Title

Permalink
https://escholarship.org/uc/item/5dh2k8x9

Author
French, Daniel Edward

Publication Date
2016

Peer reviewed|Thesis/dissertation
UNIVERSITY OF CALIFORNIA

Los Angeles

Volume I

The Composite Instrument: Pitch, Percussion, and Instrumental Transformation in Michael Colgrass’s déjà vu

Volume II

Symphony for Percussion Quartet and Wind Ensemble

A dissertation submitted in partial satisfaction of

the requirements for the degree

Doctor of Philosophy in Music

By

Daniel E. French

2016
ABSTRACT OF THE DISSERTATION

Volume I
The Composite Instrument: Pitch, Percussion, and Instrumental Transformation in Michael Colgrass’s déjà vu

Volume II
Symphony for Percussion Quartet and Wind Ensemble

by

Daniel E. French
Doctor of Philosophy in Music
University of California, Los Angeles, 2016

Professor Ian Krouse, Co-chair
Professor David Samuel Lefkowitz, Co-chair

VOLUME I
Michael Colgrass’s déjà vu is one composer’s attempt at rejuvenation of the orchestral medium, yielding intriguing but limited results. The work, for percussion quartet and orchestra, reimagines the role of percussion in the orchestra in three fundamental ways. First Colgrass, expands the percussion and places the quartet at the head of the stage to equalize sonic power with the orchestra. Second, Colgrass uses instrumental and orchestrational techniques to
strengthen the pitch content of traditionally ‘unpitched’ percussion and, third, treats the percussion as equal partners in motivic transactions. The monograph begins with a discussion of sound and auditory perception and a cataloguing of terminology before proceeding to a discussion of organology. The concept of the ‘composite instrument’ as a tool of orchestrational analysis is introduced and explored throughout.

VOLUME II

*Symphony* for Percussion Quartet and Wind Ensemble, in four movements, is my attempt at integration of percussion within the large instrumental ensemble—in this case, a large wind ensemble. Beyond the four-movement structure, the symphony is subjected to a number of higher levels of organization. First, and most notably, each movement engages a different type of percussion—the first movement membranophones (drums), the second malleted percussion (vibraphones and marimbas), the third metallic percussion (bells of various sorts), and the fourth Latin percussion. The second and third movements are tone poems and self-contained pieces within the larger symphonic structure, while the first and fourth movements are musical mosaics of sort, assembled from fragments of shared musical material. The high point of the work comes at the end of the third movement and features a long cacophony of bells sounds over a brass climax. As a symphony, the entire work is constructed from common musical materials, with inter-movement references and organization. Crucially, and like Colgrass’s *déjà vu*, my symphony is not a concerto, where the quartet would assume a preeminent role, but my attempt at a unified ensemble of percussion and wind ensemble.
The dissertation of Daniel E. French is approved.

Travis J. Cross

Elizabeth Randell Upton

Ian Krouse, Committee Co-chair

David Samuel Lefkowitz, Committee Co-chair

University of California, Los Angeles

2016
# TABLE OF CONTENTS

**Abstract of the Dissertation** ........................................................................................................ii

Volume I ...............................................................................................................................................ii

Volume II ..........................................................................................................................................iii

**Table of Contents** ........................................................................................................................... v

**Table of Figures** ............................................................................................................................ vii

- Figures ............................................................................................................................................. vii
- Score Facsimiles ............................................................................................................................. vii
- Score Excerpts ............................................................................................................................... vii
- Tables .............................................................................................................................................. viii

**Vita** ..................................................................................................................................................ix

**Volume I** .........................................................................................................................................1

**Chapter 1: Methodology** ............................................................................................................. 2

- Introduction ....................................................................................................................................... 2
- Sound and Auditory Perception ....................................................................................................... 5
- Organology ....................................................................................................................................... 10

**Chapter 2: déjà vu** ........................................................................................................................ 12

- déjà vu ............................................................................................................................................. 12
- Percussion Battery ........................................................................................................................... 15
- Organological Classifications ........................................................................................................ 16
- Perspective & The ‘Composite Instrument’ ..................................................................................... 17
  Composite Instrument: Sustained Vibraphone ............................................................................... 20

**Chapter 3: Melodized Percussion** ............................................................................................. 23

- “Make Percussion Sing” .................................................................................................................. 23
- Fully-pitched Percussion ................................................................................................................ 28
  Composite Instrument: Amplified Marimba .................................................................................. 30
  Composite Instrument: Marimba-Harp ......................................................................................... 32
  Composite Instrument: Synthetic Vibraphone ............................................................................ 33
- Inflexibly-pitched Percussion ......................................................................................................... 36
Composite Instrument: Plucked Timpani

Composite Instrument: Roto-tom-Harp

Partially-pitched Percussion

Unpitched Percussion

Composite Instrument: Jazz Band Drum Set

Chapter 4: Depth

Conclusion

Appendix

Bibliography

Volume II

Instrumentation

I. Spiraling Mosaic

II. Boogaloo

III. Zion, 2:43 A.M.

IV. Chase & Dance
TABLE OF FIGURES

Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>primary theme</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>deconstruction of primary theme</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>ranges of pitched percussion</td>
<td>28</td>
</tr>
<tr>
<td>4</td>
<td>tuning of roto-toms</td>
<td>39</td>
</tr>
<tr>
<td>5</td>
<td>primary theme, again</td>
<td>43</td>
</tr>
<tr>
<td>6</td>
<td>melodic contour of primary theme</td>
<td>43</td>
</tr>
<tr>
<td>7</td>
<td>5-line melodic contour</td>
<td>44</td>
</tr>
</tbody>
</table>

Score Facsimiles

<table>
<thead>
<tr>
<th>Facsimile</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>m. 1-4</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>m. 178-182</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>m. 216-218</td>
<td>34</td>
</tr>
<tr>
<td>4</td>
<td>m. 42-46</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>m. 5-7</td>
<td>38</td>
</tr>
<tr>
<td>6</td>
<td>m. 340-344</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>snare drum in m. 171-b</td>
<td>47</td>
</tr>
<tr>
<td>8</td>
<td>m. 169</td>
<td>48</td>
</tr>
<tr>
<td>9</td>
<td>m. 171x-174</td>
<td>49</td>
</tr>
<tr>
<td>10</td>
<td>m. 225-226</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>'Suggested Stage Set Up'</td>
<td>60</td>
</tr>
</tbody>
</table>

Score Excerpts

<table>
<thead>
<tr>
<th>Excerpt</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>m. 31-32</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>m. 206-207</td>
<td>32</td>
</tr>
<tr>
<td>3</td>
<td>wood blocks at m. 277</td>
<td>44</td>
</tr>
</tbody>
</table>
Tables

Table 1, Organology ..................................................................................................................... 16
Table 2, pitch capability of the percussion battery ........................................................................ 26
Table 3, pitch capability & sustaining ability of the percussion battery ........................................ 27
Table 4, m. 1-43—presentation of composite instruments .............................................................. 53
Table 5, m. 225-226 ...................................................................................................................... 56
VITA

Education

University of California, Los Angeles; Los Angeles, CA
Cognate Area: Musicology

**C.Phil in Composition, 2015**

**M.A. in Composition, 2013**

Thesis: “Essay for Orchestra” | Advisor: Prof. Ian Krouse, Music

Dissertation Year Fellowship recipient
Graduate Research Mentorship recipient
Other Awards and Honors:
  Graduate Summer Research Mentorship recipient
  Henry Mancini Fellowship recipient
  University Fellowship recipient
  Herbert H. Wise Scholarship recipient
  Elaine Krown Klein Scholarship recipient
  Stanley Wilson Scholarship recipient

Manhattan School of Music; New York, NY

**B.M. In Composition 2011**

Minor: Piano
Thesis: “Proud Music of the Storm” for Orchestra

Composition Studies with Richard Danielpour

Awards and Honors:
  Dean’s List
  Merit Scholarship recipient (4 years)

TEACHING

University of California, Los Angeles; Los Angeles, CA

Teaching Fellow, 2014
Teaching Associate, 2011-2013
Teaching Assistant Coordinator, UCLA Music Department Fall 2013

PUBLICATIONS

“As One Listens to the Rain” 1/1/2014
Boosey & Hawkes Windependence Serie
VOLUME I

The Composite Instrument: Pitch, Percussion, and Instrumental Transformation in Michael Colgrass's déjá vu
CHAPTER 1: METHODOLOGY

INTRODUCTION

The symphony orchestra, having emerged as the defining medium of western art music, is now a backwards-looking institution, defined—and constrained—by its celebrated repertoire and elaborate performance practice traditions. Even when approached through the prism of its tradition, the medium presents a substantial challenge to a composer: first and foremost, the sheer multitude and variety of forces that the ensemble offers. Many other cultural traditions have large instrumental ensembles, but the orchestra, singularly, is defined by its aesthetic of “uniformity, homogeneity, predictability, and discipline.”¹ The orchestra is the only instrumental medium that attempts to forge order in such large and disparate instrumental forces; the achievement of that order, in whatever form a composer might seek it, is a substantial undertaking—“Composers as different as Schoenberg and Sibelius share not a common musical language but a common problem and common strategies for solving it.”² These shared ‘strategies’ define the repertoire and help inoculate the orchestra from the kind of fundamental reconsideration that twentieth and twenty-first-century composers have undertaken in the area of pitch, rhythm, and form. Composers simply cannot escape the repertoire and its monolithic position in Western art music: “The principal fact with which composers of our century have been confronted in writing for the orchestra is the retrospective nature of the orchestra repertoire.”³

¹ (Spitzer, 1988)
² (Burkholder, 1986)
³ (Burkholder, 1986)
One such ‘problem’ is the historical hierarchy of the components of the orchestra—the strings, winds, brass, and percussion, in that order. The percussion, however, have long been an unequal partner in this consortium, relegated through much of the nineteenth-century to decorative, inconsequential roles. The reasons for that inequity are numerous and varied and will not be elaborated here, but those factors, in combination with the self-reinforcing nature of institutional standardization, prevented substantial reconsideration of the role of percussion in the symphony orchestra. Indeed, there are strikingly few examples from the repertoire, even as late as Strauss, where a wholesale deletion of the percussion parts would change fundamentally the meaning of the music. Even when a percussion instrument is central to a work's dramatic arc—timpani to signify rolling thunder in Berlioz’s *Symphony Fantastique*, off-stage cowbells in the first pastoral interlude of Mahler’s *Sixth Symphony*, cannon-fire in the finale of Tchaikovsky’s *1812 Overture*—that role is typically separate from the orchestral tradition and is extraordinary for its extra-musical connotations.

Percussion, meanwhile, is the focus of the musical traditions of many world cultures, many of which predate the Western musical tradition (and certainly the symphony orchestra). The parallel traditions, in totality, possess a diversity of instruments and sounds that dwarf that of the orchestral tradition. In the twentieth-century, Western composers seized on this rich source of sonic variety and imported these instruments into the orchestra, often as devices of sound production alone, and with little or no reference to the traditions in which they arose.

