Perception: A Perspective from Musical Theory

A set of forty questions and answers pertaining to the paper Perception: A Perspective From Musical Theory, written by Nicholas Cook, the third chapter in the book Musical Perceptions, edited by Rita Aiello and John A. Sloboda. The topics which the questions and answers cover are Nicholas Cook’s analysis of multiple theories regarding how music is perceived and processed by humans, as well as, his views on the relationship between psychology and cognitive musicology. Nicholas Cook’s’ short analysis of The Generative Theory of Tonal Music, written and proposed by Lerdahl and Jackendoff and his inclusion of some of Noam Chomsky’s ideas relating to musical grammar is also detailed within the questions and answer set.

Picture taken from http://comp.uark.edu/~ehm/
1. Write a 5 sentence biographical sketch of Milton Babbitt, devoting 2 sentences to personal information and 3 sentences to musical ideas.

Babbitt is a noted American Composer, during his career he was hired by RCA as consultant composer to work with their Mark II Synthesizer at the Columbia University Computer Music Center and in 1961 produced his Composition for Synthesizer. He continued to write electronic music and conventional compositions for traditional musical instruments, often combining the two, in such pieces as Philomel (1964). Babbitt was intrigued by the notion of inversional hexachordal combinatoriality. Combinatoriality describes the property under which collections (sets) of pitch classes (PCs) can combine to form the complete twelve-note chromatic scale. Based on this he created a theory deemed combinatorial serialism centered on the perception of note intervals and pitch classes. Babbitt concluded that anyone who can identify pitch structures and classes can hear combinatorial structure. All information taken from http://en.wikipedia.org/wiki/Milton_Babbitt

2. Write a 5 sentence biographical sketch of Karlheinz Stockhausen, devoting 2 sentences to personal information and 3 sentences to musical ideas.

A famed German composer, Karlheinz Stockhausen composed electronic music. He also wrote music for traditional instruments that range from miniatures for musical boxes to compositions for solo instruments, chamber music, choral and orchestral music, and a cycle of seven operas. He created a theory of musical perception based around logarithmic relationships of durations. These relationships are most clearly found in the perception of pitch and Stockhausen concluded that pitch is duration transferred to a higher level therefore logarithmic duration structures are perceptually exclusive. His theories suggested that the entire compositional structure could be conceived as timbre: since the different experienced components such as color, harmony and melody, meter and rhythm, dynamics, and form correspond to the different segmental ranges of this unified time, the total musical result at any given compositional level is simply the spectrum of a more basic duration. All information taken from http://en.wikipedia.org/wiki/Karlheinz_Stockhausen

3. In what way does Cook suggest that Babbitt inappropriately drew on perceptual data in order to justify one of his theoretical works?

Cook suggests that Babbitt inappropriately drew on perceptual data specific to certain circumstances and instances that cannot be generalized to other cases with very different situations, in Babbitt’s experiments pitch intervals were identified by subjects in an ear training class.

4. In what way does Cook suggest that Stockhausen inappropriately drew on perceptual data in order to justify one of his theoretical works?

Cook suggests that Stockhausen inappropriately drew on perceptual data specific to certain circumstances by assuming that pitch perception has a logarithmic nature and cannot generalize this theory to other cases before truly weighing the perceptual validity of his generalization.

5. Konecni and Gotlieb
(a) Showed that college-level listeners showed no preference of the ordering of movements, original or modified, in a large scale piece.
(b) Referenced music theorists of questionable authority who claimed that the ordering was vitals important.

(c) Concluded that music Chemists and critics should temper their claims about music and music listening according to empirical results of cognitive psychologists.

(d) All of the above.

6. Rita Wolpert conducted experiments which indicated that theorists view melody, harmony, and rhythm as the essential constituents of music, with instrumentation having a secondary function. (True or False)

7. Cook suggests that Wolpert's research-based claim that musicians and non musicians listen to music very differently may be questionable because the two groups may, in fact, be engaging in different tasks. (True or False)

8. What is the language game of Western music?
The language game of western music, according to Cook, is the way in which western listeners are trained to hear certain musical concepts like thematic relationships and notation relative to their own experiences with western music. This is based both on personal perception and social influences on what the norms for western music are defined as.

