



InterPARES 2 Project

International Research on Permanent Authentic Records in Electronic Systems

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Survey of Recordkeeping Practices of
Composers

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Background

This paper summarizes the results of a survey of composers conducted as part of the InterPARES 2 Project. The survey was prompted by the observation that, while the supposed problems surrounding composers' use of digital technology have been referred to and, to some extent, discussed in the archival and musical communities, there is little or no data to provide a foundation for such discussion.

The questionnaire that follows was posted on the InterPARES Web site. An invitation to participate in the survey was sent to some 500 composers, 161 of whom did complete the survey. The names and email addresses were gathered from lists published by such sources as the Computer Music Association, the Canadian Music Centre, and the College Music Society. Only composers in English-speaking countries were contacted, since translating the survey and the responses would have drastically increased the workload.

Because of the large number of invitations sent out and the large number of responses anticipated, the questions were kept simple. Most required only a yes or no response, some were multiple choice, and only a few allowed for textual response. A majority of the questions were not discipline-specific (3, 4, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21), while several make specific reference to musical issues (1, 2, 5, 6, 7, 10, 11).

Analysis

The purpose of this survey was to gather data and to suggest areas for future research. Nevertheless, some observations can safely be made.

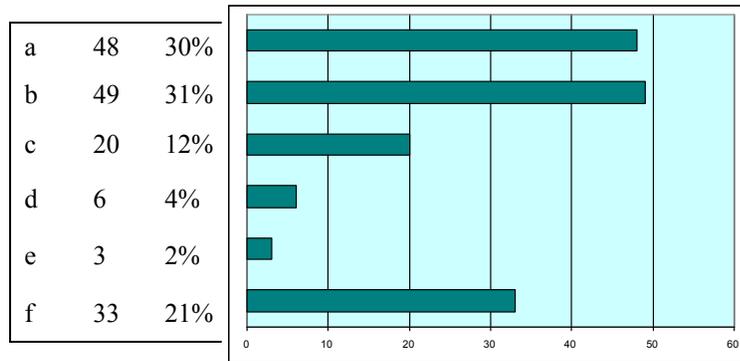
1. The majority of digital files produced by composers were audio files (2).
2. Almost half (47 percent) of the respondents have lost files they considered valuable through hardware or software obsolescence (13).
3. While we see interactive and Web-based musics as increasingly important - because they distinguish the compositional milieu of today - they still represent a minority. Only 16 percent of composers identify the making of interactive music as their primary activity (1) though 43 percent produce interactive music of some kind (5). Only 9 percent deal with distributed or Web-based events (8).
4. Question (4) seems to indicate that the participants in this survey are not particularly concerned with archival issues. While 97 percent say they attempt to keep the digital records they produce (3) 100 percent keep them for practical reasons (4). This probably reflects the fact that composers have not, historically, had to concern themselves with preservation – unlike, for example, photographers, where archival concerns are embedded in the crafty of printmaking. The textual responses do, however, show some concern for archival issues, and the great majority do take measures to ensure that their records will not be lost, with simple backup to another physical medium being the preferred technique (15).
5. A majority (56 percent) do not care about authenticity (17) but by a narrow margin they do care about accuracy (18). It may seem surprising that authenticity is not more of a concern,

but this probably reflects that for most composers authenticity simply has not been a problem. Composers work alone – 72 percent say that others do not have access to their files (19). Their records may be misplaced or destroyed, but it is less likely that their ownership will come into question. The concern for accuracy is almost certainly a practical one: the nature of the digital records is that if they are not accurate they will probably not work.

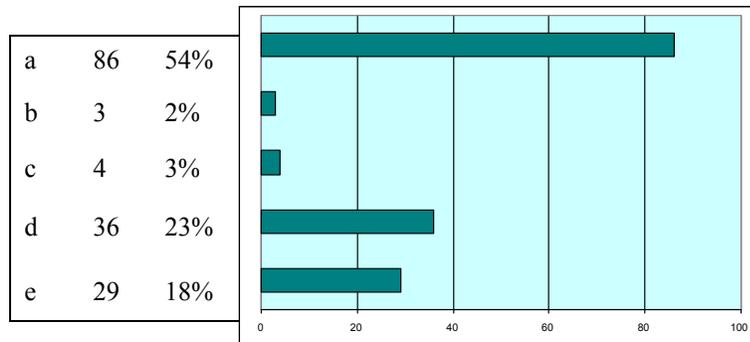
6. Question 11 tackles the difficult issue: where, in the absence of a score, does the work reside? It is a question that is crucial to the appraisal process, particularly where interactive and dynamic records are involved. In this case, a number of alternatives were offered, with the poles being (a) the work resides in the pre-existing digital documents that define and delimit its possibilities, and (e) the work is best represented by an audio (or video) record of what actually happens. Opinion is split almost equally with a few answers in the middle.
7. Most of the software that composers use (76 percent) is commercial, off-the-shelf products (12). This will be important to remember when considering how preservation strategies will affect this community.
8. A good way to get some sense of the variety, range, and complexity of this field is to read through the text responses to the last question (22). Categorizing the activities described here would be a large project in itself.
9. If one thing emerges from this survey, it is that composers work alone. Even when they are officially attached to institutions, the archival and preservation policies and practices of those institutions will seldom touch them. On the other hand, the majority must rely on commercial hardware and software, and their archival practices will necessarily be conditioned by this fact.

