2. Recorded Objects, Reproducibility, and Identity

In his now legendary paper "The Work of Art In The Age Of Mechanical Reproduction", Walter Benjamin stated that "to an ever greater degree the work of art reproduced becomes the work of art designed for reproducibility". This was a provocative observation, implying that the machinery of mass production was not an irrelevant ancillary to the creative process but provided an underlying spirit, structure, and raison d'etre for the art object itself.

Though Benjamin's comments were inspired primarily by technological developments related to film and the graphic arts, it is not difficult to transpose his observations today to the making of recorded objects.

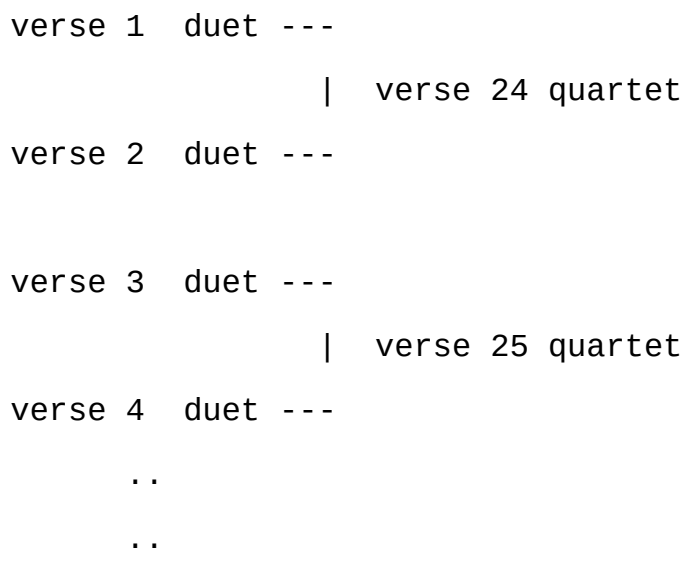
The primary property of all recorded objects is their reproducibility. Not just reproducible as objects in their entirety, as in "I really liked that Elly Ameling recording of Brahms folk songs and made a tape of it", but reproducible in part, as in "I know you especially like the way she does 'O kuhler Wald', so I'll make a tape of that song for you", or "Can you make a tape of the first 8 bars of that song, please? The producers decided to use them in the film over the credits." At the most general level, we are often asked to identify the object under a single rubric. I might refer to my recording of Schumann's Symphonies #1 and #4, played by the Vienna Philharmonic conducted by Bernstein. (Or is it my recording of Bernstein

conducting the Vienna Philharmonic playing Schumann's Symphonies #1 and #4? The rubric often wrests from us a hierarchical description.) Or take "New Music For Virtuosos", a recording of seven pieces (four by Milton Babbitt, one each by Leslie Bassett, William O. Smith, and Charles Wuorinen), performed by nine independent musicians (who may or may not have known each other before this recording; the rubric sometimes suggests a hierarchy -- this is new music for, not by, virtuosos). Or there are recordings like the Beatles' "Revolver", a collection of 11 songs, unrelated except by the fact that they exist "together" on the same disk.[i]

To refer to recorded objects in this general way implies an ability to reproduce separate entities, or parts of entities. On the simplest (and perhaps most compositionally useful) level, a recorded fragment (no matter what medium) can be copied and duplicated anywhere -- within the same, or any other, composition. Within the same composition the duplication might offer some recapitulative advantage; the recurring, resounding church bell in Varese's Poeme Electronique, for example. Examples of the second case, recordings pieced together from other recordings, are rarer (perhaps for copyright reasons). Take, as one example, English composer John Cardale's "1956". The piece is constructed from fragments of Karlheinz Stockhausen's "Gesang der Junglinge" and Elvis Presley's "Heartbreak Hotel", very cleverly mixed and juxtaposed. One of the

things that makes the piece interesting is the way short (less than a second) excerpts from works so dissimilar in just about every way, can sound like they originated from the same piece.[ii]

Reproduction of material at the lowest level involves the copy of separate tracks, either to other tracks on the same device, or to different devices. Because a track is as much a conceptual category as a physical one, boundaries can blur, as the output from one level becomes the input to another. An interesting example is Harry Partch's "And on the Seventh Day Petals Fell in Petaluma". The piece -- inseparable from the recording --consists of twenty-three one minute duets or trios ("verses"), followed by ten composites of those verses, into quartets or quintets.



