

Williams Mix Extended

Octophonic electro-acoustic diffusion

participants:

valerio tricoli - composition, diffusion

werner dafeldecker - composition, diffusion

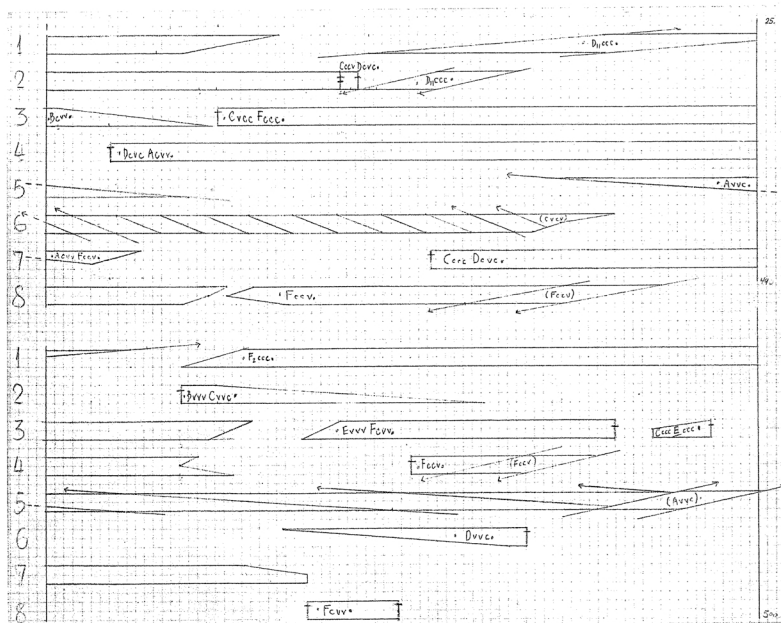
Williams Mix Extended is a new interpretation of John Cage's Williams Mix by Werner Dafeldecker and Valerio Tricoli, originally scored for magnetic tape in 1952. Approaching the original score from a contemporary perspective, this new interpretation of Williams Mix contains a close analysis of the relationship between early tape music and current digital production, allowing for original parameters of the score to be realized within the context of recent audio technological practices and live instrumental performance. Williams Mix Extended has a duration of 32 minutes whereas the original is 4 minutes and 15 seconds long. The difference between the two durations is generated by the transposition of the score's specifications from tape to digital audio software. To complete Williams Mix Extended a library of approximately 2000 different sounds is used, all recorded by Dafeldecker and Tricoli.

A brief introduction to the Williams Mix score

Williams Mix (1952) is an 8 channel electro-acoustic composition that has a special standing in the oeuvre of early tape music, in that the work was realized in the studio according to an already completed score. In those days, composers usually generated their tape pieces directly out of their studio working process. But in the case of Williams Mix, Cage's mode of composition called for the realization of preliminary fixed written notations whose musical parameters were derived through chance operations (I Ching divination).

The 192 page score is, as Cage referred to it, a kind of 'dressmaker's pattern' showing, in 1:1 ratio, how the 8 monophonic tapes (running simultaneously) should be spliced, and what kind of sound should be recorded within each "tape slice". The sounds are categorized as follows:

A: city sounds; B: country sounds; C: electronic sounds; D: manually produced sounds, including the literature of music; E: wind produced sounds, including songs; F: small sounds requiring amplification to be heard with others.



2012 EXTENDED VERSION: the process undertaken to realize a digital version of Williams Mix

For a number of years we had been attracted to the idea of working on an interpretation of Cage's Williams Mix score, asking ourselves if it would be both relevant and suitably interesting to develop a new tape version of it, in all means (except for new sounds) representative of the original one completed in 1952. After some weeks of research into the logistics of developing the piece for actual concert presentation, which included a close analysis of Cage's detailed one hundred and ninety two page score and multiple experiments with tape, we came to the conclusion that a realisation of the original piece true to the score would be somewhat impractical. To complete the piece we would have needed no less than six months of painstakingly intricate tape splicing and cutting (Cage's original took approximately a year to finish). This, for obvious economical reasons wasn't possible for us. Nonetheless, we realized that the problems associated with the tape editing required by the score wouldn't necessarily prohibit us from successfully working on Williams Mix, if we approached it from a different perspective.

