

Case Studies

This section contains case studies comprising interviews with a number of leading digital musicians, chosen from a range of backgrounds and each representing a different approach or way of working. There are representatives from the USA and Latin America, Europe and Scandinavia, Canada and Japan, from academia and the commercial world, from pure digital to mixed media backgrounds. Many areas of music are represented, including popular and electroacoustic, film and television, multimedia and installation work, networked music and new media, music for theatre and dance, laptop work and instrumental performance.

Each musician was asked to supply a short biography and answer a fairly general set of questions, as follows:

- Please describe your creative use of technology, particularly digital technology.
- What music do you make?
- Why do you make music?
- Is any of your sound-based work not 'music', as such?
- Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?
- What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?
- What skills and attributes do you consider to be essential for you as a digital musician?
- Do you have any other useful or relevant things to say about being a digital musician today?

The answers echo a number of the key themes that have been explored in this book, sometimes from some unusual or particularly interesting angles.

Oswald Berthold

Please supply a biography, giving an account of your career and current activities.

enter world. awakening of the internal program. learned to play an instrument. formed a band. acquaintance with more instruments including electronic devices. left home. meet computer. short studies in music technology. meet internet. establishment of a studio and founding of a collective that lives until today. embeddance in an electronic music scene. Playing concerts. start learn programming. playing more concerts. doing regular work in website construction. shifting interest to installations. picking up studies in computer science. still going. vacillate between art and science.

Please describe your creative use of technology, particularly digital technology.

i am interested very generally in wave phenomena as they are evident in, or rather, constituent of all of nature's processes. sound then seems well suited for conveying information about the trajectories of these processes' variables, particularly as they unfold along time, be they external and tapped or simulations. this suggests a toolbox equipped with devices such as supercollider, octave, R, and a good text editor, a lot of glue, utilities and scripts of diverse provenience and a box filled with I/O apparatus, sensors, soldering iron and such.

What music do you make?

barely any. or put extremely, it's not making music but rather transforming music. consider music as the continual evaluation of a vector valued function of multiple variables. whew.

phenomenologically its again a progression, one of parameterized sounding entities, elements that vary mostly microscopically, that recur among diversely different timescales, maybe slowly evolve. hums, hisses, buzzes, tonal drones, optionally and quasiperiodically pulsed, also blips, squeaks, tweets, squirts, grunts and other more short lived creatures.

Why do you make music?

i slipped into this, not noticing myself and now i can't find a way out.

Is any of your sound-based work not 'music', as such?

referencing above preemptive statements, most of it, yes. it appears to me i have arrived at this definition (the one with the function, above) by searching for a local optimum in personal manoeuvring space. i enjoy a lot of music "as such" but i enjoy in a very similar manner many more temporal structures occurring in my immediately perceptible surrounding and wonder about the imperceptible.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

clearly, all of the above and then some. maybe not quite a generalist but at least a student in many disciplines.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

sorry to be unsubtle in unwrapping subquestions.

1) white elitist western art music, sound art, sound hacking, slow code, media art + theory.

2) in no way directly. only through the filter of being published on recording media.

3) i draw inspiration from all over movies, literature, people, visual, sculptural, electronic and/or performing arts, physics, biology, mathematics, electronic and hacker culture, (in ad-hoc order) and other unworldly terrain. generally i go with the notion of arts and sciences overlapping, a tendency to syn rather than sci.

What skills and attributes do you consider to be essential for you as a digital musician?

verbalised positively in the order of descending generality: humor, curiosity, persistence, luck, classical literacy, having readily access to electronic calculating machinery of recent make including libraries of open software for their operation, literacy in mathematics, the internals and black magic of aforementioned machinery.

Do you have any other useful or relevant things to say about being a digital musician today?

no, not today.

Nick Collins

Please supply a biography, giving an account of your career and current activities.

Nicholas (Nick) Collins has indulged in both mathematics and instrumental composition in the past. His interests run the gamut of topics in electronic music, but particular specialisms include algorithmic composition, live electronica, machine listening and interactive music systems. He occasionally tours the world as the non-Swedish half of the Swedish audiovisual laptop duo klipp av.

He was born near Oxford, grew up in Burntwood, Staffordshire, received a first degree in mathematics, a masters in music technology, worked for Sony for a year on film SFX software, then became a programmer and part-time lecturer in London. Nick escaped to Cambridge to sort out a PhD, where he also learnt the dark art of writing in the third person about himself. He is now a lecturer in computer music at the University of Sussex.

In a recent interview, he said: "I am trying to build an artificial musician, some kind of autonomous unit that can sit on a concert stage and interact with human musicians. It would have to analyze acoustic music in real time, and then play back something that fits in with that music or compliments it."ⁱ

Please describe your creative use of technology, particularly digital technology.

I am active in: machine listening and interactive music systems; generative music/algorithmic composition (especially for large-scale 'infinite length pieces' exploring nonstandard tuning systems and other mathematical musical systems, and in tool development for algorithmic electronic dance music and more abstract compositional modes); live coding (this grew out of earlier experiments in laptop music), live audiovisuals (this is probably where I've had the most concerts with klipp av, novel non-standard sound synthesis algorithms (see the SLUGens plug-ins for SC).

What music do you make?

I used to create fixed products including 'impossible tape music illusions' but the last three years especially have seen me focus full time on live performance. The various facets of this described above include an audiovisual experimental electronica duo (live improvisation of mappings), designing systems for realtime interactive situations, and competitive live coding battles.

Why do you make music?

The answer to this would itself vary based on the work and the time of day. But here is a selection of responses:

To make social contact with people I'd be too shy to talk to, to assist communal forgetting of the everyday, for particular functions (a club event, promoting dancing) to undermine particular functions (deliberately awkward music disrupting dancing);

To create artifacts as a challenge to my own and other's intellectual and emotional states;

To become lost (or transcendent, meditative?) in the flow of composition and performance. I can both achieve such direct flow in more intellectual pursuits (though I also play piano in traditional musicianship and can become lost there in a motor memory assisted kind).

I'll stop before your patience wears thin...

Is any of your sound-based work not 'music', as such?

I made one installation in my life, a failure, a bit of a joke - a large banner proclaimed an 'Anti-Copyright Installation, copyright Nick Collins' and below was a red button (and this was in the foyer of the Royal Festival Hall!). Granulated shards of sound of sufficient shortness to have unidentifiable origin were played, but the envelopes would be extended if you touched the button. To reveal copyrighted sources. I have nothing against sonic art - it's still organized by humans, and it's healthy to not always be sat 'consuming' in the dark but to wander a space and reach out to an artifact.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I've made the comparison before of 19th century composer/pianists and 21st century composer/programmers. People are an implicit and untangleable blend of characters and change as the context suits; so I can be any of the above, but certainly, happy to be labelled a digital musician where this might simply mean someone working at the cross-disciplinary juncture of these types.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

I am interested by all musics, but am especially drawn to those of counter cultures and experiments. Of course, from a Western perspective, sometimes the mainstreams of other cultures can seem like subversive voices! All arts and sciences are good sources of human richness. In particular, I'm actively involved in multimodal art (audiovisuals).

What skills and attributes do you consider to be essential for you as a digital musician?

Some are in common with and critical to an acoustic musician: dedication/enthusiasm, networking, effort/practice, but some are exclusive, these are possibly more what you're asking for: computer programming ability in a number of languages (i.e. SuperCollider, C, MATLAB) instrument builder's/system designer's spirit - desire to tinker and explore potential (and the necessary patience to defer outcomes here, plus the necessary impatience not to spend the entire time designing) grasp of electronic musician's music theory: psychoacoustics, DSP, discrete math, representations/formalisms and some I'm developing and currently weak in, but might like to improve: ability to be operating system and platform/software free; essentially to reach to ideas independent of particular implementations (helping with future proofing in this over anxious environment of upgrades- we should have a moratorium on progress for some years and take advantage of what he have right now!) live electronics/interfaces.

Do you have any other useful or relevant things to say about being a digital musician today?

The avenues for truly experimental new music are highly centred on digital technology. However, a few of the debates and themes seem to me chimerical or unnecessary: there's nothing special about laptop music, cognitive skills have a lot in common with physical skills, and we shouldn't be too biased against either. Sometimes we want to listen to

acousmatic music; sometimes we want to be dancing, sometimes we want to talk during a concert. A mixture of functions is great!

Julio d'Escriván

Please supply a biography, giving an account of your career and current activities.

