IMPROMPTU: A PRACTICUM

Introduction[1]

To help get a practical sense of working with Impromptu, we position it, now, in general music classes where Impromptu activities are the common core. These stories, taken from classrooms of young children (8-9 years old) as well as musically novice MIT undergraduates, illustrate beginning projects and the results of working with the design of Impromptu.

The first, and most common task that is presented to students early on in the general music class is this:

> Given a set of unfamiliar tuneblocks, arrange the blocks in the playroom so that they make a whole tune that you like and that makes sense. You can listen to the given blocks as often as you like and you can, of course, repeat blocks within your tune.

While the task may seem obvious enough we are continually amazed and pleased at the varieties of strategies and levels of engagement that students bring to the task. If there are ten students in a class, all using the same set of blocks, they came back to class with 10 quite different melodies. Student's melodies are often met with surprise and even sometimes distaste by others in the class. Indeed, in order to understand a student's tune, others in the class often need to "restructure" their thinking, adjust their perception of the shared material.

As an example, I show one set of blocks, typical of those with which students begin, along with their "pitch contour" graphics. Following are two quite

---

different tunes made by students using these same blocks. Click on the icon next to the blocks in Figure 9.1 to hear the material with which the students worked.

Figure 2.1: Tuneblocks

The tunes composed by Jorge and Mark are shown in Figures 2.2 and 2.3. Click on the QT icon to hear them

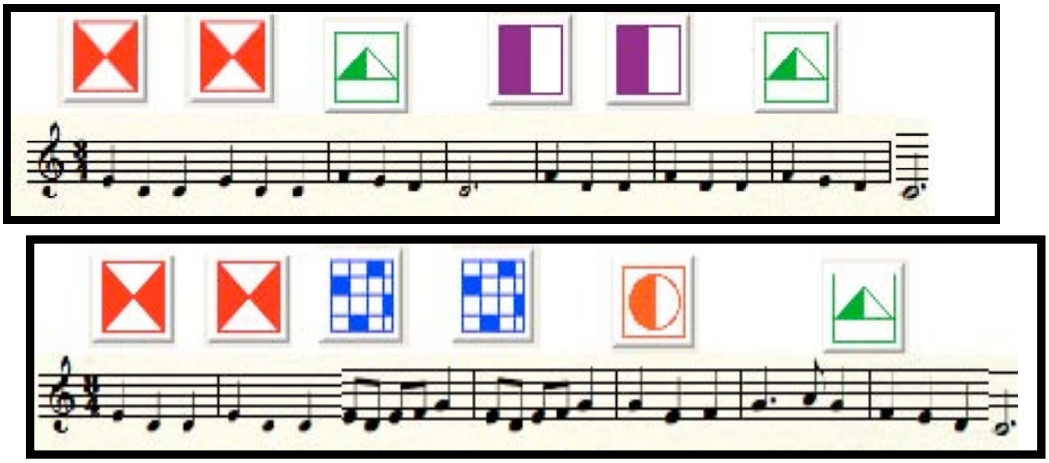


Figure 2.2 Jorge's tune

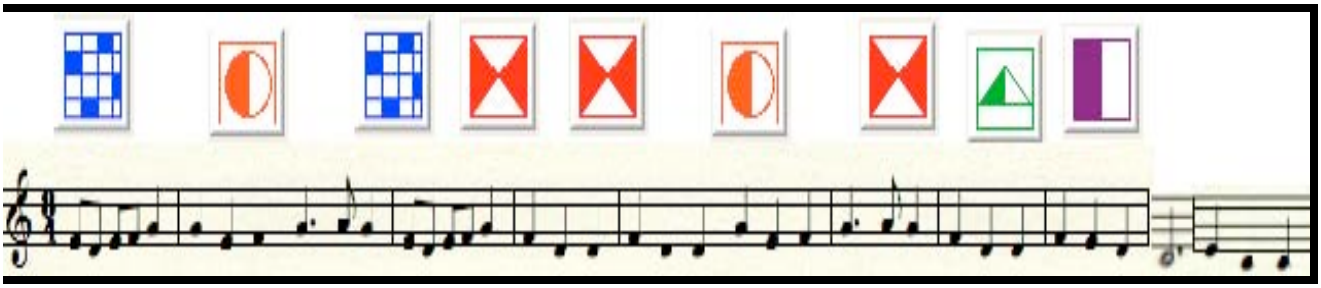


Figure 2.3: Mark's tune

Jorge's melody was probably the biggest surprise. Jorge was from Peru; his musical background was almost exclusively the folk melodies of his own country. Listening to Jorge sing some of these Peruvian songs, it was clear that they offered a different model of a sensible tune compared with our familiar folk songs. In fact, Jorge's composed tune was much closer in structure to the Peruvian songs that he sang for us than to our own common tunes. Very roughly, the tune starts up slowly, gradually gains steam, then quickly reaches a climax and immediately ends in a resolution.

