Time, Flow, Gravity and Uncertainty (2012)

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I have previously written on the role of the psychologist Mihaly Csikszentmihalyi's idea of "flow" in music (Pocknee, D. *Virtuosity, Flow and Re-Notating Modernism*, 2012a). This short essay seeks to examine the possible implications flow has on the perception of time, and the implications of this for composing and performance.

Flow is a psychological state in which an individual becomes engrossed in an activity to such an extent that they experience extreme enjoyment, loss of sense of self, distortions of time etc. Flow is often connected with peak or optimal performance; an individual in flow is likely to perform the activity at a higher level than they would otherwise.

There are nine features of flow, that Csikszentmihalyi describes the "phenomenology of enjoyment" (Csikszentmihalyi, 2008, p. 49):

1. There are clear goals every step of the way.
2. There is immediate feedback to one's actions.
3. There is a balance between challenges and skills.
4. Action and awareness are merged.
5. Distractions are excluded from consciousness.
6. There is no worry of failure.
7. Self-consciousness disappears.
8. The sense of time becomes distorted.
9. The activity becomes autotelic (meaning "an end in itself", from the Greek).

One of the most important aspects that enable individuals to enter flow, is the balance between challenges and skills. If the skills of the person engaged in the activity are optimally met by the challenges presented to them by the activity, then flow is more likely to occur. The relationship between challenges and skills varies from person-to-person and from activity-to-activity, so it is possible for a low-skilled individual engaging in an activity that has a low-challenge level to enter flow.

However, the eighth element listed by Csikszentmihalyi is what this essay will be concerned with; a distortion in the sense of time:

> Generally in flow we forget time, and hours may pass in what seem like a few minutes. Or the opposite happens: A figure skater may report that a quick turn that in real time takes only a second seems to stretch out for ten times as long. In other words, clock time no longer marks equal lengths of experienced time; our sense of how much time passes depends on what we are doing.
> (Csikszentmihalyi, 1996, p. 115)

The idea that a performer working at the top of their abilities would experience distortions in time is an ontologically problematic idea for a time-based artform. Listening to music, as well as performing it, can also induce flow states: "Listening to music wards off boredom and anxiety and when seriously attended to it can induce flow experiences" (Csikszentmihalyi, 2008, p. 109).

Due to the individual nature of skill-sets, dependent upon each person's training and innate abilities, the conception of "the audience" must be dismantled when considering the nature of time distortion in relation to music. "The audience" is not a single entity, but consists of a set of individuals whose experiences of flow will be affected not only by the relationship between their listening skills and the challenges presented by the music, but also the way in which they structure these challenges: "...a state of flow does not depend entirely on the objective nature of the challenges present or on

the objective level of skills; in fact whether one is in flow or not depends entirely on one's *perception* of what the challenges and skills are." (Csikszentmihalyi, 1975, p. 38)

The wide variety of flow states that can result from a single stimulus mean that, due to the subjective nature of a person's approach to the opportunities or challenges presented to them, in a single performance there can be a large dissonance between the psychological states of not only performer and audience, but within the audience itself. This lack of a collective flow state means that the distortions in time experienced within a concert will differ from person-to-person.

If a music seeks to fulfil the conception of the performer/audience relationship, in which the performer's goal is to accurately create a sonic manifestation of the sounds symbolically described in the score, there is a problem, in that the different ways in which each player and each individual audience member is experiencing time is different, thus distorting the accurate perception and delivery of the piece. This conceptual model, which is referred to as the High-Modernist Performance Practice model by Franklin Cox, has more in common with the utilitarianism of Information Theory than aesthetics. The score becomes the medium between the composer (emitter) and performer (receiver), whilst the sound of the performance transmits the information from the performer to the audience. In this model, any deviation from the accurate re-production of the composer's original idea is seen as "noise" introduced into the system. If using this model, then one must surely conceive of the variety of time-dilation occurring intra- and inter-audience as the introduction of a type of cognitive noise which changes the temporal proportioning of a piece on the micro and macro level.

Whilst a compositional approach to cognitive distortions in macro-time (albeit, not from within the context of the flow framework) were widely implemented by the Spectralist movement in the 1970s and 1980s – the most concrete example of this is explored in Gerard Grisey's *Tempus Ex Machina* article which contemplates the application to music of logarithmic temporal structures more suited to the way we perceive time – the implications of time distortion upon musical practice do not seem to have been fully explored (Grisey, 1987, p. 239-275).

In considering the effects of flow on micro-level temporal perception, an examination of rubato seems necessary. Rubato is generally defined as "a feature of performance in which strict time is disregarded" (The Concise Oxford Dictionary of Music, 1980). Normally this is done with a syntactic or expressive aim, designed to clarify musical structures or articulate dramaturgical aspects of a work. I would like to propose a third type of rubato, one which arises as a secondary aspect of a performer entering a state of flow. This rubato has no syntactic or expressive aim, but arises as the result of a distorted sense of time caused by this psychological state.

My contention is that this un-notated type of rubato, which has always existed as a subsidiary aspect of a musical peak performance, was commodified with the rise of virtuosity and, thereafter existed as an alienated stylistic decoration, transplanted from the elevated psychological and performance state that birthed it.

To understand how this specific rubato functions it is useful to consider all individual performers and audience members as having an Einsteinian *Inertial Reference Frame*. Performers and composers who put their faith in the High-Modernist Performance Practice Model make a similar mistake to that of the pre-Einsteinian physicists in presuming that time is a constant.

