

# Assignment 4

BMus/BSc in Music, Part Two Module: Music Perception and Cognition  
Department of Music, City University, London

Tuesday, 27 May 2003.

**QUESTIONS** Answer all the following questions. Each question is worth 10% of the total mark for this assignment.

- 1 One or more of the following statements are true. State which one(s).
  - a. Sequential integration is the segregation of an auditory scene into concurrent streams.
  - b. Sequential integration is the connection of parts of an auditory spectrum over time to form concurrent streams.
  - c. Sequential integration is the chunking of a musical sound into structural units such as motives, themes and phrases.
  - d. The connection of consecutive tones played on a single instrument to form a single stream is an example of sequential integration.
  
- 2 Figure 1A shows a pattern of six tones, perceived to be all in one stream and Figure 1B shows a pattern of six tones with the same pitches perceived to be split into two streams. In both A and B, the vertical dimension represents log frequency and the horizontal dimension represents time. Each horizontal line segment represents a sinusoidal tone. The length of each line segment represents its duration. The time scale is not necessarily the same in A as in B. So, for example, each tone in B does not necessarily have the same duration as each tone in A.
  - a. In which of the two cases, A or B, is the pattern being presented at a faster speed?
  - b. In which of the two cases, A or B, would it be easier to perceive that the second tone occurs after the first tone?

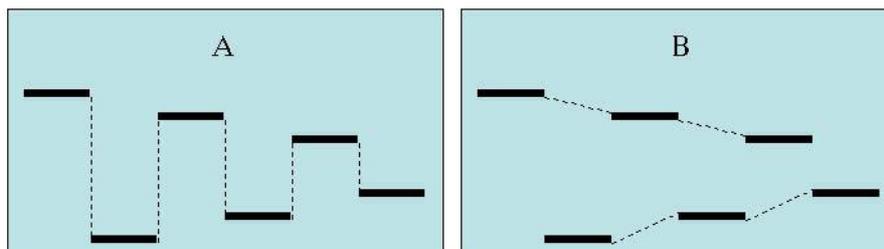


Figure 1: Example for question 2.

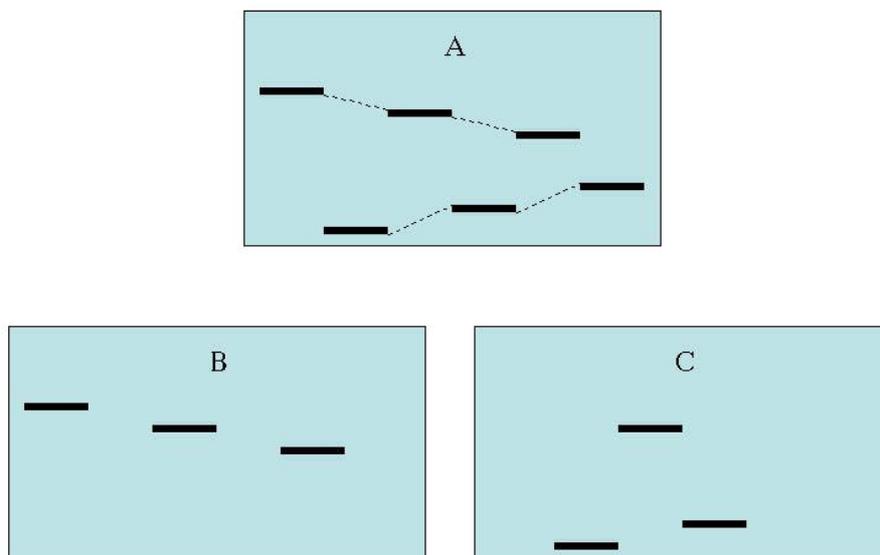


Figure 2: Example for question 3.