---

4 Traditions which arose seemingly independently on every inhabited continent.
5 Percussion-focused traditions influenced Western composers in many other ways as well, especially with regards to temporal techniques and procedures, but those are not the purview of this analysis.
This monograph is focused on the Western symphony orchestra and on the ways in which the percussion, and a percussion-centered conception of sound and sound organization, provide an avenue for rejuvenation of the orchestral medium, and is specifically focused on Michael Colgrass’s *déjà vu: for Four Percussionists and Orchestra*. This instrumental and orchestrational analysis will concentrate on the methods by which Colgrass fundamentally recasts the percussion in the symphony orchestra and the deep and far-reaching ramifications of that innovation. *déjà vu* is not a concerto for percussion, where the percussion would typically assume a preeminent role, but “a composition for percussion and orchestra,” the goal of which is true synthesis of percussion with the winds, brass, and strings.

*déjà vu* was written in 1978 for the New York Philharmonic, and was awarded the Pulitzer Prize in the following year. In *déjà vu*, Colgrass reconsiders the role of percussion in three fundamental ways: first, and continuing a tradition of composers of the last 125 years, Colgrass simply increases the size and diversity of the percussion battery, and then places those instruments (and their performers) at the head of the stage, in front of the conductor. This stage arrangement has visual and dramatic value, of course, but is of sonic value as well—“contrary to popular belief, the percussion are not always the most audible of instruments”—and serves to equalize the percussion battery in the ears (and eyes) of the audience.

---

6 from Colgrass’s program notes: (Colgrass, *déjà vu*: for percussion quartet and orchestra, 1978)
7 For the purposes of this discussion, ‘percussion battery’ and ‘orchestral complement’ will denote the percussion and the winds, brass, and strings, respectively.
8 Score Facsimile 11, 'Suggested Stage Set Up'
9 Allowing *déjà vu* to be marketed and programmed as a concerto for percussion, despite Colgrass’s more nuanced description.
10 (Colgrass, *déjà vu*: for percussion quartet and orchestra, 1978)
Colgrass’s second method of integration is orchestral. Orchestration is "the study of instruments and their use to create distinctive orchestral textures,"\textsuperscript{11} but Colgrass’s approach to orchestration is far more granular that the term typically implies, involving the deconstruction of instrumental sounds into component parts and the reassembly of those sounds into entirely novel instrumental combinations (which I call ‘composite instruments’).

Third, déjà vu brings a reconsideration of the role of pitch in the percussion battery, including the use of instrumental pairings to enhance pitch content of percussion instruments. Fully-pitched material from the orchestra complement is transferred to percussion instruments of widely varying pitch-capabilities, transforming the original material into something new and then, crucially, reengaging that new material with the orchestral complement. Said another way, the physical and sonic properties of the individual instruments of the percussion battery have demonstrable influence over shared musical materials.

A discussion of sound and instruments, and the pertinent properties of each, will precede and facilitate the analysis that follows. I will begin the analysis of déjà vu will begin by cataloguing and sonically investigating Colgrass’s percussion battery, then proceeding to a discussion of pitch as that parameter is informed by the instrumental properties of the individual instruments of the percussion battery. Examples of composite instruments occur throughout the analysis to illustrate the orchestral realizations of Colgrass integralional techniques. Although form and harmony are approached at those points where they enlighten the instrumental and orchestral analysis, they are not the focus of this study.

\textsuperscript{11} (Todd, 1986)
The analysis that follows is fundamentally instrumental in scope, at its core a discussion of the relationships between instruments. More specifically, though, it is a discussion of the sounds that instruments produce and the component properties of those sounds when they serve to guide compositional choices and direct musical realities. A sound generated by an instrument is informed by the size, shape, and construction of the instrument, but is not itself a property of that instrument. Roger Scruton sums up the relationship between sounds and instruments (objects):
"Sounds, however, are not secondary qualities, for the reason that they are not qualities at all. Objects do not have sounds in the way that they have colors: they emit sounds."\(^\text{12}\) Sounds are truly independent phenomena, capable of being consumed, experienced, and analyzed entirely independently of any knowledge of the objects that produced them. That is not to say that our conception of sound is entirely divorced from 'instrumental' understanding, but that the phenomenological investigation of sound is merited as well.

Imagine one such instrument—a large church bell. This particular bell, when struck by a hammer, emits sound. The sound produced by the bell is not one thing but rather the combination of a booming strike (the attack), an immediate partial decay, a long sustain that itself decays slowly before an eventual full cessation of sound.\(^\text{13}\) Each of these qualities of sound—attack, decay, and sustain\(^\text{14}\)—are unique not only to this particular bell but to this particular striking event as well (which will vary in force, velocity, material of the striking element, the physical

\(^\text{12}\) (Scruton, 1999)
\(^\text{13}\) Other instruments share those qualities of attack, decay, and sustain, but also feature an eventual release (cessation of sound) with distinct acoustical properties.
\(^\text{14}\) Whenever, possible, terms for acoustical properties of sound are chosen in accordance with the The Acoustical Society of America’s preferred terminology.
location of the strike point, or many other possible factors). The sound of the bell changes continuously from attack through release, and the rate and slope of that change is an important property of the sound as well.

The sustain, between attack and release, is an important strength of the strings, brass, and winds in the symphony orchestra. In those cases, sustain is really the prolonged plateauing of the sound's decay via continuous manipulation—perhaps through a violinist's long bow stroke or a flutist's steady administration of breath. Some instruments may be perceived as 'sustaining' without such continuous manipulation—the piano when pedaled, for instance, has such a gradual and graceful decay in its middle and lower registers that it is perceived as 'sustaining.' The bell, likewise, has a very prolonged decay, producing a sustain of continuously evolving character through to the point of imperceptibility. The relationships between the attack, decay, sustain, and release, of a particular sound are known collectively as the 'time envelope.' In the analysis, the term ‘sustain’ is used interchangeably with decay when discussing the sonic properties of percussion instruments, as both terms denote the sound that remains following the attack.

A sound also has unique acoustic properties—taken collectively, the 'spectral envelope' of a sound—which are not understood as distinct pitches, but rather the particular relationships of overtones that define perceived qualities of sound (metallic, hollow, nasal, or brilliant, for instance), as well as the degree of inharmonicity, the degree to which ‘noisy’ partials unrelated to the fundamental are present, in a sound. The particular acoustic properties of a sound are also

---

15 The final piano chord of The Beatles’ “Day in the Life”, which decays for nearly a minute, is a prime example of the sustaining power of the instrument.
16 An envelope is a container. In this case, the envelope is a measure of time and temporal proportion.
17 “This is an awkward distinction, since a wide range of transitional sounds occurs between pure noises and noise-free tones; indeed, save for a few laboratory instruments, there are no sound-
particular to the individual components of that instrument's time envelope—its attack, decay, sustain, and release. Measurement and direct comparison of these envelopes are not the purview of this monograph, but the subject is addressed in the context of organology, wherein particular materials and methods of performance produce predictable qualities of sound across seemingly disparate instruments. The church bell, for instance, shares few similarities with a triangle—the two instruments are of vastly different shapes and sizes, produce very different types of sound, and serve different sonic functions. Nonetheless, both the bell and the triangle are perceived as "metallic" or “bell-like” in their sound color, and this is the result of shared similarities in portions of the spectral envelope of each instrument, which is in turn the result of a shared metal construction.

Furthermore, any component of the time envelope may or may not carry pitch, although most sounds do to some degree. Sustained sounds are the best conductors of pitch, and a degree of sustain, whether level in amplitude (as in the case of the violin and oboe) or gradually sloped (as in the case of the piano and chimes) is necessary for the identification of and recognition of pitch content. Not all sounds that are sustained bear pitch, and not all sounds that bear pitch may be perceived by a listener as 'pitched'. The degree to which any particular sound is perceived as pitched or, conversely, 'noise-filled', is a result of that sound’s spectral envelope, too. In the case of the bell, the sound emitted carries pitch content, but quite a bit of inharmonic partials that are not recognized by the listener as well.\(^\text{18}\)

\(^\text{18}\) “With ‘noise’ sounds like crashing waves, highway traffic, or those of many percussion instruments, the overtones are disorganized and out-of-tune, so it is difficult for any single pitch to be identified […] Speaking technically, ‘noise’ is the presence of many pitches sounding...” (Hornbostel & Sachs, 1961)
The relationships between attack, decay, sustain, and release (the time envelope), in combination with the particular overtone profile (the spectral envelope) of each component of the time envelope, including the proportions of pitch content and noise content, define a sound's tonal quality or 'timbre'. The Acoustical Society of America defines timbre as "that attribute of auditory sensation which enables a listener to judge that two nonidentical sounds, similarly presented and having the same loudness and pitch, are dissimilar."\(^{19}\) Timbre, then, is really a 'catch-all' term, the "psychoacoustician's multidimensional waste-basket category for everything that cannot be labeled pitch or loudness."\(^{20}\)

The parameters of pitch and volume ('loudness') are also defined by a sound's spectral envelope but are, in many cases, much more freely variable. The variation in these parameters, crucially, does not jeopardize the listener-discriminable character of the sound, which is typically much more reliant on timbre. For instance—two oboe sounds, each at two different pitch levels and two different dynamic levels will, in most cases, be perceived as variations of the same sound. Two key presses of adjacent keys on a piano, each presented at the same dynamic value, and without direct temporal context to the other, will be perceived as the same sound by most trained ears. Thus, a sound, as it is perceived at any moment, can be fully understood as the combination of a distinct spectral envelope in combination with a distinct time envelope.

The analysis, however, is concerned only with sounds as they are captured by the human auditory system and experienced in human consciousness. In the case of the bell, the sound changes continuously, and in nearly all possible variables, from attack through release. A measurement of the tonal quality of any given moment is just a snapshot, and by the time any

\(^{19}\) (Acoustical Society of America, 1960)  
\(^{20}\) (McAdams & Bregman, 1979)
particular property of sound has been captured by the ear and realized in the listener's consciousness, that property has likely already changed, existing only in the memory of the listener. The character of the bell is informed by the unique tonal qualities of the sound we hear, but is the result of our synthesis of that information into a form that can be identified, recalled, and experienced. That information includes not only sounds collected and processed by the auditory system in real time, but also our understanding of the context and space in which the sound exists—that is, “a given sound’s perceived pitch, timbre, and loudness are influenced by the sounds that precede it, coincide with it, and even follow it in time.”

In the realm of orchestration, and in the combination of instruments, identity is key to the recollection of patterns and material, and the composer relies on the recollection of sounds to produce musical structures of discernible shape and form.

ORGANOLOGY

Organology the categorization and cataloguing of instruments by their materials and method of sound production. For Organologists and Ethnomusicologists the most common system of classification is the Hornbostel-Sachs system, which dates back to 1914 and is continually maintained by a number of professional bodies (chiefly, the Musical Instrument Museums Online Consortium). The Honbostel-Sachs system, as currently maintained, divides all sound-producing objects— instruments—into six primary classifications:

• **Idiophones:** instruments where the entire body vibrates—wood blocks and gongs, for instance.
• **Membranophones:** instruments that rely on a stretched membrane to produce vibration—this includes all drums.

---

21 (McAdams & Bregman, 1979)
22 Anthony Baines and Klaus Wachsmann’s 1961 English translation of Hornbostel and Sachs’ 1914 treatise is the primary source for this monograph.
• **Chordophones:** instruments that rely on a stretched string to produce vibration—guitar, violin, piano, dulcimer.

• **Aerophones:** instruments that rely on a vibrating column of air for sound production—all wind instruments.

