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PROFESSOR: Our guest today, this is Neil Leonard from Berkeley. As you can see by your handout, he's the director of the interdisciplinary Arts Institute there, and professor of electronic production and design.

He's been a friend of mine. He was a former student, briefly, at NEC, and gone on to great, wonderful things, including travels around the world, as you can see by the bio so we're very fortunate that he's here today.

He's got an assignment on the handout which he'll talk about as we go through. And that'll be due next Monday like we've done before with other of our presenters. Don't forget, Wednesday we have a concert with Neil and an associate Robin Eubanks, who's one of the great improvisers on the scene today, wonderful trombonist.

So they'll be in Killian Hall, Wednesday night, 8 o'clock. So bring everybody you know for that. It's free. And once again, there will be a concert reflection, as we know. So turn it over to Neil, welcome him. Thank you.

NEIL LEONARD: Hi. So I'm going to give a short presentation on a work I've created, a little bit of background and why I made the work, and leave you with an assignment, which is to create your own work along the same lines and with the idea that when I come back next Monday I'll be able to hear what you guys have come up with. And we could even play together. So this is all kind of going in the direction of you taking some of these ideas and running with them on your own.

I have a background as a jazz saxophonist with some activity in the area of fine arts, which kind of means that I've always had not like a singular vision of what I want to do, but I've always kind of been looking on the peripheral for other things that will be

interesting.

When I was a teenager, really, I played in bands in Philadelphia. And one of the bands that I was part of had these two brothers Robin and Kevin Eubanks. And Kevin Eubanks, you might have known, was the band director of the Jay Leno Show for I think about 18 years or so. And he recently retired.

And his older brother, Robin, is going to, as Mark said, participate in the concert on Wednesday evening, fantastic trombone player. So he's a guy I've known as a kind of young musician in Philadelphia.

And that was sort of the background I came from, just kind of people playing jazz, a little bit of pop musical, a little bit of funk, occasionally a Latin gig, as a teenager in Philadelphia before I moved out of Philadelphia to go to a conservatory. In the course of playing the saxophone, I came across a few things which really interest me.

One was a reel-to-reel tape deck. So the school I went to had a small electronic music studio with a EMS synthesizer and a two reel-to-reel tape decks. And we were essentially just shown this stuff and invited to come to use it somehow.

And at that time, I was really interested in pop music. That was kind of before jazz, I had listened to pop music that had very interesting things happening in the production. So this would be Jimi Hendrix, Pink Floyd, you name it bands of say the '70s, so to speak, if I can really date myself.

And I began to teach myself a little bit about how to use this tape deck. And one of the first performances I can remember doing was with a trumpet player, my brother Devin who played trumpet, a pianist. I played some objects which I had just collected, pieces of hardware, chains, stuff like that.

I had some recordings that I played back from this reel-to-reel tape deck. And for me, this just seemed like a normal way that someone would want to play music. So you'd learn to play your instrument. You'd take lessons. You'd be in ensembles.

You'd do all the things that an instrumentalist would do. But at least to me, it just seemed interesting to see what else I could bring to the mix of playing improvised music. And now a few decades later, I'm really still kind of doing that.

So I'd like to introduce a work that I did that in. But I guess first before I show my own work, I want to talk a little bit about things that were in the air when I started, a little more about things that were in the air.

And two of the things that I think had an impact on me as a young musician, and musicians in general, was number one, John Cage. And Mark has mentioned that you've spoken a little bit about John Cage's work in this class.

And did you talk about *Four Minutes and 33 Seconds of Silence* by chance? Do you know that work? OK, so this is a work, seminal work of 20th century music. It's a piece in three parts.

And in the premier performance, as I understand it, the pianist went to the concert hall, opened up the lid of the piano, sat for four minutes and 33 seconds, and then closed the piano lid. And the piece was done.

I heard a really interesting lecture on Cage and his impact on today's music in the last week. And the person who gave the talk pointed out that *Four Minutes and 33 Seconds of Silence* was not about listening to the sound in the room. But it was about diverting your attention.

So you go to the concert hall with the expectation of seeing the lid goes up on the piano, this virtuoso plays this incredible piece. We're all in awe. We applaud. We go home. And this piece was like opening up the door to shifting your attention away from that.

And that has some really interesting implications because I think even for Cage-- Cage was thinking about the impact of convention, but also the impact of big business on music. So he wrote a lecture that was called *Lecture on Nothing*. And in this lecture, he talks about the impact of media culture, *Time Magazine*, *Life Magazine*, *Pepsi-Cola*, and how they have a bearing on what we understand culture

to be.

I got a text for my son during the last Superbowl. And Rihanna was on. And so I went to go catch a little bit of this thing he was all excited about. And it was sponsored by Pepsi, wasn't it? Wasn't Rihanna's Superbowl performance sponsored by Pepsi? So, again, it was like big business is investing a lot of time, money, and energy on what they want us to see, which is probably going to lead us to buy Pepsi-Cola, which is why they're putting money into this.

But all this is to say that one of the things that was interesting about Cage was his music was encouraging, or his work was encouraging us, to look outside of the prevailing orthodox models of making music, and thinking of other ways to think about music, to approach music, to approach working with sound. So somehow that stuck.

Another thing that was in the air at the time that I was starting to play music was, I think, one of the first albums-- I remember at one point, for my birthday and for Christmas, all I wanted was recordings. My mother's in the back of the room.

So I remember giving her my wish list, like, I want records. And I remember one of the recordings I got for Christmas was The Beatles *White Album*. And The Beatles *White Album* had a piece called Revolution Number Nine. Do anybody know that piece? Raise your hand if you know that piece.

And goes up, OK, good. Two, OK, two people know that piece. John Lennon's wife, Yoko Ono, no was part of a group called Fluxus artists. And they were kind of radical, experimental artists who did all kinds of really fascinating things with performance, with music, with film, kind of opening up all genres and medium as tools for them to explore.