Mark's tune has a much different but also more familiar way to go: We hear two phrases each beginning the same. But the first phrase ends unresolved while the second phrase comes to rest (an antecedent/consequent relationship). We even heard the ending of Mark's tune as a joke--just as Mark intended. It's not surprising, given these obvious differences in structure, that when Jorge heard Mark's song, he said, "Wow! I never heard a song like that!" Notice that Mark's tune <u>begins</u> with the two blocks that form the <u>climax</u> of Jorge's tune.

Observing students composing with tuneblocks revealed interesting aspects of learning and perception, as well. The younger children (7 to 12) demonstrated that even these young students were quickly involved in active listening, searching for coherence, thinking about a melody as interrelated parts that together make up a particular whole. And they had no difficulty managing the computer interface. Another surprise was seeing that nearly all of the children, without their actually realizing it, began to sing quietly to themselves as they worked, and quite in tune, too.

As we had hoped, making the "units of perception" also the "units of work," composing with tuneblocks was more accessible to students as compared with composing at the level of isolated pitch and duration. As the children played with

contexts, they gradually became aware of new and different features. For example, one 8-year old student commented at first that the end of a particular little closing block “seemed like a plateau."

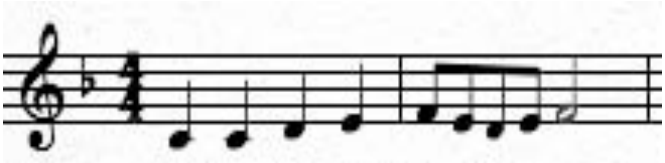


Figure *3: Plateau*

Only later did he discover that the ending of the block actually went down in pitch and returned back to the same pitch. Evidently, in its initial context, he had heard only its boundaries; later he discovered its inner movement ("it goes down and up") and with this, a different hearing of parts and wholes. But the student's initial image ("a plateau") was also perceptive on a more structural level: The little ending figure functions as an embellishment of a single focal pitch (F)—it is, indeed a *functional* plateau.

Interestingly the analytical process of this student, while on a very small scale, is just opposite of the traditional one. That is, traditionally we start with discrete notes on a printed page, or perhaps notes ("places") on an instrument and then go up the structural ladder to the bigger design. But Intuitive perception seems to <u>start</u> with the "larger line" and work down in the detail to the note level.

GOING ON

Meter and/or Rhythm

A second set of projects involves students more specifically with the *contents* of tuneblocks. Rhythm seems the most natural place to start. All the children and most (but actually not all) of the college students can clap along with the "surface rhythm" of a melody (i.e., its set of varied durations). Here is Impromptu's space for time analog picture of the rhythm of *Mary Had a Little*

Figure 4: rhythm of melody

The graphics, holding time still, make it instantly clear to both ear and eye that the rhythm groups into three chunks or figures—one longer and two shorter ones. Each figure is bounded and made visible by a bigger space between claps, which means, of course, a bigger space-of-time. While we probably hear that space as a "stop," the alternative graphics show that the spaces are not empty—time or motion continues on.

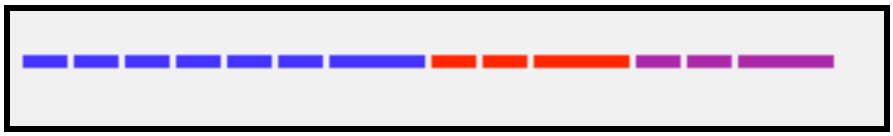


Figure 4a: Space-of-time

Listening and looking again, students heard that the two shorter chunks seem like *fragments* of the longer one. The question was: How can we account for this sense of fragmentation? Maybe getting at the actual durations within these chunks will help. Since the beat (underlying pulse) marks off time into *regular (invarient) units*, looking to see where the beat and the clapped events in the piece coincide, we can use the beat to measure the rhythm (varied dur(ations) of the tune.

We often divided the class into two groups, one clapping the rhythm of a melody and the other clapping the underlying beat. Some could even do both at once using two hands or hands and feet. Impromptu's graphics (another, two-voiced graphics) show a picture of the group's performance and also the coordination of beat and rhythm.

