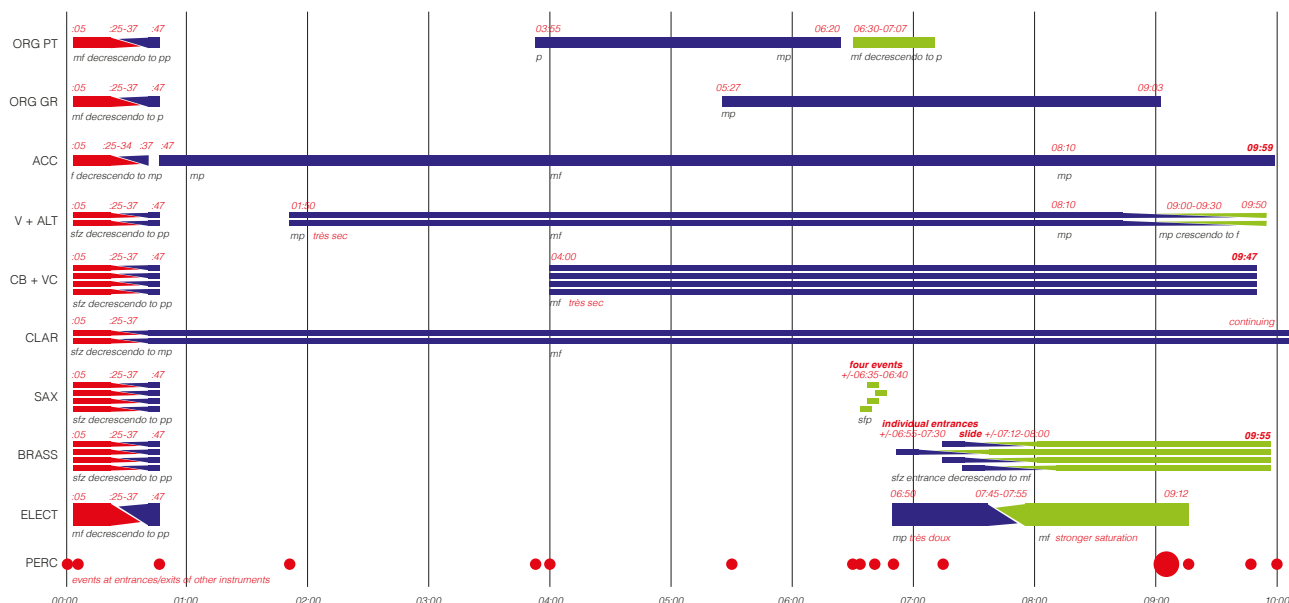
SLIDE transitions between phrases executed with high degree of linearity

\*Organs softer timbre, lower/sub bass registers, discover other predetermined timbres for phasing  
\*Organs ignore octave designations, play single notes in multiple low octaves  
\*Saxophones, intonate to one quartertone higher or lower  
\*Polyphonic instruments play as neutral timbre and optionally multiphonic