Julio d'Escriván (b.1960) is a composer who uses music technology, both for concert music, and in its applications to film, video and new media. From 2002 onwards he was in-house composer at A&E Mundo, a Latin-American cable network which is part of the HBO group. He also directed bitBongo, a highly successful recording and production studio running out of Caracas. His clients included Kraft, Pepsi, Gatorade, P&G and the local Venezuelan banking industry. In the UK he has worked as a consultant for Yamaha Research and Development in London, on sampling and synthesizer voicing projects. He is now a lecturer in Creative Music Technology at Anglia Ruskin University.

d'Escriván's musical work includes CDs of purely acousmatic music, and his electroacoustic music has been performed at numerous music festivals in countries such as The Netherlands (Gaudemus), Spain (Centro Reina Sofía), The Basque Country, France, England, Scotland, Ireland, Argentina, Sweden, Norway, U.S.A. and Venezuela. It continues to be broadcast in America and Europe and has been heard on BBC Radio 3, VPRO Amsterdam, Radio Nacional de España, and RAI (Italy) among others. He is interested in the 'traditional' literacy of non traditional laptop musicians.

Please describe your creative use of technology, particularly digital technology.

I use digital technology for the transformation, archival and sequencing of sound and visuals. I also make use of programming languages such as SuperCollider and MaxMSP in order to design algorithmic music structures that may aid the composition and performance process as well as use live synthesis for sound design tasks.

In my orchestral piece which features USB game controller as a soloist, *Con cierto Demente* (2005), I created a system that would not only let me cue in prepared soundfiles at various points but also the facility to trigger random processes of live synthesis and sample playback.

In my piece for Laptop, Harpsichord and Baroque flute, *Tonada Recursiva* (2006) I used the SuperCollider language to record and transform the live sounds to provide a backdrop and dialogue between the laptop processing and the performers.

Finally, I have used and hope to deepen my understanding of sensor technology to extend the instrumental capabilities of music performers as exemplified in my recent piece *Sueño con Ranitas* (2006) where with the use of accelerometers on the wrists of the marimba performer, she can control the spatialization of the electronics in performance.

What music do you make?

I am a composer of electronic music. I straddle all the styles currently practised in this field. My main output has been in the electroacoustic field with, as well as those recent works mentioned above, pieces such as *Salto Mortal* for tape solo (1989) and *Sin Ti Por El Alma Adentro* (1987) for Flute and tape and *Hocketus Creole* (2001) for chamber orchestra and Venezuelan 'carrizo' panpipes. In the electronica genre I have produced 2 CDs, *Vox* (1998)

and *Inventos Barbaros* (1999) which had a successful run in Venezuela where they were released. (A piece from *Vox* was broadcast on BBC radio 3 on the excellent Friday night *Mixing It* program in autumn 2003). In the film and commercials music areas, I have worked extensively for advertising as well as scoring four feature films and one short in Venezuela, I also scored *Balloon* (1991) (Dir. Ken Lidster) in London which won the BAFTA for animation. I have played and arranged Venezuelan folk music and Latin salsa.

Why do you make music?

This will sound silly but I am like the Blues Brothers, on a mission to make music! It is, with the exception of my family, the most important thing in my life. I feel a strong calling to recombine, transform and place sounds in a musical way even if I don't think the results are destined to fame and fortune; I view it as beautiful inevitability.

Is any of your sound-based work not 'music', as such?

No. Even my commercial work as sound designer, whenever I am called upon to do that, I view as a musical task. Sounds cannot (should not!) be organized except according to musical criteria.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I am a composer in the 21st Century. I am no more a technologist for using computers and electronics than Bach was a carpenter for playing the harpsichord. A 21st Century composer can easily be a performer through the use of 'macro musical' devices such as sound cueing and live diffusion, in a manner not too different from that of a conductor who also happens to have created the music he is directing.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

My context is a mixed baggage of urban world popular idioms, South American and Latin folklore, world folk/ethnic musics and delightfully high brow pretentious European concerns which I can afford to never take very seriously because I am a foreigner everywhere I go, including Venezuela. Like a lot of my contemporaries I am sensitive to visuals and visual artforms such as cinema and video. Internet communication through art media is also an important influence and concern.

What skills and attributes do you consider to be essential for you as a digital musician?

An open mind is the principal attribute. Technological shamelessness is the second most important. The latter allowing me to plunder code (a useful skill) and recorded sound whenever necessary to produce my music. A digital musician must be more concerned with the final sonic output than with beautiful programming. Being an elegant coder/programmer is an irrelevant bonus. The main thing is to get the sound you are looking for. Digital musicians need to start thinking of themselves more as simply musicians in possession of new musical literacy paradigms. Otherwise why not talk about 'pianist musicians' or 'woodwind musicians'? How different does our choice of instrument really make us?

Having said all that, it is politically useful to be ghetto-ised as it has created an identifiable niche market for electronic music and it fosters a spirit of experimentation and innovation all but absent from much present day 'acoustic' music.

Do you have any other useful or relevant things to say about being a digital musician today?

I may have used all my gunpowder in the above response!

Chris Joseph, a.k.a. babel

Please supply a biography, giving an account of your career and current activities.

I am a writer, artist and musician who works primarily with digital text, sound and image. My past projects include 'Inanimate Alice' www.inanimatealice.com, a series of interactive multimedia stories, and 'The Breathing Wall' www.thebreathingwall.com, a digital novel that responds to the reader's breathing rate. I am editor of the post-dada magazine and network 391.org www.391.org, and a founding member of The 404 www.the404.org, a group of digital and traditional artists exploring early modernism within new media.

Please describe your creative use of technology, particularly digital technology.

My creative process is completely suffused with digital technologies. I use them for inspiration; to create text, images and sounds; to edit, program or otherwise manipulate those elements; to allow the reader/audience to respond to and influence the works ('interactivity'); to collaborate with other artists around the world; to publish, distribute and promote my work; and many other related uses between and besides.

What music do you make?

Electronic music in a wide range of styles, often with collaborating singers or musicians who are part of the 391.org network.

Why do you make music?

This is a question I often ask myself, and a difficult one to answer. The best answer I can give for now is that it is a kind of compulsion - a need that must be satisfied to remain happy and sane. I think part of the reason may be that when I make music I often feel completely absorbed in the process/moment, to an extent that comes more rarely when creating with other forms. I almost want to say that it is a more 'pure' form of creation, but maybe better would be to say that it is more immediate, and there is something in that immediacy that makes it a hugely enjoyable activity.

Is any of your sound-based work not music, as such?

Aside from the creation and manipulation of sounds as part of my multimedia works, many of my longer sound pieces would probably be better described as something other than music. What that something is, I wouldn't like to say...

Do you consider yourself a performer, a composer, a technologist, an engineer, some

combination of these, or indeed something else?

Any of these terms would fit some part of my practice, which is why I always have difficulty answering the question 'what do you do'. I tend now to describe myself as a writer and artist, which is sufficiently vague to cover and leave open all possibilities.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

My major musical influences would probably be post-War popular musics, principally rock, pop and electronic music; the classical music I played in orchestras when I was younger; and Dada. But there are a huge number of other influences that wax and wane. I am certainly influenced by the other arts, and digital arts in particular.

What skills and attributes do you consider to be essential for you as a digital musician?

As with any musician, a basic love of music, an ability to be happy sitting alone for (sometimes long) periods of time, and an awareness of copyright; for the specifically digital musician, an interest in learning new musical softwares and other related digital skills.

Beyond that there are lots of useful skills, but probably none essential.

Do you have any other useful or relevant things to say about being a digital musician

today?

The relative ease with which anyone can create electronic music today is a great thing; however it sometimes obscures two important issues. Firstly, that the majority of people in the world do not have the resources (financial or other) to become digital musicians (or digital artists of any description). Secondly, traditional music theory and skills can greatly help electronic musicians with their art.

Thor Magnusson

Please supply a biography, giving an account of your career and current activities.

I studied music from a young age, and was involved in various bands in Iceland until I moved out of the country in my early 20s. My academic background is philosophy: focussing on the philosophy of mind, language and aesthetics, but also on Indian philosophy. This got me interested in computing and Artificial Intelligence. When I learned programming, it became obvious that a meta-machine like the computer is a fantastic tool for creating musical instruments and compositions, so I've spent a decade now researching and creating digital instruments and algorithmic/generative music. I am the co-founder (with Enrike Hurtado Mendieta) of the ixi software project www.ixi-software.net which concentrates on experimenting with graphical user interfaces in musical software. We also have a label and regularly run workshops all over Europe where we teach audio-visual software development for artists and designers. At the moment I am a PhD student at the University of Sussex - in the Creative Systems Lab which is part of the Informatics department, concentrating on human-machine interaction and intelligent tools for musical production and playing.

Please describe your creative use of technology, particularly digital technology.

I use all technology that I can get hold of. I consider my guitar a sophisticated technology; guitar pedals and amplifiers, all kinds of flutes and a clarinet that I'm practising. On the computer I work most of the time in a programming language called SuperCollider, which is specifically designed for audio programming. My work with SuperCollider can be roughly divided into two areas: a) building instruments that are designed for live improvisation and are therefore quite flexible and allow for spontaneousness. b) algorithmic compositions where I create software that generates music that is never the same when you listen to it.

