

9th International Conference on Music Perception and Cognition

*Alma Mater Studiorum University of Bologna, August 22-26
2006*

Rhythmic Sensibilities: A Dichotomy

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ABSTRACT

My work deals with an observed phenomenon of preferences in listening and production of music: two different rhythmic sensibilities; one oriented and needed of regularity—in the sense of equal disposition of events in time—id, est, equal durations, a pulse, tactus or beat and another avoiding isochrony and more oriented to irregular events. In my observation, these two types of rhythmic sensibility may exclude one another, may also be used as a condition for choosing or rejecting, evaluation or appreciation of music or musical features and, in the case of musical creation, they become a compositional tool.

I exemplify this dichotomy with examples of aesthetical changes and differences between styles from Western and non-western musical cultures; then I examine with a critical view the way the issue is addressed in music psychology for then presenting an experiment proposal.

Keywords

Rhythm Perception and Cognition, Musical Time, Sensibility / Aesthetic Judgment.

REGULAR VS. IRREGULAR:

In: M. Baroni, A. R. Addressi, R. Caterina, M. Costa (2006) Proceedings of the 9th International Conference on Music Perception & Cognition (ICMPC9), Bologna/Italy, August 22-26 2006. ©2006 The Society for Music Perception & Cognition (SMPC) and European Society for the Cognitive Sciences of Music (ESCOM). Copyright of the content of an individual paper is held by the primary (first-named) author of that paper. All rights reserved. No paper from this proceedings may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information retrieval systems, without permission in writing from the paper's primary author. No other part of this proceedings may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information retrieval system, without permission in writing from SMPC and ESCOM.

AN OBSERVATION

My work deals with two different rhythmic sensibilities I observe between subjects, showed in preferences for appreciation listening and production of music:

1. Preference for evident pulse, rejection of music with no regularity.
2. Rejection of evident pulse, preference for irregularity.

These two sensibilities might be:

- Excluding one another
- With variable tolerance, depending on context (internal or external to the subject)

Each of these rhythmic preferences may condition the appreciation of other musical features such as pitch relations or timbre, even becoming a *sine qua non*.

Supporting the idea of two rhythmic sensibilities

My observation was reinforced in the first place by points and concepts I found in several fields such as:

1. Psychology, in the work of Paul Fraisse, when he mentions

a sensibility towards isochronous rhythms, of little discrimination and great affective repercussions, termed as *protopathic*; it yields satisfaction, reinforced by movement and synchronisation and its socialising effects; it withdraws before its opposite, the *epicritic*, of more affective discrimination.

Fraisse also points out how

spontaneous synchronisations are inhibited in western adults because of cultural criteria Fraisse (1978).

Thus my observation fits with this idea from Fraisse of *protopathic* and *epicritic* rhythmic sensibilities, the former representing spontaneous, kinesthetic and basic and the later intellectual, discriminatory or cultural.

2. Aesthetics and Western classical music History; where I found, in the origins of periodical strong-weak, upbeat/downbeat measure-motif rhythm (the inception of meter) and its derivation from dance music, ca. from 1550 to 1650, (Lasso, Des Prez, Palestrina) a difference between liturgical and pagan music based on the use of counterpoint versus dance derived repetition; mediaeval religious art viewed as *complex, intellectual and artistic* versus the music of minstrels and troubadours, as *popular, amusing and forceful*. See for instance De La Motte (1991).

In Twentieth century classical music a similar dichotomy regular-irregular (protopathic-epicritic, using Fraisse's terms) can be easily perceived when confronting Serial and Minimal music. The modern "emancipation of dissonance" had a rhythmic parallel in Messiaen's *frozen time*, Stockhausen and Boulez *suspension of history* or Cage's need to *empty time structures* which generated a treatment of temporality free from regular referents (often termed as *micro rhythmic*) The post-modern consequences of minimal music represented the "emancipation of consonance" and also an "emancipation of pulse", which somehow "sanctioned" the reappearance of isochrony.