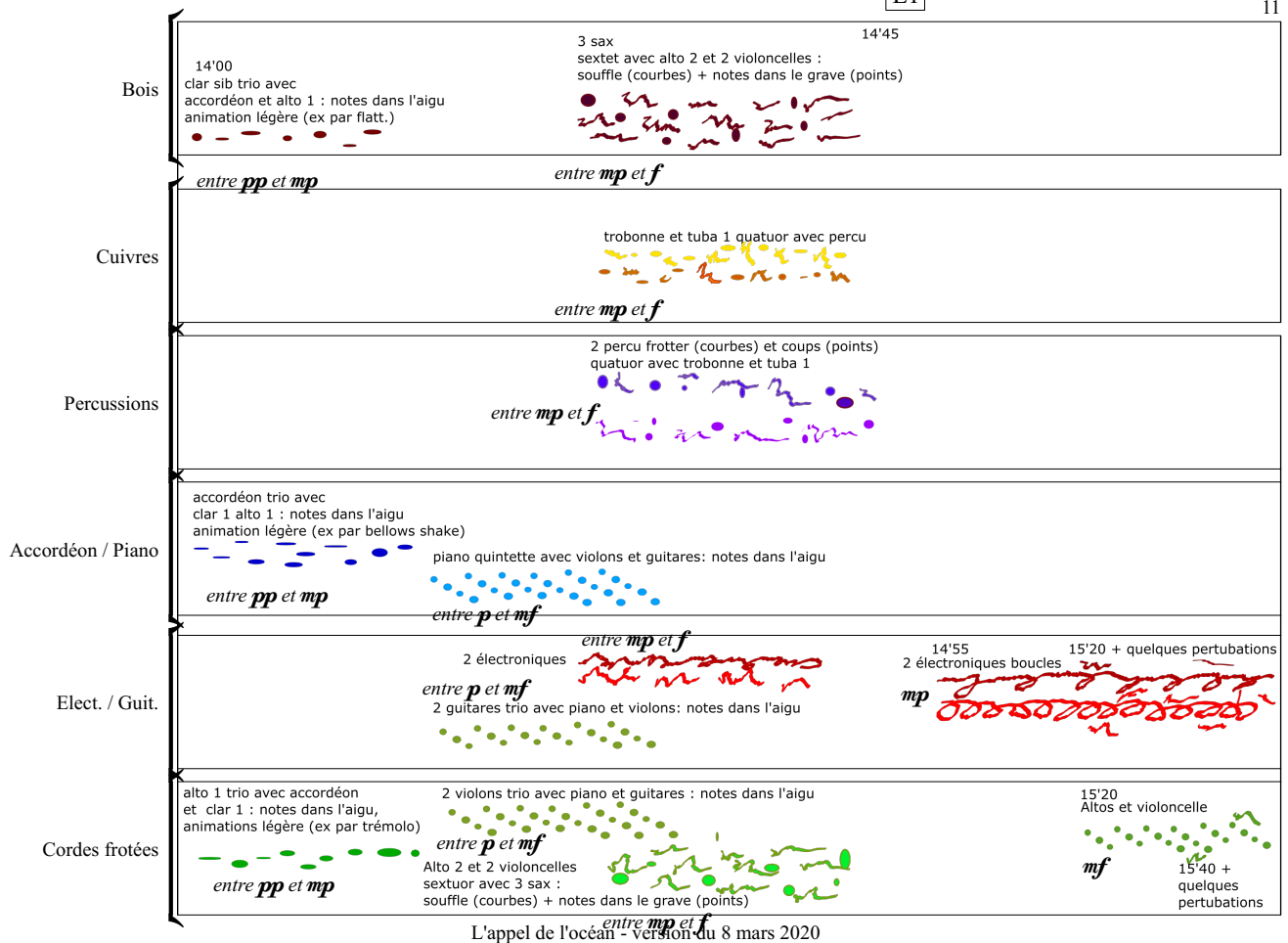
\*Bowed instruments optionally play one quartertone higher or lower  
- higher more often with higher pitches, lower more often with lower pitches  
\*Bowed instruments play with tactility and friction

\*Electronics play/process two tones, one of which is a quartertone higher than designated, optionally change color per stages  
\*One Electronic process accordion in violet and or sections at a level one degree behind/lower than the accordion  
\*Electronic instruments: grain, doux saturation, sine tones, harmonic distortion, très resonance, très doux

\*Percussion emphasize starts/stops as indicated with long resonant impacts, + sustained sound textures as indicated



**Figure 3.** First page of O'Malley 2014. Each colour stands for a list of pitches from which each individual musician can freely choose.