I always try to make software that supports working with acoustic instruments, hopefully creating a symbiotic relationship between the acoustic and the digital.

What music do you make?

I mostly play with improvisation bands using a mixture of acoustic instruments and electronics, but I also enjoy improvising with other electronic musicians which happens frequently in various club or festival settings. I also make generative music in the form of software, the latest piece in a collaboration with Runar Magnusson where we used field recordings from Iceland to create "schizotopic" soundscapes where the pieces/locations are never the same. We intend to release the software so the user can generate endless amount of music and share with others.

Why do you make music?

For me, music is an outlet of ideas and states of mind that I am dealing with. I get inspiration from everything I hear, see or read, and working with music in an environment like SuperCollider, which allows you to deal with musical elements from the level of samples to the score level, is a highly engaging activity where you feel you can get your hands (and mind) really dirty with direct connection to the musical material, i.e. the soundwaves themselves. Sound is an important part of my world and researching and experimenting with sound and its physics is for me a meditative process of understanding the environment. For example, recording sound in nature gives me a richer and deeper "presence" and "experience" of the nature itself. It is as if the ears become hypersensitive. I imagine this is analogous to a painter painting the nature or even a hunter that has to pick up signs from the natural environment in order to find the prey.

Is any of your sound-based work not ‘music’, as such?

Yes, some of my research is on the affects of sound on the mind or direct explorations of sound physics. I don't consider that necessarily music although some people might enjoy it as such. In any case, I have a very loose definition of the term "music" and it changes according to contexts, so it's quite hard to answer this question really. Some of the installations I have made emphasize the notion of space and ruptured temporality, often without formal or narrative structure. For myself, music tends to be more about the temporal in the "here-and-now" sense where formal structures are important.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

All of these in addition to being an inventor. As with the term "music" I don't find it productive to define myself (neither for myself nor others) so it depends on context what mask one might have to wear. In fact I prefer the term "musician" as it is vague and meaningless enough. - I consider everybody a musician, just of varied skills, practice and maturity.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

The cultural context of my work is a mixture of the cultures of experimental music and academia. I play regularly in various concerts and music festivals, but over the past years I have been working on my project - ixi software - in an academic setting and that has taken me to various academic conferences and festivals. I enjoy both worlds, although I think the most interesting stuff musically is happening outside the academic settings.

As of music from other cultures, I have to admit being obsessed with Indian music (and philosophy) and this has had strong influence on my own musical practise. I studied music in India for a while which was amazing experience. I'm also interested in various African musical cultures, such as those of Western Africa - Mali and Morocco in particular. All music inspires me and often the most obscure location of the world contains some amazing musical performers.

What skills and attributes do you consider to be essential for you as a digital musician?

Personally, I think knowledge of a programming language and sound physics is the most

important. Learning those things takes time and practice, but not any more than learning to play an acoustic instrument well. In order to escape the limitations that commercial software imposes on the musician, I think it is important to be able to work in an environment where you are free to compose your own instruments or tools. But at the same time, working with sound on the computer also requires that you understand sound physics and digital signal processing. For specific things like algorithmic composition, machine learning, signal analysis or other generative approaches I think a textual programming language suits better than graphical environments, but that's just my opinion/experience and I acknowledge that people's minds work in different ways.

Do you have any other useful or relevant things to say about being a digital musician today?

I don't consider myself a digital musician, but simply a musician that makes use of digital technology as part of what I do. I think all instruments afford certain ideas and work processes and it would be limiting to constrain oneself to one tool or technology.

Regarding useful things to say, I don't know what those would be. It is almost a cliché, now in 2007, to talk about the change in the music industry with the advent of the internet and the social networking that is happening through this wonderful, but at the same time dangerous, technology.

Kaffe Matthews

See www.annetetworks.com for all details on Kaffe works; also see current developments in www.musicforbodies.net

Kaffe Matthews has been making and performing new electro-acoustic music since 1990. She is acknowledged as a leading figure and pioneer in the field of electronic improvisation and live composition making on average 50 performances a year worldwide. In 1997 she established the label Annette Works, releasing the best of these events on the six cd's, '**cd Ann**', '**cd Bea**', '**cd cecile**', '**cd dd**', '**cd eb and flo**' presenting an annual document of ever developing sound worlds. Currently she is rarely performing, instead directing the collaborative research project **Music for Bodies** with multidisciplinary professionals and the community, bringing new music and some ideas about listening to everyone. (NESTA Dreamtime Fellowship, 2005).

Kaffe became known for making live site-specific sound works, playing in the dark in the middle of the space, the audience surrounding her, the sounds moving around them. She uses self-designed software matrices through which she pulls, pushes and reprocesses sounds live, using microphones, a theremin, and feedback within the space; the site becoming her instrument. It is this practice that she has shifted to sonic furniture building, with **Sonic Bed_London** (Distinction, Prix Ars Electronica, 2006) and the **Worldwide Bed project** being a central pin in this ongoing collaboration.

Kaffe has worked and performed with many artists worldwide including AGF, Ryoko Kuwajima, Eliane Radigue (The Lappetites), David Muth, Shri, Mandy McIntosh, Zeena Parkins, Sachiko M, Brian Duffy, Leafcutter John, Janek Schaeffer, Ikue Mori, Marina

Rosenfeld, Pan-Sonic, Alan Lamb, Christian Fennesz, and ongoing democratic struggles with pan-European electronics orchestra 'MIMEO'. Her most recent collaborative release, *Before the Libretto*, with the Lappetites, was voted in the WIRE's best top 10 new releases for 2005.

She has also been making a growing body of composed works through collaborations with a variety of people, things and processes. From working with NASA astronauts researching the sonic experience of space travel, making BAFTA awarded **Weightless Animals**: kites and the weather on an uninhabited Scottish island, Sanda, **Weather Made**; taut *Wires* in the Australian outback with Alan Lamb; *Touching Concrete Lightly* for MIMEO and the Oscar Niemeyer Pavilion 2003, Serpentine Gallery; and the innovative **Radio Cycle**, a concept and works for maps, bikes and radios.

She played classical violin from the age of 7, singing badly in one band but getting further with bass and drums in another which recorded and toured for 4 years, in 1985 she discovered electricity and sound and with that, her current trajectory. Since then: acid house engineering, electrically reconstructing the violin, Distinction for a Masters in Music Technology, introducing and running a Performance Technology course at one of the leading Live Arts Colleges in the UK, and establishing the label Annette Works. She also set up a shop and did a Zoology degree along the way.

What music do you make?

I make experimental electronic music, but I use the word 'electronic' music only because to most people, the word 'electroacoustic' means nothing. In fact, I make both electronic and electroacoustic music.

Why do you make music?

I don't know. I just know that that is what I have to do.

But, if you want a story: in the mid eighties, when I was in a band playing bass and drums, I went to West Africa for a couple of months. I lived with some drummers and they taught me traditional rhythms on tam tams and within that, I learnt very simple things about how the texture of the skin on your hand, and the shape of the hand, and the tightness of the drum skin and the shape of the drum, these tiny, tiny details, would change the sound of the drum when your hand hit the skin. The changing of that sound would alter the pattern and so completely alter the music and its meaning. Also how the simple patterns, simple cells, interlocking with each other, would produce music of great complexity.

I came back to Nottingham, where I was living at the time, and had this epiphany - I just had to make music. Sound essentially is my medium. It's not emotional expression, or personal experience. I'm more of a channel. Overall, making music using it is a continuously questioning journey that never stops which makes some sense of living.

Is any of your sound-based work not 'music', as such?

No. I consider everything I make with sound to be music.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I am a person who makes music through constant questing. I'm always looking and listening and thinking and challenging and proposing and moving. I very much work with now time: what's happening now and now and now: now where I am, what's happening politically,

socially, emotionally, geographically, historically. I live in the middle of London. It's a very noisy, fast, complex, fascinating place that is full of cultures, of people from all over the world, all of us struggling to survive in our different ways. We mash with each other and we don't. It's the antithesis of Quebec city, which I've just visited, where there are clear blue skies and lots of space, absolute clarity to think.

I am a performer. I can get into showing off too, one of the reasons I no longer go on stage- I don't want audiences to get distracted by my prancing about rather than just listening.

I am a composer in different ways. I compose on the fly in live performances, improvising and working with software to create chance events to which I respond then and there. I also slowly make carefully constructed, thought out pieces for dance and film. Right now I am also designing multichannelled interfaces for which I compose pieces to feel through and moving around your body in never repeating combinations of sounds.