• **Electrophones:** instruments where the initial vibration is an electrical current.\(^{23}\)

• **Hydrophones:** instruments where the vibrating agent is water.\(^{24}\)

Percussion instruments are largely classified as idiophones and membranophones, the winds and brass as aerophones, and the strings as chordophones. Electrophones and hydrophones will be dismissed for the purposes of the analysis. The traditional orchestral sound is dominated by chordophones and aerophones, which were designed to sustain sound and do so quite effectively. Idiophones and membranophones are typically (although not in all cases) less adept at sustaining sound but are much more precise and pointed in their initial attack, which is the traditional function of percussion.

The idiophones and membranophones (the percussion) can be classified further, by material and method of construction\(^{25}\):

• **Metallophones:** instruments constructed primarily of metal

• **Wood & Fiber, or “Xylophones”:** instruments constructed primarily of organic materials

• **Membranophones, or “Drums”:** instruments with a stretched membrane. Note that membranophone is both a primary classification and a material classification.

• **Crystal/glass, or “Crystallophones”**

• **Stone, or “Lithophones:”**

And can also be classified by method of sound production:

• **Struck**

• **Stroked/Rubbed**

• **Shaken**

• **Plucked**

---

\(^{23}\) This top-level category was added by Sachs is 1940.

\(^{24}\) A recent addition by the MIMO consortium.

\(^{25}\) (Lefkowitz, 2017)
“At age 10 I saw drummer Ray Bauduc in a movie play ‘Big Noise from Winnetka; with bassist Bobby Haggart and I was mesmerized. I hounded my father for a drum, and when I got it I immediately played the rhythms I heard Bauduc play in that movie. I soon formed my own band, the Three Jacks and a Jill, and started my career as a self-employed musician. I traveled into Chicago to hear the big bands and imitated every drummer I heard. Jazz was my only ambition up to age 19.” 26

Michael Colgrass (b. 1932) began his musical life enmeshed in the pop music of his day, performing as a drummer in jazz and dance bands in his small town outside of Chicago, IL. Colgrass went on to attend the University of Illinois, where he studied Applied Percussion with Paul Price and began composing upon Price’s prompting: “I was thunderstruck by his suggestion because I thought you had to be dead to write music.” 27 Following college, Colgrass worked as a freelance percussionist in New York City, moving between Broadway pits, jazz clubs, and recording studios, and continued to compose, mostly for solo percussion and percussion ensemble. Variations for Four Drums and Viola (1957), in which Colgrass pioneered the use of precisely-tuned membranophones—specifically, tuned tom-toms—proved a breakthrough. 28 These tuned drums were a precursor to the roto-toms, an instrument which Colgrass is largely credited with inventing, 29 and which impart pitch capability to a previously unpitched family of

26 (Colgrass, Conversation)
27 (Colgrass, Conversation)
28 (Broadhurst, 2005)
29 In coordination with Al Payson, former principal percussionist of the Chicago Symphony Orchestra. (Dean, 2012) and (Solomon, How to Write for Percussion: A Comprehensive Guide to Percussion Composition, 2002)
instruments. This newfound capability makes the membranophone highly amenable to instrumental combination, a quality that Colgrass explores in the orchestral context in *déjà vu*.

In ensuing years, Colgrass’s output expanded to encompass music for orchestra, wind ensemble, musical theater, and the voice, but his music remains identified with a focus on percussion and the continuing influence of jazz. *déjà vu: for Percussion Quartet and Orchestra* was commissioned and premiered by the New York Philharmonic to showcase its percussion section. About seventeen minutes in length and in a single continuous movement, *déjà vu* has three broad sections—(1.) a quick, fragmented opening, (2.) a lull, defined by long, held string chords, and (3.) a fanfare-like finale. These sections broadly map to the traditional three-movement concerto form, but there is a degree of textural overlap and blurred transition that renders simplistic formal description inadequate. *déjà vu* is built on a single idea, a single theme, that is developed continuously from its initial presentation at the beginning and through each of the three broad sections:

“In *déjà vu* I have written a typically classical type of melody to provide the thematic and rhythmic substance of the piece. This theme first appears in a serial form introduced at the beginning of the work by the four soloists, and then later in a purely rhythmical form on non-melodic percussion. From time to time the listener will hear the original classical version of the theme very clearly (as when it is played by the violas early in the work) and sometimes hidden (as when the strings play it slowly and softly under various musics in the percussion). At one point, the theme storms out in the brass in an almost romantic outburst. So that all of the music, no matter how abstract, emanates from this classical line, even the jazz.”

30 (Colgrass, *déjà vu: for percussion quartet and orchestra*, 1978)
Colgrass’s theme, in its first statement in the vibraphone, is reproduced below:

![Figure 1, primary theme](image)

This theme is notable for its distinctive melodic as well as rhythmic contour, with a dotted rhythm to begin, a falling fifth, and general upward trajectory, and is treated to a process of continual variation throughout. Colgrass’s methods of variation are the typical arsenal of a twentieth-century post-modernist, and will be sources of further inquiry in this analysis only in those moments when they illuminate the composer’s choices regarding instrumentation and orchestration. The theme is noteworthy for its versatility, and is equally amenable to both melodic and rhythmic development. In the domain of pitch and melodic content, these methods include transposition and interval alteration (within the theme's existing melodic contour). With regard to rhythm and temporal processes, Colgrass’s developmental methods include segmentation, augmentation and diminution, and extension. The developmental techniques for both domains—pitch and rhythm—involve the alteration of a relatively stable original idea, one which, crucially, is capable of maintaining an identity throughout all of these developmental processes.

Despite an underlying thematic unity, the resulting aesthetic of déjá vu is not nearly as easily described. The single-movement works’ transparent post-modern character is constantly interrupted by sharply foreign materials—the jazz band, the march, the classical-era clarinet solo. These ‘foreign objects’, though derived from the same cellular materials as any other material from déjá vu, serve to delineate the form and, most importantly for this analysis, provide an impetus for more extraordinary instrumental combinations and orchestral decisions.
PERCUSSION BATTERY

Below is the selected percussion battery for *déjà vu*, grouped by material/method of construction:

**Metallophones**

- Chimes
- 6 Cowbells (5 graduated)
- String of Elephant Bells
- Glockenspiel ("Orchestra Bells" on score)
- Gong, large
- Pair of "very large" Plate Cymbals
- 2 Suspended Cymbal (8", 10"
- 5 Sizzle Cymbals (2 players: (3) - 22", 20", 18" and (2) - 18", 16")
- 3 Tambourines, graduated
- 4 Triangles, graduated
- Vibraphone

**Membranophones**

- 2 Field Drum
- 8 Roto-toms (2-18", 3-16", 14", 12", 10")
- Snare Drum
- 2 Tenor Drums
- 2 Timbales
- 5 Timpani (30", 28". 2-25", 24")
- Tom-tom

**Wood or Fiber**

- Bamboo Wind Chimes
- Marimba
- 5 Wood blocks (4 graduated)

Colgrass does not use any glass or stone percussion instruments, and the great majority of the percussion battery are either metallophones or membranophones. Only the Chimes, Glockenspiel, Vibraphone, and Marimba could be said to be fully pitched, and Colgrass also makes substantial use of sets of graduated unpitched percussion instruments, the function and ramifications of which will be a subject of deeper inquiry later on.
### Table 1, Organology

<table>
<thead>
<tr>
<th>Type</th>
<th>Struck</th>
<th>Shaken</th>
<th>Stroked/Rubbed</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metallophones</strong></td>
<td>Chimes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 Cowbells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glockenspiel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gong</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Plate Cymbals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Suspended Cymbals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 Sizzle Cymbals</td>
<td></td>
<td></td>
<td>(sympathetic chain vibration)</td>
</tr>
<tr>
<td></td>
<td>4 Triangles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vibraphone</td>
<td></td>
<td></td>
<td>(air column oscillation, when motor is on)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Membranophones</strong></td>
<td>2 Field Drums</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 Roto-toms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Snare Drum</td>
<td></td>
<td></td>
<td>(sympathetic bead vibration)</td>
</tr>
<tr>
<td></td>
<td>2 Tenor Drums</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Timbales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 Timpani</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tom-tom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 Wood Blocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marimba</td>
<td></td>
<td></td>
<td>Marimba</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bamboo Wind Chimes</td>
</tr>
</tbody>
</table>

The table above contrasts the percussion battery, grouped by material of construction, with methods of sound production. In general, striking and plucking will produce a clearer attack but a sharper decay than will stroking/rubbing or shaking, and thus most of the percussion employed in déjà vu is attack-driven. The exceptions are the gong and the suspended cymbal, which have a slow attack and a gradual decay, and the vibraphone, which is a unique case. The sustaining power of the vibraphone is quite substantial when the pedal is depressed, and even more so when the motor is on and agitating the air beneath the metal keys (in this case, truly sustaining). Likewise, both the snare drum (when the snare component is engaged) and sizzle cymbals...
include beads or chains, respectively, that vibrate sympathetically as a result of the initial striking. In those cases, the resulting sound is actually a hybrid of two separate methods of sound production. For still other instruments, sound can be produced using more than one method of production—in the case of the suspended cymbal, for instance, this can include striking, rolling (when a player uses quick successive strikes to seamlessly and indefinitely sustain sound), scraping (as with a triangle beater, to produce a sharp, focused sound of an entirely different character), or even bowing (as with a cello bow).

It should be noted, however, that these classifications of material and method of sound production are not absolute. The solo jazz bass, for instance, is a plucked chordophone, but also a wood-based idiophone by virtue of the jazz plucking technique that results in a great deal of wooden idiophonic resonance. Likewise, instruments like the piano and dulcimer are struck chordophones, and thus resonate, and are treated by composers, much more like percussion instruments than like bowed chordophones (orchestral strings). The celesta, which looks and is played like a keyboard instrument, is in fact a struck metallic idiophone, emitting sound nearly indistinguishable from that of a glockenspiel.

PERSPECTIVE & THE ‘COMPOSITE INSTRUMENT’

“My vast playing experience also included jazz bands, where I heard the great variety of mutes for the brass—the straight mute, the cup, bucket, plunger, Harmon (with and without stem), and ways of combining them with other instruments. I’ve devised what I call “invisible doublings” where you can’t tell if a combination of instruments is coming from a whisper-muted trumpet or a so flute, a bucket- muted trombone or French horn, a cello or English horn. Violas playing near the bridge (ponticello)
alternating with ‘stopped’ horns intrigues me. I love instrumental similarities that make me wonder which instruments are playing.”

In combining two roughly equal forces of sound production - a full orchestra and a substantially equal (in sound possibilities and volume, although not in performers) percussion battery - an issue of perspective arises. When both play simultaneously, there are three possible perspectives of auditory perception:

- Orchestral complement in the forefront, percussion battery in the background
- Percussion battery in the forefront, orchestral complement in the background
- Full integration, with percussion battery and orchestral complement perceived equally, or with the listener entirely unable to distinguish between the two groups.

This is not simply a question of volume, but rather of focus and sonic perspective. Essentially the entire history of orchestral repertoire is limited to the first perspective, in which the orchestra is central and the percussion is either accompanimental or incidental. That perspective is certainly present in *déjà vu*, as is the second, but Colgrass’s primary innovation lies in his attention to the third perspective—that of full integration of percussion and orchestra. The most important vehicle by which this integration is achieved is the composite instrument. Composite instruments are virtual instruments created through precisely controlled instrumental combinations, the amalgam of forces from the percussion battery and the orchestral complement into a voice of a singular identity.