**Figure 4.** Page 11 of Laubeuf 2021 shows an example of graphical notation used to express musical textures — note the iconic signs used for loops (*boucles*).

completely indeterminate in terms of its instrumentation, but after a first series of exchanges with ONCEIM's musicians, a second version of the score was jointly produced by Guionnet and Blondy which precisely distributed all the sonic material comprised within the score to the various members of ONCEIM. But more generally, such a process of determination can also be seen as a way for ONCEIM's musicians to fully make the pieces their own. In this setting, scores are not treated as "finished" objects, but rather as objects that can be collectively transformed, edited, or appropriated. It is thus not rare to observe that, during the rehearsing process, entire sections were in fact modified or simply discarded, resulting in significant material alterations of the composer's score (see Galiay 2018, figure 7 for an example). In that perspective, the dialectics of indetermination and determination which is at work in such improvisation pieces is precisely what makes possible the distribution of creativity and authorship (see [15] for similar insights).

The rehearsing of improvisation pieces also involved processes of transcription and notation. Noetinger 2016 provides the clearest example of such processes. As discussed above, this piece involved the musicians emulating as closely as possible short electro-acoustic audio samples.

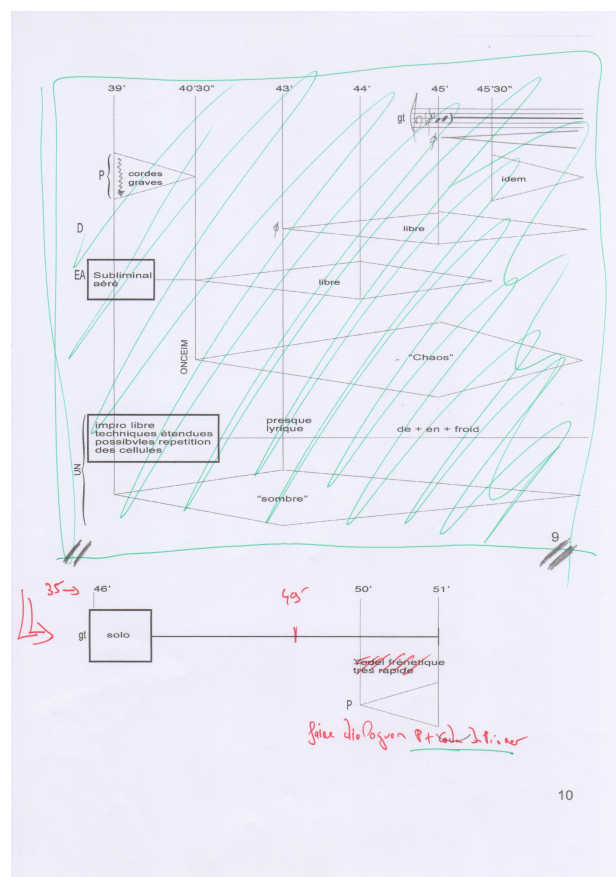
Here, some musicians simply chose to transcribe some of the samples in standard notation, in order to make their underlying metrical structure more explicit and optimize the ensuing rhythmical coordination. Figure 9 shows an example of the transcriptions made by the pianist for a few audio samples of Noetinger's piece. An alternative solution was simply to print out the waveform of some samples and to use such graphic representation as a kind of score, to ensure better temporal coordination between the various individual parts (see figure 11). Ultimately, the score provided by Noetinger was wholly notated by ONCEIM so as to make it easier to parse and perform, from a series of individual scores, which simply prescribed the overall temporal sequence of the audio samples to be emulated (see figure 10), to a more detailed conductor score, which contained the same information but organized in a more traditional way, with the various instruments on the y-axis and time on the x-axis (see figure 8).

Finally, and strikingly, notation seems to play an ineliminable role when it comes to the long-term life of such improvisation pieces, even the more "oral" ones such as Radigue 2015. For Radigue's piece, a textual score has indeed progressively been produced as part of the overall creative process. Such a score serves several functions.