And through Yoko Ono, John Lennon knew John Cage. And one of the things he did upon becoming in contact with John Cage and these ideas is he made this piece. And I'd like to play just a little bit of it that's called *Revolution Number Nine*.

Now, I have colleagues who say that this is a song because John Lennon only

made songs. So you could think of this as a song. I always sort of thought of as a tape piece, or a sound collage, because that's the kind of terms I understand it in. So let me see if I can get this to play. Can we turn this up?

[MUSIC PLAYING]

NEIL LEONARD: I'm going to stop it here. The piece is eight minutes and 22 seconds. So it's a sizable piece from this recording *The White Album*. So somehow this stuff was in the air. And I think it really had an impact on me.

As I was alluding to earlier, did something to my peripheral vision. It made me think that there's something interesting there on the side to think about and investigate. With The Beatles it wasn't just *I Want To Hold Your Hand*, and these wonderful pop tunes that I made, all of which I really enjoyed. But there was sort of another world, other ways, to think about working with sound.

So what I would like to do now is kind of fast forward and show you fragments of a piece I made, a long piece I made, in the past few years. But before I do that, I just want to invite you, if you have questions or comments, please just blurt out your questions or raise your hand. And I'm happy to stop anywhere along the way and hear what's on your mind. OK?

And actually, I have a new tactic which I'm using with my students at Berkeley, which is I don't let anybody leave the room until they ask a question. So that works pretty well. Yes, you're leaving the room?

AUDIENCE: How did he make that? Did he splice tapes together?

NEIL LEONARD: Splicing tape together, sometimes the tapes are reversed. It sounds like snippets of a band playing that were reversed. They had a brilliant producer who's often referred to as the fifth Beatle, George Martin, who had a background in orchestral writing. So he had a very robust skill set.

And if they came in with an idea that was kind of outside the norm of making just

pop hits, or the way popular music had been made, he was often their collaborator in going on a tangent and doing things. One example would be for the piece *Penny Lane*. I don't know if you know that piece. It's a fabulous song of theirs.

I think it was Paul McCartney had seen the London Symphony Orchestra. He heard a Piccolo trumpet in a Baroque concerto. He went back and told George Martin, like, that was really cool. And George Martin said, oh, let's get the Piccolo player from the LSO. And we'll use him on a piece.

So George Martin probably wrote the part of the Piccolo trumpet on *Penny Lane*. And it doesn't sound like any other track they ever made. It's a wonderful, idiosyncratic, playful track. So, yeah, you get to leave the room. You asked a question. I should give you a ticket.

So I'm going to fast forward. And I spent a few years actually working at Mass College of Art. I thought it was going to be a short-term job. And it turned out to be an eight year residency there and.

And I kind of went in knowing a little bit about computers, and some teaching experience, and a little bit of administrative experience. And they said, great, you'll do all of that.

And I ended up staying there because they had a few really interesting people who came to work with us. One was this jazz trombonist named George Lois, who is a seminal person working with jazz and electronics, which only fueled all this curiosity even more.

John Cage was in town for a year we did the Norton Lectures. And he came to Mass Art a few times to meet with us, to see what we were doing. I got a chance to show him my work. There was a famous video artist named Tony [? Allison ?] who was on the faculty.

So all this is to say, I ended up staying. I really didn't think I'd be staying there. But I did. I stayed there for eight years, kind of got involved once again in working with visual artists. Not so much me making visual art, but collaborating with visual artists

on all kinds of projects, performances, films, videos, dance projects, theater projects, happenings, computer graphics with sound.

And then, eventually, I married a woman who is a visual artist. And we've done a lot of work around the world. We're doing a piece in the upcoming Venice Biennial in May. We did piece in the Havana Biennial last May. And so I've kind of worked quite a bit with people who aren't just playing saxophone, or just play with saxophonists. I've been very interested in finding artists outside of music to collaborate with.

So in this kind of journey of working with artists outside of music, I was at an Italian estate on top of a mountain, fantastic villa that had two incredible view. One is the marble quarries of Carrara. So across the valley, you can see these mountains of Carrara.

And even though it's summer and it's warm, there's just white spilling out of the mountains, which is the fragments of marble that didn't get schlepped away, but are just kind of like tumbling down the mountains. So the mountains had these sort of white residual marble, chunks of marble. The other side is the Ligurian Sea.

And so my wife and I were asked to make a permanent installation at this Italian estate. And the owners, every two years they would go to the Venice Biennial and pick an artist to commission to make a permanent, site-specific work for their estate. And we met them, they'd say, hey, would you do something for our estate?

And we said, yep, we got this great idea. And they said, no, we don't want to see your great idea. We want you to come to the estate, look at the place, look at the territory, and think of an idea that would work for the space. So its site specific, which is a very important concept in visual art.

So we developed a relationship with this commissioner of private sculptures for this private sculpture park. And one year I was going back to visit them, and they said, you know, we have this sculpture which you've seen that is this huge-- maybe you could draw it-- it's this huge pit that's maybe eight feet across. It's like a pit that goes straight down the Earth.

And there's just a spiral of church bells, with no clappers in them. Very large church bells, I mean, they might be like, from top to bottom, if the hinge was up here, the clapper would be down here. They're very, very big.

But they're turned upside down and they're arranged in a spiral kind of like facing the sky. And so the owner said, would you record these bells and make something with this? And I thought, well, I have no idea what I'll make of this, but why not? I'll record these bells.

So I recorded the sounds of these bells. And I kind of had them around. I started to play with them, didn't really know what I'd do with them. And I met a choreographer, also Italy, in Naples, and then she asked me for a composition for a dance piece.

And I thought, OK, well I have these sounds I made with these bells. So maybe it would be interesting to do something with these belts. So I'm going to play just a fragment of this recording that I made.