Part of the skill which I have been trying to acquire through practice with the live work is to ask: is this decision I am making now the best one? Is it right? (whatever that means?) Is that interesting? Is this a decision that's worth making? Or should I actually not do what I think I should do? Of course I begin with an idea, launch off, I'm playing and I have no idea what will come next, like life really. So sometimes it's great, and then slam, a disaster, and I have to deal with that. And all witnessed with an audience.

I'm not a technologist. I use digital technology as my instrument, my tool.

I'm not an engineer either. But I got into what I do now because I went to work in a recording studio in the early days of acid house and discovered that you could use technology to make sound accessible as a material. At that point I stopped making conventional tunes and began to play with what the machines might do, crashing and coming up with things I would never think of. That's where the collaboration began and I began to feel that music making was really possible. I also made the decision then not to be an engineer, but to use the studio and its gadgets creatively. I wouldn't be doing all this if computers didn't exist.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

About two years ago I started to realize that I no longer wanted my work to be available just to those who already know about the kind of music I make; the largely young, male, white audiences who come to galleries, warehouses, basements, cellars, and so on, to enjoy shows.

I think that experimental electronic music, if you can find a way into it, can be profoundly rewarding, even life-enhancing. It gives you a way of tuning in to what life is like through your ears, through listening. If you listen, rather than look all the time, it can transform your life.

I realized back in about 1997, when I made my first sonic armchair, that old women and kids would queue to be able to have a ride in this chair. All that they were actually listening to was a piece made from a recording of a jumbo jet, which I had processed, looped and filtered so that it moved up and down your body as you sat in the chair. It gave you an audio massage and was great to sit in. However, if you had played that piece to any of those people through speakers they'd have said: "give me a break love, where's the tune?"

So, having realized that sonic furniture had potential, I went on to make a sonic bed. So the sonic bed is for lying down, can be a social space (there's room for three to six people) as well as a social experiment around listening and unbeknownst intimacy with strangers in public spaces. It has a high quality twelve channel sound system so the music really spins and wraps and massages visitors. No more stereo. The response has been stunning.

So my music is no longer just about me performing solo with a space, but is now working with collaboration. I have set up and direct this collaborative research project, "music for bodies" (www.musicforbodies.net) exploring sound, architecture, furniture and the vibrations of the human body to make new music and ways of enjoying it. It works with professionals from other disciplines such as an architect, a social psychologist, a biofeedback practitioner, an acoustician, a software programmer pooling ideas. A lot of musicians end up working with image, but not me. I'm interested in sound and the future of sound, and now it seriously is involving looking for wider audiences.

What skills and attributes do you consider to be essential for you as a digital musician?

All kinds of skills, but the main one has been collaborating with other people, such as programmers and other musicians. As a result of meeting the programmer David Muth, for example, I am able to think about sonic shapes and sonic movements as different entities, so I can link them separately to other things. I am no longer the digital musician in my studio practising for hours every day.

My intention when performing was always focused on the live event. I started with an empty hard drive and a sense of the occasion, and a responsibility to the audience. I don't want to

work like that anymore. People used to love the spectacle of me as a person performing, but it was a distraction. Another important skill is to jettison stereo and to work with the acoustic properties of the space you are in at the time. I'm no longer a soloist. Now I work with other people and aim for a wider audience.

Do you have any other useful or relevant things to say about being a digital musician today?

Quebec was a delight because it was the antithesis of what I just said! I was a complete recluse, making my bed. One other thing I wanted to say is that I've got very bored of watching people playing with laptops. People even still mime to what they produce from their laptops or mixers. I want to be in a social space, and experience music with other people.

I also really want to make music that is not restricted by time, that doesn't have a middle and an end, but is about the sonic experience that is happening right now. What's happening around me right now could be music. And I want to make music that is always different, every time you come back to it.

So I'm asking more from technology. I set up the rules and the ingredients, and something different must happen. That's why I'm making installations. Let's replace a few of these new gyms with huge multichannelled sound systems for people to come and spin around their favourite disco, opera or swing cd's.

Randall Packer

Please supply a biography, giving an account of your career and current activities.

Randall Packer is internationally recognized as a pioneering artist, composer, educator, and scholar in the field of multimedia. His book and accompanying website, *Multimedia: From Wagner to Virtual Reality* has been widely adopted as one of the leading educational texts in the field. He is concerned with the aesthetic, philosophical, and socio-cultural impact of new media in an increasingly technological society.

In 1988, he founded Zakros InterArts and has since produced, directed and created critically acclaimed new media performance, installation, and net-specific works. Since moving to Washington, DC in 2000, his work has explored the critique of the role of the artist in society and politics. He founded the virtual government agency US Department of Art and Technology (www.usdat.us) in 2001, which proposes and supports the idealized definition of the artist as one whose reflections, ideas, aesthetics, sensibilities, and abilities can have significant and transformative impact on the world stage.

Please describe your creative use of technology, particularly digital technology.

My work is based in performance and has incorporated nearly every form and genre of new media. Currently I am working with HD video and surround-sound for an upcoming music theatre production.

What music do you make?

Music that supports a variety of media and interdisciplinary projects.

Why do you make music?

Because I can.

Is any of your sound-based work not 'music', as such?

No.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I am a composer of media.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

My work is influenced by social and political issues. Currently I am at work on a political music theatre work entitled "A Season in Hell," a project of the virtual government agency I created shortly after 9/11, the US Department of Art & Technology.

What skills and attributes do you consider to be essential for you as a digital musician?

The ability to integrate ideas with technical skills.

Do you have any other useful or relevant things to say about being a digital musician today?

It is no longer possible to be concerned only with music; we live in a global world where interdisciplinary approaches are critical to artistic expression.

Quantazelle

Please supply a biography, giving an account of your career and current activities.

A self-proclaimed “multi-hyphenate,” Liz McLean Knight—the sole woman behind Quantazelle—is thoroughly immersed in technology, fashion, music, and the often-surprising overlaps between. When attempting to circuit bend battery-powered music toys for an upcoming music performance, she discovered that electronic components can be turned into elegant jewelry and started an entire tech-fashion line called Zelle <<http://zellestyle.com>>.

While devising a content management system for her online experimental electronic music magazine, Modsquare <<http://www.modsquare.com>> she learned various web-based programming languages and related technologies, having a head start from her one time computer science college major. With that knowledge she then started an online store, Fractalspin <<http://www.fractalspin.com>>, to sell not only her jewelry, but also accessories and gear for the technologically-sophisticated yet fashionably-minded crowd.

Desiring to assist similar artists reach a greater audience as well as provide gear for electronic musicians, she started Subvariant <<http://www.subvariant.com>> –a record label and accessories company behind the well-received Electronic Musician’s Emergency Adapter kit <<http://www.emergencyadapters.com>> .

As laptop-DJ Liz Revision <<http://www.lizrevision.com>>, she selects both experimental ambient and glitchy techno in response to the aura of each night (including a recent co-

promotion and residency at Ramp Chicago <<http://www.rampchicago.com>> 's Sonotheque nights). As Quantazelle <<http://www.quantazelle.com>> she combines complex percussive programming, sonic innovation, and engaging sound design together with an approachable melodic sensibility and often booty-shaking result.

Quantazelle has contributed a track to the upcoming compilation by Black Dog's self-tagged "Future Sound of Sheffield" label, Dust Science (<http://www.dustscience.com>), called *Faith is Fear*.

Liz lives and works in the Wicker Park neighborhood of Chicago, USA, sharing a cable-strewn apartment with her boyfriend, their two dogs, and stacks of music gear and computers.

Please describe your creative use of technology, particularly digital technology.

What's great about computers is that they are amazing tools that allow you to completely stretch, distort, invent, and re-invent sound like no other instrument. And, there's usually an "undo" command. :-)

What music do you make?

Perhaps "edgy experimental-yet-melodic electronic" or "glitchy-yet-catchy instrumental electronic." It continues to evolve as I do.

Why do you make music?

I feel that I have a particularly unique audio perspective on creating music that's not dependant on any particular instrument, machine, plugin, or genre to make it sound like it

came from me. I've participated in this Iron Chef of Music competition put on by the kracfive label (<http://www.kracfive.com/ironchef/>), but which has worldwide participation via the internet and various "nodes" (physical meetups) throughout the world. The idea is that they give you one audio sample, and two hours, and you can use any program or effect to create a track from that one sample, but you can't use any other instrument. I thought it was absolutely fascinating how everyone who participated took the same source material but used it in completely different ways. And I was able to recognize the ones that were produced by my friends, because it just "sounded like them." Even though all of us who participated started from the same place with the same materials, we each produced something uniquely different. I sort of feel that way about what I do--I have a particular approach that sounds like me that you'll never hear anywhere else, even though there are people using the same software and plugins as I do. I feel as if I'm contributing something unique to all the available recorded electronic music. If I ever stumble across anyone who sounds like I want to sound, but doing it better, I'll just retire and subscribe to all their future albums. :-) Also, I wrote about my experience at Iron Chef on my blog:

<http://lizrevision.com/general/iron-chef-of-music-kracfives-sample-chopping-beat-dicing-producer-battle>

Is any of your sound-based work not 'music', as such?