## MATIÈRE

 + 3H = <b>SOLO</b>   + 4S = <b>PONCTUATION RYTHMIQUE</b>   + 5C = <b>MÉLODIE / CHANT</b>   + 6D = <b>MASSÉS / ACCORDS / AGREGATS</b>   + 7H = <b>L'INATTENTIF / ÉVENEMENT</b>   + 8S = <b>LE SOURD / EN PARALLÈLE</b>   + 9C = <b>LE CHANCEUX / LIBRE</b>   + 10D = <b>BOUCLE / CYCLES</b>   + 11H = <b>SONS LONGS / TENUES</b>   + 12S = <b>BRUITS / HARMONIQUES / OBJETS</b>   + 13C = <b>L'IMITATEUR / CONTRE-CHANT</b>   + 14D = <b>LE RELAI / REPRISE</b>   + 15H = <b>RUPTURE / BRIS</b>	<p><b>COULEURS :</b></p> <ul style="list-style-type: none"> <li> = PHYSIQUE / BIEN SENTI</li> <li> = ÉNERGIQUE / INTERROMPU</li> <li> = CARRÉ / FROID</li> <li> = RONDE / HAUT/DROITE</li> </ul> <p><b>RÈGLE DU JEU</b></p> <ul style="list-style-type: none"> <li>- Des cartes sont distribuées aux joueur, équitablement ou non, selon le choix du croupier.</li> <li>- Chaque carte permet une intervention d'environ une minute selon les matières et caractères correspondants.</li> <li>- Pour jouer une combinaison les cartes doivent être montrées au groupe</li> </ul> <p>La pièce dure douze minutes au total.</p> <p><b>COMBINAISONS</b></p> <p><b>DEUX PAREILS :</b> le joueur peut désigner un autre joueur pour , jouer sa carte avec lui. On ne tient alors pas compte des caractères. les deux cartes peuvent aussi être jouées séparément.</p> <p><b>TROIS PAREILS :</b> le joueur peut désigner jusqu'à la moitié du groupe pour jouer sa carte avec lui.</p> <p><b>QUATRE PAREILS :</b> le joueur peut diriger le groupe pour une minute.</p> <p><b>NOTES pour la représentation</b></p> <p>Si vous disposez de lutrins, vous pouvez simplement les retourner afin de faire voir les cartes jouées au reste de l'orchestre ainsi qu'au public.</p> <p>Si vous ne souhaitez pas que le jeu soit une part de la représentation, vous pouvez aussi le faire à l'avenuglie, chacun gardant ses cartes pour soi.</p>
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**Figure 6.** Instruction page for the deontic piece Normand 2016, performed by ONCEIM with the GGRIL ensemble, where musical form is created by laying down playing cards, prescribing different configurations, interactions, and materials for the musicians.



## 4. ROLE OF ELECTRONICS

The presence of electronic instruments presents a specific challenge for the composers in their endeavour to create a piece for ONCEIM: while expectations exist for all the acoustic (and electric) instruments, nothing can be known in advance about the specific capabilities of the highly singular and bespoke electronic instruments used in ONCEIM before consulting the musicians who assembled them, since there is no standard organology for such instruments.

<sup>4</sup> <http://cycling74.com/products/max>



However, and perhaps surprisingly, as seen in the last column of table 2, most of the time, there is no special role for the electronics. Instead, it is considered just like the other acoustic instruments, capable of spontaneously creating musical gestures, timbres, and textures, and being reactive to the propositions made by the other musicians and to the ever-changing musical situations. This is underlined by the fact that both electronic musicians play over individual loudspeakers placed behind them, and not over a general PA system, installed left and right of the stage, in order to convey a distinct acoustic position of each electronic musician in the spatial image of the orchestra. At most, there is sometimes the more or less unspoken expectation by the composer to make use of the extended frequency range the electronics is capable of, i.e., to produce sub-bass sounds (via the subwoofers usually present for a concert), or extremely high pitches.