Theoretically each level is exactly reproducible, though depending on the media and mode of transfer a certain amount of noise may be introduced.[iii] Reproduction of disk recordings depends on a metallic "mother" which has a limited wear of some several thousand pressings, the last disk in the run being substantially inferior to the first. With tapes it depends, of course, on whether all copies were made from the "master" or from other copies. Digital copies are about as noise-free as we have at the moment, though devices differ in quality, of course, from manufacturer to manufacturer, model to model. One may well question, then, to what extent any two reproductions are the same. Moreover, it's worth asking whether, and how, an object is affected by multiple playings; a single disc recording, for example, can often easily be identified by the "sound" of its wear, i.e., the physical (and hence temporal/musical) position of pops and scratches.[iv]

Reproducibility and Originals

If a score's primary function is to generate multiple, yet accurate, performances -- to make the music reproducible -- then the reproducibility of the recorded object frees the score from that function (and obligation). The recording can be turned into something potentially more than an electromagnetic image of a live performance. Once the recorded image is equated with the event itself, once playback equals performance, then the recording is freed

from its "stenographic" function, from its need to be representational, to document reality. The recorded image, creating its own reality ("the choral production, performed in an auditorium or in the open air, resounds in the drawing room"[v]) becomes a "new" music in its own right, engendering new ways of composing and hearing.

Still, the score offers us a unique point of reference, a yardstick by which any and all compliant performances can be measured. We have a certain amount of faith in the fact that our copy of Beethoven's Seventh Symphony is related in very significant ways to an original manuscript prepared by the master himself, and it's that faith which gives the score its authority. The score is an original.

With recordings for which there is no score, or for which the score serves only as a blueprint, we must ask ourselves where an original exists, if anywhere. For example, a piece which has been synthesized digitally on a computer system and eventually released to the public in both LP and cassette form might have several "masters": a two-track quarter-inch reel-to-reel "master tape" and a "master cassette", from either one of which can be cut a hard, vinyl "master", from which the metal mother can be made so that the records themselves can be pressed. But one may consider the data files themselves (or on older systems, the stack of 80-column punched cards) as constituting the "master"--after all, it is from those files (which may be

many, containing representations of several stages of the composition) that new master tapes will originate.[vi]

If, as mentioned above, we might well question to what extent any two reproductions are the same, then from the foregoing we will correctly conclude that unless and until a relationship can be established between a recorded object and its original, the identity of a recorded object can never be taken for granted.

Identity (a digression)

"What more easy than to conceive a tree ... existing by itself, independent of, and unperceived by any mind whatsoever?" (Hylas to Philonous in Dialogue I of George Berkeley's Three Dialogues.)

People know quite a lot about the properties of sound nowadays. Enough, anyway, that "Berkeley's paradox" (if a tree falls in a forest and no one is around to hear it, then does it make a sound?) doesn't seem to be so problematic. If a tree falls in a forest and no one is around to hear it then no, it doesn't make a sound.

When a tree falls it disturbs the air around it; how much of the air, and the extent of the disturbance, depend, of course, on the size of the tree. The air is disturbed according to the laws of physics, whether anyone is around or not. But air disturbed according to the laws of physics does not in and of itself constitute sound. That is, the word "sound" is what we use to describe what happens not

just when air is disturbed, but when the disturbed air reaches our eardrum. It's only then that we say we "hear" something. A tree falls in the forest causing millions of air molecules to be disturbed, but if there's no ear for those molecules to come into contact with, and similarly disturb, then there is, very simply, no sound. What if someone puts a tape recorder in the forest, starts it running, and then leaves before the tree falls? Won't the tape be evidence enough that sound did in fact occur, even though no one was around?[vii] No, this just postpones the moment at which we'll be forced to define sound from the moment the tree is falling to sometime later when we're listening to the tape.