In creating composite instruments from combinations of percussion and orchestral forces, the primary incompatibility that must be reconciled is one of attack and sustain, of the percussion's general inclination for a strong attack and a weak sustain, and the winds’, brass’, and strings’ inclination to sustain sound. Most percussion, for instance, lack the ability of strings,

31 (Colgrass, Creating from the Muscle, 2015)
winds, and brass to produce a seamless crescendo of sustained sound, or even a leveled sustain, without the interruption of recurring attacks (although this can be mimicked in some percussion instruments through the roll technique). Most wind instruments, conversely, cannot match the strength or focus of attack that many idiophones and metallophones provide, nor those instruments exceptionally rich and unique timbres.

What percussion instruments (at least those that are primarily struck) cannot do is precisely and completely control the rate, duration, and slope of their decay. In these cases, the composer is limited by the natural properties of the instruments—some of which, like the tam-tam, can have an extraordinarily long period of decay following a strike while others, like the xylophone, have practically no resonance beyond the attack. This means that a simultaneous strike of a group of different percussion instruments will necessarily yield unequal decays, with each instrument exiting at a rate determined primarily by each instrument’s specific design.

A composer can, however, gain a sort of artificial control over the rate and character of a percussion instrument's decay, or create the impression of sustain or even crescendo, by combining that instrument with other, more capable sustaining instruments. These could be winds, brass, or strings, depending on the particular percussion instrument employed as well as the musical intentions of the moment. It is actually incredibly difficult to distinguish between different instruments from the timbre of their sustains alone—it is the attack, and to a lesser extent the release, that provides the weight of an instrument's character. Thus, the combination of

---

32 Certain parameters that affect a percussion instrument’s decay are controllable by the performer (and thus the composer as well), especially with drums and usually through manipulation or muffling of the head (Solomon, 2002). These techniques are still unusual and not called for in déjà vu.

33 Musician’s face “a great deal of difficulty in simply identifying musical instruments […] when the attacks and releases [are] removed from the recorded instrumental tones.” (Elliot, 1975)
a percussion attack with a sustaining voice of strings, winds, or brass will generally yield something that is taken by the listener as an unusually sustained variation of a percussion sound.

Colgrass describes this technique explicitly:

“The idea is simple, but it provides a way of glorifying the percussion sound and extending the effect of the instruments beyond their normal capacity. In this sense one might say that I use the orchestra the way a cook uses herbs-to heighten the subtle flavors of the various percussion instruments and make them more memorable.”

Composite Instrument: Sustained Vibraphone

The first composite instrument appears in the very first measure of déjà vu, stating the first statement of the work's theme. This particular combination is of vibraphone and sustained, muted strings:

![Score Facsimile 1, m. 1-4]

Here, the vibraphone is in the forefront. The vibraphone, when the sustain pedal is off has moderately weak sustaining power and, when played with medium or hard yarn mallets (medium, in this excerpt) a crisp and focused attack. The dynamic envelope of the vibraphone line is limited to a range of piano to mezzoforte, with a swell in the middle of the first measure to

34 (Colgrass, déjà vu: for percussion quartet and orchestra, 1978)
focus and shape the rising gesture. The muted violins, played *pianissimo*, bring a steady and even sustain, and very little else. The more pointed attack of the vibraphone will entirely conceal the string attack. The strings do not participate fully in the melodic gesture, instead providing a static backdrop—a vibrato-less halo of sound. The strings generally illuminate each beat of the gesture while the vibraphone subdivides the beat further, although this pattern is not entirely strict, as in the fourth beat, when the Violins II jump early to the A-natural. Colgrass, presumably, values a four note gesture in the strings over strict adherence to beat, as the latter would require a repetition of the G and a much less satisfying melodic contour in the string parts:

![Image of musical notation](image.png)

*Figure 2, deconstruction of primary theme*

This kind of imperfect unison, or heterophony, is central to Colgrass approach to orchestrational integration through the use of composite instruments. A degree of perceptible imperfection adds vitality and character to the newly-formed composite texture that a simple unison would not. That is certainly the result here, where the swell in the vibraphone's melodic line keeps the listener's focus with the vibraphone through the first measure but the slowing of activity in the second measure, culminating in the fermata, means that the sustaining voice of the strings becomes the primary focus as the resonance of the vibraphone's attack is lost. Thus, over the two-measure phrase, there is a slight, but appreciable shift of focus from the vibraphone's attack to the strings' sustain. Another iteration of the ‘sustained vibraphone’ occurs in m. 21,
when the vibraphone is combined with a trio of winds – flute, alto flute, and clarinet (although, with the exception of a single beat, only one at a time):

For most of these two measures, the vibraphone, given the entire two-measure long gesture, is again the lead voice. The resultant composite instrument, however, is much more amorphous than the previously-discussed combination of vibraphone and strings; this is largely the result of the characteristics of the wind instruments’ attacks. Colgrass exploits this opportunity for greater color, starting in the first beat of the gesture, when a forte alto flute is combined with a vibraphone at a piano dynamic. In this case, the orchestral instrument masks almost entirely the vibraphone attack, with the vibraphone only reemerging as a result of its continuing swell gesture. In the second measure of the example, all three winds sound on the third beat, mirroring the vibraphone’s mezzoforte dynamic highpoint not in dynamic but in multiplied forces. The result is a much more cohesive and less easily identified composite texture, with at certain points the vibraphone and at others one of the trio of winds perceived as primary.
CHAPTER 3: MELODIZED PERCUSSION

“MAKE PERCUSSION SING”

"It's been many years now since I've played percussion or written for it, and since I had in the intervening time developed a strong lyric side -- operas, songs, oratorios -- the idea of writing again for solo percussion presented new problems. How could I make percussion sing? Should I try?"

If singing is the act of sustaining pitch, then Colgrass’s question—"how can I make the percussion sing?"—requires an answer that addresses both pitch and sustain. In fact, the two parameters are not entirely discrete: some degree of sustain, however brief, is a prerequisite for pitch perception, and the human auditory system recognizes pitch content of sounds more reliably the longer that they are sustained.\(^\text{36}\)

In all acoustic instruments, be they idiophones, membranophones, chordophones, or aerophones\(^\text{37}\)—the timbre, the character of the instrument, is the result of a rich overtone structure (spectral envelope). For most 'pitched' instruments are designed so that the spectral envelope of the sound directs the ear to a specific, and relatively clear, fundamental pitch, that lays within the bounds of human sensory perception. The ear is remarkably capable of identifying pitch completely independent of any particular spectral envelope: "Somehow the auditory system is able to extract information on the fundamental frequency of a periodic sound regardless of its harmonic content. Given the large variety of possible spectra, this is by no means a trivial fact."\(^\text{38}\)

\(^{35}\) (Colgrass, déjà vu: for percussion quartet and orchestra, 1978)

\(^{36}\) (Marvin & Brinkman, 2000)

\(^{37}\) And, notably, not sine-wave-producing electrophones.

\(^{38}\) (Houtsma, 1971)
When a single pitch is perceived as primary in a sound, as the single focus of the overtone structure, a sound can be said to possess a ‘centricity of pitch’. Anything that produces sound has pitch, of course—be it a shoe on a wood floor or an air-raid siren. The question then is not whether a particular instrument has pitch, but whether that instrument bears pitch in a form that can be captured and recognized by a listener. Many sounds that are perceived as noise-filled, like that of static on an old-fashioned tube television or a running shower, are in fact a cacophony of countless pitches from which the ear is unable to discern any single fundamental, and thus possess no centricity of pitch. An instrument that produces sounds for which noise-content predominates and obfuscates pitch content cannot be said to be ‘pitched’.

So, while centricity of pitch is a necessary property of ‘pitched’ instruments, it is not a sufficient one. A composer is concerned not only with the clarity of pitch that an instrument produces, but also the degree to which that pitch can be controlled. A brake drum, for instance, exhibits a clear centricity of pitch, but one that varies from instrument to instrument and which, as a single invariable idiophonic instrument, has absolutely no degree of pitch variability. For the intents and purposes of the composer, then, the brake drum, as an instrumental type, is considered ‘unpitched’, despite its clear and present pitch content. The percussionist Samuel Solomon summarizes this paradox effectively:

“many of the sounds produced from the percussion battery contain pitches not prescribed by composer or performer. In most cases, the pitches from two like instruments are drastically different; one player’s “medium” tom-tom, for example,

39 “Many percussion instruments have considerable presence of noise as part of their sound. A snare drum, for example, produces clear pitches from the top drumhead, but the rattle of the snares against the bottom drumhead introduces a significant amount of noise into the overall sound. Instruments like shakers and closed hi-hats have very high noise content, so much so that it is quite difficult if not impossible to identify any single pitch.” (Solomon, The Problem of Pitch - Seeking a Lasting Repertoire, 2009)
will likely sound far different from another’s. Pitches from one single percussion instrument can also vary as a result of changing beaters, beating spot, muting, or volume. All of these variables contribute to a significant and inherent indeterminacy that presents substantial difficulties to creators of percussion music.\textsuperscript{40}

‘Pitched’ percussion, then, produce sounds with a centricity of pitch, the particular value of which may be defined or directed by performer and composer. For the purposes of this analysis, the degree to which an instrument is pitched, and that instrument’s ability to move freely between pitches, will be referred to as its ‘pitch capability’. The percussion battery of \textit{déjà vu} includes instruments of widely varying pitch capabilities, and can be divided into four broad categories:

- **Fully-pitched percussion** (e.g. Glockenspiel, Marimba, Vibraphone): instruments with a centricity of pitch and which are as fully flexible in pitch as strings, winds, or brass instruments.
- **Inflexibly-pitched percussion** (e.g. Timpani and Roto-toms): instruments with a centricity of pitch but which are more limited in range and pitch vocabulary than are the fully-pitched percussion
- **Partially-pitched percussion** (e.g. four wood blocks, three graduated sizzle cymbals, five graduated cowbells, three graduated tambourines, four graduated triangles): instruments which, when combined in graduated groups, may or may not possess centricity of pitch, but do have melodic contour.
- **Unpitched percussion** (e.g. snare drum): instruments which may or may not possess centricity of pitch, but which have little to no pitch capability.