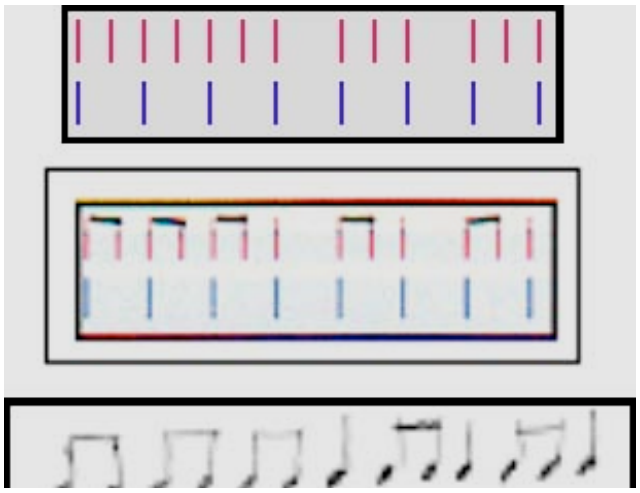
Figure 5

Rhythm and beat.

The graphics show that two claps (two events) go by for each beat, except the last event in each figure is equal to the beat in duration. That means the ending events at the boundaries of figures are twice as long as the events that lead up to it. Indeed it is these longer durations that create the boundaries.

As an added and unanticipated result, it turns out that the graphics also show a way to translate the varied durations of the rhythm into standard music notation. The principle is this:

> The lines marking the regular beat can be used to measure the rhythm (varied durations) of the tune. So to turn the graphics into standard notation you do this: All the events of the melody (the rhythm) that coincide with the beat, you leave alone. But if two or more events in the melody go by in time with the beat, you draw a cross beam joining them together. The beam shows that as a pair these events are equal to the on-going beat.



Like magic the Impromptu graphics are transformed into familiar music notation. The rules for making the transformation copy the people-process in notating a heard or imagined rhythm. And they are also what we do in reading or performing a rhythm. In fact, we have captured the general principle inherent in standard rhythm notation. That is, if events in a rhythm coincide with (are equal to) the beat in duration, leave them alone; if pairs of events are together equal to the time of the beat, beam them together. [2]

But something else has happened. The shorter fragments, the *three* claps that clung together to form a *single thing,* have now become *two things—two claps plus one*:

One *thing*

Two *things*

These two graphics together now clearly show that the smaller groups are actually fragments of the bigger group: You can see that the two eighths and a quarter in the notation are already present at the ending of the first, bigger group.

Each representation captures different but significant features of the "same" events. Just as with tuneblocks, a new representation reveals new features that can also influence our perception. Looking at both of these representations, we can see and hear both metric and motivic information--each of which is right and neither of which excludes the other.

Expanding one's abilities to include shifts in focus among representations even in such a simple example reveals new features and relations. In this way

students gain access to increasingly complex compositional means that go well beyond the limitations of these simple tunes. Marvin Minsky makes the general case:

> ***An idea with a single sense can lead along only one track. Then, if anything goes wrong, it just gets stuck--a thought that sits there in your mind with nowhere to go. That's why, when someone learns something "by rote" -- that is, with no sensible connections--we say that they "don't really understand."***
>
> ***The secret of what anything means to us depends on how we've connected it to all the other things we know. That's why it's almost always wrong to seek the "real meaning" of anything. A thing with just one meaning has scarcely any meaning at all.***
>
> ***Rich meaning-networks, however, give you many different ways to go: if you can't solve a problem one way, you can try another. True, too many indiscriminate connections will turn your mind to mush. But well-connected meaning structures let you turn ideas around in your mind, to consider alternatives and envision things from many perspectives until you find one that works. And that's what we mean by thinking!. Marvin Minsky, Society of Mind, P. 64***

Another, perhaps surprising feature of this same example shows a different aspect that common tunes share with extended compositions. Schoenberg speaks

transformations performed on such germinal shapes, a work develops its particular, unique structure and coherence.

