

# Math/Music: Aesthetic Links

## Research Paper

**Due: Wednesday, April 20, 2011**

For this assignment, you will investigate one composer and a particular piece (or set of pieces) written by that composer demonstrating some mathematical concept or technique. Roughly half of your paper should focus on historical aspects: biographical information about the composer's life, type of music they wrote, how your particular piece fits within their collected works, background information about your piece, etc. The other half of your paper should be a thorough, mathematical analysis of the piece (or set of pieces) of music. This analysis can be your own interpretation of another scholarly work and/or may involve your own investigations based on concepts we have discussed in class.

You should be as specific in your analysis as possible. For example, instead of writing, "Bach uses lots of inversions in the top two voice parts," a more precise analysis would read, "Bach employs an inversion about middle C in the top two voice parts from measures 35 - 40, although this inversion is not an exact horizontal reflection; it remains within the key of G major." At the same time, it would be boring to read two pages full of sentences such as the previous one. Your goal is to write an analysis that is thorough but also presents the information in a way that is readable and understandable. Topic sentences and summarizing statements will be quite useful toward that aim.

The paper should be 5-6 double-spaced pages in length. This is intended to be a research paper, so you are required to use at least four scholarly sources (historical, mathematical, musical, etc.) Although Wikipedia is useful for background information or links to other sources, it does not count as a legitimate source. Be sure to read your paper over carefully several times before submitting it. The quality of your writing is very important and will factor into your overall grade. It is recommended that you have a classmate read a draft version of your paper and that you seek out assistance from the Writer's Workshop if necessary.

All of your sources should be listed at the end of your paper in a bibliography, whether you quote from them directly or not. The bibliography does not count toward the 5-6 page limit. You should follow the guidelines below for citing sources, making sure to be consistent throughout your paper and within the bibliography itself.

1. Identify direct quotations with quotes and a note in parentheses after the quote, e.g., (Diamond, p. 235), giving information where the quote can be found within your source.
2. If you are paraphrasing or summarizing information from a source but do not use a direct quote, you should still include a reference to that source in the text using either a number or some form of the author's last name. For example, you might end a sentence with [6], [Dia] or [Diamond] to indicate that the ideas being currently presented come from source #6 in your bibliography or from the source written by Diamond. Be sure to distinguish between multiple sources written by the same author.
3. List all your sources in a Bibliography at the end of your paper:

- a) Books: give the author, the title, the publisher and year of publication.
- b) Journal, magazine or newspaper articles: give the author, the title of the article, the title of the journal, magazine or newspaper, the date (or year) of publication, and the starting and final page of the specific article.
- c) Encyclopedias: give the author (if given), the name of the article, the name of the reference book, the edition, the year of publication, and the starting and final page of the specific article.
- d) Websites: give an author (if you can determine that), the full URL (Internet address) and the date you accessed it (since information on the Internet often changes).

## **Deadlines:**

- Wednesday, March 23: Composer, piece of music (or set of pieces), and list of at least four sources.
- Wednesday, April 6: Opening paragraph and outline of research paper.
- Wednesday, April 20: Paper due at the start of class.