\textsuperscript{40} (Solomon, The Problem of Pitch - Seeking a Lasting Repertoire, 2009)
Below, Colgrass’s percussion battery distributed between the above categories:

*Table 2, pitch capability of the percussion battery*

<table>
<thead>
<tr>
<th>Pitch Capability</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully-pitched</td>
<td>Chimes</td>
</tr>
<tr>
<td></td>
<td>Glockenspiel</td>
</tr>
<tr>
<td></td>
<td>Marimba</td>
</tr>
<tr>
<td>Inflexibly-pitched</td>
<td>Vibraphone</td>
</tr>
<tr>
<td></td>
<td>8 Roto-toms</td>
</tr>
<tr>
<td>Partially-pitched</td>
<td>5 Timpani</td>
</tr>
<tr>
<td></td>
<td>6 Cowbells</td>
</tr>
<tr>
<td></td>
<td>3 Tambourines</td>
</tr>
<tr>
<td></td>
<td>4 Triangles</td>
</tr>
<tr>
<td></td>
<td>5 Wood Blocks</td>
</tr>
<tr>
<td>Unpitched</td>
<td>Bamboo Wind Chimes</td>
</tr>
<tr>
<td></td>
<td>2 Field Drums</td>
</tr>
<tr>
<td></td>
<td>Gong</td>
</tr>
<tr>
<td></td>
<td>2 Plate Cymbals</td>
</tr>
<tr>
<td></td>
<td>Snare Drum</td>
</tr>
<tr>
<td></td>
<td>String of Elephant Bells</td>
</tr>
<tr>
<td></td>
<td>2 Suspended Cymbals</td>
</tr>
<tr>
<td></td>
<td>5 Sizzle Cymbals</td>
</tr>
<tr>
<td></td>
<td>2 Timbales</td>
</tr>
<tr>
<td></td>
<td>2 Tenor Drums</td>
</tr>
<tr>
<td></td>
<td>Tom-tom</td>
</tr>
</tbody>
</table>

Exactly ten instruments—half of the battery—are pitched to some degree, and that six are precisely pitched. Again, pitch cannot, and should not, be entirely separated from the parameter of sustain. The chart below distributes the individual instruments of the battery, categorized by pitch capability, into columns denoting each's sustaining ability:
Since sustain aids in the perception of pitch content, pitched instruments of strong or moderate sustaining power will generally be perceived as more strongly pitched than instruments of weak sustaining power. For the chart above, the sustain parameter refers to the sustaining power of a single strike. In the case of the marimba, vibraphone, metal bar chimes, and all of the drums and membranophones, sound may also be sustained indefinitely through rolls.\textsuperscript{41}

The vibraphone is an interesting outlier due to its pedal system and motor - the instrument has little sustaining power when the pedal is disengaged, and substantially more with the pedal

\textsuperscript{41} Interestingly, Colgrass employs the roll technique surprisingly sparingly, likely because it robs the instrument of its decay, an important component of its characteristic sound, and Colgrass prefers to maintain that characteristic when combining percussion with more capable sustaining instruments.
engaged. The vibraphone’s motor, by oscillating the air beneath the metal bars, produces a sort of timbral vibrato, a “trick of continuously altering resonance”. Unlike a vocal-style vibrato, the pitch is mostly unaltered. This otherworldly undulation, combined with the instrument’s strong sustain, enables the vibraphone to effectively cut through a variety of orchestral textures. This quality of the vibraphone is more illuminating than it may first seem, as Colgrass frequently uses the vibraphone as a sort of textural glue between different groupings of instruments.

FULLY-PITCHED PERCUSSION

The pitched percussion instruments in déjà vu possess pitch centricity and are, to varying degrees, as flexible in pitch modulation as the instruments of the orchestral complement. These instruments are all struck idiophones - the glockenspiel, metal bar chimes, and vibraphone are metallophones, while the marimba is made of wood. Taken together, the four pitched percussion instruments span the bass register to the highest register of the orchestra:

![Figure 3, ranges of pitched percussion](image)

The marimba has the largest range of the four, although it should be noted that the instrument does not have a pre-defined range and that bass marimbas can descend as low as

---

42 (Perdue, 2016)
43 (Adler, 2002)
C3.\textsuperscript{44} The high C is rarely exceeded, and the range above is generally the most common for orchestral marimbas. A composer may, although Colgrass does not, use a xylophone to effectively extend upward the range of the marimba, thus increasing the upper range of the wooden pitched idiophones to a point rivaling the glockenspiel. The vibraphone has the next widest range and is a treble instrument with much greater sustaining power in its upper register. Both the marimba and vibraphone can be played with four mallets by a single performer, allowing for four-note chords, fast arpeggios, or quick melodic lines or patterns. Both the marimba and the vibraphone can also be played by two performers simultaneously, allowing for the performance of eight independent pitches. Both the marimba and the vibraphone are arranged in a keyboard format and can be played with great virtuosity by skilled percussionists.

The glockenspiel is somewhat less flexible, with a more limited range and a (typically) a maximum two-mallet technique. Still, the instrument is often capable of matching the flexibility of the high winds or strings that share its range, and certainly matches their volume. The chimes are, by far, the least flexible of the pitched percussion in \textit{déjà vu}, and are more effective when given space to sustain. The instrument is most adept at carrying and cutting through even dense orchestral textures in the treble range, an ability that separates it from the other pitched percussion and is central to its purpose in the orchestra.

The most flexible pitched percussion of all, however, is the ‘orchestral piano’, which is not included in the previously reproduced percussion catalogue. The piano is a struck chordophone and not typically considered a percussion instrument. In fact, the piano is so versatile in volume, attack, and register (and, in all three parameters simultaneously), and, at the hands of a capable performer, capable of executing passages of nearly-unimaginable difficulty and complexity, that

\textsuperscript{44} (Adler, 2002)
it is in fact capable of serving nearly any purpose a composer may ask of it. The orchestral piano relies on a subset of piano technique that has developed over the twentieth century and is largely limited to the extreme registers of the instrument. These registers approach the outer registers of the orchestra, where the piano is much more likely to cut through the orchestral texture. The orchestral piano is, for all intents and purposes, a percussion instrument. The piano in \textit{déjà vu} serves both as percussion instrument and, in the "jazz band," in a more traditional role.

The glockenspiel and chimes, and the orchestral piano, had, by the composition of \textit{déjà vu}, fairly standardized utilization in the orchestra and while Colgrass does expand on their standard functions, the instruments themselves do not pose particular challenges in the orchestral context. The vibraphone, although newer to the orchestra, is, by virtue of its unique construction and sustaining power, a natural and opportunity-producing addition to the medium. The marimba, however, as a result of its wood construction, has the weakest pitch focus and most impotent sustain of the pitched percussion and is, of the four, least naturally suited for orchestral use—it is simply a weak orchestral instrument in that it is, under normal circumstances, unlikely to carry over an orchestral texture. This is a compositional challenge for Colgrass, the primary solution to which is the creation of composite instruments that augment the marimba's attack, pitch focus, and sustain.

\textbf{Composite Instrument: Amplified Marimba}

The string instruments of the orchestra are chordophones whose wooden bodies serve as resonance chambers for vibration that begins in the strings. When certain plucked techniques are employed (snap-pizzicato, for example\textsuperscript{45}) the actual mechanism of the string being pulled and

\textsuperscript{45} (Adler, 2002)
springing back against the fingerboard produces a much more percussive sound, with a much
greater proportion of the vibration originating in the wood itself. The pitch content of a plucked
note, while still clear, is dramatically weaker than it would be if initiated by bow. The pizzicato
strings are a natural choice for combination of the marimba, and share many of the same
qualities of sound. The combination of marimba and pizzicato strings does little to address the
inherent weaknesses of either, but serves to minimize that weakness through combination.

In the example above, the marimba and pizzicato strings share the same material, the
marimba playing an octave higher than the strings. Due mostly to its higher register, but also to
the richness of its attack, the marimba is perceived as the primary voice in this texture. The
octave displacement of the strings, then, serves to expand the range of the marimba. Even if a
marimba capable of playing in that register were employed, the instrument is ineffectual in its bass register when compared to an orchestral section of pizzicato cellos and contrabasses. The attack, meanwhile, of both the marimba and the pizzicato strings includes quite a bit of noise, typically higher than the sustained pitch—so the accumulated power of that attack is not particularly affected by the octave displacement. The winds, then, address the issue of sustain, ghosting the pitches of both the marimba and the strings. Played pianissimo throughout, and with unaccented attacks (juxtaposed against fortissimo attacks in the marimba and strings), the winds are highly unlikely to be singled-out as a unique component in the sound of this passage. The resultant sound, really, is that of a huge, amplified marimba, with a stronger bass register and improved sustain.

Composite Instrument: Marimba-Harp

The harp in most orchestral literature is limited to string or wind textures and quiet passages, and is rarely combined with percussion or brass. The marimba has precisely the same problem, and Colgrass’s solution to both instrument's inherent ineffectuality as orchestral instruments is to combine them in a way that increases both instruments’ ability to cut through an orchestral texture. The particular composite instrument of the marimba-harp recurs frequently throughout déjà vu.

Score Excerpt 2, m. 206-207
This instrumental combination does not achieve the same dramatic ends—the alleviation of all substantial weaknesses of the marimba—as did the particular combination with pizzicato strings examined previously. This combination of marimba and harp is still too quiet, still of little carrying power and limited to sparser orchestral textures. This combination exists primarily to augment and to amplify the pitch content of the marimba through increased sustain while largely maintaining the mallet instrument's character. In the passage above, the harp and marimba play from the same collection of pitches at the same time but at entirely differing rates. Both instruments play at the same static forte dynamic level, and with no discernible phrase structure or other element that might cause one instrument to rise above the other. The only discernible differentiators here are timbral—a weak differentiator in the orchestral context, especially when anything else is playing at the same time. In that orchestral context, the marimba, by virtue of its substantially stronger attack, will be perceived as primary, but will exhibit more focused pitch content and an aura of sustain by way of its pairing with harp.

**Composite Instrument: Synthetic Vibraphone**

The ‘synthetic vibraphone’ is a composite instrument formed from the vibraphone, high vibrato-less\(^{46}\) strings, flutes, and celesta, in various and changing combinations. The vibraphone, by virtue of its pedal and electric motor, is the most memorable component of this sound, imparting shared sustains with an inhumanly precise vibrato and rich overtone profile:

---

\(^{46}\) Harmonic tones are usually vibration-less (although not always), but will the vibrato-less passages will typically be played vibrato-less as well (although not specifically notated) as dictated by contemporary orchestral performance practice.
“[the] vibraphone (with electric motor on) [has] a way of ringing that sometimes makes the listener think he is hearing a wave in the sounds – an undulating vibration mixed with a number of secondary pitches, or ‘enharmonic partials’.”

The synthetic vibraphone is differentiated from other composite instruments by its focus on sustain, a property arising from the rich and character-filled sustains of the instrument from which it arises. The synthetic vibraphone is largely limited to the register of the natural instrument, save the occasional upwards extension and, interestingly, remains so limited even when the vibraphone itself is not present. These rich and diffuse sustains, the precise configurations of which are rarely static, act as a binding agent between different choirs of treble instruments. Again, the vibraphone itself, and its characteristic vibrato, may or may not be a component of these sustains.

Score Facsimile 3, m. 216-218

In the passage above, the vibraphone is struck with soft yarn mallets, with the motor on, at pianissimo. While not explicitly notated, the pedal will be engaged as well, as necessitated by the overlapping multi-voice writing in the vibraphone part. The strings, in vibrato-less harmonic

47 (Colgrass, déjà vu: for percussion quartet and orchestra, 1978)
tones, echo and extend the the vibraphone line. Colgrass notes that “string harmonics serve the same function as the vibraphone,” and the function here is a broad, diffused sustain from which any sound could emerge. In the passage below, the synthetic vibraphone is reassembled as a combination of high strings, high winds, and celesta:

The celesta, a keyboard instrument, is a struck metallic idiophone, similar in its higher register to a glockenspiel but with more focused sustain (when its pedal is engaged). In its lower register, the attack is largely indistinguishable from that of a vibraphone, but with a vibrato-less sustain. Here, the celesta, mezzoforte and in its middle register, serves to impart a crisp, metallic attack to the ‘synthetic vibraphone’ texture, while the strings add a (barely audible) sustain. The

48 (Colgrass, déjà vu: for percussion quartet and orchestra, 1978)
winds, in a chromatic, undulating line that grows to *mezzoforte*, are a sort of realized impression of the vibraphone’s vibrato.

