

The Flow of Notes and the Flow of Consciousness

My aim in this talk is to explore the relationship between rhythm and flow in music. Resorting to etymology may make that seem like a very straightforward task. Our word “rhythm” derives from the Greek *rhythmós*, and that word is assumed to have developed from the Greek verb *rhein*, which means “to flow.” This is beginning to look like a very short talk. But hold on. As the great French linguist Emile Benveniste demonstrated in 1951, the word *rhythmós*, even if it did derive from the verb for “flow,” did not originally have a meaning anything like our word “rhythm.” And that’s just as well, because flow, as of water in a stream, is not what we would call “rhythmic”; it is undifferentiated, unmarked, unmeasured, continuous. The original meaning of *rhythmós*, as Benveniste shows, was something much more interesting. It meant “form,” but form with a particular relationship to the flow of time: it meant a configuration or arrangement that arises at a given moment, subject to change. As he writes, it is “the form as improvised, momentary, changeable.”¹

How, then, did *rhythmós* come to refer to a quality of music? Benveniste finds the answer in Plato’s use of the term, which involves two adaptations of the traditional sense: in the first place, he applied *rhythmós* to “the form of movement which the human body makes in dancing, and the arrangement of figures into which this movement is resolved,” and in the second place, Plato introduced the idea that rhythm in music and dance was ordered by measure, that is by numerical proportion. In the *Philebus* (17d) he writes that to understand music requires, besides a command of the intervals of the modes, a grasp of “certain corresponding features of the performer’s bodily movements, features that must, so we are told, be numerically determined and be called ‘figures’ [*rhythmoùs*] and measures [*métra*].”²

Rhythms and measures are therefore distinct concepts, but their relationship is intimate: the framework of measure that we read into music—the pattern of beats that we feel, for instance—is not something that we hear at all, but rather that we abstract from the rhythms, the figures, that we do hear. And at the same time, those rhythmic figures are defined by measure—by temporal proportions—among the constituent notes and rests. In the *Symposium* Plato writes that “we produce rhythm by resolving the

difference between fast and slow,”³ and that resolution, that rhythmic harmony, is possible only when the temporal proportions, between fast and slow notes in a rhythmic figure, say, are measured.

There are many ways of thinking about what rhythm is. My plan today is to work with this Platonic conception of rhythm and explore how it may connect with flow. By this conception, music and dance have measure and they have rhythms that contain and resolve differences in measure. Does either measure or rhythm in this sense produce the effect of flow? In fact, they both seem detrimental to the flow of time. Measuring time marks it off into beats or measures or proportions, breaking up its continuity. Rhythms are even harder on flow. They not only mark time off, but mark it off unevenly. And yet we feel that music flows, and we teach ourselves and our students to make music seem to flow. So, how do we recognize music as flowing, when it is made up of non-flowing temporal elements?

Let’s examine this question by looking where Plato looked: at dance movements. The dance I have chosen to show you is a tango, an especially fluid kind of dance: the dancers seem to flow across the dance floor. But if you analyze their movements, you will see that those consist of incessantly changing rhythmic forms, that is, incessant contrasts between quick and slow movements and even between moving and stopping. The stopping makes the boundaries between one rhythmic figure and the next especially clear. If this dance, with its sudden eruptions of movement, can seem fluid, that is surely because the moves are all made in measured time, and the measuring of time is provided by the music. I’m therefore going to show you this dance both with and without music, so that you can test whether your sense of the flow of the dancers’ movements is affected by your sense of the flow of the music.

Guillermina Quiroga and Gabriel Missé dancing to “La Bruja” at Shall We Tango New York, November 21, 2015

<https://www.youtube.com/watch?v=yB8snBVKH7Q>

Now let’s turn to music itself. My next example is described by its composer as a gavotte, that is, a dance from the eighteenth century. But the scene is set in the early

twentieth century, and no one is dancing. More precisely, the scene is set in the racetrack at Ascot, and the number is the chorus known as “The Ascot Gavotte” from Lerner and Loewe’s musical, My Fair Lady. I have chosen it because its striking rhythm is created by the almost incessant alternation of monosyllabic notes with silences in the choral writing. And that’s the joke: this is a musical portrait of the English upper class in George Bernard Shaw’s day, displaying their social stiffness—the opposite of fluidity—in the way they simulate excitement; and that musical portrait is produced by the difference, or alternation, between starts and stops in the vocal delivery, resolved, as Plato might say, into a distinctive configuration, or rhythm, of perfectly controlled near-motionlessness.

