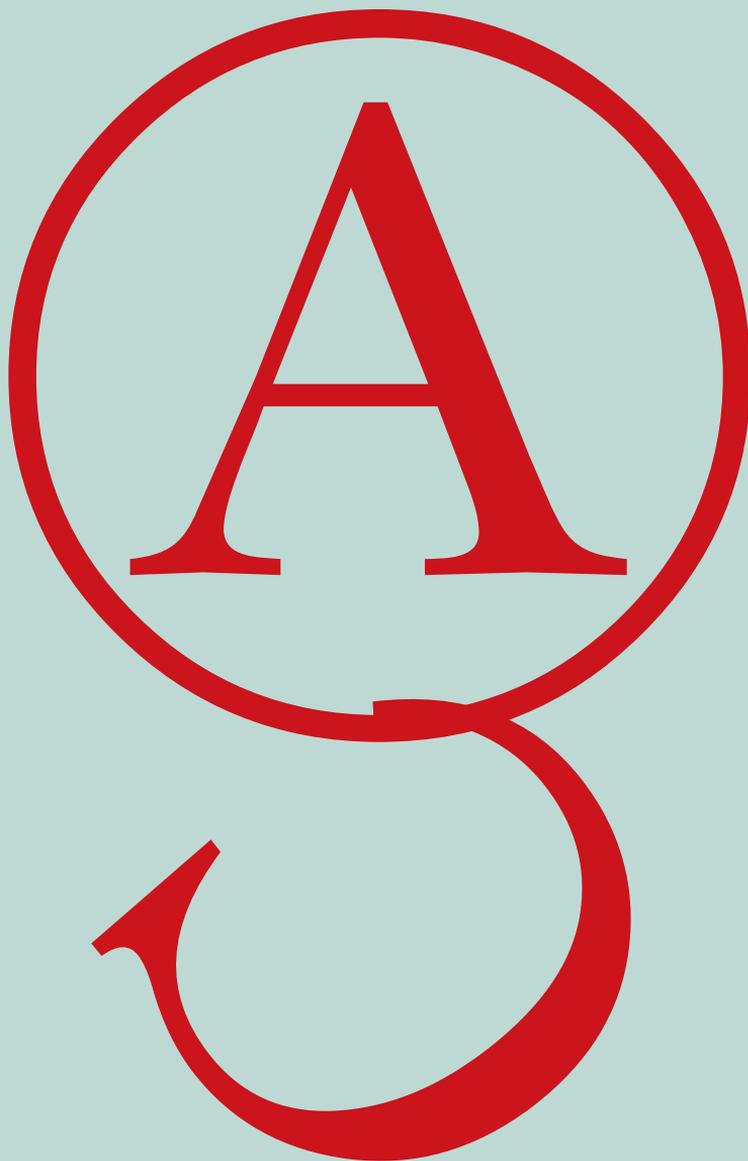Edited by Mireille van Eechoud

The Work of Authorship

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Edited by
Mireille van Eechoud

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Contents

Reassessing the challenge of the digital

An empirical perspective on authorship and copyright

Elena Cooper

Policymakers have long noted the challenges posed by new internet and digital technologies to copyright's category of authorship. As the European Commission expressed at the advent of the internet, in its Green Paper Copyright and Related Rights in the Information Society of 1995:

> The traditional picture of the author as a craftsman working more or less in isolation and using wholly original materials is contradicted by new forms of creation. The new products and services are increasingly the outcome of a process in which a great many people have taken part – their individual contributions often difficult to identify – and in which several different techniques have been used [...] (European Commission, 1995, p. 25).

The perception that creative practices of the digital age often involve the contributions of many people is thought to complicate the task of identifying the author.[1] In addition, scholars noted how digital technology, in facilitating collaboration, was 'hastening … the demise of the illusion that writing is solitary and originary' (Woodmansee, 1994, p. 25). As Martha Woodmansee expressed, this was a development that sat uneasily with a proprietary notion of authorship:

> Electronic communication seems to be assaulting the distinction between mine and thine that the modern authorship construct was designed to enforce (1994, p. 26). [2]

This chapter[3] explores these perceived challenges of the digital for copyright, through ideas about authorship that underpin so-called creative practices today. It does so through a qualitative empirical study that involved semi-structured interviews with 'artists' and 'poets' who use digital technology.[4] The interviews sought to uncover the extent to which the participation of many people was characteristic of the interviewees' work and their views about 'authorship'. For example, is authorship of any significance to interviewee 'artists' and 'poets'? If so, who do they consider to be the author?

In situations where many have contributed, how and why do they attribute authorship to some contributors while denying it to others? Finally, why is authorship important to the interviewees, if at all, and does this bear any relation to copyright's proprietary author?