> ***Even the writing of simple phrases involves the invention and use of motives, though perhaps unconsciously... The motive generally appears in a characteristic and impressive manner at the beginning of a piece...Inasmuch as almost every figure within a piece reveals some relationship to it, the basic motive is often considered the "germ" of the idea...However, everything depends upon its use...everything depends on its treatment and development.***

The opening "simple phrase" from Mary Had..., reveals in primitive form an example of just such transformation:

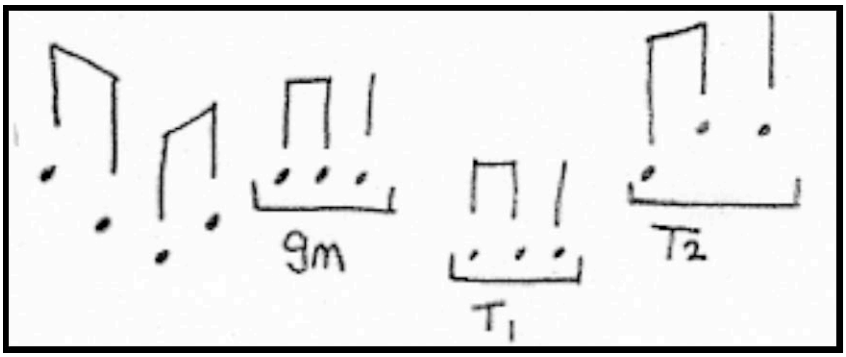


Figure 7: Transformations

Consider the end of the first longer chunk as a germinal motive (GM). Then T1 is a transformation of it: T1 is a fragment of the longer initial chunk, but it makes use of a *new set of pitches*. But T2 is a further transformation: GM and T1 are the same in their set of durations and in their *pitch shape*—i.e., each is a single pitch repeated. But in T2, *pitch-shape is no longer the same*-- only the set of durations remains the same. Within this miniscule world, we catch a glimpse of what we might call *degrees* of transformation. Indeed, the sense of tiny climax generated at the end of this section of Mary, is partly due to this increase in degree of transformation. Along with that goes the important fact that the tune moves

be thought of as a structural transformation.

While the story of Mary's evolution captures the powerful notion of motivic transformation, there is clearly a qualitative difference between motivic transformation as it functions in this ordinary tune, and motivic transformation as it functions in a work of Schoenberg or Beethoven.[3] How, then, can the description of Mary lead the student to a better understanding of and an increased perception of works by Schoenberg or, indeed, Haydn or Beethoven?

First of all, working reflectively and attentively with the reconstruction of more tunes in Impromptu will bring these and other organizing aspects to the surface. I propose that through this kind of reflective and interactive study of simple tunes, students make their *intuitive* understanding of musical structures *explicit*. Building on these, they can go on to develop more powerful hearings and representations of them. A representation is sufficiently powerful it if captures events and relations in a way that will generalize to and explicate varied instances in both simple and complex musical situations.

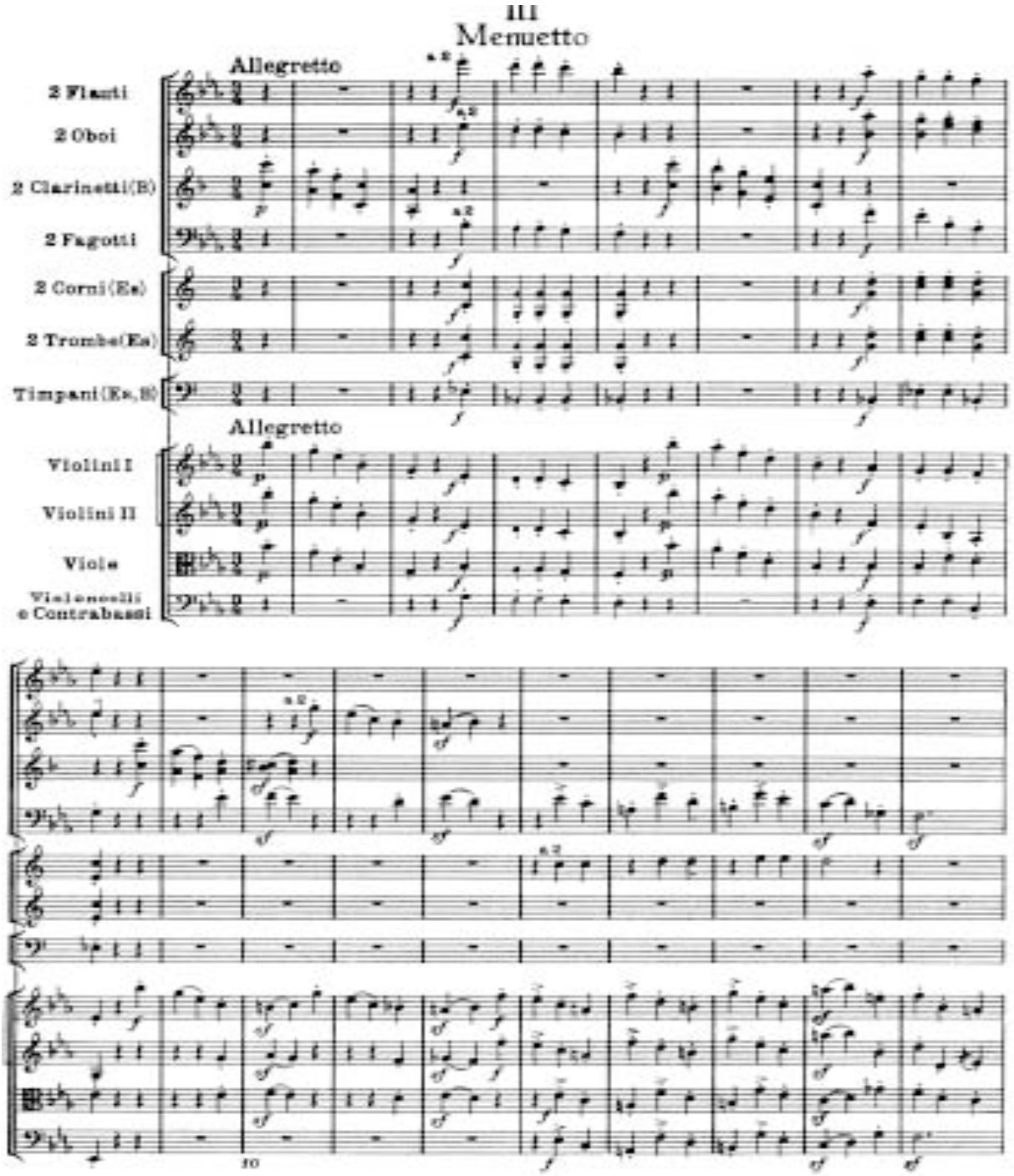
Examples of relations to which I would like students to respond:

