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**INSTRUMENTAL MECHANISM AND PHYSICALITY AS
COMPOSITIONAL RESOURCES**

TIMOTHY MCCORMACK

A thesis submitted to the University of Huddersfield in partial fulfillment of the
requirements for the degree of Master of Philosophy (MPhil)

September 2010

ABSTRACT

This thesis discusses my engagement with and investigation into the aesthetic and expressive possibilities of instrumental mechanism and performer-instrument physicality, while proposing an aesthetic frame inside of which purely physical events or objects can be contextualized. The relationship between the performer and their instrument is discussed at length and reimagined as being highly mediative in nature; the body and the instrument existing as autonomous operators comprising a larger machine within which they mutually exert an influence over the other. The exact points of contact between the body and the instrument are examined as if through a microscope – extremely small, precise spaces inside of which catastrophically violent physical phenomena take place. The activity within these spaces is understood as being responsible for the quality and texture of a sound, and is the point in the process of generating sound where physical, corporeal, palpable friction is transmuted into a more ephemeral aural phenomenon. The remainder of the thesis relates the information to purely musical matters, and discusses how approaching the compositional act through mechanism and physicality has led to a reversal in the hierarchy between form and content. Form and other parameters such as rhythm and meter are now issued from the organization of raw materials, rather than being *de facto* constructs that were generated apart from and before things like sound and physicality were considered. In the conclusion, I propose that, as a direct consequence of my research into mechanism and physicality, the roles of and the relationships between the score, performer and listener have fundamentally altered such that their confrontation with each other is the terminal, necessary factor in the piece's becoming of itself. Throughout the essay, I contextualize the ideas through their manifestation in my pieces *The Restoration of Objects*, *Apparatus* and *One Flat Thing, reproduced*.

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Portfolio

- i. *The Restoration of Objects* (2008) for viola + string trio
Performance history:
 - a. March 26, 2009: The JACK Quartet (St. Paul’s Hall; Huddersfield, UK)
 - b. August 22, 2009: Ensemble SurPlus (Sommerakademie Schloss Solitude; Stuttgart, Germany)
 - c. December 9, 2009: Ensemble SurPlus (E-Werk; Freiburg, Germany)
- ii. *Apparatus* (2009-10) for bass clarinet, cello and piano
Performance History:
 - a. February 10, 2010: Richard Haynes, Séverine Ballon and Mark Knoop (St. Paul’s Hall; Huddersfield, UK)
- iii. *One Flat Thing, reproduced* (2010) for oboe, violin and percussion. Performance history:
 - a. November 23, 2010: ELISION (HCMF: St. Paul’s Hall; Huddersfield, UK)
 - b. December 6, 2010: ELISION (Kings Place; London, UK)
- iv. Recordings:
 - a. *The Restoration of Objects* (The JACK Quartet)
 - b. *Apparatus* (Haynes/Ballon/Knoop)
 - c. *The Restoration of Objects* (Ensemble SurPlus)

Word Count (footnotes included): 6,692

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Instrumental Mechanism and Physicality as Compositional Resources

Timothy McCormack

“Catastrophe: an easy word for a much more ambiguous situation.”¹

An instrument must first be held by a human being before it is that instrument. This is the central idea at which I have arrived again and again throughout my recent research into instrumental mechanism. The complexity of that phrase is betrayed by its inherent axiomatic sentiment; for once one follows this logic down the compositional dialectic, one ignites a Markov chain of problematizing aesthetic issues. If this is accepted as a valid personal aesthetic stance, then a number of assumptions have been made, and a number of beliefs have been called into question. If this is to be accepted, one must also accept that:

1. the instrument literally transforms into something else as a result of its contact with a human being. *It becomes* something else (or else it *becomes itself*).²
2. the human (performer) must also then become something else as a result of its interaction with the heretofore inert instrument.
3. the instrument and performer are engaged with each other such that they are simultaneously one thing *as well as* separate, autonomous components within that whole.
4. this double-becoming is significant and has musical, aesthetic and philosophical consequences.
5. these consequences, born of a physical, spatial reality, must necessarily affect, alter or otherwise become manifest in the laws of non-physical and non-spatial musical/compositional parameters.

¹ [Foreman, 2001], p. 145.

² For more on the transient state of *becomings*, see “Becoming-Intense, Becoming-Animal, Becoming-Imperceptible...” in [Deleuze & Guattari, 2004], pgs. 256-341.

These consequences issued from an exploration into the nature of instrumental mechanism – what it is, what its aesthetics are, and how a deep, personal understanding of it can inform both the compositional process as well as the music that is the result of that process. Issues of mechanism and physicality have been explored in three chamber pieces written over the course of my research: *The Restoration of Objects*,³ *Apparatus*⁴ and *One Flat Thing, reproduced*.⁵

I came to understand instrumental mechanism, in very broad terms, as being the mechanical and articulative faculty inherent within the instrument itself. *Mechanical*, as it was necessary to first understand what actually happens on an instrument's body outside of the context of sound production (What happens when *this* key is depressed?). The objective was to understand the mechanism not only outside of the sounds that its construction produces, but also outside of the very instrument in which it is contextualized. Through approaching it so autonomously, I attempted to free the mechanism from its codified functions, and write for it accordingly. In order to make the complex matrix of wind instruments' mechanisms more immediately visible, I created diagrams, modeled after Richard Haynes's diagram for the buffet prestige bass clarinet,⁶ detailing the relationship of the keys and tone holes in the flute and oboe (Figure 1) and wrote a short study⁷ which approached the instrument primarily through its mechanism (Figure 2). In this case, "mechanism" was taken to mean simply the "open and closed holes which can be correspondingly closed and opened by the mechanism, and [...the...] series of complicated, automatic dependencies within the keys themselves."⁸

However, even before this clinical study into mechanism, I understood the importance of the mechanism's *articulative* faculty; that is, its relationship to the sound it manipulates (What happens *to the sound* when *this* key is depressed?). *The Restoration of Objects* was written from this position, though it does not concern itself with exhausting the string mechanism's limitless potentials. Conversely, it explores the string mechanism through a focused reduction of what is at its core, reducing it to its most basic manifestation.

³ *The Restoration of Objects* (2008) for viola and string trio.