Lerner and Loewe, My Fair Lady: “Ascot Gavotte,” from the 1964 film adaptation directed by George Cukor

<https://www.youtube.com/watch?v=q5Sq1Pax7h8>

Near-motionlessness, I said, but what makes this music captivating, long after we’ve gotten the joke, is that it has its own, very special motion, even its own flow. It is worth asking where that sense of flow comes from.

The answer is simple: the flow of the music is in our heads. To be more precise, it’s in the heads and bodies of the performers, as it is in the heads and bodies of the listeners. We all feel a flow in the music because while the notes are alternately sounding and silent, our conceptualization of the song is a continuous presence in our thought, in our consciousness. In fact consciousness is by definition continuous, as William James wrote in the passage of his 1890 study The Principles of Psychology that gave the world the phrase “the stream of consciousness”:

Consciousness, then, does not appear to itself chopped up in bits. Such words as ‘chain’ or ‘train’ do not describe it fitly as it presents itself in the first instance. It is nothing jointed; it flows. A ‘river’ or a ‘stream’ are the metaphors by which it is most naturally described. *In talking of it hereafter, let us call it the stream of thought, of consciousness, or of subjective life.*⁴

So while music does not flow like a river or stream, because the notes are “bits” and the movements of notes need to be changeable and discontinuous if they are to form themselves into rhythms, the consciousness with which we conceive and perceive music needs to flow like a stream in order for us to feel the continuity of the music as flowing, patterned form—that is, to feel the rhythm within the music. Our perception of rhythm in music allows the continuity of our consciousness—something that at other times we hardly notice—to register against the flow of time, with the result that the rhythms of the music, for all their markedness and unevenness, seem to constitute the flow of our consciousness.

How does this process work? We integrate the disparate sounds we are making or hearing with our sense of our own ongoing existence. We relate those sounds to our own bodily rhythms—our pulse, heartbeat, nervous and muscular responsiveness—thus centering the phenomenon of the music in ourselves. Imagine that you are walking on a path through the woods, and you look to one side as you walk. Some of the trees around you appear to move past you much faster than others. But you don’t for an instant believe that they are moving at all, let alone at different rates of speed. Instead you understand that some trees appear to move faster because they are closer to you, while others appear to move slower because they are farther away. In short, you are integrating your perceptions of tree movements with your knowledge that you are the one moving, thereby mapping the static forest by an unconscious formula that relates distance to speed from the standpoint of your own moving position.

Now consider musical cognition in a similar light. As you make or listen to music, you are not moving through the woods or any other space, but you are nevertheless moving—through time. The music provides markers of time, as the trees in the woods provide markers of space. Instead of some being closer and others farther away, some of these markers come sooner and others later, some are more salient and others less so, some move quicker and others slower (Notes, unlike trees, really do move faster or slower!). And by an unconscious formula you integrate all these differences into your sense of your own passage through time. You detect and impose patterns on these markers. Because you are a human oscillator, living by a whole series of oscillatory

activities—breathing, pulsing, walking, tapping, clapping—the patterns that you detect and impose are patterns that are measured out in repetitions and recurrences of regular units of time.

So now you are feeling and maintaining a pattern of measured units or beats, in other words a meter, in your mind and body, and that pattern has its own, musical, kind of flow to it. It is not like the flow of your consciousness, or of a river, because it is marked by beats. But it is a flow because those beats, those regular units of time, repeat in continuous sequence. The cognitive music theorist Elizabeth Margulis has recently published a magnificent study of musical repetition titled On Repeat: How Music Plays the Mind,⁵ but to my thinking with all the attention she gives to repetitions in the notes of music, she underplays the repetition of units of time that goes on in our minds and bodies whenever we are engaged in music, the time-measuring repetition against which we map those trees of sound we are passing, thereby turning those sounds into what we experience as music.

Let's give a listen to several instances of music that map beats and rhythms against the flow of time in different ways, raising a variety of issues about what kind of flow musical flow is. First, let's think about what happens when musicians create flat rhythms, notes that are all rhythmically equal, in effect conflating rhythms with beats. We would expect the effect to be monotonous, but the music might still flow, in the sense that beats flow, despite the fact that they are marking time off. Here is a passage from a musical work that does that, Galina Ustvolskaya's Piano Sonata no. 6, performed by pianist Alexei Lyubimov. The effect of this music is, I would say, not at all monotonous, though certainly painful. From a Platonic point of view, you might say that there is no rhythm at all here, since there is no interplay of slow and fast. My question, though, is: what gives this music its flow, and how does the performer create and impart that flow?