So you know when you take a JPEG image and you stretch it horizontally, all of a sudden the image is unrecognizable? This is sort of what I've done with sound. And some of this I did with some free software which I could show you. There's commercial software. There's free software. Lots of different software does time stretching of audio. So this could be two seconds of audio that's stretched out for a minute.

The computer's going to kind of sputter. And then this is sounds of just bells straight because I wanted the listeners in the dance performance to be able to hear an actual bell so this wash of sound in the background would make some kind of sense, would have some context.

[MUSIC PLAYING]

NEIL LEONARD: Now, the dance performance was 40 minutes long. So it's a very kind of slow, kind of glacially moving performance. So nothing in the music happens too quickly. The music goes through a lot of different phases. But each phase is maybe five minutes.

[MUSIC PLAYING]

NEIL LEONARD: And this goes on. But essentially, these were recordings of bells that I put in a program called Spear, which we could look at. And I began playing with ways to time stretch the audio, listening to what sounded interesting, throwing away a lot of stuff.

I kind of went into a phase where when I make a piece, I want to have a phase in the beginning where I call it sort of like your work-- a research phase, research, slash, play, slash, failure. Meaning, I take sounds, I put them in a software. I play around with them. I research what I can do, knowing that I probably have time to throw a lot of these away.

So I'm not doing this the day before the performance. This might be a few weeks or a few months before the performance. And I want to build in time to experiment, knowing that a lot of the experiments won't work.

So out of many of those experiments, I came out with this file. Sent it to the dancer. The dancer said, that's really going to work for the idea that she was thinking of.

And then she proposed a site to do this performance, which was Mount Vesuvius. So Mount Vesuvius, as you know, is the volcanic mountain that erupted and buried Pompeii. It is still an active volcano. There are people who occupy the side of the volcano pretty much against, or in defiance of, kind of zoning limitations because the authorities don't want people to live in this volcano because it's dangerous.

The people live there all have gas masks in their house, because the biggest the problem is the toxic gas that comes from the volcano. So in any case, there was an art center on the side of this mountain where we staged this performance. And it kind of grounded the whole piece right then, because I begin to think of what is it I'm working on?

I'm working with these bells. We're doing something on Mount Vesuvius. How am I going to begin to kind of focus on an idea for this piece?

And there's an author named Murray Schafer who wrote a book called *The Tuning of the World*, which has been republished under the title *Soundscape*. You can find it on Amazon. It's probably in the library here, Murray H. Schafer. And one of the things he writes about is that for any environment there's a keynote sound.

There is a sound that we human beings associate with every environment. So with this environment right now, it's probably the sound of the fan on the video projector, or maybe the hiss coming out of the speakers. This would be keynote sound here.

Perhaps in the hallway, it's the sound of footsteps within this space that you know is very long. It's not very wide. And it's a fairly reverberant space.

So every place you go, there are sounds that let you know you're in that place. When I was standing at the subway the other day, the metro in Brookline, I was recording the sound of the train because I've taken that train, the D Line, for ages. And if I heard that sound in my sleep, I would know, Green Line, light rail vehicle, Green Line.

So I would say that one of the things I'm really interested in doing is thinking of pieces that have a particular meaning, have a meaning that's tied to a particular site. That fascinates me. And that's a way to kind of get out of doing what I always do.

So if I'm going to work at Mount Vesuvius I don't want to do just what I do in Boston. I want to do something which is kind of specific to a performance which is going to premiere at Mount Vesuvius. If I do something in a rice paddy in Japan, what's something about a rice paddy in Japan that I wouldn't think of in Boston? How can I respond to the site where the work is?

So one of the ways to respond to a site where you're working as a musician is to think of the keynote sounds, and play with those. What are the sounds that are typical to that environment that kind of tell you you're in that environment that you can play with?

I should say, very briefly, that one of the things which is fascinating in Murray Schafer's book and his ideas, is that he also kind of points to this way of reflecting on your environment is an integral part of literature that we know, that we've known for centuries. So, for example, for Dickens to talk about England in the period of *Oliver Twist*, cobblestone streets have a particular sound, horses on cobblestone streets have a particular sound.

Those sounds are sounds that Dickens is very aware of being very important to your understanding of that place. Those are parts of Dickens' world. Tolstoy, same, the example I like most is Dante. In *Dante's Inferno*, when Virgil and Dante head off to hell, they decide they're going to go over to hell, see what's over there.

They pass Cerberus. They make it to the mouth of hell. There are no stars above hell.

The damned don't get to have stars. There's a black sky above hell. And because the sky is black and there's no light, there are two paragraphs of *The Inferno* that the contact with hell is an audio contact. It's an audible contact.

They hear the sounds of the damned. And there is a two paragraph description of the sighs, and the gasping, and the kind of toil that these people are experiencing in hell. So all this is fascinating to me because it means that Dante, Tolstoy, Dickens, were audio artists. They were interested in oral analysis, or oral reflection, of their environment.

So this is part of something we can do. Our environment might be like the vending machines downstairs. They may be the sound of going up and down the hallway, or going up and down the staircases which have wonderful echoes. It could be the sound of radiators just kind of flapping. But these are sounds which can be really interesting to work with.

So when I began to work on this piece, which I'm going to play not the rest of, but more of, I just wanted to say that it occurred to me that there was this wonderful opportunity in that one of the most incredible sounds ever in Italy was Mount

Vesuvius blowing up. And period accounts of that explosion say that the explosion could be heard 100 kilometers away. So you could practically be in Rome and hear the sound of this colossal boom.

The colossal mountain now is kind of like a big mouth waiting to erupt again, like these bells. The mouths the bells were all facing the ceiling. So this became kind of an idea that I began to play with and work with in the piece, this idea of a kind of silent tongue.

As the piece evolved-- and I'll play you maybe five minutes of a kind of finished version of the piece, of a radio edit of the peace, a short version. I wanted to also process not just bells, but voice. And I asked the host if they could find me a singer who lived on Mount Vesuvius. And they said, oh, yeah, we've got a singer for you.