⁴ *Apparatus* (2009-10) for bass clarinet, cello and piano.

⁵ *One Flat Thing, reproduced* (2010) for oboe, percussion and violin.

⁶ [Haynes, 2009]

⁷ *Codicil/Fragment* (2009) for solo English horn. For the full score, see Supplement 1: Page 29.

⁸ [Veale and Mahnkopf, 1994], p. 15.

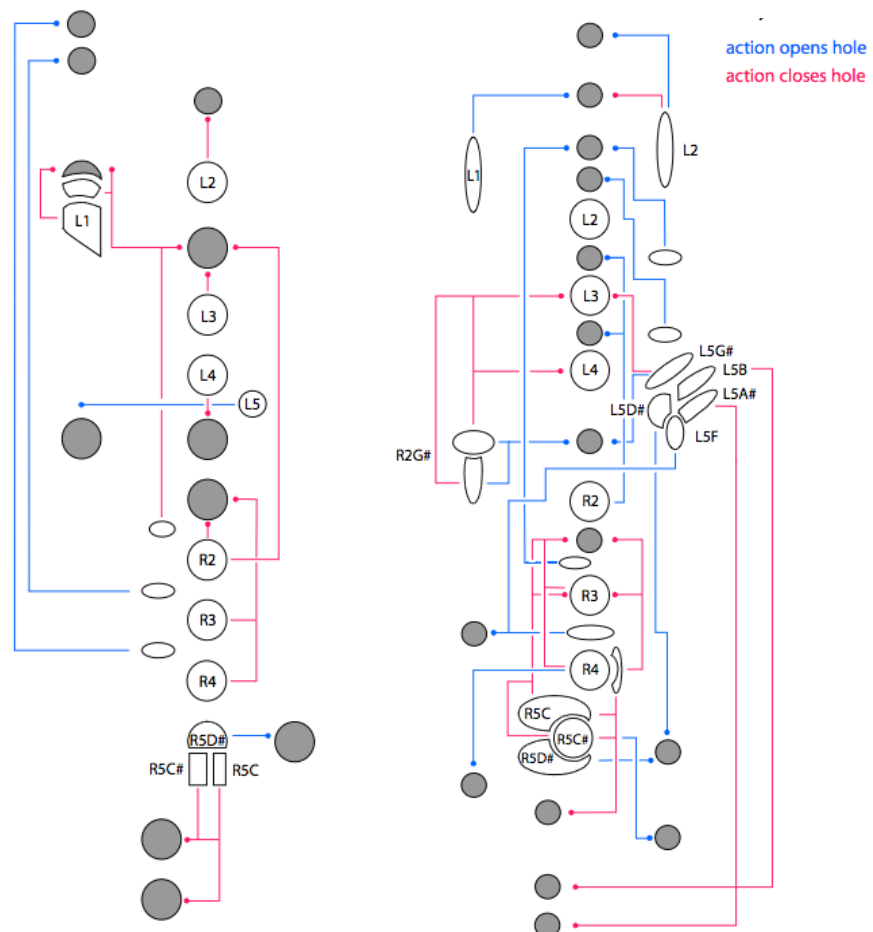


Figure 1: Flute (left) and Oboe (right) Mechanism Diagrams, illustrating the interaction of the keys and tone holes.

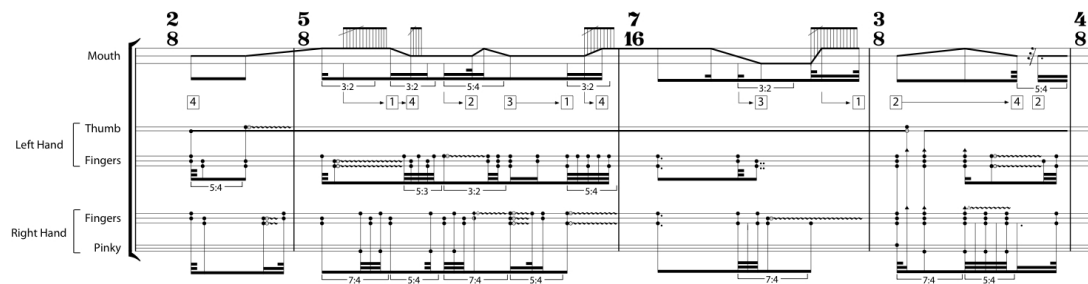


Figure 2: *Codicil/Fragment*, mm. 1-4

In *The Restoration of Objects*, I identify the bow and right hand as largely constituting the instrument's mechanism, the mechanical and articulative faculty inherent within the instrument itself. Accordingly, absolutely no pizzicato techniques are utilized, nor are "extended" bowing techniques such as *col legno*, bowing behind the bridge or on the body of the instrument. The pieces' parameters are limitations set by their rigid exploration of the bow, or, more precisely, the *act of bowing*.⁹ The instrument was approached as a plane upon which a three-dimensionally latticed grid indicating possible movement and direction was superimposed. The placement of the bow upon the instrument (to and fro), the pressure exerted onto the strings (up and down) and, perhaps most importantly, the speed at which it is dragged across the strings (side to side) became the three directional operations that are made autonomous in the piece's notational system and which constitute most of the prescriptive information in the piece (Figure 3). They exist at all times among one another and modify each other's influence upon the aural result.

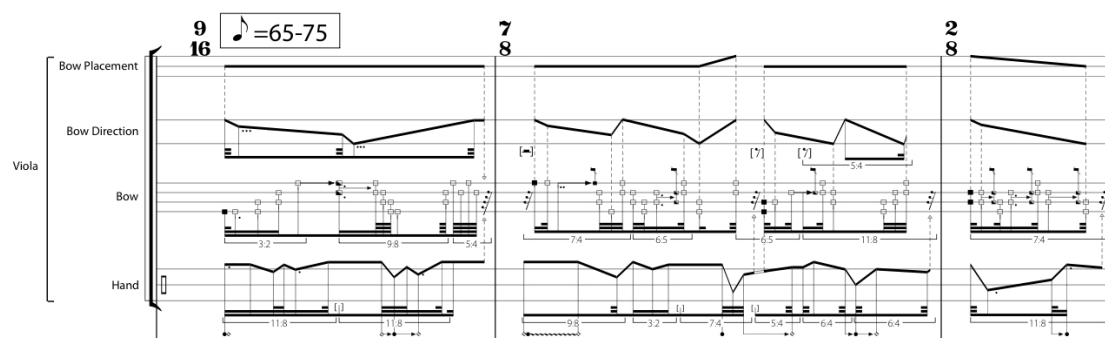


Figure 3: *The Restoration of Objects*, viola, mm. 1-3

⁹ This is why the aforementioned extended bowing techniques are excluded, while *jeté* figures are quite predominant throughout the piece. I identify *jeté* as being a consequence of the act of bowing. From the performance notes: "*Jeté* should be conveyed and activated as a function of the down-bow, as opposed to it being its own discrete object. [The amount of iterations in a *jeté* gesture] should be governed by the physical action which produced it, and that which maintains it. The *jeté* figure is therefore a residuum of the physical transition between up- and down-bows."