Well I suppose my mother might say yes, but I don't think so. :-)

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I'd say all of those on some level. These days I've toned down the actual "performance" of my shows a bit (haven't worn a costume in forever, haven't done any costume changes or participated in any laptop cage matches in quite a while) and have just been focusing on the sonic experience that I create as a sound-technologist in a live setting. Plus, just creating all the musical intricacies in one track requires a few days of such focused nerdery in front of my laptop that I kind of run out of time and energy to think about how I could make it more "performative" in a live setting.

What is the cultural context for your work?

Here in Chicago, the only stations that play instrumental music are the classical music station and two low-signal-power college stations, one that plays dance music and one that plays absolutely anything from field recordings to noise-punk. There really isn't a mainstream cultural channel that my work would fit into, although I can think of about 12 internet-based podcasts or websites that are a near perfect fit. And that's why the internet is just so wonderful--you can discover all kinds of new music and network and interact with people with the same connoisseur-level taste in this kind of music that you wouldn't find in mainstream cultural channels.

And I do think that people who love IDM / experimental / abstract electronic music are connoisseurs along the same level as classical music buffs. Both sorts of fans generally have a technical knowledge of how their music is created (although classical has a "canon" of pieces by established composers that can be played by different groups of musicians and compared side by side with each other to highlight technical differences), and both rely on emotions created only through the interaction of all the sounds and not through a sung narrative. That's likely what's behind the perception of IDM as being pretentious and over-

intellectual instead of fun, but it definitely can be both.

What's interesting to me though is the response I get when I play my music or my favorite tracks by other musicians for people who've never heard this kind of music--and they really are into it. I think this sort of music can be appreciated by more people and I'd like to see it have a higher profile than just background music for car commercials.

Are you influenced by music in other cultures? And the other arts?

I think Gamelan is really interesting. It's heavily and sometimes complexly layered, with different parts coming in and out with variations or in another time signature. Some of it reminds me of earlier Autechre.

What skills and attributes do you consider to be essential for you as a digital musician?

Technically: keeping up on current technologies, upgrades, plugins, processor speeds, available VSTs. Knowing how to optimize the performance of one's computer for digital audio, keeping an eye on the sort of peripherals and MIDI interfaces and whatnot that become available, and looking at tech news to think about the future of one's setup as technology progresses (IE: I use a PC, but with the advent of imminent-failure Vista, I'm going to have to start thinking about either switching everything over to a Mac, or pray that the software and hardware I use now can either be emulated in WINE under Linux or that those manufacturers will port everything to Linux)

Professionally: networking and sharing ideas with fellow digital musicians, having a local peer base, having an internet peer base, being committed to the larger digital musician

community and helping out others with talent (either by sharing knowledge or helping to connect musicians with labels or musicians with venues to perform in), not letting one's ego get in the way, keeping in touch with people in the press who've been supportive in the past, as well as labels or promotions crews that have booked me.

Mentally: commitment, goal-orientation, foresight and planning ahead, just doing things that are musically fun (like DJing privately or in a low key setting and not being constrained by a genre, or participating in the Iron Chef of Music competition), having another income stream so I don't have to care if my music is commercially viable, going to music events that aren't electronic just for a change of pace.

Do you have any other useful or relevant things to say about being a digital musician today?

It's a very exciting time to work with computers, software, and new interfaces--I can't wait to see what people will invent next. For a new musician, I would recommend learning Max / MSP, PD, or Reaktor, since those modular software interfaces allow for all sorts of innovation, both sonic and in the sort of things that you can begin to program through it (like, the ability to use external sensors, and being able to control freestanding lighting or even robotics in Max,). I'd recommend against learning a program like Reason since it's built as a sort of program with "training wheels" to help analogue musicians make the transition to digital. If you're just learning, you should go as digital as possible in a platform that allows as much flexibility as possible in regards to how you're going to be composing your music.

John Richards

Please supply a biography, giving an account of your career and current activities.

John Richards' work explores performing with self-made instruments and the creation of interactive environments. He performs regularly with electro-noise improvisers kREEPA and the post-punk group Sand (Soul Jazz Records), and he is actively involved in the performance of improvised music and community music projects. In 2002, his work with kREEPA helped initiate the OIK project at STEIM, Amsterdam that involved the hacking of commercially available hardware to create economic musical interfaces. He has worked with many leading improvisers and musicians in the field of live electronics and has performed extensively across the globe, predominantly in Europe, as well as Japan, Australia and the USA. He completed a doctorate in electroacoustic composition at the University of York, UK, in 2002, and he is currently part of the Music, Technology and Innovation Research Centre at De Montfort University, Leicester, UK. Since 1990, he has also taught improvisation at Dartington International Summer School.

Please describe your creative use of technology, particularly digital technology.

My use of digital technology, particularly in my performance work, is not obvious. This is the case with the Kreepback instrument: a modular environment of analogue DIY electronic devices, audio hardware, and digital bits and pieces patched together to create a feedback labyrinth. The instrument's name is derived from my work with the group kREEPA and the idea that sound creeps back on itself. Since 2000, I have been developing the instrument and approaches towards performing with it. Some of the modified 'physical' objects (see answers to questions below) tend to catch the 'eye'. However, as far as the ear is concerned, digital

technology plays a big part. I have been hugely influenced on different levels by object-orientated programming languages. I initially conceived the feedback network of the Kreeback instrument using Max/MSP and the inputs and outputs of an audio interface. Despite being quite a different instrument to the one I currently use, the genesis of the instrument is here.

Max/MSP has also offered me a way of prototyping environments for performance and installations. The Kreeback instrument is really a hybrid technological system designed for solo and group improvisation. It combines both analogue and digital technology as well as the acoustic and physical properties of objects. For me, although digital technology has been formative in my creative work, it is not simply just about being a 'digital' musician. In regards to specifically digital technology I currently use in performance, the Nord Micro Modular is used as a 'module' in the Kreeback instrument. The programming language of the Nord offers great flexibility, and its small size, robustness, and control features make it a really powerful device to help coerce and steer the feedback produced by the other modules that make up the Kreeback instrument. For example, using a mixing desk as a matrix, I can use a low frequency oscillator (LFO) from the Nord to modulate some of the analogue signals. Within the digital domain of the Nord I also have created feedback labyrinths and networks that I control with MIDI: there are feedback loops within feedback loops within the overall instrument. Having worked with Max/MSP, programming the Nord was an extension of the same modular approach.

What music do you make?

I make predominantly electronic and improvised musics, as well as having written 'composed' electronic pieces. Such terms as 'industrial jazz' have been applied to some of this music, where free improvisation meets the broad genre of 'noise'. Although a lot of the

music I have created has dense textures, complex rhythms, and could be considered as 'loud', I am also interested in extreme contrasts, the use of silence and sparse musical landscapes. Similarly, the idea of contrast in my music is also explored through the relationship between the performer's involvement and non-involvement (total process) in performance.

Why do you make music?

I do not really have a rational answer to this question. Making music is part of my fabric as a human being, and is something that has always been there. I have sometimes thought about how I might stop making music, but these thoughts have been fleeting.

Is any of your sound-based work not 'music', as such?

With some of the instruments I have created there would seem a clear link to sculpture and found art. For example, the Mincer - a modified meat mincer (grinder) where turning the handle outputs different resistances that in turn controls other sound generating devices - is very much like a piece of commodity sculpture. With the Mincer there is a striking resemblance to the ready-mades of Marcel Duchamp. I have also used other found objects to create sound generating devices/instruments. These include two Victorian teapots (Loud Tea), a wooden plank with drill-hole patterns (Resonating Wooden Sculpture No. 1), and brass candlesticks. In some of my instruments, the appropriation of found objects is purely cosmetic, such as whiskey bottle corks for knobs and old tins to house the electronics. Then there is the Automaticiser, a brass etching produced automatically that acts as a random touch control. Often there is as much interest in the way my devices look as sound. With an audience I like to set-up a visual dynamic. Devices, cables, objects are arranged, normally on a table, very much like an artist's still life. The tabletops of Keith Rowe and David Tudor have been influential in this respect. These objects also act as a score to the performance.

Before and after concerts my still life or ‘installation’ is meant to be viewed. The audience more frequently than not want to more closely explore the devices used in performance.