Summary of Responses

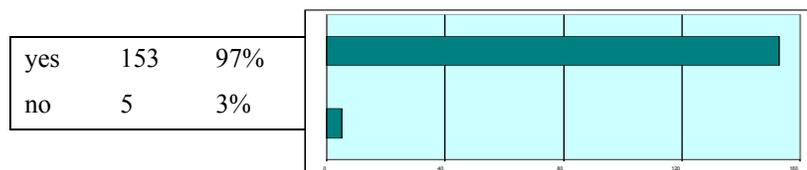
1. Which of the following best describes your activities:
 - a. compose traditionally scored and performed music
 - b. compose pre-recorded electronic music (analog or digital)
 - c. compose real-time interactive electronic/digital music
 - d. design digital, interactive, sonic environments
 - e. compose film music
 - f. other (please describe)



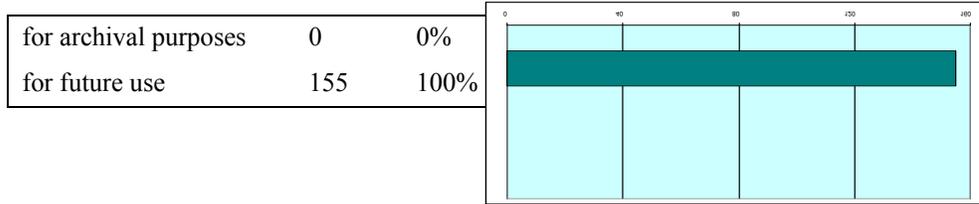
2. Which of the following digital documents do you produce?
 - a. audio files
 - b. MIDI files
 - c. data files to control hardware (e.g., input to synthesizer, data to control lights, video, etc.)
 - d. data files for a manuscripting program (FINALE, SIBELIUS, etc.)
 - e. other (describe)



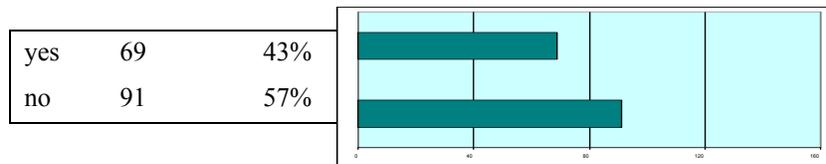
3. When a project is finished, do you attempt to keep the digital files generated?



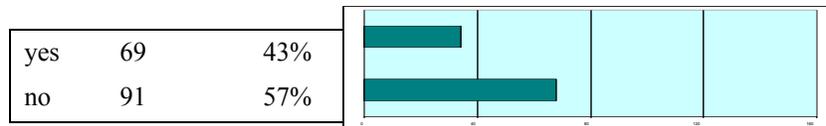
4. If so, do you keep them:



5. Do you produce interactive music?

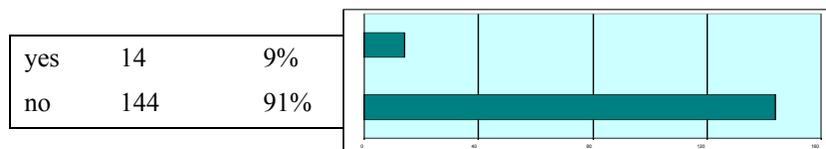


6. If so, do the actions of the performers produce data which is recorded?

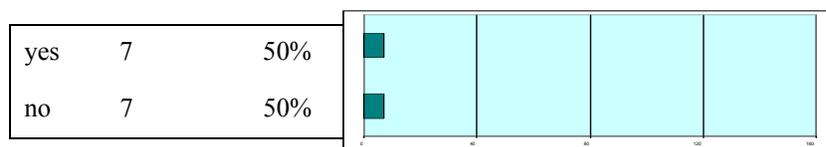


7. If yes, please describe how, and in what format (see Appendix 1)

8. Do you produce musical events which rely on the input or interaction of more than one participant in different locations (e.g., Web-based performance systems)