I presumed a similar situation when reading about the change of aesthetic paradigm in the return to narrative, figurative or even decorative painting in the work of German painters such as Baselitz, Richter et Al; who claimed for a similar emancipation of figurative art from the 50's avant-garde tenets (abstraction, performance, etcetera) as Krens, Govan & Thompson (1989) point out; they quote how J. Beuys used to stand by his students' oil and canvas and say: "still painting, aren't we?". I associate this to a situation alluded by Griffiths (1995) when Stockhausen was "anxious to avoid an unexpected steady pulse which came out of the use of serial techniques" when writing *Kreuzspiel* in 1951.

3. The same protopathic / epicritic idea can be applied to nowadays' accustomed judgment of classical and popular music, where the presence/absence of kinesthetic rhythm is associated with concepts of complexity and simplicity, in the same *complex, intellectual and artistic* versus *popular, amusing and forceful* guise. See for instance Longhurst (1995) for a review of some such issues in music sociology.

4. From studies on non western music such as Arom (1985) I draw the thought of the researcher fighting against a common prejudice in westerners towards African (and other non western) music because of its cyclical nature, as if researchers had to "find proof" of its complexity. A reason for this prejudice was later proposed in Snyder (2002), as I will show below.

Apart from these points I present a list at the end of this paper of paired protopathic / epicritic music examples.

How do I study rhythmic sensibilities

I take from Fraisse (1978) the idea of a basic, spontaneous sensibility, related to kinesthesia and which forms the basis for the preference for isochronous music (protopathic sensibility) or, as he also suggests, some basic trait which may be culturally inhibited and withdraws before the epicritic sensibility. This is a crude, simple and risky explanation, because it derives conclusions or direct relations between basic cognitive attributes and cultural or aesthetic issues.

I found those dangerous leaps top-down / bottom-up quite often in the field of music psychology. The problem of distinguishing those elements conforming aesthetic sensibility is a hard one. Still, I will dare to take a plunge and try to find support for my observation.

Protopathic / Epicritic as movement / shape

The difference between aesthetical trends such as the more contemplative music of Debussy or Messiaen's frozen time and the more kinesthetic dance music, for instance, suggests a different cognitive approach for each one. Human audition has been studied as a system of spatial localization, spatial-temporal measurement or auditory scene analysis, as explained in McAdams and Brigand (1993) or Reisberg (1992). In the case of music, audition may render a soundscape similar to a *trampe l'oeil*, if we use auditory analysis processes (on inter-aural timber, pressure and frequency) and specially its mismanagements (as with optical illusions) as emotion provoking. This might explain how those superior processes of analysis have a different emotional effect – an epicritic one – than the spontaneous kinesthetic based musical emotion, for they result from cognitive activity rather than kinesthesia.

Protopathic / Epicritic as qualitative / quantitative

Note that I say *emotion provoking* instead of *expressive*; the words *expression, expressive* have a dualist form / content flavour, and also imply the questionable idea of art as communication. I will use them only referring to appreciation of difference from a model for *judgment* (another word to be aesthetically careful with).

As I mentioned earlier, assessing model / deviation – structural and expressive functions to discrete musical elements is complicated and elusive. Addressing this problem reflects a need to formalize such elements, understanding this as the scientific approach.

The need for a temporal referent through which *expression* is obtained, by friction, or deviation, or as variants against invariants may serve to understand protopathic / epicritic sensibilities. Tempo and expressive deviations (rubato, etcetera) were then a qualitative element because of its expressive effects, while meter is a quantitative element. Hence meter becomes a category, and so does pulse, as Clarke (1984) or Large & Palmer (2002) state.

Categories

Then, how do we define categories and rhythmic context for music which has no meter, no previous structural referent, or no tempo, as is the case with epicritic sensibility?

The idea of tempo is a protopathic one because it implies kinesthesia; co-variation of two temporal referents (like bpm) is used to coordinate movement, as Meyer & Palmer (2002) suggest. Obviously, absence of (at least clear) temporal referents provides a sense of no movement, a static, more contemplative music (avant-garde, for instance), and appreciation of form rather than movement, which is exactly what is sought for in epicritic music.

Further studies on performance nuances or *microtiming* (or *microrhythmic*; not to be confused with XXth Century avant-garde rhythmic I mentioned above) (see for example Clarke, in Deutsch 1999) were to find quantitative aspects in it. Iyer (2002) for instance, proposes a margin for the detection of microtiming in a 500ms range between grouping and subdivision, a “precognitive, sensitive, immediate” temporal level for rhythmic activity perceived as *feeling* or recognition rather than analysis or calculation and which depends directly on primary perception and echoic memory.