There is intrigue in regards to how such objects are used to create sound or how they work. I find that the digital elements in my hybrid system are often overlooked by the audience or overshadowed by the more visual curios.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I have found it increasingly difficult to call myself a composer, although I am, at times, clearly composing. There is a lot of baggage with the term composer, some of which, I do not like. For example, the composer as someone that sits at the top of a musical hierarchy, the limited reference of the term in regard to Western culture, and the composer as something distinct from a musician. I have previously remarked in other interviews I have given on a comment made by Harrison Birtwistle in an interview with Paul Griffiths. In this interview Birtwistle states, that for him, playing the clarinet and composing were incompatible. This seemed anathema to me. Never at any point whilst composing did I ever feel the need to give-up playing or performing. If this meant my compositional output was smaller or compromised in some way then so be it. I like to think of myself as a musician, the term musician also embracing the composer.

I am also a technologist, engineer, designer, programmer and artist. However, for cultural reasons I do not call myself any of these. To be, for example, a sculptor, you have to earn the right to be called this: have a studio and exhibitions, a commitment to sculpting. Some of my instruments are arguably sculptures, but their *raison d’être* is to create sound. I recently remarked in a seminar entitled *Inscribing Instabilities* that I gave with Simon Atkinson at the

Institute of Electroacoustic Music, Sweden, on the Resonating Wooden Sculpture No. 1. This is a piece of wood from my workshop that I have used for years on my drill press. Random patterns have been made on the wood from the drill holes. The piece of wood is aged and worn. It has a history and there is something visually appealing about it. Justifying it as a work of art, however, is another matter. Yes, I would like to hang it in an art gallery, but as a sculpture, I have no artist authority to do this. But, as a 'musical' object, I can justify it. Working with these types of objects has been very important to me and has enabled me to express different artistic sides of my personality.

Furthermore, I feel very strongly that the distinctions associated traditionally between science and the arts are perfunctory. In the UK, for example, people study to become a Bachelor of Science or Arts. It is clear that many students do not fit into either of these categories. This is also true of the majority of digital musicians.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

"The Twenty-First Century is a Better Place for Me". This is the title of a paper I have had an idea for, although I am struggling to start the paper due to the enormity of the issues it keeps throwing up. In brief, the idea for the paper was to attempt to place my and other people's work within a cultural context. Being born in the 1960s, I have been fortunate to experience making music in more traditional ways with acoustic instruments such as the piano and double bass, as well as witnessing the incredible rise of the PC and being part of the digital era. Also through teaching, I have seen the emergence of the first generation of purely digital musicians. Consequently, I am a polyglot musician: I speak many musical languages. I remember at university where I was studying music, there were those who could improvise

and those who could not. Never the twain met. I suppose one of my attributes as a musician was that I could move across different musical terrains. It seemed completely natural. I had learnt some of the canon of Western classical music; I played in a jazz band and spent a good many years of my youth playing 'axe murdering' bass in a punk band. I also have experienced the dissemination boom of music. By this I mean the opportunity to have on CD, for example, a vast range of music from around the globe. Some of my tutors would see my eclecticism as a problem, arguing that it was artistically incoherent to be involved in and have such an interest in such a broad range of music, to have more than one musical personality. For them, it was all about artistic integrity, creating a coherent body of work and 'purity' of an idea. I never really saw it this way. My broad interests were a result of my cultural background. My artistic integrity, therefore, should be informed by this plurality. So, for the last twenty years, in certain circumstances, I have kept supposed different musical personas under my hat. The idea behind the paper "The Twenty-First Century is a Better Place for Me" simply recognises the cultural phenomena that I have been part of and that has arisen.

The high versus low art debate really does seem to have run its course. Likewise, the stranglehold of high Modernism, which seemed to dominate a lot of my music education, has loosened. I often joke with myself about being a musician representing the true 'middle-brow'. Now, this may sound abhorrent, but this is something I am beginning to think more positively about. There really is a cultural revolution going on and a lot of very exciting new music being made as a result.

My work is very much influenced by the other arts. This is particularly evident in, for example, the Kreeback instrument. These influences include the Futuristic imagery in Fritz Lang films, the architecture of Richard Rodgers, the ready-mades of Marchel Duchamp,

Constructivists sculpture, the Young British Artists (YBA) and pop art, the writings of William Gibson, and automatic art.

What skills and attributes do you consider to be essential for you as a digital musician?

File management and archiving is something I should be better at and really is a skill the digital musician needs. Over the years I have created thousands of files that are now sprawled across many hard disks. I sometimes feel it is easier to create a new sound rather than try to retrieve a file I made, for example, five years ago. Also understanding ins and outs and patching skills is essential. The binary world has no in between in regards to this. Being a digital musician is not any different for me from being a musician in general, where, for example, I would want to experiment, explore and find the 'edges' of the medium.

Do you have any other useful or relevant things to say about being a digital musician today?

Being a digital musician is not just about the practical application of technology, but a way of being or thinking. I have recently presented a paper at Stanford University entitled "The Short-Circuited Digital Mind". This paper discusses how 'virtualness' has had a major impact on how we interface with the physical world, and how the digital has reinvigorated our interest in 'old' technology in relation to music. In Nicholas Negroponte's seminal text *Being Digital* there is the sub-heading *Don't Dissect a Frog Build One*. Negroponte uses this sub-heading to suggest that the digital age is all about 'doing'. In the digital it is possible to try things out, lots of things and at speed, for there is more often than not the 'undo' key if mistakes are made. Digital technology has enabled me to have a better understanding of acoustics and synthesis through different software programs, and to experiment with making

performance environments and musical instruments. I have been able to ‘do’, and this mentality has affected my entire music making.

Marshall McLuhan has stated how a new technology is often concerned with technology of the past. In regards to music, the digital has helped reinvigorate and excite musicians about pre-digital analogue technology. Take eBay for example, I can systematically search and find hundreds of digital images of old reel-to-reel machines that are for sale or have been sold.

Digital technology, in this case eBay, can constantly bring to life the past. It is not just about buying and selling, but what we are ‘experiencing’, albeit virtual or digital through an image or description. And there are all of the softsynths and computer programs based on analogue models. Eventually after using, for example, virtual patch cables or valve amp simulators, it seems inevitable that a musician is going to want to use and experience the ‘real’ thing.

Negroponte also considers that we have not even got to base camp in as far as the capabilities and potential of digital technology, yet terms such as post-digital are gaining usage. Perhaps this is due to the fact that digital technology has become so all-pervasive that it is often taken for granted, or even ignored. This is true in the case of the Kreeback instrument I discussed earlier. So, it is in this sense that the digital mind has been short-circuited.

Sophy Smith

Please supply a biography, giving an account of your career and current activities.

I have been involved in music since the age of 5. Essentially, I am classically trained with three grade 8s in Piano, French Horn and Singing and a first class BA Hons in Music and Inter Arts. I played and sang in classical choirs and orchestras until the age of 24, but then stopped orchestral performance when it was no longer necessary for my formal education.

Although I enjoyed playing in music ensembles it became dull playing the same repertoire over and over, especially being a french horn player where the parts are usually unchallenging.

My undergraduate degree was also in Inter Arts and this cross/inter-disciplinary approach to my work led me to complete a MA in Contemporary Performing Arts. It was during this course that I began to write music. I had studied and enjoyed composition at GCSE level, but it was not advised as a 'safe' option for A-level music and so by the time I began my degree course I was unconfident in my compositional abilities. However, I did some composition at University and enjoyed the work, where I was able to follow my own path! My undergraduate degree course had no music technology provision and so my compositions were all for orchestral/vocal ensembles. This had a direct effect on my future compositional development and style, as I am essentially self-taught in all aspects of music technology. This lack of experience (and equipment!) resulted in my early music technology experiments involving any cheap lo-fi equipment I could access, and using it in any way I could find, for example cheap 1980s sampling keyboards, electronic toys, tape recorders and four-track machines. Early music technology work was essentially sound-based as I had neither the equipment nor expertise for sequencing! A lack of keyboard or computer based sound-generating equipment forced me to focus on sample-based music and creating my own sounds by recording and manipulating found sounds. When I began to work as a professional composer being commissioned by other people, this reliance on sound-based and sample-based work was too restricting for the different types and styles of music that I was being asked to write and so I learned sequencing and editing software and techniques to widen my skills.

My professional work covers a wide range of work. I currently work as a professional composer, writing music mainly for dance and theatre companies as well as running my own live art company 'Assault Events'. The company creates original devised performance events as well as planning and delivering a range of specialist residencies. We also undertake research and consultancy projects for clients including the Creative Partnerships, regional arts organizations and local LEAs. In 2007 I completed my PhD in Music Technology (The compositional processes of UK hip-hop turntable teams) and am currently working part-time at the Institute of Creative Technologies at De Montfort University, Leicester as a Research Fellow with responsibility for the Masters in Creative Technologies.