There are only seven pieces for which the composer has ascribed a specific role to the electronics. In four of these pieces, one or both of the electronic musicians had to record specific parts of the concert, in order for them to serve as a source material for later re-evocation of the orchestra's timbre, with specific transformations. This requirement was always based on the composer's previous knowledge of the capability of the electronics (using corpus-based concatenative synthesis for Schwarz's digital instrument, and cassette recorders for Riviere's or Gross's setup), acquired by prior discussion with the musicians. In the three remaining pieces, the electronics had to create an overall sonic atmosphere, either by playing field recordings (Walker 2017), by capturing and freezing all harmonic partials played during the piece, saturating the frequency spectrum (Badaroux 2015), or by creating the sound of a "black mass" that would engulf all the other instruments (Mariage 2013). These last two examples, together with Guionnet 2021—in which the recordings are to be played back highly distorted and very loudly—could be interpreted as revealing a subtext of electronics as a menace or negative force within the music.

The electronic instruments played by Riviere, Gross, and Schwarz also raise specific issues in terms of their notation. Given the idiosyncrasies of such instruments, composers sometimes tend to adopt a looser approach when notating for such instruments, and to rely more extensively on the know-how of the musicians. This is particularly striking for the pieces making extensive use of standard notation. For example, a passage of Naegelen 2019 simply asks the electronics to perform "scattered waves" modeled after the harmonic footprints of the multiphonic played by the solo clarinet (figure 13), whereas the other instrumental parts for the same passage are notated in a much more precise way. A similar treatment of the electronics would be found in Tetreault 2019. Conversely, notation for electronics is largely on par with that of the other instruments when the piece mostly relies on textual or graphic notation (e.g. O'Malley 2014, figure 3). In other words, the notation for electronics seem to exhibit an intrinsic indeterminate quality, at least within our corpus.

GAUCHE	SOUFFLE	SOUFFLE	SOUFFLE	CLIC SOLO
VIOLON	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
VIOLONCELLE	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire trois fois - effet stéréo
CONTREBASSE	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
EUPHONIUM	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire trois fois - effet stéréo
TROMPETTE	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
CLARINETTE	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
SAXOPHONE TÉNOR	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
BATTERIE	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
GUITARE	Crescendo de 0'00 à 2'00 avec Clic solo à la fin - MF	Crescendo de 2'10 à 3'10 avec Clic solo à la fin - MF	Crescendo de 3'15 à 3'30 avec Clic solo à la fin - MF	Entre 3'30 et 8'30 le faire une fois
ARNAUD	Crescendo de 0'00 à 2'00	Crescendo de 2'10 à 3'10	Crescendo de 3'15 à 3'30	Entre 3'30 et 8'30 le faire une fois
				Sc-F2 x 2 dans le même temps

**Figure 8.** The final conductor score produced by ONCEIM for Noetinger 2016.



**Figure 9.** An example of the transcriptions made by ONCEIM for Noetinger 2016.

## 5. DISCUSSION

We have shown in this paper that the collection of 23 improvisation pieces produced for ONCEIM covers a large variety of approaches to improvisation, notation, transmission, and use of electronics. After having discussed in some detail how ONCEIM approached improvisation,

Droite 9 - Piano

0'00"—SOUFFLE crescendo—2'00      2'10"—SOUFFLE crescendo—3'10"      3'15"—SOUFFLE crescendo—3'30"      4'30"—Clic solo x 1 — 8'30"

10'37" PIANO ATTAQUES x 1 - 11'02" x 2 - 11'58" x 8 en fade out  
*Conduite basse timbre*      *2x = 2 attaques - résonance chacune durant 4s*      *Fin à 13'02"*

15'36" x 1 - 15'50" x 1 - PIANO FLOU      16'15" - PIANO FLOU x 11 ave 5 sec de sil entre chaque - 18'10"      18'35"— PIANO FLOU + MVT x 12 — 19'49"  
 [collé à batterie flou]      *Piano préparé (g rubs & jovan) + scotch ds aigus*