**INFLEXIBLY-PITCHED PERCUSSION**

The inflexibly-pitched percussion—the five timpani and eight roto-toms—present a problem of classification, laying somewhere between the fully-pitched percussion and partially-pitched percussion in pitch capability. Both the timpani and roto-toms are membranophones that can be tuned precisely but that require a manual adjustment of drum head tension to modulate pitch. The possible range each drum is constrained, but is increased substantially, if virtually, via the use of graduated sets. Still, the total inventory of pitches available to a composer at any given moment is limited by the number of timpani or roto-toms available (five or eight, respectively), as well as the ranges of the individual drums, although the timpani may be much more freely modulated during performance. A more limited pitch vocabulary differentiates the inflexibly-pitched percussion from the fully pitched percussion, which can freely move over the chromatic spectrum within a given range.

Furthermore, as membranophones, the timpani and roto-toms possess a less focused pitch center than any instruments of the pitched percussion. In both cases, the booming "drum" resonance, especially at the higher dynamic levels, significantly outlasts a sense of pitch as the instrument decays. The pitch is also typically variable from attack though release and will vary in conjunctions with variations of dynamic, striking object, and position and method of striking: “A drum sound will often naturally have a slight pitch bend. When the drum is struck loudly, the
force of the stick will push on the head so that post-attack the head with quickly relax back into position and produce a small downward glissando. This is most apparent on drums with looser heads, played at loud dynamics. These qualities further differentiate the inflexibly-pitched percussion from the fully-pitched percussion, whose centricity of pitch, and fidelity of pitch, is maintained much more clearly from attack through decay.

**Composite Instrument: Plucked Timpani**

Modern timpani are equipped with a spider tuning mechanism, manipulated by the player via pedal, that enables relatively quick and precise tuning by adjusting the tension of the membrane. Each drum is constrained by the range of at most, a major-sixth, but can be freely modulated by pedal within that range. When combined in graduated groups (four is most typical; *[déjà vu* calls for five], the timpani set can span nearly two octaves and is capable of executing any single pitch within that range. In practice, however, the total inventory of pitches is severely limited, as a player can only execute one pitch per drum at any given moment. Composers are also limited by the ranges of each graduated drums: a quick, repeated oscillation of semitones, which would require two drums, would be, in normal orchestral configurations, impossible or very difficult in certain registers.

Despite opportunities for expanded utilization, including melodic work, glissandi, and even complex pedal modulation, composers typically engage the timpani as fixed-pitched drums—a limitation that Colgrass observes. Consequently, in orchestral settings, the timpani are rarely re-

---

49 (Solomon, How to Write for Percussion: A Comprehensive Guide to Percussion Composition, 2002)
50 “melodic capabilities on timpani are not as limited as one may think: complex pedaling is difficult but very possible.” (Solomon, How to Write for Percussion: A Comprehensive Guide to Percussion Composition, 2002)
tuned inside a single passage, and are thus only marginally more fluent in pitch modulation than are the roto-toms. These limitations are likely imposed by the orchestral tradition—the kettle drums (predecessor of the modern pedal timpani) were the first percussion in the orchestra and were pitched (with tuning screws before the performance) to tonic and dominant. The role of the timpani in the orchestra has expanded since the instruments’ introduction, as has the range of the set (four drums is the standard now, and Colgrass uses five), but the role of the instrument has not changed appreciably over time. In *déjà vu*, Colgrass treats the timpani as fixed drums, preferring to expand the function of the instrument through instrumental combination.

Colgrass’s solution to the timpani's imprecise pitch focus is, frequently, to combine the drums with pizzicato low strings. The two sounds are not substantially dissimilar, as Colgrass addresses in his program note: "I think that at times the listener would be hard pressed to tell the difference between timpani and basses amidst a scramble of tapped and plucked pitches."

In the example above, the plucked strings mirror the three-bar crescendo-diminuendo swell gesture in the timpani. The focus is on the downbeats, with the timpani playing at a lower subdivision (which it can accomplish with much more clarity than can pizzicato strings). The timpani are very much at the forefront—the drums’ booming resonance ensures that that will be

---

51 Note that the Timpani's C is not present in the strings at all in this passage.
the case—but the pizzicato cellos and contrabasses to add a small degree of pitch focus and sustain, and a much larger degree of amplification though the addition of forces.\textsuperscript{52}

Composite Instrument: Roto-tom-Harp

All membranophones, of course, have pitch to varying degrees, but the precise tunings of those instruments may vary between instruments and are generally not within the purview of the composer. A tom drum, for instance, or a tenor drum, is for the most part indistinguishable from a single roto-tom drum in its centricity of pitch or the profile of its decay. The only difference, and a crucial one for this analysis, is that the tuning of the roto-toms may be prescribed by the composer. And, if the tuning of the drums can be precisely controlled, then those tunings may also be augmented by orchestral doublings, effectively negating the comparatively weak pitch focus and uneven decay of the drum.

The roto-toms are tom-like drums that can be tuned with a screw device, typically in advance of performance. For \textit{déjà vu}, Colgrass calls for a precise array of drums—two at eighteen inches in diameter, three at sixteen inches, and three more at fourteen, twelve, and ten inches, respectively. Those drums are tuned, for the entirety of the piece, as follows:

![Figure 4, tuning of roto-toms](image)

In his performance note, Colgrass addresses a primary challenge of the roto-tom:

"The eight roto-toms (on the listener's left) have specific pitches but they are somewhat fragile and have little carrying power."

And his solution:

\textsuperscript{52} A typical orchestral low string section will add between twelve and sixteen players.
"So, almost every time these drums play, I have harp 1 (situated next to the roto-toms) play the same notes but in different rhythmic patterns. Ostensibly the harp sounds like an accompaniment, where it is in fact acting to double the pitches of the drums."

The clearest manifestation of Colgrass’s chosen solution begins in mm. 340:

In this example, the pitch material is strictly shared between roto-toms and harp, save octave doublings in the latter. Another example is below:

The example above is not a doubling—at no point does either the roto-tom or the harp subdivide the beat in the same way as the other, and a sense of rhythmic independence is maintained at all times. The roto-toms have a sense of forward momentum generated by gradually increasing subdivisions of the beat and a crescendo, culminating in a mezzoforte two-drum tremolo, while the harp part is comparatively meandering. As Colgrass noted in his program note, this passage is not perceived by the listener as a doubling, nor as a composite instrument, but rather as harp accompanying roto-toms which, by virtue of a more active line, are
perceived as primary. The real purpose of the harp, however, is to illuminate and focus the pitch content of the roto-toms and to add a degree of pitch sustain through lingering resonance of the harp, which greatly aids in perception of pitch from the drums. Interestingly, the harp (which can play any note) is not strictly limited to the roto-tom's pre-tuned selection of pitches and will double at the octave (although, in this passage, only for the C and G). It should also be noted that, as prescribed by Colgrass’s suggested stage set-up, these the harp and the roto-toms are adjacent on the stage, to facilitate this integration in performance.

PARTIALLY-PITCHED PERCUSSION

The partially-pitched percussion are instruments that, when ordered in graduated groups, offer the composer a linear band of imprecisely-pitched sounds. In déjà vu, the partially-pitched percussion include:

- 4 cowbells (graduated)
- 3 Tambourines (graduated)
- 4 triangles (graduated)
- 4 wood blocks (graduated)

Beyond ‘graduated’, Colgrass gives no specific directions with regard to size or tuning of instruments. There are, of course, conventions that define broad guidelines of size and tuning to both performer and composer, but the precise selection of instruments is at the control of the performer. This means that any specific pitch content in these instruments cannot be enhanced or augmented in the orchestra (as was the case with roto-toms, for instance), as the composer simply cannot control for that.

Certain sets of graduated percussion, like the temple blocks, have standardized somewhat into predictable tuning schemes, typically pentatonic. That is not the case for the wood blocks, nor any of the other sets of graduated percussion called for in déjà vu. In that case, the onus is on
the percussionist to select instruments that he or she believes serve the particular context, and this can and will vary greatly from performance to performance. While the precise tunings of the individual instruments are not particularly important, it is important that the tuning scheme allow for clear differentiation between instruments and a clear and recognizable melodic contour within the set. The entire span of the graduated percussion set should, generally, fall within a single octave—especially when the composer or performer's intention is that the different instruments be heard and understood as part of a set (the success of which is jeopardized by expansive or radically uneven intervals between instruments).

For *déjà vu*, Colgrass knows, for instance, that he will have four triangles available, each pitched differently but all within the treble register, and that they will be graduated by the performer from high to low. Colgrass cannot know, from performance to performance at least, the precise span of triangle pitches (the range between highest and lowest triangle), or the specific distances between adjacent triangles. In other words, Colgrass can control for melodic contour in these sets of graduated percussion, but not for their pitch. Of the four graduated sets employed, the wood blocks have the clearest centricity of pitch, followed closely by the cowbells, while the tambourines and triangles have much more unfocused pitch centers. Perhaps for this reason, the cowbells and wood blocks are more often utilized in graduated sets, the tambourines and triangles much less so.

---

53 Solomon outlines a percussionist’s approach to the selection of instruments: “A percussionist with great ears, copious instrument options, no logistical hindrances, and plentiful time to learn a piece and experiment with sounds will be able to determine the best answers to a composition’s inherent questions. In this scenario, even pieces that have not properly taken into account the aforementioned pitch issues will have perfectly sculpted percussion sonorities.” (Solomon, The Problem of Pitch - Seeking a Lasting Repertoire, 2009)
For the purposes of this theme's relationship to the partially-pitched percussion, and its application to those instruments, further analysis of the melodic contour of the two-bar theme is required. The theme is reproduced below in its original form:

![Vibraphone notation](image)

*Figure 5, primary theme, again*

Colgrass’s theme begins with a falling perfect-fifth, then a leap, over the course of a beat, up a major-seventh, followed by a drop of a third and then continued upward motion, stepwise, and then culminating in the second measure with a falling minor-sixth. The fundamental contour of the theme is illuminated by both repeated notes and the overall intervallic span of the phrase - in this case an augmented octave. The sixteenth notes in the second beat do not inform the melodic contour and serve primarily to fill in the ascending major-seventh. Likewise, the A-natural in the latter-half of the fourth beat is more notable than the G-natural on the downbeat, which has been already been heard. The reduction below highlights this fundamental five-note melodic contour of the two-bar theme:\footnote{Note that the D-flat in the second bar has been selected over the higher C as the preferred end point of this gesture. Although not clear from its first iteration in the vibraphone, subsequent iterations and transformations of the theme indicate that this is Colgrass’s preferred melodic trajectory.}:

![Melodic contour notation](image)

*Figure 6, melodic contour of primary theme*
In the context of melodic contour, both the direction of and relative size of the intervals is important, but the precise values of those intervals is not. The descending fifth and minor-sixth may be regarded as large intervals, and the rising whole-step as a small interval. The interval between the second and third notes (the ascending major-seventh in the original theme), should be the largest of all. Below, the theme has been reduced still further, placed on a five-line percussion staff, in order to show the fundamental intervallic relationships that form the theme's five-note melodic contour:

![Figure 7, 5-line melodic contour](image)

In this reduction the final note is one value lower than the first, as was the case in the original version of the theme (which ends a whole-step lower than it begins). The two largest intervals exist between the second and third notes and between the fourth and fifth notes, as they do in the original. Those leaps, while not equal in the theme's original form, are necessarily equalized in this visual reduction, and are both larger than the leap between the first and second notes. Here, the swell of the first measure has been retained, as it is crucial to the identity of the theme (more so than any specific pitch content).