So they found a singer. And it was great. She was in this metal band. And she told me her my favorite singer was Diamanda Galas. I don't know if you know Diamanda Galas, but she is a very kind of eccentric, powerful force of a vocalist.

So she came with some people from her band to the place where I was staying. I recorded her voice. And I began to also play around with time stretching her voice.

Kind of moving forward to the final stage of the work, because there were several versions of this piece. There was a piece for the opening with a dancer. There were a couple concerts. I liked it enough that I use it concerts a few times. I'll actually play parts of this on Wednesday night.

But I also had this experience where I was in China for the first time, in Beijing. And I gave a concert. Somebody came up to me after the concert and was really interested in this piece. Or actually was interested in a piece I played.

So a conversation began. And it turned out the person who had come to talk to me after the concert was a singer trained in kind of Peking opera style, so very traditional Chinese music. Does anybody know Chinese music here? I really don't. I've just been to China and know some Chinese musicians.

So in any case, I said, OK, would you be interested in singing a piece? And she said sure. I said, here's an MP3. Come tomorrow night at five o'clock. We have a sound check. We'll see how this goes.

So let me find a version of this, so kind of a later generation of this piece I played you earlier with the bells, I'll just play an excerpt. You'll hear three things which are new here.

One is there's a sound of a singer from Napoli singing not Italian syllables, just kind of making up her syllables. And then on top of that there's also a Chinese vocalist. So this kind of became this sort of vocal time collage that kept on getting elaborated on in the course of a few projects.

And I'm playing saxophone as well. And the bells are kind of fading out here. Those are the bells.

[MUSIC PLAYING]

I'll stop that here. I won't play all of it because I'll play the whole thing on Wednesday. So we'll hear the whole thing then.

But that piece turned into kind of a trio voices. There's a saxophone. There's this very time stretched processed voice, which is mostly based on this Italian woman singing. And there's an improvisation by a person who does Peking opera, but was interested in doing electronic music for the first time basically.

And so that piece kind of took its course through just interacting with people that I found, a choreographer, a singer, a collector who had interest in a sculpture that he thought might make a sound. Actually nobody was a jazz musician except for me. So that's just an example of a piece I did in which these interests I have kind of coalesce.

There's an interest in working with artists outside of music, choreographer. There's interest in fine art, working with a collector to get his idea for materials that might be interesting to play with sonically. And I'm still playing the saxophone in a way which

is not completely unlike how I play in a jazz setting. Any questions, comments thus far? Yeah?

AUDIENCE: So did you get both the singers first and then decide whether [INAUDIBLE] and how did you do your sax part? Is that what came last?

NEIL LEONARD: Well in this case it did come last. There was a lot of sound design work. I guess for the premiere that we did in Napoli-- I'm not worried about playing the sax. I can play the sax for 40 minutes no problem.

I was concerned about having enough electronic material, enough of the sound collage. So I invested a lot of time in getting that happening first. And that probably took for the premiere, I had and some fragments of it made, but there was a couple weeks of work nonstop on the electronic score.

And then probably two days before the concert, I began to play around the saxophone and kind of find where it fit in, although I kind of intuitively knew here's a place I left for me to fit in. Here's a place for me to fit in. Other questions? Yeah

AUDIENCE: What sort of [INAUDIBLE].

AUDIENCE: Vocal recordings? I did one which I'll show you, which is really-- I'll do a very quick version of it. I found out that a piece of software that worked really well, is a piece of software that's free. It's Windows and PC. It's called Spear.

And I'll show you one of the things. I don't want to spend too much time on it because it's really fun. It's a lot of fun.

But there it is. This is a recording of the trombonist I'm playing with on Wednesday. It's a solo trombone track.

And what the software's going to do-- just going to say yes to the defaults. It's going to do an analysis of the sound. And the analysis takes the sound. And it describes the sound.

Try and shrink this, zoom out as far as possible. It's freeware. It's kind of clunky, but

it works. So this file, let me see if I can just play it.

[TROMBONE]

NEIL LEONARD: So just a trombone. Now, just a trombone-- you really don't see everything on the projector, but that's OK. These are frequencies from zero Hertz up 8,500 Hertz. And this, of course, is a timeline over here.

And it deconstructs the sound into a plot of sine waves. So without really getting too far into it, let me just do one thing to convince you that it's really doing that. So we'll go over here. And I'm going to take some of these sine waves.

I'm going to select them just by control clicking on them. And I'll just grab some of them. There they are. And now I'll go to New from Select. We'll make a new file from selection. And there's only the sine waves I selected. Let's play those and see what it sounds like.

[SOUNDS]

NEIL LEONARD: Those are sounds that are in there. Now, there happen to be hundreds of sine waves at a given moment. What we just heard is this.

[TROMBONE]

NEIL LEONARD: If we grab some more sine waves-- actually I'll do it like this. What's the first letter of your name?

AUDIENCE: V.

NEIL LEONARD: OK, we'll make a V. Not a great V, you could do better. And I can select them that way just to have fun with this. And there we go.

And we can play this.

[SOUNDS]

NEIL LEONARD: You can probably see it on my laptop better. The greys show up better on this. But do you get the idea? That sound, the sound of the trombone, the trombone performance, is deconstructed into a series of sine waves.

If we play them all, we hear the whole trombone performance. If we take out certain ones, then it sounds like a filtered trombone. Now, here's one of the things I did quite a bit, in terms of, what did you do with voice. And what was the question you asked me?

AUDIENCE: Yeah, what sort of things did you play?

NEIL LEONARD: OK, here's one.

[TROMBONE]

NEIL LEONARD: Let's take that. Let's go right there where I think he kind of changes a note and gets a bit more complicated. I want to time stretch it. So I'm going to say Transform, Time Stretch. And I'm going to make it four times longer, times four. So.