Cage's original piece was in fact made for the current audio technology of its day, and we realized that a digital interpretation could be a way to capture the spirit of technological sound exploration that is as much a part of Cage's score as was the use of

tape. Thus, applying twenty first century production techniques to a score written for a historical set of audio technologies emerged as a worthwhile path of exploration. However, in saying this we were aware that some of the physical tape effects that the score requested were not directly transferrable into the digital domain. This presented itself as an intriguing problem and a challenge for us to find appropriate digital solutions to meet the requirements of Cage's original score. With further experimentation in the studio we became convinced that it was indeed possible to translate this "Cagean tape grammar" from the score to digital sound. Moreover we had obtained the possibility to further investigate and magnify certain implicit elements of the composition, unfolding Williams Mix into a rich and sonically detailed piece. As soon as the specifications of the score were transposed to fit digital requirements, we recognized that the duration of the piece, but not its dynamics, became a factor to be interpreted within the score. In fact, no time indications are given by the score itself; it only gives spatial information (the length in inches of the tape fragments that compose the piece).

Tape is physically set at inches per second, so by knowing how fast the tape runs we can easily discover the duration of each page of the score. However, this formula does not apply to the digital domain. In digital audio software, spatial information and its relationship to time is not fixed, but always related to a number of variables (e.g. zoom function, monitor size and resolution), thus the duration of the score becomes a matter of subjective decision. Williams Mix Extended became a total duration of 32 minutes.

As mentioned above, the conversion of the piece to the digital domain implied a reinterpretation of a number of tape effects that the score required; if conventional tape editing can be simulated by digital means, this is not true for the unusual editing techniques required by Williams Mix.

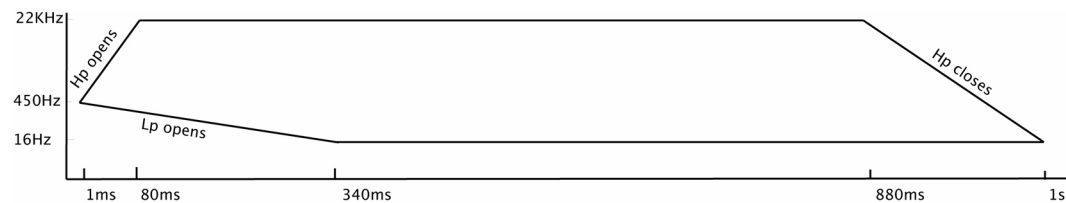
In particular:

1 -each fragment of tape must be cut, according to the score, in a unique way (different angles; single or double cuts...) to "effect the attack and decay of the sounds recorded on the tape" (John Cage, Williams Mix Instructions, unpublished manuscript).

2 - "when arrows appear in the score on diagonal lines, this refers to a way of splicing on the diagonal [sic] at the angle and in the direction notated which produces an alteration in all the characteristics of the recorded sound" (John Cage, Williams Mix Instructions, unpublished manuscript).

We experimented on magnetic tape in an attempt to clearly understand the effects such techniques would have on the particular sound that was cut. Using a Revox B77 HS, we recorded the output of a tape treated with these techniques on the computer to eventually slow it down (or stretch it) to have a clearer insight into these sonic phenomena (which in reality last at most, 1/3 of a second, but usually a lot less). According to these experiments we decided how to 'translate' these analogue effects into the digital domain:

1 - by stretching the sound (recorded at 24bit, 96kh) several times, some sort of fade in (or fade out) together with frequency rumble is perceivable. To obtain a similar effect, we will apply lowpass and highpass envelopes following the same angles of the tape cuts.



This example shows how we dealt with the "cuts" of a 1 second tape fragment. Between 1 and 80 milliseconds the high pass filter progressively opens from 450 Hz to its maximum, 22.000 Hz. Simultaneously, but with a longer progression - 340 ms -, the low pass filter opens from 450 Hz to its maximum, 16 Hz. Between 340 and 880 milliseconds all frequencies contained in the sound file are hearable. At 880 ms the high pass filter starts to close, reaching its minimum value of 16Hz at the end of the sound file.

2 - "An alteration in all the characteristics of the recorded sound" is perceivable, with every kind of sound suddenly transformed into frequency rumble, and some mid-range distortion is present. It remains unclear if the increase of the angle of the diagonal according to which the tape is spliced produces an increased amount of distortion or not. A digital simulation of this would be possible, but instead we opted to stay coherent with our medium; we decided to apply percentages of bit degradation in relation to the angles of the diagonals given by the score. The ratio is 1° to 1.1%, hence a tape fragment spooling horizontally will not be degraded; one spooling in a diagonal of 45° will be degraded by 50%; one spooling in a diagonal of 35° will be degraded by 38,5; and so on.