19'55"— BATTERIE CRAQ - 24'33" (*jeu synchron avec batterie*)  
 [x2 - 2 - 2 - 4 - 4 - 2 - 2 - 2 - 4 - 4 - 2 - 2 - 2 - 4 - 4 - 2 - 2 - 2 - 4 - 4 - avec 4 sec de silence entre chaque combinaison]

27'47" - 28'12" - 28'36" - FEEDBACK (3s)      29'00" - FEEDBACK x 10 - 29'25"  
*Knells sur tige*

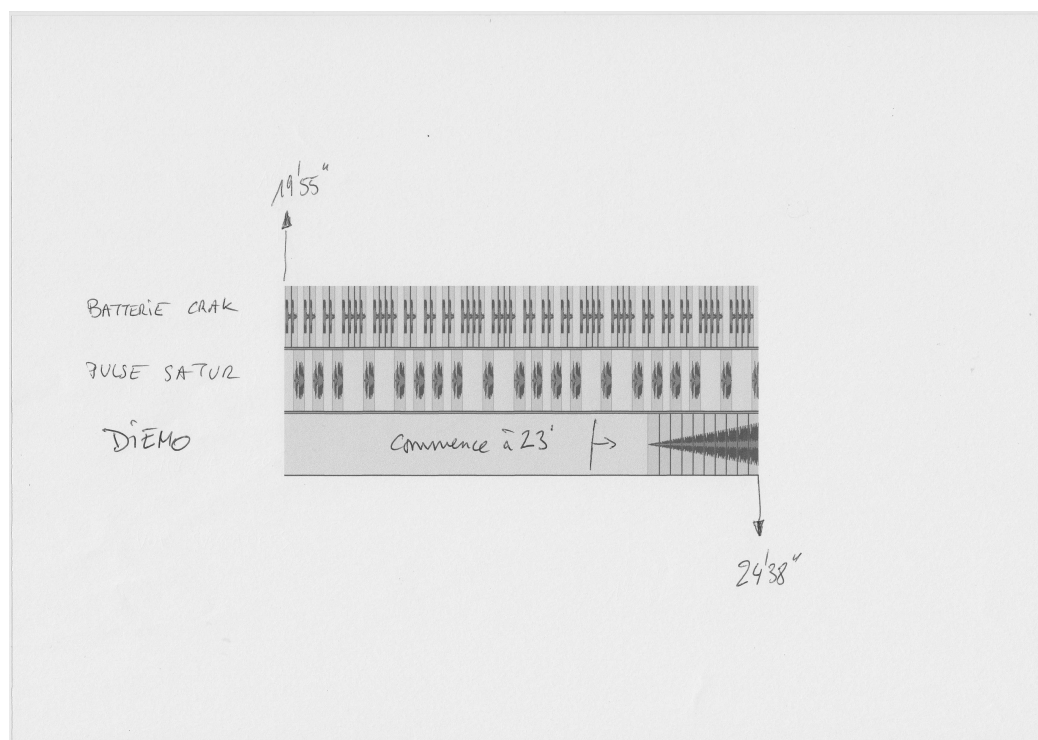
29'51"—RYTHMIQUE MECANIQUE x 5 - 30'13"  
 [avec 3 sec de sil entre chaque]

30'15"—RYTHMIQUE MECANIQUE—35'00"  
 [de 30'15" à 31'00" jouer vraiment la boucle tous ensemble. Puis tout le monde librement, à son rythme, son volume, répétée ou pas etc. Marquer l'idée de machines livrées à elles-mêmes. Mais tout le monde se retrouve de 34'00" à 35'00" dans une minute de ralentissement]

36'10" - 36'25" - 36'40" - 36'45" - 37'00" - 37'15" - BALANCIER x 1 (4s)      37'30" BALANCIER en continu - 39'00"  
*gamelan sur tige bois*

||| ||| ||| ||| |||  
 (5)

**Figure 10.** First version of the text score of Noetinger 2016 for piano, giving the timing and names of the various audio examples to be emulated.