- Different kinds but interrelated grouping structures—most specifically, metric in contrast to motivic.
- Detail in relation to "large design."
- Motivic transformation as a process of varying some features of a germinal shape while leaving others alone.
- The possibility for exploring just which features, under just what conditions, are critical to significant transformations in meaning and structural function.
- The proliferation of these notions of transformation into other parameters such as texture, harmony, instrumentation.
- Consideration of complexity as related to the level of structure and the rate

at which transformation occurs as well as the particular parameters involved.

- Consideration of all of the above as they function to define and distinguish diverse musical styles.
- The relevance of notions like invariance, analog, transformation, hierarchy, and interactive grouping structures across domains of knowledge.

To pursue this agenda, our classes are never limited to just computer-based activities and simple folk tunes. Each class includes listening closely to works by significant composers. For example, listening to the Minuet from the Haydn Symphony 99, students heard elaborations and complex extensions of structures that were similar to those they found in basic form while working with the folk tunes--motivic transformation, manipulation of pitch-time relations, fragmentation, re-grouping and so forth. As they listened to just the first part of the Haydn movement, they heard it evolving out of its initial motives in a process of continuous transformation. Reinforced by instrumentation and texture the rate and degree of transformation increases (more things change faster) to generate the climax of this first section. At the peak of intensity the opening motive, fragmented, rising sequentially and shifting in meter and tonal center, is heard out of phase against itself.



The students had acquired sufficiently powerful tools to hear and to "grasp" same and different in a non-exclusive, redefinable way: The germinal motive in Haydn's hands remained recognizable while still undergoing increasing change to create a large line that gained in intensity, finally resolving into calm. All of which could be much appreciated after hearing primitive glimmers in Mary's simple lamb

were previously inaccessible. Because the students' strategies for hearing, even reconstructing music for themselves have changed, they can perceive Haydn's Minuet as somehow extraordinary while also wanting and able to find out why.

As Schoenberg says, "...everything depends upon its use...on its treatment and development." Schoenberg refers here to a germinal motive, but I would add: Everything depends on the listener's internal “perceptual organizers” powerful enough to grasp the composer's particular use of a musical idea, his particular means of transformation, in generating the structural process and affect of a composition. For, indeed, it is what a composer does with a motive that distinguishes a significant composition from a banal one: that is, distinguishes, for instance, transformation as it functions in Mary from the way it functions in the music of Haydn.

From the experiences I have described, here, I see developing an expanding group of musically intelligent consumers; audiences who will not only be "appreciative" but demanding. Indeed, such audiences could change the future of musical taste in this country. Hearing more can become liking more and demanding more—be it Haydn, Beethoven, or Schoenberg and Billie Holiday. To develop such audiences is, I believe, a luxury of necessity for without such demanding audiences I sometimes fear that music will be, like Shakespeare's fire, "...consumed with that which it was nourished by."