The interviewees were those listed as 'notable individuals' on Wikipedia entries for 'Digital Art' and 'Digital Poetry' accessed in May 2011.[5] No claim is made that the interviewees are representative of all 'creative' practices involving digital technology. Notwithstanding this, I will argue that the interviews provide a basis for questioning the common assumptions noted above, thereby facilitating a more nuanced understanding of the implications of the digital.

By way of introduction, over the past decades practices involving digital technology have been characterised by what interviewee Joseph Nechvatal termed to be an interdisciplinary 'conversation' between 'computer science' and 'art', the result of which is that the parameters of 'artistic practice' changed and gave way to a 'third culture': '... these two fields are rubbing up against each other and they used to be thought of as ... discrete and separate activities and now there is a kind of third culture that is emerging out of the combination of these two areas of interest'.

In this context, Nechvatal observed that 'it's been a growing thing for creative artists to have computer science at [their] disposal and collaboration'. In the early years of computer technology, such work was inherently collaborative, involving multiple contributors each with different areas of expertise. The pioneers of such work in the 1960s and 1970s, such as Lillian Schwartz at Bell Labs,[6] David Em at Jet Propulsion Labs[7] and Herbert Franke,[8] all entered a highly technical environment in order both to obtain access to technology that was not readily available, as well as to come into contact with 'scientists' who knew how it worked. By contrast, today, technology has become ubiquitous, with the result that in many instances, work that was formerly collaborative has now become solitary. Today, David Em is able to work alone from his studio or garden at home. As he explained, technology is so easily accessible that 'I don't need all those programmers and I don't need a big facility'.

Further, in certain spheres, the favoured approach is for solitary work, rather than collaboration. Loss Pequeño Glazier is director of the Electronic Poetry Center, the world's largest collection of electronic poetry which was founded in 1994,[9] as well as being the first 'digital poet' to hold an academic chair (recently awarded by the University of Buffalo, USA). Glazier questions whether the involvement of many in producing a work of 'digital poetry' (or to use his term, 'digital poesis') can work, as it can, for example, in the

case of film, as the process of creation or 'poesis' requires involvement in all levels of the digital poem, from the computer coding, to the words and images. In Glazier's view, these are therefore best composed by one person working alone.

Notwithstanding these movements towards solitary working practices, the interviews revealed a number of instances where current practices using digital technology give rise to the involvement of many people. These are explored in this chapter in five detailed case studies.

First, there continue to be instances where 'artists' enter a highly technical environment, in order to gain access to powerful technology that is not generally accessible. An example of such a practice is explored in Case Study 1, which concerns the collaborative work of 'artist' Donna Cox and the interdisciplinary team at the National Center for Supercomputing Applications, Illinois, USA, who produce what she terms 'visualisations' of scientific data. Inspired by the philosophy of the Renaissance, which saw a convergence in the goals of science and art, Cox articulates a concept of co-authorship which encompasses the contributions of all members of the team: as she described, both those with authority over 'artistic decisions' (for example, 'colour or timing or viewpoint') and those responsible for the 'computer science' and 'formatting' of the data.

Even beyond the environment of the so-called 'supercomputers' there are other frameworks in which the interdisciplinary nature of the venture results in the collaboration between specialists in different disciplines. Case Study 2 concerns the work of 'artist' Joseph Nechvatal at Louis Pasteur Atelier, France who has worked with computer programmers so as to develop applications of computer virus algorithms, as a metaphor for biological virus attacks on cells. Nechvatal characterised such work as 'an equalised exchange' between 'art' and 'computer science': a 'collaborative union'. Yet, when it comes to determining authorship of the resulting work, this rests with Nechvatal alone because, as he explained, he is the 'project director' who has 'control' over the 'aesthetic demands' (which he sees as the emotional effects of colour and form). In contrast to the views articulated by Cox, therefore, in this context, the computer scientist is termed a 'technician', not an author.

In Case Study 3, we turn to an example of a so-called 'digital art collective': the OpenEndedGroup based in New York, USA. The collective brings together the three Group members, along with external participants, described as 'collaborators', 'consultants' and 'contributors', with expertise in a variety of different areas such as computer programming, art, film and dance choreography. The Group organise these participants in what

they consider to be a 'strict' 'taxonomy of collaboration', so as to restrict involvement in 'artistic decisions', the latter determining who are credited as the 'artists' of the piece. While attribution as 'artists' is important, the interview revealed that the Group feel uncomfortable with any notion of authorship tied to 'creation'. As Group member Marc Downie expressed, in part due to the role of technology as 'collaborator', the Group see themselves as engaging in a process of 'discovery', over which they never have complete 'control', a position that contrasts, in particular, to aspects of that taken by Joseph Nechvatal (in Case Study 2).