[TROMBONE]

NEIL LEONARD: So you can also hear him move from one note to another. All of a sudden it doesn't sound so clean. He's a very articulate player. But all of a sudden you get this moment of transition, which is pretty cool.

In fact, if I thought that I really wanted more of that, I'll Time Stretch the same thing again times four. What do we get now?

[TROMBONE]

NEIL LEONARD: It's like a tri tone. It's a pretty difficult to play and you kind of get some of that tension of him playing it. There are many different ways to time stretch. They all have artifacts. None of them are perfect.

But some of the artifacts I like. So some ways of stretching it are useful. And other ways just sound bad.

So there was quite a bit of time stretching. But I guess that piece is not really that extravagant. I also sort of collaged at this level. So, for example, we can make a collage of just these partials.

We can take these lines and treat it like a drawing, and rearrange where the lines are. So, in fact, I think I can, again, without going too far in this, I can offset this time. And I'll push all that stuff over here.

Now, it's probably going to be a mess because you can hear two notes at a time. Or we're going to see what you can here.

[TROMBONE]

NEIL LEONARD: So all this is to say that, like in Photoshop, you have this sort of incredible facility for rearranging the pixels in an image. This is like dealing with sound at the pixel level. Every component sine wave of sound can be stretched independently, shrunk independently, transposed. In fact, we could take some of these sounds-- actually I won't go any further because I'll just go on and on. And none of this will be what we really want to listen to.

But you get the idea. So I used off the shelf software you pay for. I used freeware, spent hours, and hours, and hours in that play, research, failure, mode of just trying more stuff out. Let me just see if I begin to experiment, what will I get?

How are we doing for time? We're probably OK.

I guess where George Martin and The Beatles were, is they did this by tape manipulation, as you had pointed us to earlier. And now, of course, nobody's using tape. It's expensive. It's not as flexible.

It has a particular sound that people love. But nobody's using it. I work at Berkeley. There's a Department of production engineering which is like the tape tribe.

They still worship reel-to-reel reel tape decks. They grew up with reel-to-reel tape decks. They learned their craft with reel-to-reel tape decks. They edited Bruce Springsteen's recordings on reel-to-reel tape decks. They think it has to be understood.

But they can't use it either because it's big, and expensive, and slow. And production has to be cheap and fast. So we're doing it in the computer now.

But quite a bit of this is being done. Other than the time stretching, a lot of that work was not that extravagant. And what I wanted to do was take the phrases of that singer and really kind of distort her lines in time.

So when she sang, some lines were held for a very long time. Some syllables went at the natural sung rate. So they appeared normal, so to speak.

But I'll also point out something that Mark and I talked about on the telephone when we were discussing this class and your assignment, which is the next we'll talk about, is that this semester I hosted a composer named Hans Tutschku. Hans Tutschku is the director of the computer music program at Harvard.

And if you ever get a chance, there's probably a concert coming up probably at the end of April. And he does concerts with what he calls the hydra system. The hydra system is a collection of 40 speakers.

And you sit inside the 40 speakers. And it's a little bit like going to a cathedral, where there's like a dome, and the dome has a painting on it. If you ever go to the Vatican, for example, there's this beautiful dome, with this ring, with this text which is really important. And it's just a great experience.

It's an installation. It's a work of art. The dome is a work of art.

This is the sonic dome. And there are three rings of speaker. One's at ear level. One kind of maybe six feet above ear level, and like 12 feet above ear level. And the rings the rings go really wide, smaller, and smallest.

So he came to Berkeley. And the students were all excited. Here's this guy from Harvard. He's got to be important. And he uses 40 speakers. So he's got to be more sophisticated than us. He knows things we don't know.

And the fascinating thing was he showed us these pieces he made, which were fantastic piece of music. He made them like-- I'm recording this lecture on this little Sony handheld recorder. it's not that expensive.

He made all his recordings with a little Zoom handheld recorder, like \$400. And he was saying one of things he likes to do is wave it. So if he's playing an antique piano, which is all out of tune. And he's recording the sound. He'll move, he'll sweep, like a visual artist would move a camera.

If a visual artist is going to shoot a video of a rock, they're probably not going to put the video on a tripod to shoot the rock. I mean, there's a pretty good chance they'll want to move to show us different aspects of this rock. Well, this is what Hans loves to do with microphones, move them across the surface.

Because his argument is if you have a gong, and you hit the gong, and you move it by your ear, the gong sounds one way if it's 30 feet away, one way if it's 10 feet away, and one way if it's very soft and you're right next to it. Those are three completely different sounds. They're all gong. But the details you get are radically different.

So one thing I want to point out is that the selection of the materials is a major part of the work. And one of the things Hans said, which I also had been doing, but I'd never really thought about in quite the way he was discussing it, was he only uses sounds he records himself.

And he's been doing this for a long time, decades. And so he has all kinds of sounds he's made all over the world. But the important thing about all the sounds is that he has a memory of recording each one, of choosing to record each one. So of these thousands of sounds he might have, he has a visceral experience that's associated with every sound.

So those bells I recorded, are bells I recorded. And I know the weight of the bell. I know the color of the bell. I know where it was in the Earth.

I remember what it was like to put the mic on there. I remember how hot it was that day. I remember how we kind of hit them with hammers, did all kinds of things to try to get a sound out of them because they weren't free standing bells really made to be struck.

Same with the vocalist, I remember hearing this vocalist, and we had a discussion about getting something that would work in this piece. So all those memories are valuable when you go back to your material because otherwise it's just a sound file. Like every other sound file, maybe I like it, maybe I don't. But because you have been involved in physically recording and capturing that sound, it's as if it was in your hands. You have a kind of tactile relation to the sound that you wouldn't have otherwise.

Now here's what I'm going to ask you guys to do. So I understand you've worked not only with Mark, but you've work with my colleague Tom Hall. And I'm actually playing a concert with Tom Hall on Sunday at a place called The Outpost with a bassist named Jamaaladeen Tacuma, who is known for his work with Ornette Coleman, very good bassist.