Please describe your creative use of technology, particularly digital technology.

I compose using an Apple Mac running Logic Pro, Pro Tools and Wave Burner. I use soft synths including Absynth and Sculpture. My music also uses a wide range of samples which I manipulate in Logic. I use the technology both as a palette where I can create and mix new sounds and as a canvas where I can compose the work. Digital technology is a tool for creating sounds as well as putting them together and having both these elements in one place means that I can work quickly and allows me to be much more flexible and effective. Digital technology is ideal as it allows me to quickly re-edit/and alter pieces of music, which is vital in the situation I compose in where I often compose in the rehearsal studio with the dances/actors whilst they are devising. This allows the work to be a much more collaborative experience than it would if I had to keep going back to a large analogue studio or writing for instrumentalists who were not present.

What music do you make?

I mainly write music for dance and theatre companies for touring shows. This involves creating soundtracks of between 40 – 75 minutes in length, comprising of a number of shorter tracks. Usually, all these tracks are ‘written through’ so that the soundtrack is heard as a complete piece of music without gaps. The type of music I write depends on the movement/action that it works with, but includes orchestral pieces, sound-based work, vocal work, and electronic dance music. I think I am more defined by my approach to composition through collaboration with other art forms rather than a particular style. Although my music is commissioned, I have free reign to experiment with different styles and approaches to create the soundtracks.

Why do you make music?

I enjoy creating things from scratch – music is one of my outlets for doing this! I find it challenging and stimulating and hugely enjoyable. I do not write much music for its own sake, but rather enjoy writing music for collaborative things (e.g. environments, events) in which music is one of a number of parts that go to make the whole. I can’t remember choosing music – I just can’t remember doing anything else!

Is any of your sound-based work not music, as such?

Yes, if it is the best medium through which to reflect/support the ‘action’ on stage.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

Mostly a performer and composer. I don’t really see myself primarily as a technologist as first and foremost I write music, and the digital technology is my means for doing this. I definitely don’t see myself as an engineer, probably as I have no formal training in this area.

My music often drives my engineering-orientated collaborators mad as my engineering is ‘wrong’! In terms of engineering, I tend to experiment until I find what I like, rather than knowing what to look for. Really I suppose I see myself as a facilitator of sorts. On one side of me I have the whole world of music (or as much of it as I know!) and on the other I have the needs of the piece. My role is to pull in relevant forms/styles/sounds/approaches of/to music, and create effective sound/music for the piece. I find this approach really exciting as it means I am not restricted to one style or approach, and am constantly challenged.

What is the cultural context for your work?

I have probably covered this in answers to the other questions. I primarily compose as part of collaborative projects involving a number of different art forms, some digital, some not. My work is not really of any particular style, though it does lean towards western traditions, both of ‘art’ music and popular music. Because of the collaborative nature of my work, I tend to begin with an aim of creating a particular ‘feel’ or atmosphere rather than with a desire to write a particular style/type of music.

Are you influenced by music in other cultures? And the other arts?

I am influenced in some way or another by all music I hear, but I don’t think that I am hugely influenced by any particular music in other cultures. I am influenced by any music that I like and find interesting – usually something that has an instant emotive hit! Some of my music does have different cultural nuances, but this is really because the sound itself reflects what I want to convey in the music for a particular scene or dance sequence. I am very influenced by the other arts as I have a very cross/inter-disciplinary approach to my composition. This manifests itself in two ways, either in creating collaborative work with other disciplines, or experimenting with different creative processes and concepts used in other art forms. If my

music is influenced by anything, then it is a combination of my past experiences as an orchestral instrumentalist and vocalist and a desire to create music that will connect with people and that they will find interesting and enjoyable.

What skills and attributes do you consider to be essential for you as a digital musician?

In no particular order...

Creativity to work within 'constraints' of technology.

Ability to use the technology creatively and push its boundaries.

Flexibility

Patience!

Knowledge of music outside the digital domain – trying different compositional approaches etc. It does seem sometimes that some digital music applications favor a particular approach to music making and it is important to get the technology to work for you rather than it directing your work.

Do you have any other useful or relevant things to say about being a digital musician today?

I love being a digital musician as digital technology gives me the tools to be an extremely creative and flexible composer. It allows me to experiment in ways that would not be possible with 'real' instruments, e.g. different approaches to creating 'new' sounds and the speed of digital processing means that I can experiment with and where necessary change aspects of my music very quickly which would not be possible without digital technology. This makes me much more likely to take risks and try new things! Also, digital technology has speeded the day-to-day processes of collaboration! I can send music to collaborators virtually instantly and get feedback much quicker than sending tapes through the post. This

sounds extremely mundane, but means that I am engaged with my work constantly, rather than having to come back to it days later. Also, because of the prevalence of and (relative) cheapness of some digital music packages, many more people I work with across art forms have some experience of creating digital music and so have an understanding of the process and some shared vocabulary. Also, in terms of collaborating across art forms, many of my co-collaborators work with digital technology (e.g. film and photography) and so tasks like swapping and inputting files, time-coding etc that used to take a long time and could be quite complex are much easier and at times extremely straight forward. This means that there is more time to be creative as less time is being spent trying to get the technology to work!

Atau Tanaka

Please supply a biography, giving an account of your career and current activities.

Atau Tanaka is a Japanese/American composer and researcher based in Paris. He bridges the fields of media art and experimental music, artistic and scientific research. His work seeks the continuing place of the artist in democratized digital forms. He creates sensor based musical instruments, searching for the idiomatic voice in the interface. He composes for network systems, considering data transmission delay as the acoustic of the network. His works include solo and ensemble concert works and exhibition installations. His work in the 90's with the trio Sensorband continues today in gestural sound-image performance with Sensors_Sonics_Sights. He publishes theoretical writings and conducts fundamental research at Sony CSL Paris to develop and document his socio-artistic approach. His work has been presented at Ars Electronica, SFMOMA, Eyebeam, La Villette, ICC, V2, and ZKM. He has received support from the Japan Foundation, the Fraunhofer Society, the Daniel Langlois Foundation and is mentor at NESTA.

Please describe your creative use of technology, particularly digital technology.

I have been interested in the use of interactive technology for musical expression. I perform with musical instruments built from sensor systems, create network music infrastructures, sound/image installations, and participative mobile locative music experiences.

What music do you make?

I make music as a function of the medium or infrastructure for which I am composing. I seek out the sonic voice of the chosen medium.

Why do you make music?

I continue to make music because ideas continue to come, and I have been unsuccessful to stop making music despite efforts.

Is any of your sound-based work not 'music', as such?

I do not make a distinction for myself between sound-art and music. I invite myself into musical situations that put in question the nature of music itself, seeking purely artistic sonic structures. Conversely, I try to impart musical life to sound installations, shaping electronic signals and acoustic patterns into structural forms.

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

I am a composer who performs, an artist who uses digital technology as his canvas.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

I have lived in several countries in my life, so feel no direct identity with one particular culture. I draw upon the different cultures of my background in ways that I could not have if I had not left them.

Also I believe that there is a culture of technology, as well as a culture that questions technology. My works sits at this intersection, ultimately embracing a visceral vision of digital sound.

What skills and attributes do you consider to be essential for you as a digital musician?

A musician is a musician, digital or not. This being said, we need to move beyond the vocational skill set often associated with musical training. Today, knowing the physics of acoustics and the physiology of auditory perception is more important than knowing functional harmony.

Do you have any other useful or relevant things to say about being a digital musician today?

Digital makes us appreciate analogue - not just for the specific sound qualities of certain historical instruments, but for the qualities of analogue electronics as a medium of sound transmission. You can keep adding to analog, you can feel analog. Digital is not in the impossibility of acquiring these capabilities, but the digital musician must sensitize himself to this potential.

Martyn Ware

Please supply a biography, giving an account of your career and current activities.

Martyn Ware was a founding member of both The Human League and Heaven 17, and is one of the UK's most successful and in-demand producers. His work includes Terence Trent dArby's 'Hardline' album and hits for Tina Turner and Marc Almond. Martyn has also worked extensively writing music for film, theatre, TV and radio. His most recent venture is The Illustrious Company, formed with long-term collaborator Vince Clarke (of Erasure, Yazoo and Depeche Mode), which makes original music soundscapes often in visual contexts. They recently staged a series of events called 'The Future of Sound'. See <http://www.illustriouscompany.co.uk>

Please describe your creative use of technology, particularly digital technology.

I'm a Mac addict. I had one of the first Macs in the country in the 1980s. The Mac is central to just about everything we do, from composition through to soundscape assembly, through to 3D surround sound convolution. We use a proprietary system that has been built with our advice by Paul Gillieron Acoustic Design which enables us to move things around in three dimensions and actually see where things should be in a wire frame diagram. It can move up to sixteen different sound frames simultaneously at 25 frames per second. We also use Logic, an industry standard product, as a front-end. We also use Macs for all our business needs, designing websites, etc. And although we are famous for using analogue synths, nowadays we use virtual instruments as well, so more or less everything we do is mediated through technology.