Another practice giving rise to the participation of many arises in the work of those who engage in what is sometimes called 'the art of not making': the 'artist' takes on the mantle of 'art director' and delegates some or all of the skilled tasks, including computer programming and other digital technological tasks, to others.[10] This is a process of delegation, rather than an 'equalised exchange' (as Joseph Nechvatal's described his approach in Case Study 2). Case Study 4 looks at two examples of such works by 'artists' who delegate tasks to different degrees. First, we consider the talking animatronic sculpture installations produced by New York based 'artist' Ken Feingold, which employ artificial intelligence technology and digital synthetic voices. Feingold delegates specific tasks, for example, the making of the animatronic heads or the computer programming. This is in contrast to the broader delegation of tasks by Greek website 'artist' Miltos Manetas, in the second example that we consider which Manetas presents as 'collaborative' work: *www.jesusswimming.com*. In both cases, the interviewees drew analogies with the position of the director of a film, to support their claim to sole authorship. This is a standpoint which contrasts with that taken by Cox, in Case Study 1.

Finally, Case Study 5 looks at the active role of the audience or user, in interactive digital works. Tracing the early history of interactive works in the pioneering laser-disc work called *Lorna* by California based 'artist' Lynn Hershman Leeson, the case study turns to consider an example of an interactive poem by Loss Pequeño Glazier, as well as the huge interactive installations produced by Don Ritter, a Canadian 'artist' based in South Korea. There was a general consensus amongst interviewees that the audience's participation did not amount to authorship and we look at the justifications for this position.

As is apparent from this overview, the interviews revealed a diverse set of practices, and consequently a diverse set of ideas about authorship. Accordingly, this contribution resists simplistic conclusions about what these ideas should mean for law. Instead the final concluding section makes more

general observations. In addition to addressing how the interviews might refine our perceptions of the challenge of the digital, this chapter draws out some unexpected results: while there was no evidence of any influence of copyright law in informing the techniques which interviewees used to identify the author(s), law did appear to underpin a number of interviewees' understandings of authorship as proprietary. Therefore, one conclusion is that far from always a challenge, law sometimes in fact supports or even informs certain aspects of the interviewees' ideas about authorship.

Case Study One: Donna Cox of The National Center for Supercomputing Applications, Illinois

The National Center for Supercomputing Applications (or NCSA) at the University of Illinois was established in 1986 as part of a national program aimed at providing powerful and high performance computing facilities to researchers of science and engineering. Supported by the state of Illinois, in addition to federal grants, the NCSA has developed a worldwide reputation in 'scientific visualisation'. Using the computer facilities and expertise at the NCSA, simulations are made of complex natural phenomena, such as how galaxies collide and merge, how molecules move through a cell wall, and how tornadoes and hurricanes form.

Donna Cox[11] is the Director of the NCSA's 'Advanced Visualisation Laboratory'. She works as part of a team comprising 'artists', 'technologists' (such as computer scientists) and 'scientists', who work together to transform scientific data into graphic visualisations such as computer animations called 'visaphors'. Cox refers to the team as a 'Renaissance team', so drawing a parallel with the convergence of the goals of science and art in the time of Leonardo Da Vinci. Asked about this analogy, Cox explained that drawings by Da Vinci, while 'amazingly beautiful' were also visual representations of scientific information about anatomy or botany: a 'mirror of nature'. In a similar vein, the 'visaphors' produced by Cox's Renaissance team today are seen as 'digital visual metaphors' of scientific data. Yet, as Cox explains, as with Da Vinci, there is also 'an art ... in how we turn these numbers into pictures'. More than 'just a translation or representation of data', the creation of a 'visaphor' involves 'interpretation and design' and 'art choices'.

For example, the team produced a 'scientific visualisation' of hurricane Katrina, which caused devastation in Louisiana in 2005. The team comprised 'artist' Cox, 'cinematographer' Bob Pattison, as well as 'computer scientist' Stuart Levy. The project began by the team visiting external

scientists at the National Center for Atmospheric Research, Colorado, to obtain scientific data concerning the hurricane, recorded in numerical form. The initial meeting with the external scientists was an important one: 'We as visualisation artists needed to understand more completely about what was important about the numbers ... the question that we asked, was what is the most important feature in this current hurricane of the data that we can help to show with the data, that tells the public why this hurricane became so deadly.' The team's goal, therefore, was to produce a visualisation of the data, to capture the scientific processes that cause the 'enormous power engine of the oceans to build up': 'as the planet warms, the oceans heat and it feeds this enormous hurricane...'