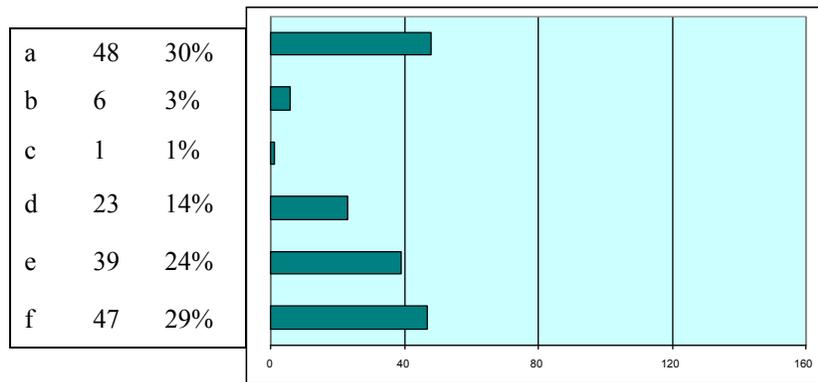


9. If yes, do the actions of the participants generate data that is recorded?

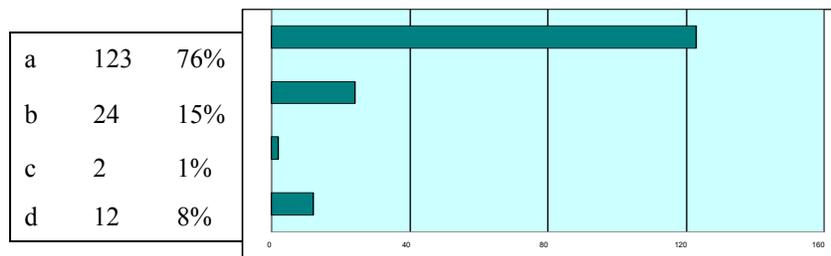


10. If yes, describe in what form. (see Appendix 1)

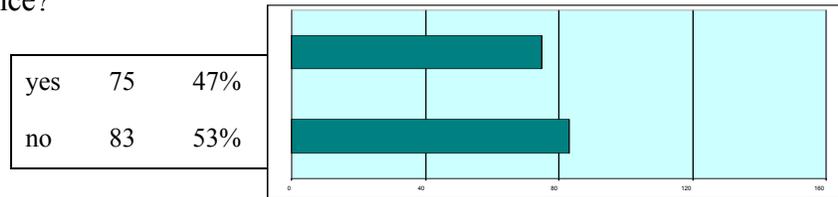
11. If you produce music which does not have a score (in the traditional sense) which of the following statements best applies:
- the identity of the work is best represented by the digital documents that exist prior to the performance
 - the identity of the work is best represented by the digital documents that are produced by the participants in the course of the performance
 - The identity of the work is best represented by the hardware used (eg., the music boxes of Stockhausen's *Tierkreis* play the same music each time and might be considered to be "the piece").
 - the identity of the work is best represented by the sum of the hardware, software, and the records produced by the participants
 - the identity of the work is best represented by a audio or video recording of the performance.
 - the concept of "identity" has no meaning - the work does not exist.



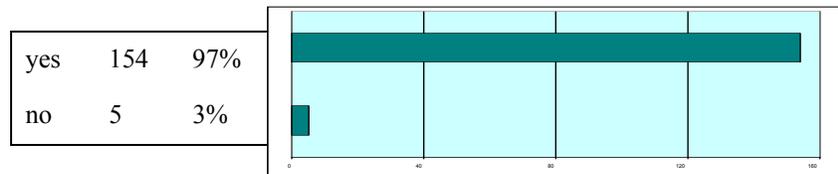
12. Is the software you use primarily
- off-the-shelf commercial software
 - made for you
 - made by you
 - not applicable



13. Have you lost digital records that you considered valuable, through software or hardware obsolescence?

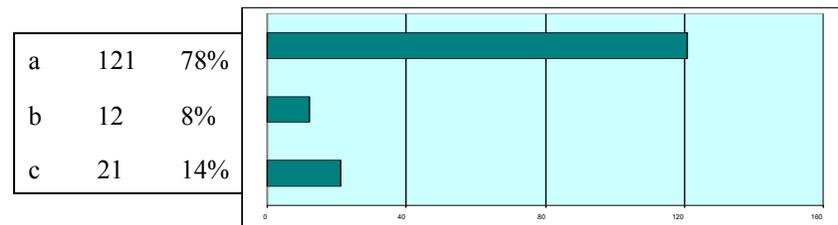


14. Do you take measures to protect your digital documents from being lost?

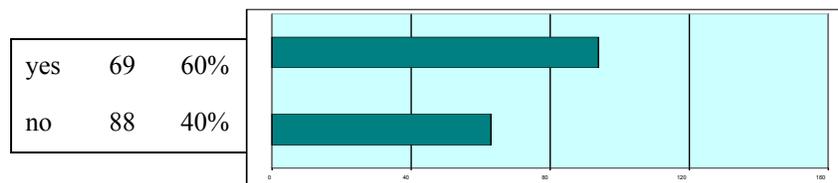


15. If yes, which of the following steps do you take

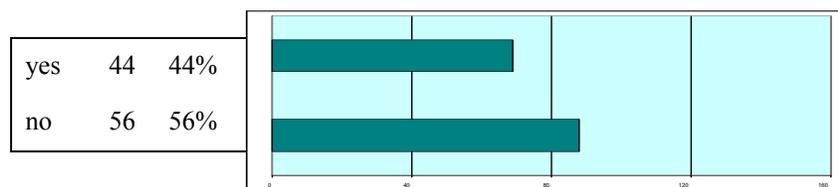
- a. backing up files on another physical medium (e.g., saving DAT files to disk)
- b. migrating to a different format
- c. other (please describe) (see Appendix)



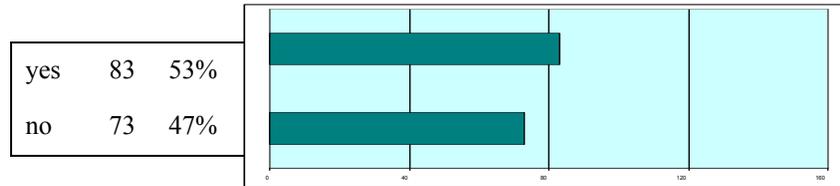
16. Do you keep a record of what digital records you produce and when you produce them?



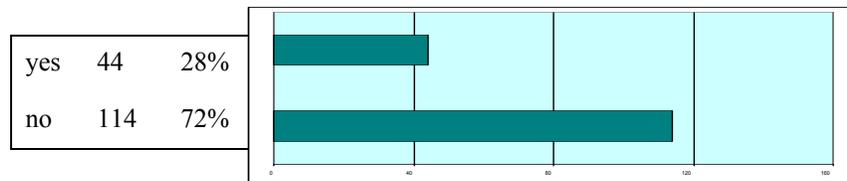
17. Is it important to you that the digital records you produce be capable of being authenticated?
- that is, is it important that they can be proven to be yours?