Mark has also told me that you work in pairs, or sometimes groups of three. And with your pair, I'm going to ask you to make a collaborative improvisation with audio recordings. And your goal is to, with your partner or partners, create small sound library to utilize in a two to three minute improvisation.

And you're going to prepare a performance that integrates the playback of some of the sounds you record in this performance. So let me ask you one thing. How do you like to improvise? And how do you improvise in this class?

Is it more along the lines of free improvisation? Are people improvising with a chord, or with a tonic, or is it all of the above?

PROFESSOR: We've done modal improvisation. We've done graphic notation, like Cage's notations. We've created our own scripts for that, and then done that. We've done a lot of free. We've done a lot of with small little parameters. Indian concepts of Phil Scarf too.

NEIL LEONARD: So all of those are fine. Any of the approaches to improvisation that you have been working with this semester that you want to use for the improvisation you do for me next week, or I'll do with you next week, is welcome. It's going to be much more interesting for all of us if you're doing something which you like to do so. And I don't know you that well so I don't want to tell you what to do with the improvisation except I want you to use whatever technology you have at your disposal, which might be your iPhone-- probably everybody has a phone that can record audio.

It could be a phone. It could be an iPad. It could be a portable recording device.

And I want you to make a collection of sounds. Say how many, it could be four. It could be 10.

And I want you to use this original material as source material for this improvisation. So it can be valuable to go to the internet, and find an audio archive, and get audio, and do a piece based on what you found on the Internet. And I can think of some really cool examples.

But I'm going to encourage you not to do that. So I actually want you to think about the sounds that-- you don't have to leave where you live, where you work, where you study. Within this part of the world that you travel in, you can get the sounds there. So plan a recording in a location that you frequent daily, your walk to school, your apartment, your job. The idea is to listen to your environment and discover new details that help divert the audience's attention from the typical mode of listening to everyday sounds.

So when you think of the role of audio, of using audio recordings, in improvisation, you get a few things. One is you get what Luciano Berio said is we open the sound pallet up to everything. Now, you could prepare your guitar, for example. If you play

acoustic guitar, or cello, or piano, or whatever, you could prepare your guitar.

Do you know that is to prepare your guitar in the John Cage sense? In the John Cage, preparing a piano meant like putting bolts in the strengths. I'm not going to encourage you to do that with this piano. But people put paper clips, erasers, and screws and stuff in the piano. And it changed the way it sounds.

There's a beautiful Cage recording of prepared piano. It makes it sound kind of like a gamelan. You could prepare your instrument. As long as you're making the recording, I'm probably not going to say, you can't do that. You could record sounds of cars whizzing by you on Memorial Drive.

But one of the things which I didn't really put in writing here, but I think is important, is if you can find either one keynote sound, or one idea about sound, that you'd like to play with, it might be-- you might get more out of that than recording like 15 completely different sounds. If you want to record 15 completely different sounds, I'm not going to stop you, but I'm actually encourage you to--

Think of it this way. If you had a play, if we were doing theater for next week, and we said, let's make a play. And there are going to be five actors.

The first actor is probably not going to come on the scene and then never come back again. They're probably not going to just say one thing and then leave.

Although, now that I say this, I can think of some examples where that happens. In fact, I went to go see Mahler's Third at the BSO. And there's a singer who sang literally five lines.

And she came out halfway. This is 100 minute symphony. She came out halfway through, sang literally five lines, and stood on the stage for the rest of the time. It was really weird. It was a great piece of music. But it was weird.

But the point is this, if you're thinking prepared guitar, or if you're thinking of the sound of opening and closing windows in your apartment, or whatever it is that you're interested in, what does it sound like in the quad, or between the buildings here? You get sort of a theme and variation potential, or a kind of multiple

perspective feature in your piece, if you will, if you have more than one recording of a certain thing.

So let me ask you. I'm just going to pick your brains right now. If you were to choose something to record to include in an improvisation-- I don't want your final answer now. But I'm just going to pick on all of you guys just to kind of get the conversation going. What's your name?

AUDIENCE: James.

PROFESSOR: James, so what would you do if you had to pick right now?

AUDIENCE: I think the sounds of riding the bus would be interesting, the doors opening and closing, or stop requests. I feel like you could play a lot with all the different sounds involved.

PROFESSOR: For sure, and it would also have the built in connotation of the piece's emotion. The piece is stopping. The piece is starting. The motion of the piece is stopping. The motion is starting.

I had a teacher who when I went back to my master's degree, a really wonderful composer named Bob Brookmeyer. And he said music is motion. Anything you do to impede the motion has to be questioned.

It doesn't mean to you can't impede the motion. But think twice if you're going to impede the motion. Well, this is a piece about a bus. Or a piece that's including sounds from the bus, so that's kind of like a built in idea. The bus has stops. Good. Perfect. Your name again?

AUDIENCE: Vineet. The sounds of an elevator.

NEIL LEONARD: Elevator, sure, good. And there must be different elevators in different places on campus. Hopefully old, clunky ones. And ones that are not so old and clunky. When I got this new recorder, that's the first thing I think I recorded was elevator.

I was in a hotel that made a really strange sound. So I figured, OK, I've got to grab

this. And I'll see if I make something out of it? What is your name?

AUDIENCE: Sarah, I think I'd do my roommate cooking.

NEIL LEONARD: Roommate cooking, great, good. The piece is cooking. There's kitchen, lots of stuff. There is a teacher at Berkeley who has his students do a piece. I think the piece is in their kitchen. It's found sound in the kitchen. There's so many things to rattle, and shake, and make stuff out of, good.

And, again, what we're thinking of doing is we're not making a grand opus. We're making a piece that's two or three minutes long. So you definitely have a few minutes of sound from cooking. What is your name?

AUDIENCE: Jacob. I was thinking various machines around a dorm, so washing machine, microwave, people typing.