**Figure 11.** Additional graphic score for Noetinger 2016 suggested by the ONCEIM musicians, giving the precise temporal synchronisation and dynamic evolution of one section of the piece via a screenshot of the multi-track arrangement of the audio score.

2

E

F

4

33

electr

*p*

*poco cresc.*

G

A

40

electr

*mp*

J

electr

**Figure 13.** Excerpt from the score for electronics of Naegelen 2019. The first system is the clarinet part which serves as conductor in this concerto for clarinet and orchestra.

## OCCAM OCÉAN

### Cuivres

- Tuba, trombone, euphonium : notes pédales
- notes le plus piano possible
- harmoniques de ré (en ut). Cf. Clarinettes
- pas de respiration circulaire mais des relais => donc pas de respiration synchronisée
- être très attentif aux entrées et sorties. Fade-in et fade-out

### Accordéon

- Note grave Sol en dessous de la clés de fa
- Pour battements : .ajouter des demis tons et clusters qui s'élargie
- .Jeux sur arrivées d'air entre main droite et main gauche

**Figure 12.** Excerpt from the “secondary” score produced by ONCEIM for Radigue 2016.

two important questions remain. First, can the modes of construction and transmission observed here apply to other large improvisation ensembles—for instance, the Splitter Orchester (Berlin), Ensemble UN (Bordeaux), Insub Meta-Orchestra (Geneva), GGRIL (Rimouski, Quebec)—or are they (partly or entirely) specific to ONCEIM?

A large part of the answer lies in the singular organisational setup of ONCEIM, with its founder and leader Frédéric Blondy *not* being one of the performing musicians, but instead serving as a critical external listener, and as an interface between the composers and the ensemble. Here, such an organisation seems to provide an advantage in how ONCEIM is able to work with composers, creating procedures that channel and optimize the exchange and transmission processes between the composers and the ensemble. Further work should be conducted to contrast

ONCEIM’s improvisational output to the approaches and processes of other ensembles.

Second, what is the relation between the various dimensions of improvisation introduced in section 2 above and the aesthetic appreciation of such improvisation pieces? As could be expected, the improvisation pieces commissioned by ONCEIM have been received with various degrees of appreciation by its members. In particular, timeline-based pieces seem to have been generally considered by many musicians as too stringent and hampering an organic development of the musical ideas. Just having to watch the timer constantly can distract from actually listening to the musical development—to the point that the ensemble now explicitly asks the composers it commissioned works from to avoid relying on a timer, but rather on more subjective forms of temporal organisation, which allows the musicians to mobilize qualities of interaction and coordination that are more typical of collective improvisation. Moreover, the musically and psychologically most satisfying pieces seem to have generally been the ones for which the composer had a good knowledge of the specifics of each musician, either because he or she knew them, or took the time to contact them beforehand, and when the material was proposed by the musicians themselves, as in Radigue 2015 and Bosshard 2018. In other words, it is precisely the pieces that take advantage of the fact that ONCEIM is an improvisation orchestra—which, as such, favours a construction of the performance through listening and interaction—that seem to have been both more relevant and pleasing for ONCEIM’s musicians. Here again, further work should be conducted to understand in more detail the aesthetic processes that underlie the reception of



such improvisation works, both from the point of view of the musicians involved and from the point of view of their audience.