Restoration obsessively focuses on the act of dragging the hair across the strings throughout its entire fifteen-minute duration. This one type of action, which actually encompasses many related actions and which spawns many divergent sounds, is applied to a multitude of various (and varying) rates, speeds and pressures. The objective was to use a single law, so to speak, and proliferate its internal possibilities to the point that it essentially becomes a piece. In reducing the instruments' mechanism to its most basic form, I was able to both more intently focus on that exploration as well as create an extremely organic, unified and monolithic sound world. This sound world, through its own circulatory proliferation and insistence upon itself, in turn points back towards the nature and circumstances of its own creation.

Mechanism and physicality working in reciprocity with sound and perception becomes a central aesthetic concern in my development of instrumental mechanism, largely due to the importance of the body of the performer in relation to the musical instrument. This is because the relationship between instrument and body is doubly reflexive in the same ways as that of physicality and sound.

Earlier, I stated that not only is an instrument not yet itself until it is held by the performer, but that both instrument and performer are transformed as a result of their hold on one another. In their union, both the instrument and the body become dynamic forces, each with properties, laws and functions of their own, and exert their influence over the other in a mutual relationship aimed at the production and manipulation of sound. In the context of my work, the word *force*, in as much as the instrument and body are forces, is only fitting as long as it is clear that force is produced through physical effort, through the physical exertion of each force upon the other. I refer to the body and the instrument as forces, but one only becomes a force once acting and reacting against the force of the other. They form an *apparatus*. They activate each other. Their relationship is confrontational, and in their collision they produce another force: sound. Thus, sound as a force, both physical and spatial, is very real to me, as real as an instrument's mechanism or a body's organ. Sound is the organ of the becoming-apparatus of the instrument and the body. Sound becomes palpable and tactile, and can be seen in the very effort exerted in its creation, just as that effort is made audible.

Approaching sound as a physical phenomenon which is actuated, modified and maintained by the union of the instrument and the performer allows me to understand not only what sounds I will use in a piece, but also how they will behave

and why they are significant. By exploring so thoroughly the physicality behind sound production, I am more clearly able to understand and harness the possibilities that lie therein. Sound, any sound, is extremely complex, with multiple properties and behaviors. How we create sound is just as complex, with just as many properties and behaviors. I am speaking here of the actual corporeal organs used to activate, articulate, sustain and modify sound through an instrument, as well as the instrument's multiple mechanical components to which the body connects when playing one. The composer Trevor Bača poetically elucidates the physical circumstances of sound production on the flute:

Consider the body of the flutist and the instrument together in the production of sound. Arms raised, flute upright, muscles on the face drawn tight or else left slack. Breath passes out of the lungs, through the throat, over the tongue, past the alveolar ridge of the gums. Lips are engaged and spread. Breath spills forward from the mouth and rushes over and into the mouthplate and its opening. Tendons tense and tendons release as fingers work in coordination with silvered keys and with the mechanism in which the keys are set. Shoulders move forward towards the center of the phrase and then draw imperceptibly back in a series of motions that cause the cavity of the chest first to tighten and then to open again. The body of the flutist and the instrument are together a special machine.¹⁰

I would emphasize that each finger is a specialized component of this apparatus, as is each key and tone hole. All of the components outlined above have their own unique function in the production of sound, which means that they also have their own autonomous and unique means of modifying that sound, and thus each organ, each component of the mechanism, is a force unto itself. Each force comes equipped with its own history, informing how the other is to relate to it. "The body plugs into the *mass* of information[...] Information impinges on the body directly as a force."¹¹ I have stated that there are two forces at work within the apparatus – the instrument and the performer. Their mutual influence over one another serves to activate the smaller, specialized forces within each other.

The concept of the apparatus begins to have wider compositional implications once we localize the actual points of contact between the forces, and what events take place in this environment. It may be helpful to first consider the physical act of painting before addressing these matters in musical terms. Deleuze and Guattari discuss painting as an assemblage of "nonvisual forces that nevertheless have been

¹⁰ [Bača, 2010], p. 1.

¹¹ Brian Massumi, "The Evolutionary Alchemy of Reason" in [Smith, et al., 2005], p. 175.

rendered visual.”¹² They elaborate:

[W]hat counts in painting is not, for example, what a peasant is carrying, whether it is a sacred object or a sack of potatoes, but its exact weight. This is the postromantic turning point: the essential thing is no longer forms and matters, or themes, but forces, densities, intensities.¹³

Though Deleuze and Guattari are undoubtedly speaking in terms of haecceities,¹⁴ the “thisness” of an object, they identify a shift in focus that can be applied just as well to the physicality of the painting-operation that is directly addressed in abstract expressionism and gestural abstraction.

What is the nonvisual force, and how has it been rendered visual? The answer lies in the interplay of the brush and the surface, or, rather, in that which exists between them. If understood as a documenter of physical forces, paint functions to trace the line of flight of its applicator, as well as the force with which it has been applied onto canvas. The paint traces its trajectory and freezes it; proves that the collision has happened and documents its force, density and violence. I use the term “violence” because the momentary, microscopic space contained between the brush (and its thousands of brushes) and the surface (and its thousands of surfaces) is a highly chaotic, violent space – it is a *catastrophe*. The nanospace is highly contained, and the intensities at play in it are greater than the space itself. The space cannot support its own energies, and thus movement through space and time is essential. This movement simultaneously releases its own energy while being the motor creating new intensities. It generates a constant and prolonged friction between brush and surface; it is responsible for both its own effacement and its own generation.¹⁵ It is a rebirth and a transformation of the catastrophe at every moment and at every point. And it is this catastrophe that gives the paint a texture, an identity, and an expressivity. Its

¹² [Deleuze and Guattari, 2004], p. 378.