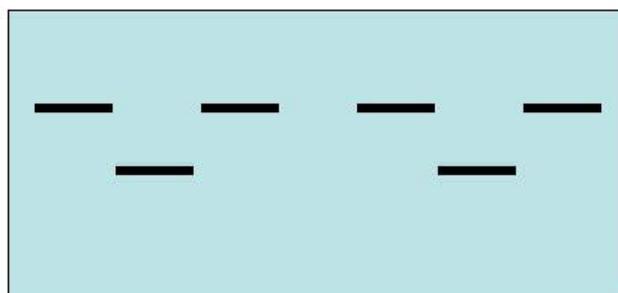


Figure 3: Example for question 4.

**3** Imagine that you are listening to a sequence of tones consisting of repetitions of the six-tone pattern shown in Figure 2A. (Again, the vertical dimension represents log frequency and the horizontal dimension represents time). Assume that you perceive the six-tone pattern to be split into two streams as shown. Figures 2B and C show two, three-tone patterns that are embedded in the six-tone pattern in Figure 2A. Which of these three-tone patterns would you find it easier to detect in the repeated six-tone pattern and why?

**4** Figure 3 shows two repetitions of a three-tone pattern known as a “galloping pattern”. When a sequence consisting of repetitions of such a pattern is heard, which of the following promotes the segregation of the sequence into two streams?

- A smaller frequency difference between the high and low tones.
- A larger frequency difference between the high and low tones.
- A slower speed of presentation.
- A faster speed of presentation.

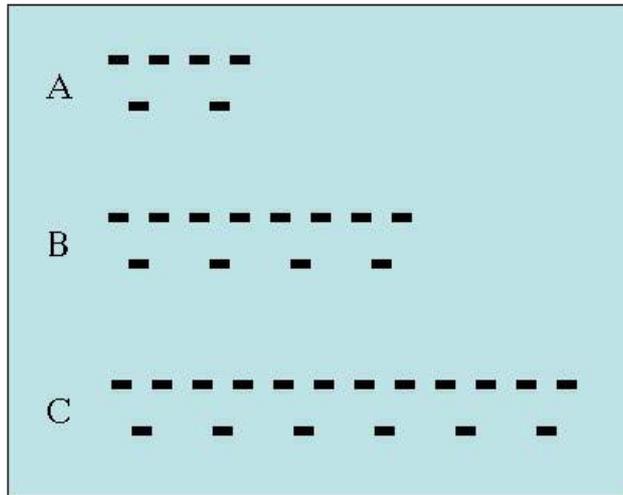


Figure 4: Example for question 5.

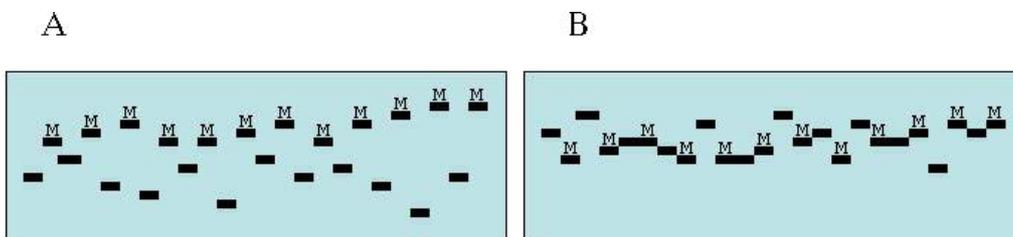


Figure 5: Example for question 6.

- 5** Figure 4 shows three sequences, each composed of a number of repetitions of the same galloping pattern. Which of the three sequences would you be most likely to hear as being segregated into two streams and why?
- 6** Figure 5 represents two sequences in which the notes of a melody (labelled M) are interleaved with distractor tones. In which of the two sequences would the melody be easier to identify and why?
- 7** Provide a musical excerpt (no more than 10 bars) from a published work in which a monophonic isochronous sequence of tones is heard to be segregated into two or more streams. Indicate the stream to which each note in the sequence is heard to belong (e.g., by writing out each stream on its own staff).
- 8** Figure 6 represents a sequence of tones consisting of repetitions of a three-tone pattern in which all the tones have the same pitch. Describe one set of conditions under which the tones marked M would be heard to be in a separate stream from the other tones.