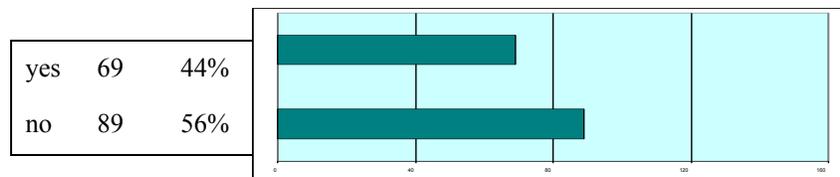
18. Is it important to you that the digital records you produce be capable of being verified as accurate and reliable? (It's understood that the concept of "accuracy" can be difficult - what we mean by this question is: "Is it important for you to be able to prove that the documents are what they purport to be").



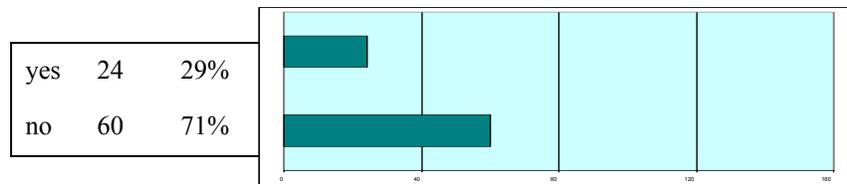
19. Do other people (or other systems) need to have access to your records?



20. Do the records you produce change over time as a result of actions by you, other people, or the system within which they reside?



21. If yes to the above, is it documented when and how the changes are made?



22. Please add anything further that you think it might be useful for us to know about your activities. (see Appendix 1)

Appendix 1: Textual Responses

Where text fields were present in the questionnaire, the answers are given verbatim. The only changes made are to eliminate personal names, signatures and e-mail addresses, and to correct spelling to facilitate more effective search and retrieval. Where several respondents provided identical answers, these responses have been collapsed and a notation added to indicate how many responses are represented. It is not guaranteed that different numbers necessarily indicate different respondents: In some cases formatting may have produced more than one entry from the same person.

Question 1(f)

A majority of the comments came from composers who wished to register that they worked in more than one of the listed categories.

1. equal energy to prerecorded & real-time interactive
2. 1, 3 and 4
3. 50% traditional 30% real-time interactive 20% pre-recorded EA
4. A mixture: all of the above apart from film music (4 responses)
5. All of the above (6 responses)
6. All of the first 4 (3 responses)
7. art installation (sound)
8. collaboration with composers, sound artists, musicians
9. compose ambient music / soundtracks for installations
10. compose for performers, both w/ and w/o interactive systems
11. composer traditionally scored and pre- recorded ea music (2 responses)
12. equally compose pre-rec EA, theatre and film
13. interactive digital music fused with acoustic instruments
14. invent instruments; compose & perform "structured improvisation.
15. items 1, 2, and 3 above; all using computer programs
16. Pre-rec electro acoustic music, sonic soundscapes and film
17. Produce CDs of my own compositions with Virtual Orchestra
18. Real-time & pre-recorded e-a music for a cross-arts company
19. Sample based edited music
20. some traditional scoring, with real-time interactive digital
21. Sound design, soundscapes
22. The last three options describe what I do best.
23. traditionally scored and pre-recorded EA in equal amounts

Question 2(e)

1. all of the above (10 responses)
2. ALL of the above ... plus word processor, EPS, and "PDF"
3. audio and MS files in equal amounts
4. audio files and data files for manuscripting program
5. Audio files and data files for a manuscripting program

6. audio for video
7. audio, video and data files
8. Emagic Logic: combined audio/MIDI/notation files
9. equally create audio (all) and MIDI (film/theatre)
10. I produce manuscript files, sequencer files, AND audio files
11. max or c programming, musical scores, and audio files
12. Midi files, Wave Files, Music Notation (Sibelius Files)
13. Mini disk, DAT, CD, tape etc. etc.
14. None of the above
15. patches to run live interaction, plus audio files too
16. real time processed audio
17. SONAR files, which combine MIDI, audio, and control data.
18. Sound sets combined with a script.
19. There is no primary; certainly both 1 and 4, sometimes 3

Question #7

1. audio recordings of performances
2. recordings of data based on input analysis for correlation and score following
3. Acoustic instruments are played by the performers and simultaneously sampled then effected and re-used alongside the original performance. Much of the music is for improvisation - therefore each action of a performer affects what the others do, and h
4. aif digital audio format (MAX/MSP)
5. analog, to do live electronic transformations
6. As audio files
7. Audio recordings
8. digital sound files
9. Documentary form (audio, video), data storage.
10. I am currently developing an interactive vocal instrument responding to touch and various movement. each player has the possibility to become composer by recording his/her creation using the audio plug-in software audioextra that allows you to record
11. I don't like interactive music
12. I have developed an instrument for real- time control of music using singing voice. The data can be recorded and used for algorithmic composition input.
13. I often use vocalists with my midi orchestrations, and occasionally bring in instrumental soloists.
14. input from performers comes in the form of acoustic sounds from instruments or bodily functions. This input is sometimes filtered in it's audio and sometimes converted into data to supply certain parameters when using synthesis.
15. Instrumental pitches and position and motion are tracked and converted to MIDI
16. MIDI control messages, audio (real time FFT analysis) then used as control, motion capture then converted to MIDI control messages
17. MIDI data
18. MIDI files or data streams collected in tables or other data formats.
19. MIDI format within the Max?MSP environment
20. Mostly MIDI data is collected.