9. How is the language game an issue (and a big one at that, for Cook) in Wolpert's research.
The major issue, according to Cook, is that there does not exist a corresponding language game for untrained listeners compared to the one that exists for trained western music listeners. We cannot compare the two groups of trained and untrained listeners in this case. What Wolpert concludes is a difference in purely psychological factors is actually more reliant on social phenomena.

10. Cook claims that psychological writings about music often attempt to give a purely psychological explanation for what are in part social phenomena. (True or False)

11. Evidently

(a) Music theorists are sometimes guilty of misrepresenting phenomena associated with the psychology of music.

(b) Music psychologists are sometimes guilty of misrepresenting musical phenomena.

(c) Both of the above

12. Write a 5 sentence biographical sketch of Pierre Boulez, devoting 2 sentences to personal information and 3 sentences to musical ideas.
A French composer Boulez most notable piece is La Marteau sans Maître. This music is a revolutionary synthesis of many different streams in modern music, as well as seeming to encompass the sound worlds of modern jazz, the Balinese Gamelan, traditional African music, and traditional Japanese music. He also collaborated with Karlheinz Stockhausen throughout his career. Boulez experimented with what he called controlled chance and he developed his views on aleatoric music in the articles Aléa and Sonate, que me veux-tu? Compositional works involving controlled chance written by Boulez, performers get to choose between musical possibilities that have been written out in detail by the composer.

All information taken from http://en.wikipedia.org/wiki/Pierre_Boulez

13. In his article, "Cognitive Constraints on Compositional System's", Fred Lerdahl discusses potential mismatches between the structure that a composer puts into a piece and the mental representation of it that the listener forms in terms of disjunction between compositional grammar and listening grammar. Write a one sentence definition of compositional and listening grammar.

**Compositional grammar** are rules that govern the underlying structure and categorical parsing of a musical piece. **Listening grammar** is the distinct perceived auditory structure and classification of a musical piece.

14. What does "La Marteau sans Maître" (the title, not the music) mean in English?

**La Marteau sans Maître means a hammer without a master when translated to English.**

15. The idea that music involves the encoding and decoding of some kind of message - something that passes from the composer's brain to the listeners - is based on an analog with language (True or False)

16. In two or three sentences, answer the question, what are Lerdahl and Jackendoff's Generative Theory of Tonal Music (GTTM)?

**GTTM is a theory pertaining to the structure of western tonal music that takes into account musical grouping, meter, time span reduction, and prolongation reduction. These elements are further grouped by methods based upon Schenkarian analysis mixed with Chomskian transformational grammar to result in a general theory for generating western tonal music.**

17. What aspect of GTTM did Irene Deliege validate, at least to some extent?

(a) Its mechanism for segmenting the musical surface

(b) Its mechanism for deriving the hierarchical structure of the music from the musical surface

(c) Both of the above

(d) Neither of the above
18. In simple conceptual terms, what is the concept of tonal closure?

Tonal closure is the pleasant sounding relatively immediate conclusion to a musical phrase which produces the effect of relaxation in the tension relaxation cycle that some composers and musicians use in their work.

19. Evidence cited by Cook suggests that:

(a) Tonal closure only has a direct effect on listeners (even musically trained listeners) when the time scale involved is well under a minute.

(b) In perceptual terms, an extended composite, cannot have the tonal unity that a single phrase has.

(c) Both of the above.

20. Cook appears all too eager to throw Lerhdahl and Jackendoff’s baby (GT'TM) out with the backwater of scalability issues. (True or False)

21. By X Chomsky means the grammatical knowledge that a competent language user has internalized, this is considered to be a mental construct. What is X?

X is competence or the resultant internalized thoughts that a competent language user relates to a given phrase or language.

22. By Y Chomsky means the way in which X is used in actual situations. If theories of X deal exclusively with perfect, well-formed sentences, theories of Y deal with interruptions syntactic breakdowns, failures of comprehension, and the goals that people have in using language in specific contexts. What is Y?

Y is the performance or action of the personal processed competence and thoughts of a phrase or language.

