Composition: Electronic Media I
Sept. 24, 2007
Assignment 2, Part 1

1. Assignment 2 will be presented in class on Oct. 8, 2007.

2. Discussion of sound mass.
   a. History
   b. Grain
   c. Density and distribution.
   d. Compositional uses.

2. Overview of the assignment:
   a. Create 5 versions of a grain.
   b. Create 5 non-literal copies of each grain, for a total of 25 grains.
   c. Using batch-processing techniques, create a network of pitch transpositions of these grains.
   d. Drag and drop these into a Pro Tools session and create a 5 pre-masses.
   e. Bounce these pre-masses and transpose them to make more versions.
   f. Drag and drop these pre-masses into a Pro Tools session and create one, beautiful sound mass.

4. Purpose of the assignment:
   a. To promote up-close hearing and learn the virtues of non-repeatability.
   b. To learn how to build up complexity.
   c. To learn how to think in terms of a chain of processes, a skill which will transfer over into Max/MSP next semester.
   d. To create a sound mass that can be used in a composition as a element of form.
   e. To create a source sound out of which can be extracted chords, melodies, grace note figures, and gestures.

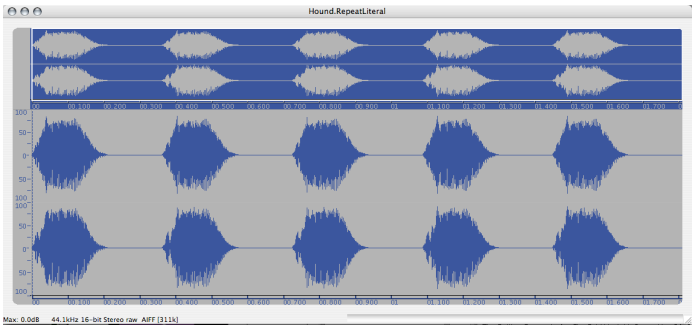
5. To get started, choose your favorite sound from Assignment 1 and use copy and paste techniques in Peak to create 5 versions of it as follows:
   a. Version 1 is a copy of the original from time A_1 to time B_1, where A_1 precedes B_1.
   b. Version 2 is a copy of the original from time A_2 to time B_2, where A_2 precedes B_2.
   c. Version 3 is a copy of the original from time A_3 to time B_3, where A_3 precedes B_3.
   d. Version 4 is a copy of the original from time A_4 to time B_4, where A_4 precedes B_4.
   e. Version 5 is a copy of the original from time A_5 to time B_5, where A_5 precedes B_5.
   f. Each value of A and B should be unique.

6. Demonstration of copying a segment of a soundfile to a new soundfile in Peak.

7. Name the soundfiles YI.Grain1, YI Grain2, YI.Grain3, YI.Grain4, YI.Grain5.

8. Modify the sounds as follows:
   a. Normalize
   b. Edit out silences if they occur.
   c. Fade in to produce a pleasing attack.
   d. Fade out to produce a pleasing decay.
   e. Normalize.

9. Referring to the Sept. 17, 2007 handout, “Repeatablility in Peak,” make 4 copies of YI.Grain1 as shown below:



10. Alter the attack, tail, and pitch of these sounds (leave the original alone) as demonstrated in that handout.

11. Repeat steps 9 and 11 for YI.Grain2, YI.Grain3, YI.Grain4, and YI.Grain5.

12. Using copy and paste techniques, copy each sound in YI.Grain1 to a new file called YI.Grain1a, YI.Grain1b, YI.Grain1c, YI.Grain1d, and YI.Grain1e. Remove silence and normalize each file.

13. Repeat step 12 for YI.Grain2, YI.Grain3, YI.Grain4, and YI.Grain5. This should give you a total of 25 files, named as follows:

	YI.Grain1a	YI.Grain2a	YI.Grain3a	YI.Grain4a	YI.Grain5a
	YI.Grain1b	YI.Grain2b	YI.Grain3b	YI.Grain4b	YI.Grain5b
	YI.Grain1c	YI.Grain2c	YI.Grain3c	YI.Grain4c	YI.Grain5c
	YI.Grain1d	YI.Grain2d	YI.Grain3d	YI.Grain4d	YI.Grain5d
	YI.Grain1e	YI.Grain2e	YI.Grain3e	YI.Grain4e	YI.Grain5e

14. This should take 1-2 hours to do. Once you learn Max/MSP, you can automate the entire process. Next class we will discuss how to make pitch transformations of these files and use them in Pro Tools.