NEIL LEONARD: Good. That would be fine. Tons of automation, which is a really interesting topic. When I first got into computers, one of the things that they seem to offer to music, which was a big question mark, was automation. You can automate a musical process with a computer. If you're writing software, if you're creating software, you can describe a process of generating notes or sounds and have it do that. So automation sounds, fine.

So all of these four ideas that we just touched on are exactly what I was kind of hoping to get to, where you have an idea of something you can play with. These are all fine. Your name is in the orange shirt?

AUDIENCE: Ben.

NEIL LEONARD: Ben? What do you think would you record?

AUDIENCE: I was thinking maybe the sounds of the locker room, which the loudest of which are probably people slamming their lockers.

NEIL LEONARD: Yeah, good. Percussion piece.

PROFESSOR: I want to clarify something for myself and maybe for others. So when we've had these other assignments, I've called them design assignments. And that's what we talked about.

So should we be thinking about how we design the framework? In other words, you had a framework with your certain phases, certain segments. Should we be thinking that way?

NEIL LEONARD: Absolutely, and we want to think about how to use these sounds. So before we get to framework, let just say, in terms of the playback of these sounds, it's kind of flexible. I mean, a simple thing that you could do is you could make a playlist in iTunes of sounds you've created and play with this playlist.

You also probably want to make some sound of silence. The sound might be more effective if you're not hearing your recorded sounds all the time, but you're hearing the sounds some of the time.

So you don't have to inundate us with recorded sound. It could be very, very poetic. It might just be that a few moments of recorded sound add another dimension to improvisation. So that would be the simplest way to use the sounds. Is everybody OK with that?

I mean, everybody has iTunes. So you could do it that way. Everybody can record a sound which is basically really, really quiet or silent, so to speak. So you can also put in blocks. You can space out silence.

That kind of would be a composition. The other way to think of this would be-- and then let's make sure we have time to talk a little bit more about context-- is when you're working in pairs, one person could use the iPhone, or the computer, or the iPad. And the other person could play.

So the two of you don't have to improvise simultaneously. One person could be more working the computer. And one person could do the playing.

So, for example, if-- what's your name?

AUDIENCE: Forest.

NEIL LEONARD: And what instrument is that? Is that yours?

AUDIENCE: No, I play the piano.

NEIL LEONARD: So Forest, for example, who would your partner be?

AUDIENCE: Austin.

NEIL LEONARD: Austin, OK, good, so if Forest and Austin did a piece, and Forest is playing piano and improvising, and Austin is working the computer, one thing you could do, Austin, is you could trigger the sounds at your discretion in a spontaneous way. You could improvise. It won't be like playing the piano where there's a whole lot of finger motion.

But you could choose in relation to Forest's performance when to trigger the sounds. So you're not triggering them all at once. You're not triggering them in a sequence that's predetermined. You could trigger them as you go.

So does that makes sense? So I think in order for this to be successful-- in order for the use of the recorded playback of sound to be more robust and to give you more flexibility, it probably make sense, unless you think otherwise and have a difference scheme, but my first suggestion would be to have one person improvising with these sound files and another person improvising on the traditional instrument. Yeah?

AUDIENCE: In your performances, is it usually balanced like that? Where one person is operating some part of the electronics? The electronics are also improvised? Or it more just straight recording.

NEIL LEONARD: It's a very good question. Because I only have two hands, and the saxophone, really, you can't do it with one hand. Piano, you could probably pull it off a little better. But I'm usually doing three things, playing the saxophone, doing live audio processing of the saxophone, which we didn't touch on, which I don't think we'll

have time to today, but we could touch on it next time. And then playing back sound files.

So at certain times, I tried to improvise everything, and write software to improvise everything. And I've sort of moved away from that approach in favor of building these sound collages which I know very well and perform with. But I do live sax processing which is improvised. And that's what I'll do on Wednesday.

But I want to go back to the issue that Mark raises about a formal structure. And I'm going to ask you to help with this as well because I didn't come today with a very exact formal structure. Or really I didn't come with a formal structure.

So one of the things that comes to mind is-- and actually maybe Mark you should help with the brainstorming of this. But one of the things that does come to mind is do the sounds you record suggest any kind of structure? So, for example, if you're thinking locker room, if I go to the gym, I have a combination lock.

I don't know how much noise that makes. It's probably pretty quiet. But the bang of the lockers. What do you do with the banging of the lockers?

They can be kind of cacophonous, as they sort of are. They don't really kind of open and close with any kind of logic. If I go to the gym at 6 o'clock, and a lot of people are there, there's a lot of opening and closing of doors.

But because you're recording, potentially you could trigger things live, who would your partner be in this? Who was your last partner in an improv project?

AUDIENCE: James

NEIL LEONARD: And James is you? So if you did this with James, James could do something which is not typical of a locker room, where things are opening and closing periodically. So you're making a rhythm out of these lockers. I do want to mention something about that. But I want to talk about a slamming door piece, or a banging piece that maybe I can bring next time and play for you.

But maybe it's a binary form. One part is more free. And the banging feels like less--

just seems a little random. And another other part seems decisively not random. Mark, what do you think? What have they done with form that would be applicable here?

PROFESSOR: I think we've done a lot of these things. So I would say leave it up to people's ideas.

NEIL LEONARD: OK, that's fine. I have the impression anything you've thought about with form already probably is still-- could be applicable here.

PROFESSOR: And we could apply things. I think what I would say is if you could think of a way to have a beginning and an ending, and maybe a middle marker of some sort. If that makes sense.

NEIL LEONARD: Good, good. I do want to say one thing about noise and banging doors. I just want to say a couple that does sound art, Janet Cardiff and George Miller is her partner.

And Janet Cardiff just did a piece in a New York armory in the last 12 months. But she's famous for making these pieces where they were like audio walks, where you would headphones on. And it would be like she was on the walk with you. And she would tell you where to go. There was a Central Park one.