When applied to groupings of four graduated percussion instruments, Colgrass must condense the intervallic relationships of the theme still further, as he does for the four wood here:

![Score Excerpt 3, wood blocks at m. 277](image)
In this version, the rhythmic profile has been adapted somewhat, with the space between the second and their notes, and between the fourth and fifth notes, eliminated. As far as the intervallic relationships, only the differentiation of the falling interval (the falling perfect-fifth in the original theme) and the ascending step has been lost. The leaps retain their differentiation from the smaller intervals.\(^{55}\) In fact—and especially, perhaps, because of the swell in the first measure here—this version of the theme, for four indeterminately-pitched wood blocks, is still clearly recognizable as a transformed version of the original.

That version of the primary theme, on the wood blocks, informs the process of continuing variation, in both the percussion and the orchestral complement. The passage below includes the wood blocks theme paired with four graduated triangles and pizzicato low strings:

The four triangles play a version of the theme as well, extended but ending with the characteristic downward leap.\(^{56}\) The strings adopt the material of the triangles, with the oscillating major-thirds approximating the interval between the two adjacent triangles. The

---

\(^{55}\) It is crucial to remember, however, that this discussion is limited to pitch relationships, and that these relationships may be distorted by the specific instrumental selections of the performer. 

\(^{56}\) When Colgrass says, in his program note, “[the primary] theme first appears in a serial form introduced at the beginning of the work by the four soloists, and then later in a purely rhythmical form on non-melodic percussion”, he is referring to this and other versions performed on sets of graduated percussion.
extension and oscillation is key here, as the connection between the triangles and strings can only be perceived if the strings are moving between two steady pitch targets. This relationship remains even if the precise intervallic relationship is only approximate.

**UNPITCHED PERCUSSION**

The unpitched percussion are instruments over which the composer may exert little control over precise pitch content, beyond broad direction to the performer (‘high’ or ‘low’, ‘large’ or ‘small’, ‘bright’ or ‘dark’). These instruments may or may not produce sounds with centricity of pitch. The cymbals, triangles, and gongs, for instance, do not, and this quality of sound is fundamental to their character and purpose: “[for these instruments] a rich spectrum of simultaneously sounding pitches is ideal; any clear identifiable pitch is considered poor sound.”

Other unpitched percussion—drums and wood blocks, for instance - require a clear centricity of pitch for maximal effectiveness.

Pitch content, however, is not a prerequisite for combination with orchestral groupings. These instruments blend well with orchestral instruments, and may even, through repeated combination with a particular orchestral instrument, eventually seem to take on the pitch of that instrument. This, however is not a technique that Colgrass employs in *déjà vu*, preferring instead to rely on the more capably-pitched percussion in instrumental combinations. There are also no examples of a purely rhythmic expression of the main theme, in unpitched percussion or

---

57 (Solomon, The Problem of Pitch - Seeking a Lasting Repertoire, 2009)
58 “drum set tom-toms are often tuned ("cleared") and slightly muted for maximum possible pitch clarity and intonation.” (Solomon, The Problem of Pitch - Seeking a Lasting Repertoire, 2009)
anywhere else. Colgrass’s compositional process for this work is heavily pitch-focused, and his instrumental and orchestrational choices reflect that predisposition, favoring pitch capable percussion overwhelmingly. The unpitched percussion, then, are largely incidental, and are used to accentuate changes of texture or mood. The single exception is in the ‘jazz band’ section, where the percussion battery collectively takes on the role of a jazz drummer. There is, in fact, a striking example of motivic transference between the orchestral complement, unpitched percussion, partially-pitched percussion, inflexibly-pitched percussion, and pitched percussion, occurs at m. 171-b, at the beginning of the ‘jazz band’ section, with the first introduction of the snare drum:

![Score Facsimile 7, snare drum in m. 171-b](image)

This moment is preceded by several minutes of amorphous orchestral texture, with increasingly acrobatic fragments in the winds, brass, and pitched percussion (a development of the upward melodic gesture of the primary theme) gradually emerging from a texture of long, held string chords. The percussion material (in the roto-toms, vibraphone, marimba, and timpani) is increasingly occupied with itself and separate from the ensemble,\(^59\) akin to a small group at a dinner party gradually segregating from the crowd. The percussion quartet is jolted back to form by a swelling repeated-note gesture, hinted at in the horns and trombones, and then stated forcefully in the high strings and winds:

\(^{59}\) (Perdue, 2016)
Until this point, the orchestral texture has been defined by near-constant melodic activity. Accordingly, the percussion has been mostly pitched or inflexibly-pitched and, save for the occasional cymbal hit, the unpitched percussion is absent from the texture. In a sound world defined by ever increasing motion, the repeated-note swelling gesture above is extraordinary—even more so when repeated shortly after by the snare drum, an entirely new sound. This moment is not accidental, and in fact serves to demarcate the beginning of the ‘jazz band’ section and commence an entirely new role for the percussion

Composite Instrument: Jazz Band Drum Set

A drum set is not one instrument but the combination of drums—typically a snare, a kick drum, and at least one tenor-range tom—with a ride cymbal and a splash cymbal, so the composite instrument moniker is at first glance a stretch. The drum set, however, especially in the context of the jazz tradition, is in fact a singular character, serving a role of timekeeping and commentary. The ‘jazz band drum set’ is a composite instrument assembled from components of the percussion battery, the membranophones primarily (roto-toms, snare drum, tom-tom, two tenor drums, two field drums, bass drums, and timpani) but with the occasional cymbal hit as well. The snare drum, including the occasional rim-shot, serves the same roles as in a standard

---

60 a snare-drum specific technique whereby the performer hits the drum head with the head of the stick and the metal frame (rim) with the body of the stick simultaneously, producing a cutting, accented tone that is part drum and part wood. (Soloman, 2002)
drum set. The roto-toms, tom-toms, tenor drums, and field drums make up the mid-range drums, while the bass drum and timpani serve as kick drum. The cymbals are present as well.

This composite drum set is much more sonically formidable than a standard drum set, especially in the tenor and bass registers. Colgrass exploits the increased capacity of his drum set at times, but also lightens the orchestration considerably, like he does at m. 172 (above), to facilitate a stable jazz groove. The solo jazz bass, playing a walking bass line, is fundamental to this groove. The bass is situated at the very front of the stage\(^{61}\) and amplified,\(^{62}\) and can hold its own with this lighter orchestration. Above this rhythmic foundation is placed the rather standard texture of an 18-piece jazz orchestra—high brass chords (trumpets and trombones) and long, lyrical lines in the strings (approximating the saxophone unison of the jazz band). The ‘jazz’ section includes Colgrass’s most prolonged utilization of the unpitched percussion in \textit{déjà vu} and is as enigmatic as it is memorable.

\(^{61}\) Score Facsimile 11, 'Suggested Stage Set Up'
\(^{62}\) This is not explicitly called for in the score, but an acoustic jazz bass would typically be at least lightly amplified.
CHAPTER 4: DEPTH

Colgrass’s innovation in déjà vu is one of orchestrational depth. The composite instruments catalogued in this analysis are representative constituents of the instrumental inventory of Colgrass’s orchestra, the building-blocks from which the orchestral whole is assembled. Colgrass has demoted the traditional instruments of the orchestra to component parts of his composite instruments, which are combined to form larger orchestral textures. The composite instruments are an additional level of abstraction between acoustic instruments and orchestral whole, taking over the tradition instrumental role within the orchestra. Colgrass presents his composite instruments deliberately, and often unaccompanied, in order to facilitate the listener’s acclimation to this new vocabulary.

Composite instruments are synthetic constructions and, as such, may evolve and change over time. This is a special feature of composite instruments and is itself a source of great opportunity for a composer. Some of the instruments instruments explored previously, like the roto-tom-harp and the plucked timpani, are largely fixed and not subjected to substantial development. Others, like the amplified marimba, have a consistent identity (in this case, the preeminence of the marimba) but an ever-changing instrumental makeup. The synthetic vibraphone, moreover, is rarely presented exactly the same way twice, even from the beginning. Colgrass strikes a delicate balance here, as the composite instruments must be clearly established in order to be recognized by the listener as singular, recurring objects, and rapid development weakens that association.

The norms for use of the orchestra in the 18th and 19th century are the enforcement of “uniformity, homogeneity, predictability, and discipline”63 over dissimilar instrumental forces.

---

63 (Spitzer, 1988)
Stratification of the orchestra into layers, creating a sense of depth, is central to that aim, with traditional distinctions between the solo line, choral (sectional) writing, and orchestral tutti. This tripartite stratification was blurred somewhat over the nineteenth and twentieth centuries, but remained largely intact over that span, even if obscured by the increasing size and scope of the ensemble. It is this fundamental assumption, the tripartite structuring of orchestrational depth, that Colgrass reconsiders with his composite instrument technique.

The composite instruments, assembled from both solo and choral components, may exist at any point of depth between orchestral tutti and solo line, depending on their particular construction and Colgrass’s musical aims. Each composite instrument may interact or combine freely with one or more of other composite instruments, or with solo lines or instrumental choirs (e.g. string section or brass tutti). The orchestral tutti, always an assemblage of smaller, discrete parts, may now be assembled from these composite instruments as well as from solo and choral components.

My analysis in Table 4 illustrates how, over the first forty-three measures of déjà vu, Colgrass presents and alternates between composite instruments, and layers composite instruments with solo and group textures. The tripartite divisions of orchestrational depth—solo, choral, and tutti—are denoted by three rows, while each column represents a single measure. The

---

64 Rimsky-Korsakov begins his Principals of Orchestration, generally considered authoritative on classical and romantic-era orchestration practices, with three chapters addressing these distinctions. Rimsky-Korsakov’s Melody, Harmony, and Composition of the Orchestra most typically are made up of solo lines, voicings within instrumental choirs or groups, and turtis, respectively.

