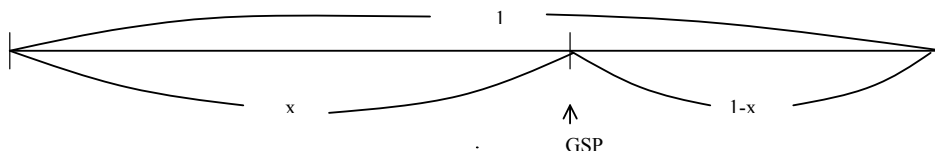


The Golden Section and the Fibonacci Series in Debussy's *Pour le Piano* (*Prelude* and *Sarabande*)

Debussy used principles of the Golden Section and the Fibonacci Series in structuring his music. *Images* (for piano), *Pour le Piano* (for piano), *La Mer* (for orchestra), and *Prelude a l'apres-midi d'un faune* (for orchestra) are pertinent examples. The Golden Section (GS) is a proportion gained by dividing a line into two parts (short and long) with a point that makes the ratio of the longer part to the shorter part the same as the ratio of the long portion to the whole line (see figure 1). There is only one point that makes the Golden Section; this point is called the Golden Section Point (GSP).

Figure 1



The Golden Section is often found in nature, architecture, and fine arts; examples include the spiral shape of the nautilus shell, the Parthenon, a temple to the goddess Athena, and many pictures and sculptures.

The ratio of the Golden Section has to do with the Fibonacci Series. The Fibonacci Series is a series of numbers in which the sum of the previous two numbers equals the following number. The Fibonacci Series is:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89 ...

As the series goes on (as the numbers get larger), the ratio of each two adjacent numbers grows closer to the Golden Section.

The first movement of *Pour le Piano*, the *Prelude*, shows Golden Section Points at modulations and structurally significant points. Within smaller sections, for example within the first section of the piece or middle development section of the piece, the Golden Section Points are found with contrasting dynamics or other noticeable figure changes. Phrases correspond to the Fibonacci Series and ultimately to the Golden

Section Points as well. The *Saraband* shows the same principle of using the Golden Section in small phrase construction as well as a big structure of the whole movement.

Various composers have used the Golden Section and the Fibonacci Series when composing music. According to Lendvai (1971), Bartok's chromatic system is based on the Golden Section and the Fibonacci Series. Bartok used this series in structuring his music; *Allegro Barbaro*, and *Music for Strings, Percussion and Celesta* are often cited as examples. Beethoven may have also used these principles in structuring his fifth symphony. Satie, Schubert and Mozart may have adopted these principles in their music as well. The structure of Debussy's *Pour le Piano* is primarily based on principles of the Golden Section and the Fibonacci Series.