In Einstein's theory of Special Relativity there is only one constant: light. Every measurement other than that of light must take into account the inertial reference frame of the person taking the measurement, in other words, their inertial velocity must be factored into the equation. The perceptual disconnect between the time experienced by the performer and audience member means

that two separate timelines exist, each with equal validity. Whilst a performer might believe that they are placing notes accurately corresponding to clock time, the reception of the proportioning of these notes will depend, not only on their own temporal distortions that they are experiencing, but the cumulative difference between their distortions and those of an audience member. This cumulative difference is a non-syntactic, non-expressive, non-notated *rubato*; the time stolen between the temporal asynchronicity of two timelines.

This facet of performance originally existed as a side effect of players working at an optimal level, and thus entering a flow state in which their perceived dilation of time had an external effect upon the music produced. This subsidiary aspect of musical performance then became bastardized as it entered notational and performance practice in the romantic period, as an attempt to furnish pieces with an exaggerated and false level of performer engagement – the composer became the virtuoso magician; stealing an effect that was the result of an engagement with a transcendental level of difficulty and transplanting its stylistic veneer into contexts designed to validate and aggrandize the composition, rather than the act of performance. As the general level of musical training bought works previously exclusively within the virtuosic range of playability into the skill-set of those far below Paganini status, skills increased in relationship to a set of challenges that stayed static, thus inhibiting flow during the later performances of these pieces. It was then that this un-notated rubato became a non-functional stylistic decoration. It was no longer a signal of the chasm between a performer and audience of individuals existing at multiple different levels of time distortion and resulting from the psychological states caused by their differing challenges and skills, or an indicator of a performer ensconced within a state of flow. Instead, it became a short-hand for a stereotyped form of musical engagement – the sounding version of a cinematic detective drinking whisky (he's troubled) or a leather-jacket wearing hardnut smoking in a non-smoking area ("You can't smoke here!" - yes he can, he's a rule-breaking, maverick, loose-cannon, joker-in-the-pack, jack-in-the-box bad-ass, he'll do what he wants, rules be damned...)

The temporal disconnect discussed above, presents a problem if we take a relativistic approach to these discrepancies and propose that the varied temporal perspectives of the audience are all equally valid. Even without the complication of indeterminate scoring, our idea of the Information Theory-style approach to the performer/audience relationship breaks down. Without a temporal constant, the fidelity of performance to score cannot be assessed unless clock-time (which nobody is experiencing) is used.

This conundrum poses another fundamental question – what gives any member of an audience the ability to assess the fidelity of a performance, if the performance is created within the subjective framework of a timeline that they themselves cannot experience.

This is a problem which plagues Roger Marsh's analysis of Ferneyhough's Second String Quartet (an analysis brilliantly dismantled by Stuart Paul Duncan in an article in *Perspectives of New Music* (Duncan, 2010, p. 159-163)). Marsh uses clock time as a way of measuring discrepancies between Ferneyhough's score and an Arditti Quartet recording of the same piece, little taking into account that "the map is not the territory". The tendency to use fidelity of score-to-performance, quantized to clock time, has plagued many critiques of the "New Complexity". If this third type of rubato arose historically from the disparity between cognitive temporal inertial reference frames created by different types of flow, or non-flow experiences, and that this flow occurred through performers engaging with scores that matched their skills with equally difficult challenges, then one can not see the Arditti's deviations from clock time, highlighted in Marsh's analysis, as a mistake, nor as a "stylistic rubato" - a manufactured transcendence born from the duplicity of the virtuosic "magician". Instead, they represent an "actual rubato", such as that discussed above, arising from the distortions in time caused by a set of performers engaging with a score whose challenges match their skills and achieving flow; not a clichéd copy, articulating an exaggerated version of historical

transcendence, wedded to a specific notational, performance, and compositional set of practices, but one that derives from the transcendence of the virtuosic "athlete".

This "actual rubato" is not as a romantic stylistic, decorative flourish but temporal distortions in clock time created by the engagement of a performer with a score that induces flow, and the discrepancy between the psychological inertial reference frames of the performer and those of the audience.

The distortion of times created by the ability of musical actions to place players in a state of flow has another off-shoot, little considered by composers: that each musical action has its own "mass". In the same way that the mass of an object will warp the space-time around it, we can talk of actions or sets of actions creating different levels of temporal distortions, according to the psychological and physical challenges they present to the performer, the listening skills of the audience members and their attendant skill-sets.

I have written before about the way in which flow may have been obliquely and intentionally encoded into New Complexity compositions, and the role of performers in facilitating, fuelling and leading the movement (see Pocknee, D. (2012b)). The inability of the score to attempt to describe the sounding result in New Complexity works, despite their apparent specificity can be explained through the use of another scientific analogy.

All scores have a built in level of indeterminacy (as evidenced by the ridiculous number of recordings of Beethoven's Symphonies – multiple recordings are not necessary if the piece is completely determinate). These indeterminacies in any score vary with the type of notation, the only thing that separates interpretational variation from incorrect performance is the margin of error.

A deviation from a highly quantized reproduction of the score is only treated as an anomaly when it exceeds the perceived margin of error of a work. This margin of error is defined both in terms of performance practice and via the score. The score, therefore, defines its own margin of error to some extent, setting the boundaries outside of which lies error, and inside of which lies a statistical set of acceptable possibilities. The size and nature of this probabilistic area changes according to the score, thus a highly indeterminate score would likely have more acceptable possibilities than a highly precise one. The score, then, becomes the point at which the player's energy and will is defracted into a wavefunction which only collapses at the point of performance. The score is a mesh through which a set of superpositional states of performance are created, thus the goals of a work are not defined by a reified set of descriptive criteria but from the type of mesh.

The score, therefore, is not a fixed object, but a wavefunction of possibilities, collapsing at the moment of performance...

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