Galina Ustvolskaya, Piano Sonata no. 6, performed by Alexei Lyubimov
(play from 0:58)

<https://www.youtube.com/watch?v=Yg4XoR5U4ZM>

More commonly, the feeling of the meter that musicians have is infected, or inflected, by their feeling of the rhythms that they are performing, against and within that meter. In this case the rhythm and the meter remain distinct, but hold each other in a kind of gravitational tension, or groove. In a musical ensemble all the members may share that tension, and it is that shared tension that allows them the elasticity to play their rhythmically distinct contributions slightly apart from the beat without disturbing the flow of the whole. Their contributions thus may be distinct not only because each has unique rhythmic figures, but also because they may all make their rhythms stick out from the whole by performing them a little ahead of the beat here, a little behind it there, now holding a little long, now jumping the gun. For this phenomenon Charles Keil invented the wonderfully apt term “participatory discrepancies.”⁶ You can hear this going on in the song “Candela,” performed by the members of the Buena Vista Social Club:

Buena Vista Social Club-Candela-Live in Amsterdam

<https://www.youtube.com/watch?v=QvxdhNz-9p4>

The virtue of this tension between the meter and the rhythm, between the felt temporal frame and the heard pattern of sounds, is that the continuous flow of the meter allows the music to engage our bodies at the deep level of our ordinary, even our autonomic movements—our breathing, our heartbeats, our steps—at the same time that the play of differentiation in the rhythmic figures and discrepancies in the delivery of them holds our attention. For as William James wrote, “No one can possibly attend continuously to an object that does not change.”⁷ Apparently Ustvolskaya’s music holds our attention not because of her rhythmic insistence, but in spite of it, or rather because of the changes that she makes in other realms—by organizing the beats into phrases, for instance—while the beats keep pounding away. In the playing of the Buena Vista Social Club, by contrast, it is the discrepancies, the irregularities, the changes, in the rhythms that paradoxically catch us up in a sense of flow because they continually refresh the flow of our attention.

Phrasing creates its own kind, or level, of rhythm in music. In vocal music, as well as in music for wind instruments, phrasing is tied to breathing, and the need for

breath measures out phrases in a roughly, if not numerically, regular rhythm. So while singers' breaths between phrases may interrupt the continuity of their sound with silences, we don't necessarily feel the silences as breaks in the flow of their song. On the contrary, if we are really following their singing, we may well apprehend their breathing as the rhythm of their vocal production that keeps the song going. It is the flow of bodily oscillations to which we respond as fellow breathers.

Please keep that model in mind as you listen to the next recording. This is a kind of sound production that is pretty universally described as singing, and I would like to suggest to you that one of the reasons people find it easy to think of as singing is that it is phrased like a lot of other singing, with a steady alternation of vocalization and silences—much more like singing in fact than like most speaking. See if you agree. The singer is a humpback whale, recorded off the island kingdom of Tonga in the South Pacific.

Tonga Humpback Whale Song,

Recorded by Cat Holloway and Rob Barrel, September 22, 2014

<https://www.youtube.com/watch?v=-s8wiMon3o0>

I've asserted that this seems like a song to us in part because it has phrasing that reminds us of the way human singing and breathing fit together and that we respond to that similarity. Then, let me point out that this whale is underwater the whole time he is singing and therefore not breathing in between those phrases. I should say that the way whales produce their songs is very hard to study, and that though huge efforts and ingenuity have been expended on figuring it out, the answers are only gradually emerging.⁸ Still, I believe it's clear that the pauses in the song are not pauses for breath. The question that I have, but which I haven't seen any attempts to answer, is: why then do the whales pause between the short phrases of their very long songs? Does their mechanism of sound production impose a limit on their ability to sustain sounds—comparable to, if different from, the way our need for breath limits our ability to sustain a sung phrase? Or is there something else at work, perhaps something in the whale's cognitive processes of composition and recall or in the process of sharing the song with

fellow singers, allowing for the distortions of sound transmission through water,⁹ that is aided by those pauses? In any case it is worth noticing, I think, that the three interrelated levels of temporal activity that we have found in human music—the continuous flow of consciousness, the measured flow of beats or breaths or other time units, and the distinctive rhythms fitted into that measured flow—can all be found equally in the songs of our fellow musicians, the whales.