Strictly speaking, sound won't occur until the tape is "played back", and the loudspeakers (or headphones) disturb the air molecules in a way that we hear something -- in this case something rather like a tree falling. Something <u>like</u> a tree falling, even something like <u>that</u> tree falling, but since we are not in the forest within earshot of the tree itself, we can not be actually hearing a tree falling. What is it then, that we are hearing?

The tape is essentially a storage device, holding a sonic imprint on it. It takes one kind of device to make the imprint -- a microphone -- and another kind of device to turn the imprint back into sound -- a loudspeaker. A tree falls, pushing molecules of air in all directions. Somewhere close by is a microphone (connected to a tape recorder).

Air molecules disturb the microphone, causing it to vibrate similarly. The pattern of disturbance is then transformed into an electromagnetic analog, imprinting itself on the millions of particles of oxide making up the tape. Sometime later, during the playback process, these particles are turned back into an electrical signal and passed to a loudspeaker, which must translate that signal even farther back to a mechanical one, literally pushing the air in front of it -- disturbing it -- in a manner we hope will be nearly identical to the disturbance the tree made when it fell in the first place.

Uniqueness of the Sonic Event

It's not difficult to see that there's a lot of room for "noise" to be introduced into the record-playback system. If the microphone had been positioned differently, or if a different microphone had been used, or different loudspeakers, or if the tape was played back in a different room -- any one of these changes, and countless more --would have changed the way that falling tree sounded when we played back the tape. How do these different ways of sounding correspond to the way the tree actually sounded --that is, when someone was around to hear it when it fell?

Much as manufacturers of recording tape would like us to believe otherwise, we don't ever confuse the recorded event with the event itself.[viii] In that sense the question is something like asking how a photograph of the tree

compares to the actual tree. The tape recording is an imprint of a sonic event which has already occurred -- an event which took place at a particular place and time in history. And if, as Benjamin Boretz has demonstrated, "to be in a given place in a chronology is to have a unique sound, and because to have a unique sound is to be a unique thing, we may truly suppose that no two musical entities can be alike, that musical qualities, as elicited by attribution through a common theory, are all ontologically distinct, rather than repeatable in the sense of qualia." [ix] One can only conclude that, if no two trees are identical, then no two trees can sound the same falling. Our tape, then, being a recording of a unique event, becomes the only tape of its kind.

But couldn't someone have just as easily hooked up two tape recorders in the forest, producing two tapes of the same event? Now even if we were to imagine that both tape recorders were identical (made by the same manufacturer and carrying the same model number), it would be impossible for both to be in exactly the same place at the same time. The molecules of air set into motion and reaching the microphone of the first tape recorder would not be the same as those reaching the second. The sonic imprints would be different, reflecting the different spatial perspective of each tape recorder. (The tape is, in effect, saying "what it sounds like from here", much as a photograph is "what it

looks like from here".) And because each perspective is unique, then, once again, each of our two tapes is unique.

What we are admitting here is what we already know to be true in everyday life, namely that two (or three, or a hundred) witnesses to an event witness that event uniquely, if for no other reason then because they witness it from a position unique in time and space. The event itself, then, can be defined only from one or more specific points of view. The question asked above: "How do these different ways of sounding correspond to the way the tree actually sounded?" must now gives rise to another: how do these different ways of sounding correspond to each other?

The tapes might correspond rather closely to what a human ear at that exact spot might have heard -- and to each other -- or they might not. But how important is it that they do? To the person who thinks of the tape recording as a sonic moment preserved, as an historical document, then it's probably desirable that recording and event correspond as much as possible. The recording is representational, like a landscape, to be rendered faithfully. "Noise" --that is, anything which alters or corrupts the original pattern of sound waves -- is something to be eliminated. To another person, however, for whom the challenge of recording is not in finding ways of eliminating noise but of controlling it, a tape can be a different thing entirely --a means of not only preserving sound, but of shaping it. For this person, the joy is not in hearing now, in his living room, for the

first time, the sound of a tree which fell in a forest fifty miles away four days ago, but in knowing that the tree falling in his living room sounds, in fact, like no tree ever sounded before.