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## 6. REFERENCES

- [1] S. Bhagwati, "Glossaire raisonné," *Circuit: musiques contemporaines*, vol. 28, no. 1, pp. 15–22, 2018.
- [2] R. Dudas, "Comprovisation: The various facets of composed improvisation within interactive performance systems," *Leonardo Music Journal*, vol. 20, pp. 29–31, 2010.
- [3] E. Clarke, M. Doffman, and L. Lim, "Distributed creativity and ecological dynamics: A case study of Liza Lim's 'tongue of the invisible'," *Music and Letters*, vol. 94, no. 4, pp. 628–663, 2013.
- [4] C. Canonne, "Improvisation et processus compositionnel dans la genèse de fenêtre ovale de Karl Naegelen," *Critical Studies in Improvisation/Études critiques en improvisation*, vol. 10, no. 1, pp. 1–28, 2014. [Online]. Available: <http://www.criticalimprov.com/article/view/2965>
- [5] C. Canonne and A. Robert, "An orchestra faces the test of indeterminacy: John Tilbury and the Sans project," *Biens Symboliques = Symbolic Goods*, no. 8, pp. 1–24, Jun. 2021. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-03478235>
- [6] C. Canonne, "Rehearsing free improvisation? An ethnographic study of free improvisers at work," *Music Theory Online*, vol. 24, no. 4, 2018. [Online]. Available: <https://mtosmt.org/issues/mto.18.24.4/mto.18.24.4.canonne.html>
- [7] L. Goupil, P. Saint-Germier, G. Rouvier, D. Schwarz, and C. Canonne, "Musical coordination in a large group without plans nor leaders," *Scientific Reports*, 2020. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-03019776>
- [8] S. O'Malley, "Gruidés," CD, label DDS, 2015. [Online]. Available: <https://boomkat.com/products/gruides>
- [9] B. Denzler and ONCEIM, "Morph," CD, label Confront Recordings, 2015. [Online]. Available: <https://confrontrecordings.bandcamp.com/album/morph>
- [10] Éliane Radigue, "Occam Ocean Vol. 2," CD, label Shiiin, 2019. [Online]. Available: <http://www.shiiin.com/shiiineer2.php>
- [11] P. Ablinger, "ONCEIM plays Notes & Bloc-Notes," Digital Album, label Remote Resonator, 2019. [Online]. Available: <https://remoteresonator.bandcamp.com/album/onceim-plays-notes-bloc-notes-by-peter-ablinger>
- [12] P. Bosshard, "Sillons – Reflets," CD, label Potlatch, 2021, two pieces performed by ONCEIM and string ensemble CoÔ. [Online]. Available: <https://www.corticalart.com/product/patricia-bosshard-sillons-reflets>
- [13] N. Cook, *Music as creative practice*. Oxford University Press, 2018.
- [14] E. Payne and F. Schuiling, "The textility of marking: Performers' annotations as indicators of the creative process in performance," *Music and Letters*, vol. 98, no. 3, pp. 438–464, 2017.
- [15] C. Canonne, "À la croisée d'un double continuum? Retour sur une expérience de co-création entre un compositeur et cinq improvisateurs," *Circuit: musiques contemporaines*, vol. 30, no. 2, pp. 11–25, 2020.
- [16] D. Schwarz, G. Beller, B. Verbrugghe, and S. Britton, "Real-time corpus-based concatenative synthesis with CataRT," in *Proceedings of the COST-G6 Conference on Digital Audio Effects (DAFx)*, Montreal, Canada, Sep. 2006, pp. 279–282. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-01161358>
- [17] D. Schwarz, "Corpus-based concatenative synthesis," *IEEE Signal Processing Magazine*, vol. 24, no. 2, pp. 92–104, Mar. 2007, special Section: Signal Processing for Sound Synthesis.
- [18] D. Schwarz, "Concatenative sound synthesis: The early years," *Journal of New Music Research*, vol. 35, no. 1, pp. 3–22, Mar. 2006, special Issue on Audio Mosaicing. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-01161361>
- [19] D. Schwarz, "The sound space as musical instrument: Playing corpus-based concatenative synthesis," in *Proceedings of the Conference for New Interfaces for Musical Expression (NIME)*, Ann Arbor, MI, USA, May 2012, pp. 250–253. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-01161442>