Now I want to turn my attention to some implications of these thoughts for musical performance. One question would be, how do performers operate on all three of these levels at the same time? A possible answer would be that they adapt their consciousness in some way in the act of creating beats and rhythms. That answer would require moving beyond William James' concept of the flow, or stream, of consciousness, which is the everyday consciousness of anyone who is awake and self-aware. A century after James wrote that account, the psychologist Mihaly Csikszentmihaly used the Jamesian term flow to describe a special state of consciousness: a state of "deep concentration" in which the self is well integrated and "consciousness is unusually well ordered." He does not associate that state of "flow" particularly with music making or listening, though he does suggest that music, "when seriously attended to . . . can induce flow experiences."¹⁰ Is it helpful to think of the phenomenon of "groove" in group music making as a special state of consciousness that musicians enter when they share a feeling of flow that is directed by no individual? I think it is, but it is probably not helpful to suggest that the way for musicians to give the music they are making the right "flow" is to send themselves into an altered state of consciousness and let that guide their performance. What I would suggest instead is that any time we are making music, we are creating distinctive rhythms, in Plato's sense; that is, rhythmic forms that measure the flow of time distinctively and therefore shape our experience of moving through time distinctively. Our task as performers is to give ourselves over to the particular flow that we can produce from those rhythms.

Let me cite the example of performing the seventh Barcarolle of Gabriel Fauré. I choose a barcarolle because the generic title tells us to think of a boat song translated into a piano solo. It is customary in barcarolles to convey the imaginary waves on which the

imaginary boat is riding by a continuous flow of notes in the bass, swelling up and down, usually within a 6/8 meter, while the boatman's song floats out above it. So we have a kind of flow built into the musical scheme. The problem here is that Fauré doesn't quite follow that scheme. In the first place, there is no steady flow of eighth-notes in the bass; that flow comes from the combination of the melody and the bass, constantly dodging each other, but together creating a steady flow. Until, that is, the last two beats of every measure, when the eighth-note motion is replaced by quarter-notes or a single half-note. In short, this is a flow with a hitch in it, a tease that repeatedly, continually frustrates the flow. But that repeated, continuous hitch is the key, I believe, to what Fauré is up to: for the customary, watery flow of bass eighth-notes in wave formation, he substitutes a larger-scale flow of hitches. A few measures in, we learn to expect the arrival of each new hitch, so that we have at one level a catchy rhythm of faster notes alternating with slower ones—the change that in William James' view holds our attention—and at a higher level the lulling flow that comes from repeating that rhythm. The trick in performance, I believe, is that the more you emphasize the hitches in the rhythm, the more attention you draw to the larger repeating rhythm of hitches and therefore the more you give the music its idiosyncratic flow. A performer I have found who pulls this off beautifully is Pierre-Alain Volondat:

Gabriel Fauré—Barcarolle no. 7 in D minor, Op. 90,

Performed by Pierre-Alain Volondat

https://www.youtube.com/watch?v=HfO_t5RoMlo

James Parakilas

Bates College

¹ Emile Benveniste, “The Notion of ‘Rhythm’ in its Linguistic Expression” (originally published in French in 1951) in Problems in General Linguistics, translated by Mary

² Plato, Philebus 17d, translated by Reginald Hackforth in The Collected Dialogues of Plato, ed. Edith Hamilton and Huntington Cairns (Princeton: Princeton University Press, 1961), p. 1093.

³ Plato, Symposium 17bc, translated by Michael Joyce in Hamilton and Cairns, eds., The Collected Dialogues of Plato, p. 540.

⁴ William James, The Principles of Psychology, ch. 9: “The Stream of Thought” (New York: Henry Holt, 1890; reprinted New York: Dover Publications, 1950), II:239.

⁵ Elizabeth Hellmuth Margulis, On Repeat: How Music Plays the Mind (Oxford and New York: Oxford University Press, 2014).

⁶ Charles Keil, “Participatory Discrepancies and the Power of Music,” Cultural Anthropology 2/3 (August 1987): 275-283.

⁷ James, Ibid, ch. 11, I:421.

⁸ A recent study of the question is Eduardo Mercado, Jennifer Schneider, Adam Pack, and Louis Herman, “Sound Production by Singing Humpback Whales,” Journal of the Acoustical Society of America 127/4 (April 2010): 2678-2691.

⁹ This possibility was suggested to me by whale researcher Hansen Johnson of the Fisheries Oceanography Laboratory at Dalhousie University.

¹⁰ Mihaly Csikszentmihaly, Flow: The Psychology of Optimal Experience (New York: HarperCollins Publishers, 1990), pp. 41, 109.