Figure 6: Example for question 8.

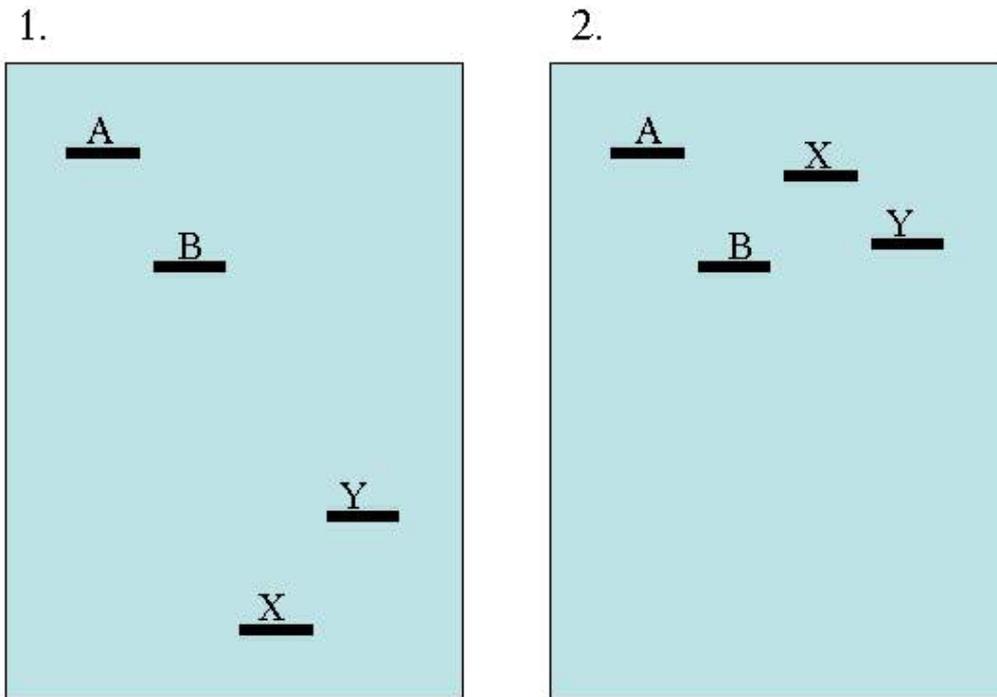


Figure 7: Example for question 9.

**9** In which of the two patterns in Figure 7 (labelled 1. and 2.) would you find it easier to detect the pattern AB, assuming that each pattern is repeated many times to form a sequence and both sequences are presented at the same speed? Briefly explain your choice.

**10** Figure 8 represents an auditory stimulus consisting of a sequence of tones forming an *X-pattern*. Define what is meant by the terms *bouncing percept* and *crossing percept* in relation to X-patterns and describe the conditions under which each type of percept is heard.

**DEADLINE** The completed assignment must be handed in to David Meredith by the end of the lecture on Tuesday 3 June 2003.

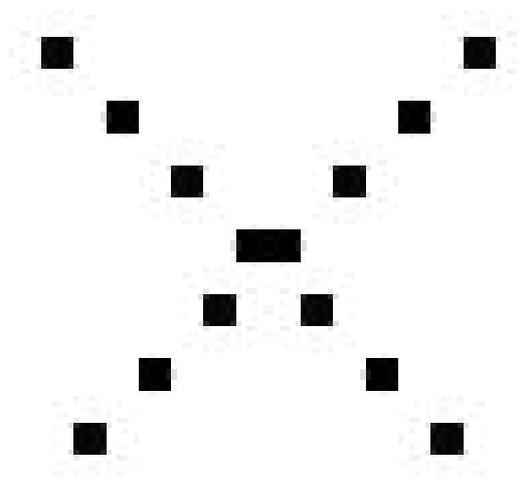


Figure 8: Example for question 10.