

**025:251 COMPOSITION: ELECTRONIC MEDIA II**  
**Spring 2010**  
**Rhythm in Max/MSP**

1. Ideas for rhythmic modules that do the following:
  - a. Steve Reich phase shifting
  - b. Messiaen additive/subtractive
  - c. Messiaen retrogradable/non-retrogradable
  - d. Traditional augmentation/diminution
  - e. Jazz straight/swing
  - f. Jazz, blues, rock grooves
  - g. Stravinsky cells
  - h. Babbitt serialized duration sets
  - i. Babbitt order and permutation
  - j. Carter metric modulation
  - k. Cowell, Theremin, rhythmicon
  - l. Roads forward-masking thresholds
  - m. Xenakis grain clouds
  
2. Issues related to rhythm:
  - a. Envelopes
  - b. Duration vs. event initiation
  - c. Markov chain (acting on individual notes or groups of notes)
  - d. Syncopation (hemiolas and generalized hemiolas)
  - e. Melodic contour
  - f. triplets
  
3. Durations based on  $16^{\text{th}} = n \text{ ms}$ 
  - a.  $1 = 16^{\text{th}}$
  - b.  $2 = 8^{\text{th}}$
  - c.  $3 = \text{dotted } 8^{\text{th}}$
  - d.  $4 = \text{quarter}$
  - e.  $5 = \text{quarter tied to } 16^{\text{th}}$
  - f.  $6 = \text{dotted quarter}$
  - g.  $7 = \text{quarter tied to dotted } 8^{\text{th}}$  (or double-dotted quarter)
  - h.  $8 = \text{half-note}$
  
4. Triplet durations, derived from 1 divided by 3
  - a. .333
  - b. .666
  - c. 1.333
  - d. 1.666
  - e. 2.333
  - f. 2.666
  - g. etc.
  
5. Quintuplet durations, derived from 1 divided by 5
  - a. .2
  - b. .4
  - c. .6
  - d. .8
  - e. 1.2
  - f. 1.4
  - g. etc.