¹³ Ibid.

¹⁴ For more on haecceity, see “Becoming-Intense, Becoming-Animal, Becoming-Imperceptible...” in [Deleuze & Guattari, 2004], pgs. 293-300.

¹⁵ Perhaps the clearest example of effacement-as-material generation can be found in the work of Gerhard Richter, whose squeegees serve as both applicator and eviscerator of paint. Peter Gidal describes these works in his essay *Endless Finalities, Part II* as “the colour-charged [...] abstract paintings made with huge squeegees dragged across, and pulling off bits of, semi-dried layers of paint, remnants, always remnants of another layer, another reproduction, another representation obliterated, repainted, covered, then uncovered, lost in process but still there” (in [Buchloh, Gidal, Pelzer, et al. 2009], p. 87). Or, more generally and succinctly: “The work of Gerhard Richter [...] is always assuming the function of crossing out, canceling, erasing” (Brigit Pelzer, *The Tragic Desire* in [Buchloh, et al., 2009], p. 61).

identity is a testament to the physical phenomena which collided to will it into existence.

But what is the catastrophe in my music? Taking Deleuze's and Guattari's earlier statement as a referent, the energies at play in the production of sound on acoustic instruments can be understood as nonaural forces that have nevertheless been rendered aural. Like painting, the catastrophic space is entirely physical, consisting of energies, speeds and pressures. It is a zone of intensity created at the point(s) of contact between the body and an instrument, of which sound is the result. Sound is not 'applied,' as paint is, but it marks the instantaneous tracing of the collision of physical circumstances, forces and phenomena. The catastrophe is the violent and microscopic space created in the collision between a finger or bow and a string (a tongue and a reed or mouthpiece, etc...). This is the small space that has been magnified beyond its capacities, and this is what my music obsessively explores and proliferates beyond its own energies. If the identity of the sound, and thus the aural identity of a piece, is dependent on the microscopic space violently created between these physical forces, then it is not simply the physical actions, but the quality of those actions that are the conditions of the material. A finger against a string at *what* degree of pressure? A bow dragged across a string at *what* speed?

As with the active and passive forces of the brush and the canvas, the body and the instrument form a symbiotic union. They become extensions of one other, and their interaction creates an assemblage, an apparatus. The body produces energy - the instrument absorbs it; the body exerts a force - the instrument provides the resistant space necessary for this force to take form. Just as with the interaction between the directional operations of the bow, the body and the instrument are mutually engaged in the articulation of the other because their relationship is one of mediation, not of hierarchy. Each provides the other with the energy and resistance necessary to create a catastrophe. Each takes what the other offers and performs microscopic acts of violence upon it. Unlike the canvas, the instrument cannot be considered a passive force because it is a complicated organism with its own inherent properties of function and behavior.

The relationship between forces at work in my music is mediatory when both forces have a mutual ability to influence the other. The sound that results in such a situation is thus a mediated sound as it is issued from the collision and refraction of multiple physical forces; it is "a mediation which takes place *through*, rather than in

abstraction *from*, its aesthetic dimensions.”¹⁶ The tongue is its own complex body, as are the lips, the jaw, the fingers, the lungs, etc... The same is true of instruments: a wind instrument’s mechanism (which is itself made of the aforementioned smaller, specialized complex constructions), a reed, a string, a bow, a mouthpiece, a mute, etc... are all individual forces operating among one another and within the larger force of the instrument itself. Each of these things have their own modes of operation and are each individually able to cast their influence upon a sound in my music. All of these forces are activated at once in a brutal counterpoint against one another. It is crucial that the forces of the apparatus, the body and the instrument, are able to simultaneously influence *and* absorb the influence of the other; they engage in a mutual, non-hierarchical relationship. This stands in contrast to the more linear, directional relationship typically understood as that between the body and the instrument, in which “the performer exposes his or her voice, as voiced by the instrument, as coming from inside his or her body and going into an exterior space, one that extends beyond the body.”¹⁷

Thus, physical actions themselves do not entirely comprise the ontological identity of any of my pieces, nor does the sound that results from those actions. The physical and the aural mutually exert an influence over each other: the physical operations used are chosen because of their sonic result and their ability to mediate that result, while the aural product is always pointing back to its physical means of production. I want the bodily actions to yield compelling aural results, and I want the aural results to sound as if they are the very actions that activated them.

The axiom that the relationship between active and passive forces, and thus of *action* and *sound*, is highly mediative by nature is of crucial importance when considering what I recognize as *material* in my music. In composition, I am acutely aware that an instrument will be played by a human being. Thus I am not simply writing *for the oboe*, for example, but for an oboe *and an oboist*. This becomes the basis for all musical material I use. The concept of mediation is born from the fact that, though two forces are being composed for, only one sound will result.¹⁸ Thus, the sound that results is a composite force of the instrument’s and the performer’s

¹⁶ Peter Osborne, *Abstract Images: Sign, Image, and Aesthetic in Gerhard Richter’s Painting* in [Buchloh, et al., 2009], p. 101.

¹⁷ [Schroeder, 2006], p. 132.

¹⁸ *One sound* as distinct from *one note* – a single sound event may very well be multiphonic and multivalent.

mutual influence upon one another. Exactly how the body and the instrument are able to influence each other is a virtue of the body's organs and the instrument's mechanism. The tongue can articulate *while* the voice glisses *while* the lips adjust pressure *while* the lungs overexert *while* multiple keys are depressed at divergent rates from each other *while* the reed is repositioned, etc... All of these things happen at the same time, all the time, independently of one another, and thus influencing each other's influence over the final, resultant sound. Thus, for me, materials colliding with and refracting through other materials is not simply a conceptual approach to the behavior of materials in my music. It is a very real, tactile, corporeal, physical ongoing event: the tongue is *actually* colliding with the reed which is *actually* refracting against the lips, for example. These are the raw, physical materials, which, in simultaneously operating among other physical forces, shape, modify and otherwise influence the behavior of other nonphysical materials. This catastrophe is evidenced by the sound produced.