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[i] The question becomes further complicated by the fact that the British release of "Revolver" (the original) contains 3 additional songs not contained on the American release.

[ii] And of course the fact that they are, now, inhabiting the same piece is not without irony. We are reminded that both Stockhausen and Elvis, musical contemporaries (seven years apart in age), each of whom epitomized, in the year 1956, a significant musical "genre", had, in all likelihood, been totally ignorant of each other's work. Of course all this makes sense only from the point of view of someone who can identify the strains of "Gesang der Junglinge" and recognize Elvis' voice, and understand the connection between the year and the title. Which raises the most interesting -- and self-reflective -- aspect of the piece: the fact that Cardale's "1956" could only have been made some time after 1956. (My thanks to David Hicks for this last point.) In a similar vein, there is Richard Trythall's "Omaggio a Jerry Lee Lewis", a recording made from fragments of Jerry Lee Lewis' "Great Balls of Fire".

[iii] Noise can be eliminated or introduced (often intentionally) with filtering devices. Of course all recorded objects are, in a sense, filtered sources of some kind. No sound can find its way onto any recordable medium without having first passed through some kind of filter, be it a microphone, tape recorder, or synthesis program. Then, the recorded object must be subjected again to filtering on playback; it must pass through an amplifier, and then through some sort of bandpass filter (both of which may be variably adjusted by the listener). And of course there is the loudspeaker itself, the final voice of all recorded objects, which is itself a filter. (In mixing popular records it is customary for there to be two pairs of playback speakers in the studio: one of high quality, capable of accurately reproducing sound over as much of the audio spectrum as possible, and another "cheap" pair, more

representative of those owned by the average listener. Some studios have a pair of car speakers as well. The idea, of course, is that the mix should be tailored for what the record will sound like in a "normal" environment, not an ideal one.)

With analog filters it's quite easy to trace a path from source to filter, with the output of one filter perhaps becoming the source for another. A composition might be "built up" in precisely this way, during preliminary or final mixing, as a sequence, or string, of filtering devices. One should include here all devices designed to modify the signal during recording and/or mixing: reverberation units, harmonizers, and distortion boxes. Software filters, on the other hand, are essentially part of the same program which generates the source; depending on the implementation, it can be very difficult to separate "source" from "filter", except to identify lines of code in terms of their functionality. With digital filtering, then, we must expand our concept of filter from that of a "black box" to that of a process. (Digital-to-analog and analog-to-digital converters may be considered high level filters which combine, in effect, both process and black box.) Filtering then becomes embedded in the act of composition itself, whether we are generating sound for recording, or composing a string quartet for the concert hall.

[iv] For example, I might identify my recording of Schumann's Symphony #1 played by the Vienna Philharmonic conducted by Bernstein, by the sound of a small scratch which I know precedes measure 50 of the first movement.

[v] Walter Benjamin, Illuminations, p.221.

[vi] Or, regarding my scratchy Bernstein/Vienna Philharmonic recording of Schumann's Symphony #1: we can be sure that the recording is mine because we can be absolutely sure that the scratch is not part of the piece. But what about some much more abstract object; might not a pop, scratch, or distortion (the disk may be warped) be heard as part of the piece? Only the original knows for sure.

[vii] This formulation in no way refers to the Newhart Show episode (related to me by Paul Lansky), where the tape recorder was positioned in the path of the falling tree, destroying the evidence. Obviously the show's producers weren't themselves so sure of the outcome -- i.e., what, if

anything, would have been recorded -- that they felt it necessary to invent a deus ex machina.

[viii] I'm thinking of the advertisement for Memorex tape: "Is it live or is it Memorex?"

[ix] "Musical Cosmology" PNM, Spring-Summer 1977