

**PG Research Methods - Assignment 2 'Book Review'**  
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'Music The Brain and Ecstasy; How Music Captures the Imagination' - Robert Jourdain

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Music the Brain and Ecstasy is an excellent examination of why we derive so much pleasure from the perception of music. Clearly such an answer comes down to subjectivity and Jourdain is astutely aware of this limitation and conveys such an understanding throughout his writing.

The first chapter starts at the fundamental mechanics of music and the starting point of our perception; sound waves. It then proceeds through a logical and inter-related structure by moving on to discuss tone, melody, harmony, rhythm, composition, performance, listening, understanding and finally ecstasy. These subjects are explored with a multi disciplinary approach; relating maths, music theory, philosophy, neurology and other areas of science to our perception of music in order to address a single question: How can certain forms of music generate strong emotional reactions in us such as ecstasy?

Although this is clearly delving into the realm of subjectivity, Jourdain manages to present many different thoughts on music cognition in an unbiased, interesting and informative manner. Each piece of subject matter is clearly illustrated with various examples, anecdotes and analogies; a writing style which allows Jourdain to delve into complex material without the loss of readability or focus.

There have been several other more recent books concerning music cognition which cover similar grounds such as Oliver Sacks *Musicophilia*<sup>1</sup> and Daniel Levitin's *This is Your Brain on Music*<sup>2</sup> both of which are written by neurologists. These and other books from similar backgrounds make Jourdains musical approach stand out. O. Sacks deals with music perception through the observation of single case abnormalities and Levitin's book caters to an undiscerned audience by oversimplifying many things that musicians already know. Jourdain however assumes his audience to be musicians and in some respects skips over the very basics. Doing this allows him to talk in a natural and concise mannerism without loss of clarity in his writing.

The book does however contain a couple of mistakes such as Jourdains description of intervals on p46; he correctly describes the difference between an A in Handel's day at 420 cycles a second to todays standard of 440 cycles but then confuses the interval relationship in his example. Here he states that '*what was once played as A would have been an A-sharp if played by current standards*', this is presumably a typing error where Jourdain meant to write '*what was once played as an A-sharp would have been an A by current standards*'. While these mistakes should be noted they are usually in a group of several examples and do not overly confuse the main points.<sup>3</sup>

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1 Sacks, O. (2007) *Musicophilia; Tales of Music and the Brain* - Knopf, Canada. \* this is somewhat based around case studies, though it still covers similar topics and illustrates many of the same points.

2 Levitin, D. (2006) *This is Your Brain on Music* – Dutton, US.

3 The other mistakes mentioned are actually from a review by Levitin, however I believe many of his textural interpretations are somewhat misconstrued for the purpose of finding fault. This is done by quoting out of context and by over emphasising Jourdains statements, however Levitin does have some accurate observations available in his review available here: <http://www.psych.mcgill.ca/levitin/pubspages/Jourdain.html> – accessed 21/11/10

It should be noted that this book does not contribute new research or quantifiable knowledge to the field. What Jourdain has instead managed to achieve is an original and informative resynthesis of musically related research and theories; addressing the bigger question of emotional response. Though not necessarily a means to directly access source research data, this book instead contributes an original comprehension of relevant material in an accessible manner.

A couple reoccurring themes throughout the book worth discussing are contour, hierarchy and structure. Firstly however, it's important to realise that the brain should not be thought of like a computer, storing actions in specific places with a 'top to bottom command'. Instead Jourdain states that it:

*'churns out information through a system of loops, and loops within loops, until centres concerned with every aspect of perception and movement are informed of what is going on and have had their say.'*<sup>4</sup>

Music could somewhat be seen as paralleling the brains structure with its deep hierarchy, this is hardly surprising considering that our systems of music stem form the brain finding relationships in sound. An example of this hierarchy can be heard in the sound of a piano chord, this contains a relationship between its notes and each of these notes in turn have a timbral quality composed from a fundamental frequency and its harmonically related content.<sup>5</sup> Observing this we see that the structure of even simple music over time can consist of overwhelmingly deep relationships, some in the time domain and others in the frequency domain.

Contour is essentially the shape or form of music; it can be described as a measurement of various distances that simultaneously occur in the time and frequency domain. This is most interesting, as the brain works in favour of 'form' where exact pitches are irrelevant to the brain but instead it's their relationship in context of each other that's important.<sup>6</sup>

In music this distance can be much more than the obvious example of intervals, it can be a tempo shift, a crescendo or even simple harmonic motion.<sup>7</sup> The concept of the brain working with contour in relation to music is a very powerful tool for dealing with the subjective in that it relates both the scientific and the psychoacoustic worlds. Although we cannot quantify perception, we can still study the subjective response of a musical relationship and then theorise explanations for this from the scientific which allow rules to be formed.<sup>8</sup>

It is Jourdains examination of the various relationships covered by musical contour and the various subjective responses that make this book so interesting; nearly everything discussed can be applied to any discipline related to music. In the field of mix engineering we can see that over compression of a piece of audio leads to harmonically unrelated content and at extremes are subjectively judged as displeasing. Similarly changes in volume caused by manual automation can be destructive or in fact beneficial to a piece of music depending on how naturally it is applied.

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4 Jourdain, R. (1997) *Music the Brain and Ecstasy* p215 – Harper Collins, US.

5 Not quite; the envelope of harmonic content is also important

6 This can be observed in the adoption of concert pitch A=440Hz, in Baroque times you could find various pitches such as A=392Hz.

7 When referring to 'simple harmonic motion' this is in relation to the fundamental principal of physics, not only in the musical context of harmony but also in every primary element of music.

8 Viewing the subjective in this manner is what makes music theory possible. Although we now have set values for notes they were originally formed from a deeper relationship of ratios and so long as this relationship stays intact the note values can be based on an arbitrary starting point without seeming out of tune. This is discussed by Jourdain on p66

Of course Jourdain cannot cover all the possible subject areas related to music; such as electronic design in audio equipment or relating the various ideas to physics. Instead Jourdain focuses on the brain and music in its most natural form, that of notes and rhythm, leaving it up to the reader to relate the concepts into a useful manner.

However the initial question remains: how can certain forms of music generate such a strong emotional reactions in us such as ecstasy? Jourdain presents the case that it could be the immediacy and depth of musical relationships occurring across time, creating a near perfect order that simply does not occur often in our 'disorderly world'.

**Word count: 986**