21. My interactive music is all acoustic! (no field to enter this). In addition to electronic media, I still work in acoustic music that involves directed improvisation - in this context, when we record 'data' from the performers, we are simply recording [remainder lost]
22. My music is interactive in the sense of engaging the performer in improvisational behaviours. The data recorded from this would be my own scribbled notes (subjectively) documenting the responses of the performers which then feeds into future projects
23. My work is primarily live performance - so recordings are made as a record, or sometimes to produce published material, usually in the form of DAT tapes, CDRs or computer audio files.
24. Normally dancers' movements - various formats depending on how things are evolving.
25. Normally in the form of a live concert recording, gesture etc. produced working with live electronics. Also combine double bass performances with an end-pin controller (mainly currently used for diffusion sounds in addition to playing the bass).
26. one piece recorded midi information as played by the performers - for later use in software such as cubase or logic, to re-trigger samples
27. output as aiff files from radiaL
28. performance recorded to DAT or CD
29. Pre-recorded electro-acoustic composition for performance with 1 or more live performers interacting with the pre-rec parts (similar to Performer and accompanist or performer with backing orchestra) is recorded in a live performance either directly or
30. Real-time audio documents that are captured during performance and can be subsequently revisited for other compositional uses.
31. Parameter data from real-time audio analyses during performance that is stored and can be subsequently used.
32. real-time sampling and playback
33. Record a passage in a software synth, then process the recording while the performer continues to play other material.
34. Recorded in the sense of samplings sounds, looping sounds and treating them with delays etc before bringing them back into the audience arena
35. Text files containing time stamped events listings
36. Urrr.. sorry, being an awkward sod here, but my aesthetic dictates that a) all music is interactive, and b) music is data, therefore any recording is 'performance data'. Well, you did ask...
37. using sensor systems / motion capture / tracking technology to trigger data. They are being mapped to sound, video or light

Question #10

1. I am working on a web-based composition.
2. aiff files
3. IDEM
4. MIDI control messages, audio (real time FFT analysis) then used as control, motion capture then converted to MIDI control messages
5. n/a
6. Position and movement are converted to MIDI
7. See answer to no. 7. The music I write is often spatial - involving performers in adjacent

spaces.

8. Text files containing time stamped events listings
9. This is currently a rare event in my work, but may produce records similar to the above.
10. This is currently being debated for a 2004 multi-site work based on a European Community grant.

Question 15(c)

1. backups
2. migrations to new platforms
3. adaptations to new technologies
4. Both of the above (10 responses)
5. All of the above, however, no prevention is better than keeping the most important bits of information in one's head! After five hard-disk failures and countless bits of lost data, I've learnt that if it's a generative piece you're after, it's t... [remainder missing]
6. All of the above; I back-up files into an archive, when retrieving old files I move them through an updated version of the software and then back them up again on the most recent data storage system and format. I have copies of music backed-up on
7. Backup MIDI and audio files on separate hard disk.
8. Backup, migration, printout, reprogramming, EPROM storage, etc.
9. back-ups; migration; printout, etc.
10. Both backing up files on another physical medium (eg., saving DAT files to disk)
11. and migrating to a current format
12. CDR and HD back ups
13. Digital recording, burning files to CD, and migrating to
14. current format/version of software.
15. I back up files to disk AND migrate to a current format if I think the current format is in danger of becoming unreadable
16. I do both the above, and also keep archival data and audio CDs in a fire proof cabinet.
17. I make multiple copies of my work on one medium (audio CD). These will be 16-bit stereo mixdowns of my work. In the last couple of years, I've been able to afford technology that enables me to work at 24-bit. I try to keep the separate 24-bit rec
18. Lots of strategies at the same time (redundancy)
19. primarily backing up to CD/DVD-r, but
20. also saving audio and video stems for future migration to other platforms/applications
21. print copy, plus scores on more than one floppy disk

Question #22

1. I have difficulty keeping up with the technology, as I began using notation software as an older person. Now that I'm retired, I don't have a lot of disposable income to upgrade continuously. I'm still using floppy disks to store my files generated on an iMAC, and am not sure I'll be able to get up to speed so I can send my music to [...] in digital form. Some of my music is published by [...]. [...] of [...] U. owns the service. He might be able to do it for me. I realize that the folks at [...] have the equipment to digitalize scores submitted on paper, thanks to the generosity of Associate Composer [...].