If the aural result of the catastrophe is equivalent to paint in its respective catastrophe, then its function is primarily of documentation; it is a residuum of the colliding forces that willed it into existence. However, as with painting, the catastrophe is what is being explored, not necessarily what is being produced. It is created in order to create something else, and this terminal object is imbued with its inherent, essential qualities - its *ecceities* and *haecceities*.¹⁹ The circumstance of the catastrophe may be projected into a larger musical form, but in that projection there is necessarily a distortion of the subject. The qualities arising from this translation into a new context become the very things which make the form of the music distinct from that of the catastrophe. The discrepancies between macro- and microforms are why

¹⁹ The terms *ecceity* and *haecceity* are not often distinguished from one another. However, their point of difference is crucial. They diverge at their roots: *ecce* meaning "here is," *haec* meaning "this thing," and, as Deleuze suggests, this "suggests a mode of individuation that is distinct from that of a thing or a subject" [Deleuze and Guattari, p. 599]. Thus, these words have different ramifications in their relation to space and time, *haecceity* seeming to be a quality that exists outside of both, while *ecceity* is found at the intersection of both. Chris Kraus and Claro separately illustrate the placement of *ecceity* between space and time. Kraus identifies it temporally as the "moment fractured into the thousand variancies and textures that compose it" ([Kraus, 2001], p. 303), while Claro relates it to space as "a coincidence of events or facets of events forming a unique ephemeral figure" ([Claro, 2008], p. 26). Interestingly, Kraus suggests that the object is first itself, and is then fractured into its *ecceities*, while Claro reverses this, suggesting that *ecceities* form to then create a unique object. Either way, as Liza Lim has suggested, the term *ecceity* is "more dynamic as a signification of presence; [that which is] indexical in multiple ways compared to *haecceity* which [is] more about quintessence" (Lim, Liza. Private correspondence; January 23, 2009).

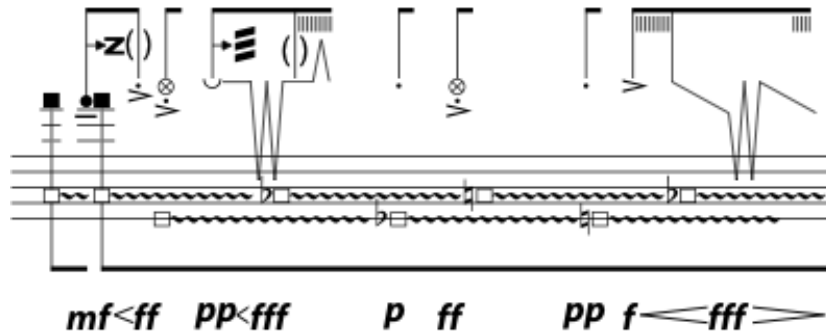


Figure 4: *One Flat Thing, reproduced* – oboe, page 4, system 2.

there is no hierarchy between *action* and *sound* in my music. Sound is not simply a byproduct, the proof of executed physical actions. It is also the *objective* of those actions; it is why those actions are specified. Just as body and instrument engage in a mediative relationship, so do, by extension, action and sound.

Figure 4 presents a brief oboe passage from *One Flat Thing, reproduced*. This excerpt has the oboist's mouth and fingers acting autonomously, and breaks that down to further independencies. The hands tremolo on four different keys simultaneously and for different durations; the mouth has been divided into three distinct zones – the lips, which loosen and tighten their embouchure to various degrees and speeds, the tongue, which alternates between different iterative articulations, flutter, and an extremely fast double-tonguing action, and the throat, which momentarily transitions into a throat-flutter figure at the beginning of the gesture. The combined action of these physical operations yields an aural result that recalls its physical inception; one can hear the counterpoint of physical actions in the sound. However, these physical actions were chosen and arranged as such because of their aural results. For example, the sudden and extreme alterations in embouchure pressure are combined with the trilling and removal of keys from an extremely high note because the fingerings for such pitches in double reed instruments typically yield very malleable aural results; the combination of these two techniques may result in a single aural result within which exists the original monophonic pitch, several possible multiphonics, as well as a wealth of indeterminate, lower pitches. Just as there is a counterpoint of physical actions within the sound, there is also a complex counterpoint between sounds and textures within the larger gesture. In the figure created, it is clear that many different sounds are being issued; however, it is very difficult to distinguish one from another,

as they are not discrete sound events. Like sound and physicality being absorbed into one another, sound minutiae are also absorbing each other.

My music is informed primarily by and claims its material as the complex circumstances and consequences of instrumental mechanism and physicality in sound production as elaborated above. The instrument and the performer come together to create an apparatus which is self-reflexive and self-mediating, located at the violent but microscopic spaces of the catastrophe (the actual points of contact and of manipulation between the body and the instrument), whose influence is heard in the resultant sound. My music seeks to harness the energy of this microscopic space within a larger form. Where Artaud sought out a “speech before words,”²⁰ I take a step back: sound before speech. My sounds do not attempt to indicate anything other than their own significance and their own circumstance. The sensation of the catastrophic attempts a projection of itself onto the large-scale form of the music (sound before music). Thus, the catastrophe is not a deconstruction of sound; rather, it is aimed at a slow construction of form.

Earlier I stated that a sound becomes tactile and palpable as a result of the violent physical circumstances of its inception. If sound is tactile, then, through organizing it into a musical form, the piece becomes corporeal, and in engaging with the catastrophe, I am writing an “undifferentiated complex of organic sensation forming the essence of our sense of body and bodily condition”²¹ transmitted through the piece itself. In composition, I seek to find structures and forms that augment this already-catastrophic sound world and the physical forces behind it. Structure, form and development become forces in their own right once they begin reacting against the force of the music. The construction of form in my music is best discussed within the contexts of *The Restoration of Objects* and *One Flat Thing, reproduced*. They arrive at the same relationship between form and content through very different strategies; the former utilizing a heavily rationalized structural plan that is reciprocal with how the material actually behaves and ultimately affects the quality, character and behavior of sound events and texture throughout the piece, the latter eschews any preconceived, formalized structural plan and derives its form directly from the musical material’s own organic proliferation of itself. For example, in *Restoration*,

²⁰ [Artaud, 1958], p. 7.