Iyer and Clarke maintain a division of micro and macrorhythmic structures, the latter being a memory based context. I question why shouldn't we view macro structures as *expressive*, even simply by *augmentation* of the processes applied to microtiming: a change of meter is a deviation, also a change of sectional proportions, global timing, and so on, expanding category size. Otherwise, non-metrical rhythm (called *articulated* or *melodic* by those with Tonal ethnocentric tendencies) thwarts the sense of context, becoming self-referential, creating its own context.

Rhythmic sensibilities as memory and attentional strategies

If the use of memory for categorisation and context creation yields expression, then thwarting the sense of context and categories produces unexpressive music, which is clearly false (at least for me and the

composers I mentioned before) although some investigators (Hasty, 1997, for instance) so declare.

On the other hand, paraphrasing Snyder (2002):

a lack of categorisation overcharges memory, as in Free Jazz; the difference between structure and expression falls down. This music stresses on nuances, producing uncategorisable events. This music requires a totally different attitude than those establishing clear memory structures.

Beat size might be a contextually and culturally learned conceptual category [...] In western Africa, beat size is small, so westerners perceive rhythmic nuances as “mistakes”, reducing a complex experience to something simple [...]

Snyder also argues how

Irregular rhythms may be completely processed as microrhythmic nuances, identified straightaway but not easy to be memorised. Without the help of meter - rhythm contrast it is rhythmic contour what creates tension, by comparison between adjacent time intervals, yielding a lack of large scale stability.

This argued lack of long term stability of unmetrical music is contradicted by a research by Clarke & Krumhansl (1998) (see Krumhansl, 2000 for a brief description) on the perception of form, general scheme and section boundaries finding no difference between varied styles of music (Mozart and Stockhausen).

So in this manner epicritic music employs memory sabotage strategies; the “totally different attitude” alluded by Snyder might represent different memory / attention strategies, in the vein suggested by Iyer.

It has also been argued by Large & Jones (1999) that hierarchical rhythmic organisation (meter) serves to an attentional mechanism of adjustment of expectancies which guides perception, a mechanism which is based on hierarchically arranged oscillations conceding a perceptual advantage. Epicritic music might then be based on more complex non hierarchical oscillations, I argue. In my view, this only transfers the aesthetical judgment question from why some subjects –epicritic music listeners– decide to sabotage memory categories to why do they ignore such *perceptual advantage*.

HYPOTHESIS

Two rhythmic sensibilities exist so that they are reflected by two premises:

1. Rejection of isochrony.
2. Rejection of lack of isochrony.

Experiments

If support is obtained, a first set of two simple experiments will be considered.

A first experiment will be conducted with non musicians, exposed to two sets of stimuli; the first set without equal durations and the second with equal durations, both having the same timbral, harmonic and dynamic elements. A list of antithetical kinesthetical versus intellectual terms such as complex / simple, active / passive, flowing / static, straightforward / intricate is used to define their sensibility towards rhythm. This expressed sensibility will be correlated to an analysis of the history of their musical preferences according to the rhythmic quality of their musical holdings and the frequency of listening of music with evident or absent equal duration events.

A second experiment will be held with eight conservatory students from the last grade, all of them familiar with the use of computer music notation software; they are given two types of material; type 1 is pieces of music with all equal durations, and type 2 is other musical pieces without any equal duration in it. Materials presented to subjects are gradually more complex and go from single layer to four voice polyphony. Participants are then asked to modify only durations of the presented pieces; in a first set of pieces, they are asked to use only eraser, in a second one, they can only add values to the durations presented. The modified pieces, along with the whole protocol recorded in another computer via screen capture are analysed using these criteria:

1. Percentage of equal and unequal durations left in the material.
2. Percentage of vertical (polyphonic, simultaneous) equalisation / unequalisation of the presented pieces in relation to number of strata.
3. Absence or presence of hierarchy between equal / unequal strata; amount of complexity related to absence and presence of equal durations.
4. Decisions, actions, hesitation or refraining in writing / erasing.