65 Here, ‘choral’ refers to instrumental choirs or sub-choirs—e.g. the brass choir or four horns.

66 “The word tutti generally means the simultaneous use of all instruments, but the word ‘all’ is used relatively, and it must not be inferred that every single instrument bust necessarily be employed to form a tutti.” (Rimsky-Korsakov, 2015).
composite instruments (all of which have been examined previously), by definition blur the lines between the traditional divisions of orchestrational depth:
Table 4, m. 1-43—presentation of composite instruments

<table>
<thead>
<tr>
<th>Measure:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sustained Vibrphone</td>
<td>Roto-tom-Harp</td>
<td>Plucked Timpani</td>
<td>Sustained Vibrphone/Roto-tom-Harp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tutti</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(REST)</td>
<td>Sustained Vibrphone</td>
<td>Roto-tom-Harp</td>
<td>High Strings</td>
<td>Synthetic Vibrphone</td>
<td>Roto-tom-Harp</td>
<td>Synthetic Vibrphone</td>
<td>Synthetic Vibrphone</td>
<td>Percussion Solos</td>
<td>Synthetic Vibrphone</td>
<td>Strings &amp; Winds</td>
</tr>
<tr>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percussion Solos</td>
<td>Strings</td>
<td>Brass</td>
<td>Synthetic Vibrphone</td>
<td>Strings &amp; Winds</td>
<td>Synthetic Vibrphone</td>
<td>Percussion Solos</td>
<td>Synthetic Vibrphone</td>
<td>Synthetic Vibrphone</td>
<td>Synthetic Vibrphone</td>
<td>Synthetic Vibrphone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>33</th>
<th>34</th>
<th>35</th>
<th>36</th>
<th>37</th>
<th>38</th>
<th>39</th>
<th>40</th>
<th>41</th>
<th>42</th>
<th>43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timp. Solo</td>
<td>Synthetic Vibrphone</td>
<td>Plucked Timpani</td>
<td>Synthetic Vibrphone</td>
<td>Synthetic Vibrphone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As illustrated above, the synthetic vibraphone is the most variable and exists, in its many permutations, at nearly every point on the spectrum over the course of déjà vu. The roto-tom harp is much more fixed and rather strictly overlaps divisions of solo and group orchestration. These opening measures are defined by rapid textural shifts that introduce and acclimate the listener to the composite instruments. While the alternation of instrumental texture slows somewhat following m. 43, the opening measures are largely representative of the construction of the work as a whole, in which the smaller instrumental components are presented alone or combined and layered into denser textures. In other words, Colgrass’s approach to orchestration is decidedly accumulative, with the densest textures almost always the result of increasing numbers overlapping, independent layers.

The orchestral tutti are assembled from the same instrumental inventory introduced at the opening, but simply include many more such components voiced simultaneously. The tutti passage at m.225, shown below, combines, in the span of two measures, the synthetic vibraphone, marimba-harp, and roto-tom harp composite instruments (the synthetic vibraphone alone includes vibraphone, solo flute, solo violin, muted trumpets, chimes, and celesta). Simultaneously with the composite instruments, chords are presented consecutively in the low brass and contrabasses, in the flutes, bassoons, clarinets, and horns, and in the high strings. There is also a solo horn present:
This *tutti*, an amalgam of independent musical strains, is made more vibrant by the inclusion of composite instruments alongside the traditional orchestral inventory. The particular vibrancy of Colgrass’s *tutti* is the result of strictly-controlled oscillations of perspective within the *tutti* texture, with the ear centering on, at any single point of time, the marimba-harp, the solo horn, or the high strings, for instance. This technique is akin to a photographer actively focusing a camera on a large crowd of people: the crowd is always visible, but, depending on any particular level of focus, one individual may be more in focus than the rest.

This approach is decidedly distinct from the traditional top-down organizational approach to the orchestral *tutti*, in which the character of the *tutti* is defined by the particular hierarchy of its incorporated instrumental choirs and sub-choirs. The composite instruments necessarily force this reconsideration—the additive nature of Colgrass’s *tutti* is analogous to the composite instrument technique generally, in that both rely on the combination of rich and independent components into a richer, even if less cleanly defined, whole. The proclivity of Colgrass’s
composite instruments to subtly shift in focus and auditory perspective is a quality naturally shared by the *tutti* of which they are a component. The composite instruments are also simply richer, sonically, than the individual choirs from which *tutti* have been traditionally constructed, and that richness and color, too, is additive in the composite texture.
CONCLUSION

Colgrass has effectively blurred entirely the traditional tripartite organization of the orchestra. The enforcement of order and of orchestrational clarity, then, falls largely to the composite instruments, themselves the result of close integration of instruments from the percussion battery and orchestral complement. In *déjà vu*, Colgrass achieves this integration by dramatically exploring the pitch potential of both pitched and unpitched percussion, both in his initial selection of the percussion battery and in the artful combination of individual percussion instruments with the orchestral consort. The results of these combinations—the composite instruments—amplify the pitch content of the percussion, elevating them to multi-dimensional partners in the orchestral context. The percussion, now as fully fluent in pitch materials as in rhythmical processes, is tasked with presenting and developing musical content traditionally the domain of the brass, winds, and strings. Not all music in *déjà vu* is fully transferable between the percussion battery and the orchestral consort—long, seamless sustains are still the domain of the strings, and the jazz drum set is still the domain of the percussion—but much certainly is.

The innovation is substantial, but it is also subtle, a rejuvenation of the orchestra from within its tradition and by its rules and not a wholesale reconsideration of the musical, dramatic, and artistic aims of the medium. The composite instrument technique breathes life into an instrumental assemblage that has been largely constant since the classical era, without actually changing its fundamental makeup, and is but one solution to the problem of the use of the percussion in the symphony orchestra. Notably, Colgrass does not include substantial rethinking of the role of the orchestral complement—through extended techniques, extreme registers, unusual doublings—to achieve even deeper integration with the percussion quartet (although this is likely informed somewhat by the realities of a professional orchestral commission). Colgrass
also does not engage with the temporal techniques of various percussion traditions, save the
drum set, to fundamentally reconsider the traditional rhythmic roles of the orchestral
complement. This work is a product of the orchestral tradition, first, informed and limited by the
medium’s history, repertoire, and performance practices.
APPENDIX

Score Facsimile 11, 'Suggested Stage Set Up'
BIBLIOGRAPHY


VOLUME II

SYMPHONY: for Percussion Quartet and Wind Ensemble
INSTRUMENTATION

Piccolo
Flutes 1.2.3.4
Oboes 1.2
English Horn
Clarinets in B-flat 1.2.3.4
Bass Clarinets 1.2
Contra Alto Clarinet in E-flat
Bassoons 1.2
Contrabassoon

Soprano Saxophone
Alto Saxophone
Tenor Saxophone
Baritone Saxophone

Trumpets in B-flat 1.2.3.4
Horns in F 1.2.3.4
Tenor Trombones 1.2.3
Bass Trombone
Euphoniums 1.2
Tubas 1.2

Timpani

Quartet Percussion 1: Chimes, 2 Cowbells (high & low), Egg Shaker, Glockenspiel, 2 Maracas (high & low), Ratchet, Snare Drum, Temple Blocks, Tenor Drum, Tambourine, Triangle, Vibraphone, High Wood Block

Quartet Percussion 2: Brake Drum, Chimes, 4 Congas (graduated), Egg Shaker, Glockenspiel, Kick Drum, Ratchet, Tambourine, 5 Tom-toms (graduated), Vibraphone, 5 Wood Blocks (graduated)

Quartet Percussion 3: 2 Bongos (high & low), Castanets, Crotales, Glockenspiel, Guiro, Marimba, Sizzle Cymbal, Snare Drum, 5 Tom-toms (graduated), Triangle, Xylophone

Quartet Percussion 4: Anvil, 4 Congas (graduated), Egg Shaker, Glockenspiel, Marimba, Ratchet, Sizzle Cymbal, Snare Drum, Suspended Cymbal, Tambourine

Ensemble Percussion 1: Bass Drum, Cabasa, Castanets, 2 Cowbells (high & low), Claves, Crash Cymbals, Crotales, Egg Shaker, Glockenspiel, Marimba, Ride Cymbal, Suspended Cymbal, Tam-tam, Tambourine, Triangle, 5 Tom-toms (graduated), Vibraphone, Xylophone

Ensemble Percussion 2: Bass Drum, Brake Drum, Cabasa, 2 Cowbells (high & low), 2 Congas (high & low), Chimes, Crotales, Gong Drum, Glockenspiel, Kick Drum, Maracas, Marimba, Metal Wind Chimes, Ratchet, Suspended Cymbal, Tambourine, Tam-tam, Triangle, Vibraphone, 5 Wood Blocks (graduated), Xylophone

Piano & Celesta
Double Bass
*All voice parts are notated in concert pitch. This is a friendly transcription of the original music, no technical notation is provided.*
Leitmotiv: Neapolitanische Motiviken

1. Thema: 
   - Trompete 1-2
   - Horn 1-2
   - Tenor Saxophone
   - Altsaxophone
   - C. A. Clarinet
   - B. Clarinet 1-2
   - Bassoon 1-2

2. Thema: 
   - Ensemble:
     - Violine 1-2
     - Violin 3-4
     - Viola
     - Celli
     - Violoncelli 1-2

3. Gestus: 
   - Baryton Saxophone
   - Tenor Saxophone
   - Altsaxophone
   - C. A. Clarinet
   - B. Clarinet 1-2
   - Bassoon 1-2

4. Gestus: 
   - Ensemble:
     - klarinetten
     - Bass
     - Eugen HORN
     - Allegro
     - Crescendo
     - Fortissimo

5. Contrapunkt: 
   - Fagott
   - Oboe
   - Violoncello
   - Celli
   - Pauken

6. Refrain: 
   - Ensemble:
     - Flöte 1-4
     - Oboe
     - Klarinetten
     - Bass
     - Pauken

7. Schluß: 
   - Ensemble:
     - Flöte 1-4
     - Oboe
     - Klarinetten
     - Bass
     - Pauken
4 a tempo
Rec. 1.2
Fl. 1.2
Fl. 2
Fl. 3 (Alt.)
Ob. 1.2
Eng. Hn.
Bsn. 1.2
Cbsn.
Cl. 1
Cl. 2
Cl. 3.4
B. Cl. 1.2
C. A. Cl.
Sop. Sax.
Alto Sax.
Ten. Sax.
Bar. Sax.
Tpt. 1.2
Tpt. 3.4
Hn. 1.2
Hn. 3.4
Tbn. 1.2.3
Tbn. 4
(Euphonium)
Bassoon
Euph. 1.2
Tba. 1.2
Q.P. 1
Q.P. 2
Q.P. 3
Q.P. 4
Timp.
E.P. 1
E.P. 2
Hp.
Vibraphone
(Timpani)
Cel.
Db.

*Hold until sound dissipates completely*
### IV. Chase & Dance

#### Steady \( \frac{3}{4} \) (\( \times \)=68)

<table>
<thead>
<tr>
<th>Bassoon 1.2</th>
<th>Flute 1.2</th>
<th>Oboe 1.2</th>
<th>Bassoon 1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrabassoon in B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clarinet in Bb 1</th>
<th>Clarinet in Bb 2</th>
<th>Clarinet in Bb 3</th>
<th>Clarinet in Bb 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass Clarinet in Bb</td>
<td>Bass Clarinet in Bb</td>
<td>Bass Clarinet in Bb</td>
<td>Bass Clarinet in Bb</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trumpet in Bb 1.2</th>
<th>Trumpet in Bb 1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horn in F 1.2</td>
<td>Horn in F 1.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trombone 1.2.3</th>
<th>Trombone 1.5 (Bass)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baryton 1.2</td>
<td>Baryton 1.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tabla 1.2</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Quartet Player 1</th>
<th>Quartet Player 2</th>
<th>Quartet Player 3</th>
<th>Quartet Player 4</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Timpani</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ensemble Percussion 1</th>
<th>Ensemble Percussion 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harp (opt.)</td>
<td></td>
</tr>
<tr>
<td>Piano</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Double Bass 1.2</th>
</tr>
</thead>
</table>