2. #11. Should also indicate here a recording of a concert.
3. Also some Max/MSP apps
4. Also as stated above, I would very much like to keep more comprehensive archives and migrate data to new formats, but the time and cost would be prohibitive. In addition to actual works (audio, video, static image, executable computer programs), I also archive my personal notes and sketches, and later I add to the archive for a work related subsequent information (liner and program notes, written verbal descriptions, reviews of my works by others). I should, and want to, but lack time to keep an up-to-date database of my personal archives for my creative works.
5. Answers are all based on "electroacoustic music for tape" so to speak, which is Question #1.
6. I could have answered "performed electroacoustics" and have different answers for the rest of the questionnaire...
7. As all sounds/composition produced are based around the use of my body and my voice they are easily recognizable and issues of copyright are irrelevant as I am the only one that can produce them.
8. As to the creation of my virtual instrument, I do retain copyright of the instrument itself and the sounds it does produce, but I purposefully and willingly offer would be players and composer the chance to create and own their own composition.
9. Being of an older generation, I conscript a knowledgeable copyist when I have a complicated score that I feel would benefit from digitization. Any such results are documented and preserved, and it's important to me that this be so. Some of my compositions do involve separation of units of performers and/or their ambulation. Most of this, I believe, has very little relevance to your survey, which nonetheless I find of interest.
10. Besides using the Finale program, I also use various rack mounted synthesizer modules (Roland, Emu, etc). These are used, along with the computer, as a fancy tape recorder. This process has helped refine my sense of structure in my writing. This newer approach has also meant that revisions and corrections are much easier. I've also been able to cut down the copyist bills to zero.
11. Changes are made to my work only in so far as my relationship to my work changes with time- the more I hear it and the more i hear others reactions to it the more likely i am to decide that the final document/audio file is not in fact the finished product but a constantly evolving work in progress.
12. Composers (like me) who compose directly to computer, don't have paper "drafts" of their pieces for posterity. So, keeping dated versions of the electronic score in an archive is something we can do.
13. Of course, it's really keeping track of the metadata that's the most challenging, and though we might do the backups, keeping them organized is not exactly in the nature of most composers.
14. Just one comment: for certain questions you should give the possibility of responding with multiple options, sometimes more than one option is necessary.
15. Digital records are just like any other form of recording is not immutable. Sometimes I work with that aspect of tables and lists, the often dynamic changes to the whole caused by minute alteration(s) to one part of the system.
16. From Question 4--I keep the materials for both purposes--archival and for possible future

- use.
17. Having been working in EA music since the early 80s inevitably there is a row of obsolescence - tape, Fairlight, Betamax, Ataris etc. Although in recent years, there is more standardization. I do try to archive my music. At least that I consider worth archiving on a CD format. Some older pieces do exist in other formats, including 1/4" but I'm not sure really if I want to resurrect them.
 18. I am a composer who specializes in electroacoustic techniques. My works are recorded on a supportive medium such as an audio CD or DAT tape (in the case of stereo works) or ADAT tape (in the case of multitrack works). These works are then diffused in a concert space with the aid of a multichannel loudspeaker system.
 19. I am concerned with keeping backup copies of my audio files. CD's are too small for backing up projects and DVD's at 4X write are slow for archiving gigabytes of data. I have the finished mixes of the works on CD, but the source sounds for the projects are much larger and remain on the hard drive not backed up.
 20. I am highly organized and use the latest versions of the relevant software. Copies of all digitized files are kept in various locations; CMC, SOUNZ, CPCC etc. Paper scores, bios, press releases etc are also kept in different locations. All music is registered with SOCAN.
 21. I am not currently publishing any of my work. All performances of my works have been either for educational or small closed sessions.
 22. I am very aware of the dangers of allowing clips of my work to be transmitted digitally to others and the possibilities of instances of plagiarism or use without my knowledge or consent. All my original work and subsequent copies is marked under my own copyright.
 23. I am very interested in interactive digital media, live electronics and even perceptual modeling. Currently, however, the technical means are not available to me. The best place for digital technology, in my view, is in live performances, and the most significant place for such technology in my own music is in its structure, in its use of timbre, in its inherent non-developmental nature, in its "reconstituted collages". In other words, technology is far more in the act of composition, than it is exhibited in form of actual gadgets. This way it has a deeper meaning. Gadgets, hardware, software all quickly become obsolete. The essence of innovative new approach to composition does not. Thus, music is not necessarily "traditional" just because the material means producing it are not from the current year's digital catalogues.
 24. I compose acoustic, electroacoustic and mixed works
 25. I compose and produce original music for television, radio and multimedia. I try to find ways to use these compositions (audio files) in different ways later, and I may remix some of them for a different purpose. I keep the MIDI source (sequencing data) and original audio (samples and real recordings of my instrumental performances) in order to be able to reconstruct a piece. This is not always easy, because the technology is changing so fast. A softsynth I was using with my Mac and OS9 five years ago, will not necessarily be available for my new Mac and OS10 in 2003 - which has been the case for me. Changing to software instead of hardware means more flexible tools, but it also means a more vulnerable working environment. I tend to think that is of great importance to finish my work when I finish it. Demo mixes simply don't exist anymore. A mix is a mix, and it should sound as great as I am possibly able to make it. Therefore, recording with great microphones and having high end mastering tools (software) is a must.
 26. I compose instrumental and electro-acoustic music in equal amounts. Instrumental music