What music do you make?

It varies. My collaborator, Vince Clarke from *Erasure*, and myself compose together, creating soundscapes for exhibitions, events, etc. etc. We also do Hollywood-quality sound design in three dimensions. So the work we do ranges from three-dimensional ‘narratives’ that have nothing to do with traditional music, through to traditional music pieces that are rendered in three dimensions.

The kind of music we create tends to be generally electronic, and can be completely abstract, or based on, say, folk history, or recordings of the human voice. We are currently working on a project for the Royal Observatory at Greenwich which uses seven different sound fields based on sounds, from various observatories around the world, created by celestial events. That’s pretty abstract for the listener, but it’s all predicated on sounds that are relevant to the particular environment.

We’re also designing the reopening of the National Film Theatre, accompanied by giant projections from their newly digitized film library. So we’re doing a lot of stuff that involves re-interpreting in space existing historical or contextual content. From a commercial point of view we work closely with commissioners to create a sense of immersion. So we did a piece for BP last year based on their six core values, from ‘innovation’ to ‘green’. We extemporised around those ideas to create a sense of immersion in a sound environment.

Why do you make music?

Because it’s the only means I have of making a living. And for pleasure. I tolerate no interference with the creative process. I never have done, throughout my career as a musician and writer, composer and producer. One of the conditions of me working is that I can’t deal

with working by committee, particularly when composing. For that reason, we don't do much work with the advertising world, for instance. The presumption in that kind of world is that if they pay you enough money they have the right to interfere. I'd rather earn less money and provide a clean path towards resolution of a creative idea. And it's my life, and has been before I got signed as a professional musician, since about 1972 when I bought my first synthesizer and started playing with imaginary bands, with my mates in Sheffield. It makes me laugh when people talk about retirement, because I'll be doing this until the day I die, if I can.

Is any of your sound-based work not 'music', as such?

I regard it all as music. Some people would say: 'that's not music'. It all has an artistic element. An example of the closest we would get to something that is not music is a piece we did for the Swansea National Waterfront Museum, with a friend called David Bickertsaff and a company called New Angle. One of the rooms was about how people used to shop in South Wales, and the historical attitudes to money. This particular room had a long table with a responsive projection on it where you could touch items and they'd go into your shopping basket as you went along. They needed a sound element to make clear the information they wanted and we had to do it in two different languages simultaneously. So we took this approach where we had multiple streams of information together with sound effects in three dimensions which, if it was done in stereo would sound confusing, but when they are separated in space sound not confusing at all. It's like having several people in different corners of the room speaking several things in several languages, almost like a Samuel Beckett play, where some of it is abstraction but the majority is about getting information across in an interesting way. Without an artistic sensibility and experience of handling

spatialized sound, this could be an absolute mess. So I regard the whole thing as being very creative at every level and very based on a knowledge of musical assembly, both in a compositional sense and a production sense (my career is half-and-half composer/performer and producer).

Do you consider yourself a performer, a composer, a technologist, an engineer, some combination of these, or indeed something else?

Good question. Nowadays, less of a performer, although during the 'Future of Sound' events I MC the whole thing, because I'm the most famous person involved and it's my baby anyway, so I can do what I want! I like public speaking now, whereas it used to horrify me. I've turned from a performer in the music sense to a performer in the didactic sense. Since I've had children (now aged 11 and 9), I've become much more interested in distributing the experience I've acquired over thirty years.

I think of myself more as a composer now, in the real sense of the word, than a writer. I'm a producer-composer. The skills I acquired as a producer were invaluable in terms of organizing the material required to get a message across, especially in the complex world of three dimensional sound and how that information is imparted to the observer.

I don't like the word 'technologist', but I have become fascinated by technology. Our three dimensional sound needs to be, or rather often is, accompanied by visual imagery. Interesting new forms come out of that collaboration. So I have become, of necessity, much more *au fait* with all the technologies that are out there to do with interaction, with digital manipulation of information, infomatics, and new forms of coding that enable you to do things that weren't

previously possible in combining digital visual generative work and sound. So I've expanded my skills base to incorporate a lot more things.

I'm not an expert on all those things, but I know the *implications* of what a certain technology can bring. I don't need to know how an engine works to drive a car is the analogy, I suppose. But it's fascinating, and a prime reason for doing the Future of Sound, in which I encourage artists to collaborate with what we do, but also do works in progress. They're not always finished or polished, they're edgy. Sometimes they don't work properly, or do totally unexpected things on the night. That interests me a lot more than creating something that's finished and polished.

The most exciting thing for me has always been the early stages of creativity. The more things converged to the point of being finished, the less interested I became. For instance, mixing never excited me that much because I always knew exactly how I wanted a track to sound and that was just a boring process of getting there. The creative process of collaboration and bouncing off other people was what excited me down the years, and that's why I've now created the seed conditions like when I started in the late 70s/early 80s.

What is the cultural context for your work? Are you influenced by music in other cultures? And the other arts?

I'm definitely influenced by music from all around the world. I've always been very eclectic in my tastes, from way back before even I was involved in making music. I don't think 'ooh, I've just discovered music from Mali, or Tuvan open-throat singing'. Everything is music to me.

I can't alter the context for my work. Everyone knows I'm an electronic musician. We've always tried to do electronics with soul, and that's what interests me, not just in musical terms but also in personal terms. I only work with people who approach what they do with soul, with a sense of humanity, of generosity and openness to new ideas. So the context for me is *innovation*, I think. I'm more interested in new forms than I am in perfecting existing forms.

What skills and attributes do you consider to be essential for you as a digital musician?

I can't think of anything that's particularly special about being a digital musician as opposed to any other kind of musician. You need a degree of talent, a good ear. I'm not a talented musician in the traditional sense: I struggle to play keyboards properly, I can only read music at a snail's pace, I never had any formal training. The important thing is that I can conceptualize how I want something to sound, based on the timbres, and melodic aspects – counterpoint, etc. I can hear a multitrack going on in my mind that I just have to get out. If I can't play some things I know people who can, or I can program it.

Open-mindedness is very important. People who buy a sequencer package have an interest in learning how to use it, but there is a big mistake that digital musicians nowadays often make. They have in their computer a tool of enormous power and diversity which enables them to create very quickly pieces that, on the surface, seem very complex and well-rounded. The problem is that the ease with which it is created means that there is a lot of stuff out there that is, frankly, as shallow as a puddle. (I can't really criticize them because I would have done exactly the same thing in the early days, if I had had the tools). What I would encourage

digital musicians in particular to do is: take a step back; do a little thought and research about what you want to achieve before you start. We're in a situation now where you can switch your computer on and, within ten minutes, you can have something that "does the job". This is particularly prevalent in advertising, or when people put mp3s on a website. They say "isn't this brilliant?" The answer is: no, it's not brilliant, it's only o.k.

What digital musicians have to aim for is to escape the normal, pre-set paths that are offered to us at all times. All musicians, myself included, can go for the easy option, the lazy way, and it is always on offer today, particularly in computer composition. The most valuable advice I can offer people starting out on this path is: take a step back, look at what you trying to achieve and do a bit of research. Make it hard for yourself. Limit your palette, even. Deliberately limiting yourself can enable more unique creations.

Do you have any other useful or relevant things to say about being a digital musician today?

The future is very exciting. We are in the early stages of virtual synth abilities. I do quite a bit of lecturing and one warning flag I'd raise is that the standards in universities and colleges are not generally agreed. I personally think Logic is as good as anything, in terms of its breadth of capabilities and depth of possibilities. But I know a lot of colleges use Reason. I find a lot of these more 'user-friendly' platforms tend to lead you in facile directions. It is more constructive to start from scratch. I'll give you one interesting example.

When I was working with Vince (Clarke) at a studio in America he used to have, as people know, every synth on earth. He used to control them all using CB and Gate and his

programming controller was a BBC B computer (this was only four years ago) running a program called UI, of which he is the only remaining user. We'd discuss what we wanted to do for a while, then he'd say "go away for half an hour". When I came back, he'd got loads of different synths plugged up together, and programmed it... really amazing. If I suggested a change to more than one sound, within ten minutes he'd re-programmed *everything*. To me this is a fantastic example of apparent complexity actually being much simpler than being pre-guided by software.

We're all under more time and financial pressure than ever before, but I would still urge people to go off-piste from time to time, and even to start with a blank canvas, no presets.

¹ Freiburger, M. 'Career interview: computer music researcher' in *+plus10 magazine* Issue 38.