Time	0-1	1-3	3-5	5-6	6-7	7-9	9-	
Smallest number of grains								
Greatest number of grains								
Average number of grains								
Shortest grain duration								
Longest grain duration								
Average grain duration								
Percentage of sharp attack, sharp decays								
Percentage of sharp attack, medium decays								
Percentage of sharp attack, gradual decays								
Percentage of medium attack, sharp decays								
Percentage of medium attack, medium decays								
Percentage of medium attack, gradual decays								
Percentage of smooth attack, sharp decays								
Percentage of smooth attack, medium decays								
Percentage of smooth attack, gradual decays								
Lowest pitch								
Highest pitch								
Average pitch								
Shortest grain duration								
Longest grain duration								
Average grain duration								
Percentage of short grains								
Percentage of medium grains								
Percentage of long grains								
Percentage of left-panned grains								
Percentage of right-panned grains								
Percentage of center-panned grains								
Percentage of grains with 100% amplitude								
Percentage of grains with 80% amplitude								
Percentage of grains with 60% amplitude								
Percentage of grains with 40% amplitude								
Percentage of grains with 20% amplitude								

1. Pitch change processing and pitch sets.
   a. Software pitch change compared to pitch-class transposition mod 12.
   b. David Lewin's Transformational Theory
   c. Fritts Distributive Method of Transposition

2. Notation.
   a. t and e for ten and eleven
   b. 2(0 1 4) = 2+0, 2+1, 2+4 = 2 3 6

3. Transpositions of pitch-class set (0 1 4).

0(0 1 4) = 0 1 4
1(0 1 4) = 1 2 5
2(0 1 4) = 2 3 6
3(0 1 4) = 3 4 7
4(0 1 4) = 4 5 8
5(0 1 4) = 5 6 9
6(0 1 4) = 6 7 t
7(0 1 4) = 7 8 e
8(0 1 4) = 8 9 0
9(0 1 4) = 9 t 1
t(0 1 4) = t e 2
e(0 1 4) = e 0 3

4. Set theory notation.
   a. Set union: $\cup$
   b. Set intersection: $\cap$
   c. Empty set: $\emptyset$

5. Set theory definitions using set X = {a, b, c} and set Y = {d, e, f}.
   a. Set union: $X \cup Y = \{a, b, c, d, e, f\}$
   b. Set intersection: $X \cap Y = \emptyset$

6. Set theory and hexachordal combinatoriality.
   a. 0(0 1 2 3 4 5) $\cup$ 6(0 1 2 3 4 5) = Aggregate (12-note chromatic collection)
   b. 0(0 1 2 3 4 5) $\cap$ 6(0 1 2 3 4 5) = $\emptyset$
   c. Combinatoriality and counterpoint
   d. Combinatoriality and harmonic areas.

7. For hexachord A, tetrachord B, and trichord C, and a transposition value T_t, consider the following
   a. If $T_0(A) \cup T_n(A)$ = aggregate, then $T_0(A) \cap T_n(A) = \emptyset$
   b. If $T_0(B) \cup T_m(B) \cup T_n(B)$ = aggregate, then $T_0(B) \cap T_m(B) = T_0(B) \cap T_n(B) = T_m(B) \cap T_n(B) = \emptyset$
   c. If $T_0(C) \cup T_m(B) \cup T_n(B) \cup T_p(B)$ = aggregate, then $T_0(C) \cup T_m(B) \ldots \cup T_p(B) = \emptyset$

8. Examples of trichord combinatoriality induced by transpositions of pitch-class set (0 1 4).

0(0 1 4)	=	0	1	4	**0**	**1**	**4**
1(0 1 4)	=				**1**	2	5
2(0 1 4)	=	2	3	6			
3(0 1 4)	=				3	**4**	7
4(0 1 4)	=				**4**	5	8
5(0 1 4)	=	5	6	9			
6(0 1 4)	=	6	7	t			
7(0 1 4)	=	7	8	e			
8(0 1 4)	=				8	9	**0**
9(0 1 4)	=				9	t	**1**
t(0 1 4)	=	t	e	2			
e(0 1 4)	=				e	**0**	3

a. Trichords on the left have the relation $T_0(C) \cap T_x(B) = \emptyset$
b. Trichords on the right have the relation $T_0(C) \cap T_x(B) \neq \emptyset$

9. Application of the Fritts Distributive Method of Transposition.
   a. Goal is to transpose (0 1 4) so that 1 occurs once per trichord.
   b. This is achieved by applying two levels of transposition to (0 1 4).

0((0 1 4), 1(0 1 4), 9(0 1 4)), 9(0(0 1 4), 1(0 1 4), 9(0 1 4)), 1(0(0 1 4), 1(0 1 4), 9(0 1 4))
= 0 **1** 4 **1** 2 5 9 t **1** 9 t **1** 0 **1** 4 **1** 2 5 **1** 2 5 9 t **1** 0 **1** 4