And as you're walking with this person who's not there, it's like a disembodied voice, she begins to tell you a story. And you're getting kind of wrapped up in the story. And the next thing, a helicopter flies right by you. And you turn around, and it's not there. So it's a kind of a talk kind of reshapes your audio experience on a specific walk that she's designed it for.

So, again, a site-specific piece of art. But she and George Miller were invited to do a piece at the Eastern State Penitentiary in Pennsylvania, which is in Philadelphia. It's a penitentiary which is infamous for, among other things, it was maybe the first penitentiary in the United States where they had this big experiment in solitary confinement.

So one of the wings, or maybe in all of the wings, prisoners were isolated in cells by themselves with only a Bible with the idea that if they were by themselves with a

Bible they would have nothing to do but reform themselves. And I think that it did not become the model for reform.

But they now commission artworks in the Eastern State Penitentiary. And so what they did is they made these kind of robots-- I won't call them robots-- but these beaters that were motorized. And they were maybe in this one corridor there were like 162 cell blocks, both sides of the corridor, first and second floor.

And they had at least one of these beaters in every one of these cell blocks. Now, this corridor had not been renovated. It was still like totally dilapidated, paint chipping all over the place, water damage. But they never cleaned it out. So there was still some furniture, which means like beds, bed pans, whatever it is.

So they put beaters in every cell block. And they controlled them. They were controlled by computer. And they did exactly what I was saying, which is where I got the idea, is they made this 16 minute score.

And they did it with a computer. And they did it in a sequence. They did it actually in the same one I'm using now, Logic, and the piano roll notation. And everyone little note in the piano roll was a different hammer in a different cell.

So in some parts of the recording. It's very pointalistic. You would hear a sound from one cell, then something from the other side of the corridor. There's kind of a race section where they're all pounding out a rhythm. But they're kind of different sounds that-- I mean, you can only imagine what the inmates would have thought if whatever it would be, really 150 years later.

This is long-- this is like totally over, pretty horrible place. But it was a banging piece. Lockers bang. So it was a piece that was all about banging, banging in a corridor, kind of almost like a prison riot kind of vibe from the recording I've heard of it. I didn't actually see the piece.

But they had a structure too. And part of the structure was have a rave. So there was kind of a beat, or I don't know if you could call it a recognizable groove. But there was sort of like a periodic thumping happening at one part of the piece. Other

parts were more noisy and pointalistic.

So given that I don't know what you're going to record, and I also don't want to make the piece for you, I'm kind of open to form. But I would say this, open to your ideas about form. But be prepared to tell us why you recorded these sounds, what was attractive about recording the sounds, what it was like after you recorded them because everything's different after you record it.

The classic example are gunshots. You think a gunshot would be powerful. But when they made the film *Terminator*, they took Howitzer's, and cannons, and bazookas, and they put them all together to make these guns that Arnold Schwarzenegger would shoot to make them sound like comic book big, larger than life. But guns don't sound larger than life. They sound smaller than life, just like a little pop. In Hollywood, there is a job in Hollywood, should you be interested, in making guns sound big. Many of my students go and do that stuff.

So why did you want to record these? What was your initial thought about recording these sounds? Like, the kitchen, my roommate makes all this, boiling, there's sauteing, there's stuff coming out of the toaster, there's water boiling, all that. And that seemed like it's a pallet which could be interesting. Whatever your reason is, whatever your experience is after.

And then also going back to what mark suggested, how did you think about organizing the sound? Because I'm not so much interested in right or wrong, but what were your thoughts about putting this stuff together? Did you have a thought before you improvised about how to arrange this improvisation with your partner?

Did you guys just plunge into it? If you had a thought about how to use it, with the bus, does it begin with starting the bus? Does it end with the bus stopping? It doesn't have to.

But that would be another valuable part of your experience to bring to the discourse. Once you had those sounds, how did you go from there to finishing a piece? So as you see with me, it's like, I come up with some cool sounds. I record some

elevators, some bells. And sometimes I just start messing with the stuff. But at some point, it's actually got to finish a piece.

So once I start to set out to make a piece, then typically I'm beginning to think of what kind of shape should the piece have? I have a degree in music composition so I kind of neurotically have to deal with it that way. You don't have to.

And I think any way you deal with it can potentially be successful. But one of the things I learned from a teacher I had was that the first thing you do when you write a piece of music is you decide the duration. The second you can do is can could think about the form.

And when you're thinking about the form, the order in which stuff's going to happen, you're actually preparing, if you call this composition, you're actually composing music without hearing a sound. I could think start soft, end loud. I could think, start fast, end slow.

And those are really compositional decisions which I can make without making a sound. I can think of only lockers opening at the beginning, only lockers closing at the end. That's a compositional decision. That came from George Russell.

You can compose. Or, because this is a class in improvisation, you can create sonic ideas without making a sound. And my neurosis as a composer and as a lifelong student of composition, is I want to use that approach, at least to some level. Not in everything I do, but I'm often trying to think about what are some ideas about these pieces before I roll up my sleeves and start making stuff?

PROFESSOR: I'm sorry. We're going to have to call time because we have to leave.

NEIL LEONARD: I think that's a good place to stop.

PROFESSOR: Thank you very much. I just have one practical question. We should think about how we're going to present these because we're going to wind up with 16. Does that mean we're going to have six computers with individual sound files or what?

NEIL LEONARD: I think so, because it's probably easiest for you just to set it up on your phone, or

your iPad, or your computer, and plug them in here. The only thing about that is this seemed to behave better when video is plugged in as well. But maybe we can just plug video into my machine and swap in and out of this cable if need be.

PROFESSOR: OK, so in each team, one person should bring some device. Is that OK? Great.

Assignment for Wednesday, I got inspired. I'm improvising.

We're going to bring our instruments. I want you to think between now and then of at least one sound that is not a conventional sound on your instrument. If you can think of two or three, that's great, but at least one sound that not conventional to your instrument. OK?