REFERENCES

Arom, S. (1986). *African polyphony and polyrhythm. Musical structure and methodology*. New York : Cambridge University Press.

De la Motte, D. (1991). *Contrapunto*. Madrid: Labor.

Deutsch, D. (ed.). (1999). *The Psychology of Music (2nd Edition)*. London: Academic Press

Fraisse, P. (1978). *Psicología del ritmo*. Madrid: Morata.

Griffiths, P. (1995). *Modern Music and after*. London: Oxford University Press.

Hasty, C. F. (1997). *Meter as Rhythm*. London: Oxford University Press.

Iyer, V. (2002). Embodied Mind, Situated Cognition, and Expressive Microtiming in African-American Music. *Music Perception* 3, 387-414.

Krens, Th. Govan, M. & Thompson, J, (1989). *Refigured Painting: The German Image 1960-88*. New York : Prestel.

Krumhansl, C. L. (2000). Rhythm and Pitch in Music Cognition. *Psychological Bulletin* 1, 159-179 (2000).

Large, E. W. & Jones, M. R. (1999). The Dynamics of Attending: How we track time-varying events, *Psychological Review* 106, 119-159.

Large E. W., Palmer, C. (2002). Perceiving Temporal Regularity in Music. *Cognitive Science* 26, 1-37.

Longhurst, B. (1995). *Popular Music and Society*. Cambridge, UK: Polity Press.

Meyer, R. K. & Palmer, C. (2002). Rate and Tactus effects in Music Performance. Melissa Jungers web page, in <http://dactyl.som.ohio-state.edu/Resources/people.html#F>

McAdams, S. Bigand, E. (eds.) (1993). *Thinking in Sound. The cognitive Psychology of Human Audition*. London: Oxford University Press.

Reisberg, D. (ed.) (1992). *Auditory Imagery*. London: Lawrence Erlbaum Assc. Publishers.

Snyder, B. (2000). *Music and Memory. An introduction*. Cambridge, Massachusetts: MIT Press.

MUSIC EXAMPLES

Here you have some paired examples of rhythmic sensibilities from mixed extraction:

1. Olivier Messiaen *Mode de Valeurs et d'Intensités* (1950) Versus Steve Reich *Piano Phase* (1967)
2. Luciano Berio *O King* (1967) Versus Luciano Berio *Folk Songs #7-Ballo* (1964)
3. Pierre Boulez *2eme Sonate* (1948) versus Reich *Music for pieces of wood* (1972)
4. Arnold Schoenberg *Suite op. 25* (1925) versus Terry Riley *In C* (1964)
5. Anton Webern *Funf Orkesterstucke* (1913) versus Busta Rhymes *Gimme some more* (1999)
6. J. Cage *She is Asleep* (1948) versus J.S. Bach *3rd Brandenburg Concert* (1721)
7. Alto Volta *Boukam Solo* (traditional) vs. Medeski, Martin & Wood *Combustication* (1998)
8. Claude Debussy *Prelude a l'apress-midi d'un faune* (1893) vs. Frederic Rzewski *Coming Together* (1972)
9. F.J. Haydn *Sonata 32 in B min. Hob. XVI* (1772) vs. Erik Satie *Danses Gothiques* (1887)

10. John Abercrombie *Timeless* (1975) vrs. Screamin' Headless Torsos *Cult of the Internal Sun* (1995)

11. Guillaume Dufay *Ave maris Stella* (ca.1450) vrs. Gbaya Sanza Music from Central African Republic (traditional)

12. King Crimson *No warning* (1984) vrs. Kraftwerk *It's more fun to compute* (1980)

12. P'Ansoni *traditional epic*, Korea, (ca.600-) vrs. Bach, *Partita III BWM 1006* 1720

13. Josquin des Prez *In principio erat verbum* (ca. 1450) vrs. Michael Torke *Four proverbs* (1994) ca. 1050-)

14. Michael Nyman. *In Re don Giovanni*, (1991) vrs. Paul Lansky *Interesting Numbers* (2002)

15. J. Cage *A Room* (1948) vrs. Nung-an, traditional chant, Viet.nam, (ca. 900-)

CONTACT

Suggestions, criticism, or any kind of comments on this paper theoretical and especially experimental proposal will be gladly welcome. Please write to:

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