²¹ This is Erick Hawkins’ definition of the term *coenesthesia*, from his essay “Modern Dance as a Voyage of Discovery” in [Hawkins, 1992], p. 28.

material from one instrument is proportionately expanded or contracted into a new metric space and given to another instrument. Since the piece tablaturizes physical actions rather than sounding results, the material's expansion or contraction does not simply yield a longer or shorter version of its referent; it actually becomes a completely new gesture or figure, possibly bearing no audible relation to its referent, though clearly physically related (Figure 4). In the cases of both *One Flat Thing* and *Restoration*, however, what has been created is, formally, a vast, undifferentiated monolith composed of a constantly changing and frenetically active interior. The superabundance of highly defined, local-level, differentiated information compiles itself into a uniform homogeneity; "largeness [...] is made out of an unregenerate, unsublated smallness."²² In the material's projection of itself onto the larger form, or perhaps the explosion of itself *into* a form, the "emphasis is on making the *force of information* visible"²³; that is, not only is the catastrophe both a very real space and event, albeit microscopic; not only is the catastrophe imbued into the genetic makeup of the very sounds issued from the apparatus; it is also the primary organizational model that is proliferated into the very form of a piece. It is the link between organ

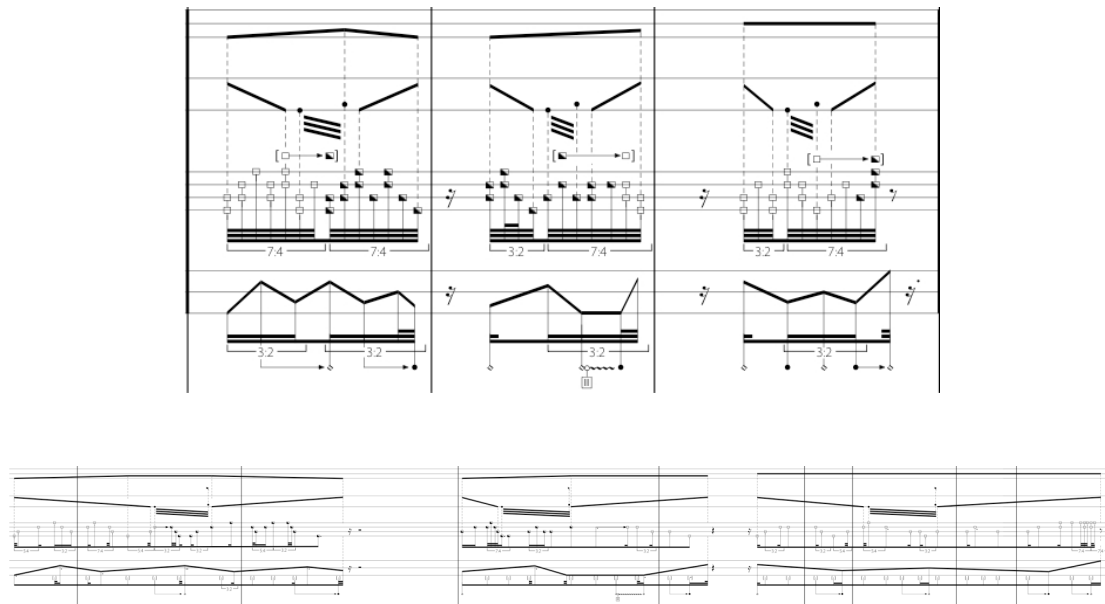


Figure 4: *The Restoration of Objects*: Expansion of material through stretching – violin 1 (mm. 174-176, top) expanded into viola 2 (mm. 178-186, bottom).

²² [Vardenoe and Karmel, et al., 1999], p. 23.

²³ Brian Massumi, "The Evolutionary Alchemy of Reason" in [Smith, et al., 2005], p. 175.

and mechanism, body and instrument, sound and physicality, music and effort.

What I am describing here is distinct from the more typical relationship between form and content as evidenced in the music of many composers as diverse as Helmut Lachenmann or Richard Barrett. Both Lachenmann and Barrett, as examples, connect form and content through a deep understanding of instrumental technique and mechanism. However, their music articulates form through the clear, typically teleological development or juxtaposition of instrumental techniques. Lachenmann's *II. Streichquartett "Reigen seliger Geister"*, for example, creates a rather elegant large-scale form through employing a simple *arco-pizzicato-arco* structure.²⁴ Similarly, Barrett has utilized such relationships between form and content in many pieces spanning his career, and even relies on this technique quite heavily in his many projects that piece together smaller solo or chamber works, such as *Opening of the Mouth*.²⁵ In these pieces, it is clear that content has been subjugated to form, and is used as a means of articulating formal priorities. In my music, form cannot exist before the content wills it to. The dense, complex sound masses that are the prevailing textures of *Restoration*, *Apparatus* and *One Flat Thing*, in which "one perceives in every past moment a parting of ways,"²⁶ are allowed to organize themselves organically from the "phenomenology of [their] making."²⁷ In other words, the materials of the piece organize themselves into what Robert Morris would consider an *anti-form*, wherein a piece's form is found in the organic organization of its own

²⁴ [Lachenmann, 1989]. Notice this is also a rather traditional ABA form. The transitions both into and out from the central *pizzicato* section are extremely controlled and deliberate. However, by page 48 of the score, the B section has fully realized itself and bows have been abandoned in favor of fingers and plectrums. The return to the *arco* 'motif', which is necessarily more abrupt than its slow dissolution, begins at page 60. Though they are rarely as straight-forward in their formal designs, even Lachenmann's early pieces heavily rely on the juxtaposition of techniques to articulate clear formal boundaries. Consider the pieces *Gran Torso* [Lachenmann, 1998], *Guero* [Lachenmann 1972a], and *Pression* [Lachenmann, 1972c]. A possible exception in his catalogue could be *Klangschatten – mein Saitenspiel* [Lachenmann, 1972b].