- preserved by score. Electro-acoustic music preserved through commercial recording and distribution. Only a few works of mine have never been released and they are stored on analog tape and CD should someone desire to release them at a later date.
27. I create scores in numeric, graphic and staff notation systems from a number of cultures. I also keep copies of performances in digital files. All of these must be regularly updated to keep up with changing formats. I also work in the electro-acoustic and interactive mediums on occasion
 28. I do not use a computer to compose music. I save excerpts of sound into WAV format or something similar to put examples of my work on the web, but in its original form, I do not want to use computers for composing my music. I use acoustic instruments, synthesizers (analogue and digital) samplers, effects boxes (digital) and record via an analogue mixer live onto CD, DAT, MD or tape. The music then exists as an expression of the moment it was made in and cannot be recreated.
 29. I don't use any digital tech except in the editing phase of recorded music. I prefer copying scores and parts by hand.
 30. I found that on several occasion on this questionnaire I would have chosen two or more of the selected choices you offered but I had to choose only one to the exclusion of other choices which made my answer inadequate. A percentage might help for accuracy (what is the percentage of your output that is for live interactive music for example...)
 31. I make two backups of important information on two separate floppy disks. I have had the experience of losing all the data on a floppy disk, probably because of deterioration of the disk. With my newest computer, I back up on CD or CDR. I cannot use the floppy disks in the newest computer, because it doesn't have a floppy disk drive, and I haven't been able to get the CD backups to work in the older computer. I can see that as time goes on, incompatibilities between older and newer computers, and older and newer operating systems and software could create a serious problem.
 32. I most worry about media going out of date. Floppies are all transferred to disk now (with some losses, due mostly to compression systems I used that are no longer supported). I like CD's and they seem like they'll be around for a while (esp. since DVD's are backwards compatible) but worry about their physical durability. I also have many things on reel tape and video and worry about compatibility and durability of those items.
 33. I primarily compose pre-recorded electro-acoustic music, but this does not mean that I ignore interactivity in live performance (including interactive sonic environments/installations), which will play a greater role in my future work.
 34. I run a record label, so all releases are documented - and files backed up. The interactive/live aspect of composition is one I would like to explore more. Also writing software is something I would like to develop. Back-up of files is a nightmare, and I have lost many hundreds of hours of work through PC crashes and learnt a lot through this. i.e., good housekeeping is a must. Good backup and documentation is essential. Hope all this helps your research.
 35. I try and back on parallel media CD-R with differing dye formulations. I also do offsite backups to a geographically (and geologically!) different area distant from my own residence. I am also experimenting with migrating finished works to older, obsolete media such as reel to reel, cassette, vinyl, DAT, and minidisc. Might as well hedge one's bets, right?
 36. I'm not as active in this field as I'd like. There are only three pieces I consider as ongoing -

- and one was written in C for obsolete technology. I have been trying to find the time to re-write it for current technology (MAX/MSP), so that I can share the piece (or software). I've found that the graphical capabilities are not as quick as writing the piece in C directly - and may end up using web technology (Flash, and a web server) to communicate with Max, to display the necessary graphical component.
37. I've answered these questions as if I were exclusively the composer described in question 1. However, I also do music for theatre which is entirely synthesized and would require a different set of responses. The survey is not flexible enough to accommodate those of us who do a variety of things and, I suspect, will produce a distorted result.
 38. My answer to Q11 is a least-worst option answer. The best answer would have been "The identity of the work is best represented by the *sound* that is stored in the final version of the piece which is then available for elucidation or interpretation in performance" i.e. a recording of a performance is not necessarily a good record of the identity of the piece if it was a bad performance!! In my ea work, the master CD *IS* the score but it is not a "score in the traditional sense" because it is sound, not a visual representation of sound. I hope that helps! Good luck with the research.
 39. My largest concern is the connection between the process of generating the work (in the case of pre-recorded electroacoustic pieces) and/or the actual work (in terms of interactive pieces) and the obsolescence of the technology, recording media, etc. application files on SyQuest cartridges, single, double sided or HD floppies, Zip cartridges, CDs, DAT audio, DAT data - the list goes on. System changes. In order to preserve a work one needs to not only keep the media but also the machines that read it! It seems insurmountable. I can keep the ideas and the audio/video record of the event. The rest (which may represent years of work) is quite ephemeral. Not unlike this mortal coil.
 40. My work is primarily improvised, so historical records are vital for retaining information of the event, but are not fundamental to the nature of the event itself.
 41. Obsolescence of hardware and software is a big problem. I still use for example reel to reel tape recorders, an analogue synthesizer and an Atari ST computer using obsolete software - all of which only just function and for which repair and fresh media are almost unobtainable.
 42. Outputs are: prerecorded works; live performances; audio and video records of performances; re-mixes of live audio; techniques passed on in workshops; and the instruments themselves as sculptural works.
 43. MIDI files exist for some prerecorded works and backing tracks, but these tend to be hardware-specific as a means to create the audio file.
 44. Performances are shared communal activities. Their digital documentation is useful, but ephemeral. Systems for performance are evolving and temperamental entities. They often must grow and adapt through the course of several performances before they assume their proper shape. Both are digital documents. One represents time that has been stored. The other represents time that is yet to be explored.
 45. Question 4 above should be answered by both, but I don't have that option. Some of the questions, such as number 1, would be better if formatted to allow multiple responses. For example, I compose quite a bit of music for traditional instruments using traditional notation. However, I do that using computer programs of my own design.
 46. Questionnaire seems problematic to me. It was difficult to selecting the best answer because too many times the choices were too narrow (at least some questions had an