23. It is an axiom of formal linguistics that issues of performance cannot be understood except on the basis of a theory of competence. (True or False)

23a. It is an axiom of formal linguistics that issues of X (theory of competence) cannot be understood except on the basis of a theory of Y (performance). (True or False)

24. Lerdahl and Jackendoff built GTTM on the basis of the aforementioned axiom of formal linguistics. (True or False)

25. What is the classic definition of a grammar?

The system of rules implicit in a language, viewed as a mechanism for generating all possible well formed sentences in that language.

26. Why does Cook find the idea of a musical grammar problematic?

Musical styles and pieces vary so greatly that one cannot discern between musical structures that are well formed and ones that are not, music has the essence of creativity built into it and the artistic freedom of many styles make musical grammar hard to
27. In what way does Cook suggest that music is much more fluid than language? *Music is much more fluid than language, one cannot discern the grammar of music until one hears the piece, while we know what grammar we need to use before we start a conversation.*

28. Alan Marsden (1989) has outlined a model of music listening based on the idea of discovery learning. In just a few sentences, describe Marsden's model of listening with reference to GTTM. *As a listener experiences music certain parsing rules, similar to ones that are in GTTM, are strengthened or weakened according to how well they fit the music. Listening to music involves the construction of a grammar to the piece being heard, I would also say reading a musical piece in a known language like that of traditional notation or MxM notation involves construction of a grammar as well.*

29. Cook argues that the competence/performance distinction drawn by Chomsky cannot be sustained in music. *(True or False)*

30. Harris has an issue with formal linguistic theory - the collection of ideas inspired by Chomsky. Cook claims to have essentially the same issue with recent developments in music theory that were so stridently advanced by GTTM. In a sentence or two, articulate the issue. *The point raised is that music and language fundamentally analyzed in a strict auditory manner cannot totally exclude bias from the written equivalent because it is so strongly conceptually related to it within our minds.*

31. What is scriptism? *Scriptism is the assumption that writing is more ideal form of linguistic representation than speech.*

32. Which do linguists claim is the proper basis for the study of linguistics: speech or the written word? *Linguists claim that speech is the proper basis for the study of linguistics.*

33. Which do music theorists is the proper basis for the study of music: sound or score? *Music theorists believe that the music is the proper basis for the study of music.*

34. Cook writes: "It stands to reason, then, that the he kind of full and satisfying comprehension of music at which the theorist aims is unlikely to be attained, except on the basis of a representation as rickety determinate as that in which the music was conceived." Which of the following do you believe this idea legitimizes?

(a) Carrying out a set theoretic analysis of notes that may not be discernable in the music heard.

(b) Writing a program which explicitly captures the hierarchical structure of a melody.

(c) Both of the above.
(d) Neither of the above.

35. Which of the following do you believe to be true?
If you were well trained and versed in both methods then I would say both of the above.

(a) One of the benefits of music theory is that it enables people to hear music better.
(b) One of the benefits of modeling music in Clay is that it enables people to hear music better.
(c) Both of the above.
(d) Neither of the above.

The probe tone technique is method of paying a given scale or musical structure and then playing a single note and prompting participants to categorize such a note. The purpose of this exercise is to find out how the perception of individual pitches is affected by the context in which they are situated. We did this in class one day if I recall correctly.

37. Generally speaking, what is the probe tone technique used for?
The probe tone technique is used to find out how the perception of individual pitches is affected by the context in which they are situated.

38. The concertos key profile is closely associated with Carol Krumhansl. What is a key profile?
A key profile is a graphical synopsis of pitch relative to the distance between different keys, within a given musical piece.

39. The Krumhansl Key Finding algorithm is a distributional algorithm based on key profiles. David Butler notoriously took issue with the theoretical foundation on which this algorithm is based. What was his problem with Krumhansl's algorithm?
David Butler’s problem with Krumhansl’s algorithm is the variability of everyone’s perception and judgment on how well the probe tone fits which was used to construct the algorithm, multiple people might be thinking of totally different values of congruency for the probe tones.

40. What was the main point of Cook’s article?
The main point of Cook’s article is to reiterate the fact that music does not have such a concrete grammar when compared to language and the acceptance of recent academics of strict western musical theory is creating problems for the field of cognitive musicology and experiments related to the research. Furthermore, the main effect of the article is to educate the readers on the countless theories of the musical perception of structure.