²⁵ [Barrett, 1997]. Consider the formal boundaries in relation to the juxtaposed or developing usage of techniques in pages 1-42, which incorporates the solo pieces *abglanzbeladen/auseinandergeschrieben* [Barrett, 1996] and *CHARON* [Barrett, 1995]. In these solo pieces, formal boundaries are clearly delineated through a fixation of particular techniques, textures or, as in the case of *abglanzbeladen...*, different instruments, within a section. Sections stand in stark contrast to one another due to the sudden shift in technical focus. The solo pieces have been written such that their clear formal divisions coincide, and thus these formal boundaries are even more prominent once the pieces have been palimpsested upon one another in *Opening of the Mouth*. Other noteworthy examples of his music's formal reliance on clear differentiation in content are the cello solo *ne songe plus a fuir* [Barrett, 1986] and perhaps even more so in the recent duos for clarinets and brass, *Hypnerotomachia* [Barrett, 2009] and *Aurora* [Barrett, 2010], respectively.

²⁶ [Smithson, 1996], p. 131.

²⁷ Rosalind Krauss, "The Crisis of the Easel Picture" in [Vardenoe and Karmel, et al., 1999], p. 163.

materials.²⁸ Rather than prescribing a form upon materials, the materials have been placed in a context in which their natural, inherent form can become evident, and thus generate the larger formal architecture of the piece itself.

This is true of *The Restoration of Objects* despite its heavily structured, top-down organizational scheme. In the piece, each instrument follows its own unique subsectional architecture (Figure 5). The content of corresponding subsections is related, though expanded or contracted as previously explained. These subsections are not unified vertically, and thus a large-scale ‘smearing’ is created. Thus, this ‘dissonant’ structure subverts its own faculty of yielding audible organization, and the listener does not hear this architecture. Rather, the listener assembles a form which mirrors their experience of the piece itself. Thus, where my previous music had not distinguished between structure and form, *Restoration* articulates the crucial difference between them. In this piece, structure, which is visible on the page of the score, is wholly absent from the actual experience of the piece; whereas form is only present after the music is generated by the performers and perceived by the listener. There is a reciprocal relationship between structure, physicality and sound; each affects the other, and the collision between them yields form. As stated at the beginning of this essay, the physical, spatial circumstances of a piece’s creation affect, alter or otherwise become manifest in the laws of non-physical, non-spatial musical parameters.

Other parameters that have fundamentally changed as a result of embracing physicality as a compositional determinant are meter and rhythm. A cursory,

	1										10									20										30
Va1	Subsection 1										2						3	4						5			6			
V1	1					2				3		4			5					6						1				
C					1				2				3						4						5		6			
V2					1				2				3												4		5			

Figure 5: The desynchronization of subsections in section 1 of *The Restoration of Objects* (mm. 1-30).

²⁸ For more on Robert Morris and *anti-form*, see Rosalind Krauss’s essay “The Crisis of the Easel Picture” in [Vardenoe and Karmel, et al., 1999], chapter 6 in [Krauss, 1993], [Bois and Krauss, 1997], and “Notes on Sculpture (Parts 1-4)”, “Anti Form”, “Some Notes on the Phenomenology of Making”, and “The Present Terms of Space” in [Morris, 1994].

chronological look at *The Restoration of Objects*, *Apparatus*, and *One Flat Thing, reproduced* illustrates the evolution and mutation of rhythm and meter: in *Restoration*, there is a sustained level of multiple, complex rhythmic subdivisions for each instrument, as well as a complicated metric scheme that changes at nearly every measure. However, the monolithic nature of the material subverts and glosses over the very rhythmic and metric grid that has it locked in place. The layering of divergent rhythmic information assigned to autonomous parameters between the right and left hands of the performer assures that these rhythms will not actually be distinguished. Despite the explicitness with which rhythmic and metric information is communicated through the score, *The Restoration of Objects* is altogether uninterested in the discrete information of rhythm and meter audibly manifesting themselves as these parameters function to obfuscate themselves in favor of yielding a monolithic, smeared sonic landscape (Figure 6a). In *Apparatus*, my music moves further away from presenting rhythm and meter as significant, discrete carriers of content. The meter does not change, and is in a steady triple meter throughout. The written rhythmic language has been greatly simplified, with attacks taking place on the pulse-grid being heavily buried beneath or otherwise adorned by a preponderance of grace note iterations. Thus, not only is the written rhythmic language vastly simplified; the discrete rhythms are highly obscured and indistinguishable from their grace note counterparts (Figure 6b). With *One Flat Thing, reproduced*, all discrete rhythmic and metric information has been abandoned in favor of a more graphic and spatial representation of such parameters. Rhythm has been replaced by purely spatial relationships, with duration being conveyed through the length of beams. Stems have been retained, however, because they “transmit velocity in a way that note heads do not.”²⁹ Meter, in its faculty of visually organizing musical symbology into large phrases, has been replaced by indications of the general length of a certain passage; while, in its faculty of synchronization, meter has been replaced by an elaborate network of triggers given from a specified instrument and received by another (Figure 6c). In this way, the performers are able to communicate to each other using the very aural material that they are producing. The information is encoded in the aural fabric, and in this way *One Flat Thing, reproduced* eliminates any difference between form

²⁹ Haynes, Richard: in conversation on *Apparatus*; February, 2010.

The musical score is presented in four staves, each with a double bar line at the beginning. The measures are numbered 51 through 58 at the top. The time signatures are indicated above the staves: 9/8, 7/8, 4/8, 2/8, 3/8, 4/8, 5/16, and 7/8. The notation is dense, with many beamed sixteenth and thirty-second notes, suggesting a fast tempo. Dynamic markings like 'f' (forte) and 'p' (piano) are used throughout. The score includes various musical symbols such as beams, slurs, and articulation marks, indicating a complex and rhythmic composition.

Figure 6a: *The Restoration of Objects* (2008), mm. 51-58.

Musical score for *Apparatus* (2009-10), mm. 9-10. The score is divided into two systems. The top system contains five staves: a grand staff (treble and bass clef), a single staff with a V-shaped dynamic marking, a staff with a sawtooth waveform, and a staff with a jagged waveform. The bottom system contains two staves: a grand staff and a single staff with a large black wedge. Dynamics include *pf*, *ff*, *mf*, *f*, *mp*, and *fff*. A 3:2 ratio is marked in several places.