- "other" choice. Especially 1, 2, 4 should have allowed multiple selections. Also ... it appears to be impossible to retract an answer ... except by choosing another answer ... no way to change your mind and leave a question blank.
47. Re question 1: I have collaborated with film makers and visual artists which resulted in combined works that included my music. I also recently used my own music in a number of computer animated movies I created.
 48. Re question 2: In a (Cakewalk) SONAR file, both audio and MIDI data can be combined and put on a time line. The MIDI data is *not* General MIDI data as it controls specific synthesizers which are essential for the final product. In my setup the SONAR file defines the composition, but sometimes I record the resulting composition to an audio file and use (part of) it in another work or as a film score. Re question 4: Archival purposes as well as future use. Re: question 11. I ticked that option because it was the closest to my feelings, but for me the true statement is 'The identity of the work resides in the performance' full stop. The work exists when it is performed, and ceases to exist after the performance other than conceptually. That 'conceptual' existence to me only represents potential, rather like dreaming of owning a nice car. The identity of the work comes from me as performer, particularly as my work is quasi-improved. Nobody else could reproduce my music, not because it's difficult, but simply because they're not me - it would then be their music. As a footnote, a recording does not represent the identity of a piece for me any more than a photograph represents the item pictured. Sorry about all the clumsy metaphor.
 49. Some of my work is itself archiving the sounds of equipment that is going obsolete (e.g. sounds from old tape loops).
 50. As someone who works with electroacoustic sounds, I feel I've become used to the fact that I'll lose some of the raw materials of my work (the original sounds) - even some of the material that makes it up.
 51. These days, I make so many gigabytes of files, it's hard to find somewhere to store everything created in the process of a project. It's when I carry out essential housekeeping that I've been known to accidentally delete treasured files.
 52. Set up a record label called [...]. Specializing in the promotion of electronic and electro-acoustic music.
 53. "Since some of my activities are as a typographer for either composers or performing organizations, archiving and retrieval is important. But what is becoming a problem is the security, software and hardware upgrades and authenticity. Music is now being sent all over the world through the Internet in formats available to any computer; with this ease of use the original becomes the date at which the file was last saved. Authenticity is sometimes only assured through the source of the file.
 54. If the composer has submitted music to a publisher or a retrieval centre (like the [...]) I'm wondering what control or assurance does the composer have that their music will still be available in the most 'contemporary' format post mortem? Who will maintain the usability of the compositions over a long time period when the hardware and software upon which the music was realized have become obsolete?
 55. Some of the work produced before I started using radiaL exists purely as audio and midi files and as such are fixed works...at the moment my working process is in flux and involves 3 stages of a) traditional midi composition; b) sonic manipulation of stereo mixed files in radial; c) collaging of radiaL output in Pro Tools...
 56. Some questions could be answered by more than one response. My work does not take on

- a single form, but varies by commission - the responses are based on an 'average' of recent work.
57. "Some related issues: Storage system format may become obsolete, thus inaccessible. Storage mechanism may become damaged (e.g. Syquest Drive); data is inaccessible although disks or cartridges remain intact. "Saving" files immediately changes write dates, which may change the historical identity of the file (if logged, etc.)
 58. Thank you for inviting me to fill this questionnaire. I need to clarify that I am not a composer, I am a company director, my own background is in movement/dance but I have studied music and I work closely with composers, sound artists and musicians, including improvisers. I have filled this questionnaire with information which applies to the work of my collaborators
 59. The above questions are an attempt to average a reply from the different projects I have undertaken. In fact were I to focus on any one of the projects the answers would likely be different. Each project is in many ways intended to question the nature of identify, process, and cultural artifact.
 60. The creating of my own software/patches is very important for my work, in fact I can't separate programming and composing from each other.
 61. The digital sound (or video) that I make as an artist is composed in an improvised way i.e. is never the same in any performance, but very flexible. That is why I favour 'open source', it should be possible for other people to have access and I don't really care about copyrights or anything
 62. The survey seems to assume significantly more categorization of activity than is typical for me. I wish there were more "all of the above" or "both" options in the buttons. I have not answered those for which "all" or "both" apply.
 63. Following are full answers: #4 is both. #11 is all except the last. #12 is all. #17 depends on the piece (and sometimes the pseudonym under which it was written). #19 depends on the piece.
 64. You have also not dealt with issues of corporate dependence which seriously affect data preservation and identification.
 65. This is a timely survey, in that I am actively dealing with an overwhelming archive of data (both paper and electronic). My current strategy has been to make sure I have, where possible, versions of all projects (media and personal alike) which can be read by current technology. However, I have had to differentiate between restoring older projects for reworking (multitrack audio, application-specific digital audio workstation) and simply retaining copies of final mixes. With the exception of projects which I know I will need to rework (theatre scores that are still active), I am stringent only with the 'resultant' files (usually stereo audio). Then there are all the paper scores.....
 66. "Though authenticity, accuracy, and reliability and not important to me personally, I agree that these issues should be important to persons whose task is to collect and maintain records
 67. I am interested in the results of this project. Perhaps there is more I could be doing now to make my work verifiably authentic, accurate, and reliable to others in the future.
 68. Good luck
 69. Very large number of audio files are very difficult to organize with names. I always have problems naming the files for future reference.
 70. We work within a medium that is not 100% reliable, and that is good!

71. What I care about more than proving that work is mine, is being able to replicate performances. This is a very difficult task, and I have pieces that are less than 10 years old that can't be played anymore because the hardware or software doesn't exist anymore. It is probably necessary to save a machine that is "frozen" in time, that a certain piece uses, and just keep that machine unchanged in order to perform the piece again later. But even this is not very reliable.
72. When composing "tape" music, I always preserve intermediate files generated during the composing process.
73. Your survey limited my responses in some areas because you allow only one answer to each question. I write "traditional" concert music more often than computer music, but I also compose computer music. My answers in some cases would've been somewhat different if computer music was the majority of what I write.
74. I have lost some electronic music because of obsolescence, and I am now trying to deal with moving older scores in one music notation program to another. This is to ultimately "simplify" the management of my catalog and make it more uniform in format for reproduction and distribution. It is a time consuming task and, of course, takes me away from writing music. I expect that this kind of work will become a part of what all composers have to deal with unless they are willing to leave some of their work "behind" in an obsolete format. PDF may hold some promise of being a lingua franca, but it is far from perfect and most documents have to be translated into the format, so revisions require a return to the original application.