Figure 6b: *Apparatus* (2009-10), mm. 9-10.

and content; in this piece, “content does not have a form [...], it *is* form.”³⁰

Thus, the raw material with which I am working has not only generated itself into the piece’s large-scale form, but it has also evolved to the point that it is directly responsible for local-level devices such as meter and rhythm. Meter and rhythm have become fundamentally different things in the space between pre-*Restoration* pieces of mine and *One Flat Thing, reproduced*. Where these parameters were once discrete, prescribed on the page in such a way as to imply exactitude, they are now suggested, experienced or perceived by the performer and the listener. Where they once served to initiate musical material, they now require the activation, manipulation and creation of sound and music in order to be received. They do not lock sound into a grid; they literally issue from both generated and experienced sound. In composition, I cannot approach these parameters – form, meter, rhythm – without first confronting the aural reality of the piece itself.

This is not to say that rhythm and meter no longer exist in my music; they are simply created *after* the sound, rather than as a prerequisite to the sound. In performance and audition, *One Flat Thing, reproduced* will have rhythm. And, if meter can be understood as being a device with which to frame the space in which gestures take place, then the listener may also perceive meter. But these things are absent until they are created in real time; they are a product of the confrontation between a person and an instrument. Where earlier pieces of mine³¹ placed the performer in a position in which he or she simply executed these materials, the recent pieces discussed here require that the performer actually create them. The piece, as an organization, as a sound event, as an object available to be perceived, materializes as such only after it has become a spatial, temporal event; a performance by the performers among an assembly of listeners. This marks a turning point in my engagement with live performance and sound creation. Through the reconfigured relationship between body and instrument, action and sound, and form and content, I have arrived at what I view as a tangible, palpable, corporeal music in which the participation and engagement of the performer, both to the score and to their instrument, is itself an integral part of the piece; it is an aesthetic act of creation, as is,

³⁰ [Richter, et al., 1995], p. 102.

³¹ For example, *Disfix* (2008) for bass clarinet, piccolo trumpet and trombone, or *Jregate* s.p. *JAggre* (2007) for piano.

by extension, the perception of the piece and the event by the listener. The music is completed by the very *effort* involved in realizing and perceiving it. Reevaluation of instrumental mechanism and physicality has in turn transformed parameters of my music that do not exist in the physical, spatial realm, but which instead operate in the perceptive and cognitive faculty of performers and listeners. At every level, from the violent but microscopic space in which the body and the instrument confront each other to the terminal triple-confrontation of the piece with its performers and its perceivers, it attempts a *becoming-music*, which is contingent upon multiple forces working in tandem, collaboration, resistance and activation of one another. It is not music that *is*; it is music that *does*. It is *happening*.

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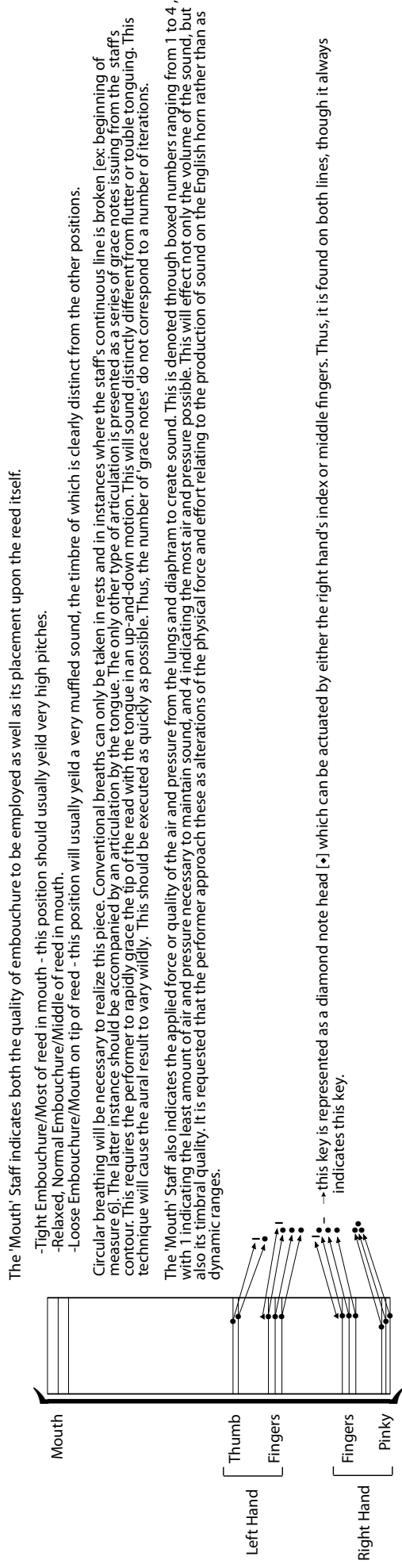
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SUPPLEMENT

Codicil/Fragment (2009) for Cor anglais

Codicil/Fragment was written as a short study into both the mechanism of wind instruments as well as possible notational strategies for such musical concerns. The piece was workshopped with Christopher Redgate on February 19, 2009. The study was instrumental in arriving at the oboe notation utilized in *One Flat Thing, reproduced*. The full score to *Codicil/Fragment* is reproduced here to give a more complete representation of my notational and musical development throughout the time of my research at Huddersfield.

This work is notated on a tablature system perscribing the physical actions of the performer's mouth and individual fingers:



The notation indicates which keys are depressed. A key is to be remained depressed until it is not presented in a rhythmic impulse. Thus, the situation of two concurrent rhythmic impulses which include the same depressed key does not indicate two articulations of that key.

Codicil/fragments

for Christopher Redgate

Timothy MCCORMACK

$\text{♩} = 45$

2/8 5/8 7/16 3/8 4/8

Mouth

Left Hand

Right Hand

Thumb

Fingers

Fingers

Pinky

4/8 5/8 3/8 3/8 7/8

M

L.T.

L.F.

R.F.

R.P.

9

7 8

4 8

5 16

M

L.T.

L.F.

R.F.

R.P.

12

5 16

6 8

2 8

5 8

M

L.T.

L.F.

R.F.

R.P.