In producing the 'visualisation', the members of the team were 'all playing kind of distinctive roles', reflecting their particular expertise in computer science, cinematography and art. For example, Stuart Levy's role was to 'handle' the data; it was obtained from the Colorado scientists in numerical form and it needed to be formatted so it could be used by the team. Bob Patterson, as 'cinematographer', oversaw 'the settings on a lot of the shots'. Cox's specialism was the use of colour, for example, in suggesting that the piece shows 'the sun rising and setting and the moon rising and setting and the stars to give the timeline of the life span of this hurricane'.

The result of these different areas of specialism is that 'artistic decisions' were generally seen as in the domain of Cox and Patterson, rather than Levy:

> So, you have the person who deals primarily with the data, he does some graphics but leaves all the artistic decisions up to us – Bob and I. And Bob and I will get into struggles sometimes over colour or timing or viewpoint but we work it out and usually results in a compromise on something that satisfies both of us.

Despite the greater authority of Cox and Patterson in 'artistic' matters, decisions are seen as made by the team collectively. Cox described this process as a 'negotiation' between all team members. For example, there was much discussion over how to present the 'hot towers which feed the hurricane', the source of its deadly consequences: 'There are different ways of representing hot towers. We had choices ... We had different types of software that can represent the data. We had lots of dials. We can turn these dials to make some of these clouds brighter or they can just be outlines instead of dense fog ... all of those are negotiations ...'

The result of the negotiations was a 'compromise' that satisfied all team members, in the light of the overall goal: to produce something which is

'jaw droppingly beautiful' while also 'informative' in '[communicating] something essential about the science'. As the aim was clear, Cox considered that reaching a compromise was not difficult: 'we definitely are willing to compromise'. Facilitating this are team dynamics of 'mutual respect' and 'really listening' to each other. As Cox explained:

> You know … whatever we are producing together, we want it to be the best and sometimes that means that your first ideas might not be that great anyway, and you see how it might play out in another way, and you just sit back and say "well that other way does look better" … or "I'll give you this if I can have this". That kind of negotiation … but the ultimate goal for the team is that it looks good and it represents the data well, and accurately […]

The model of the 'Renaissance team', which operates today at the NCSA, stems from collaborative work dating back to the late 1980s. For example, in 1988, Cox collaborated with Professor of Mathematics George Francis, and a computer scientist, in producing computer graphics software that would create images visualising Francis' mathematical theories. As Cox explained, the basic principles for successful 'Renaissance teams' were formulated at this time. Cox published widely on this subject in the 1980s and 1990s, and she considers that those principles have continued to underpin 'Renaissance teams' from that time to today.

One of the most important prerequisites for a 'successful team' is that it 'has to be egalitarian', that is all members of the team must be 'equal players'. The consequences of this 'egalitarian' framework for 'authorship' are that all of the team members are considered 'co-authors' of the resulting 'visualisation'. This conclusion flows from the characterisation of the team 'as a unit', comprising 'in and of itself … the collection of very unique guilds' such as 'artists, film makers, software writers'. As Cox accepted during the interview, this is a concept of authorship which appears closer to Arts and Crafts ideas which circulated in the 1890s, involving recognition for every contribution, as opposed to the single author model of authorship implicit in, for example, some interpretations of the Auteur approach to film. As she explained:

> […] what I don't like and I have a real prejudice against, is when I see artists, so single artists, who can pull together teams and take the sole credit, and sometimes the team is not even listed on the work. I have always been against that director "Auteur" approach. … The authorship

has to be shared in these larger collaborations. It is a kind of plagiarism when an artist will say: "I have 'hired' that programmer to do this work, I conceptualised it, I could have hired another programmer to do the work". I just take issue with that. The best work comes when you recognise that team [...]

Later in the same interview, Cox returned to this point:

[...] Artists ... finally say "right, I'm going to work with technology" and they want to keep the technologists like technicians, and they want to retain that ownership, but for me and my early career, what I recognised early on ... that through the collaborative process the outcome would be so much better than what I could do by myself [...]

In this way, as Cox explains: '... the group shares authorship because the final artefact could not have come into being without the collective partnership and the collective authorship of working together and making the final set of sequences or digital images.' And, later in the same interview: 'I consider now the very sophisticated work that we do as a group of professionals that we are all co-authors because it simply could not have come about otherwise ... the final artefact was so totally dependent on that collaboration that I don't think you could separate them out ...'

This notion of 'collective' authorship, including 'computer scientist' members of the team, in addition to those with authority over 'artistic decisions' (Cox and Patterson), stems from the 'Renaissance' inspired view of the work as a 'mirror of nature', encompassing both scientific and artistic aspects. As Cox agreed in interview, this is a concept of authorship conducive to capturing collaboration between practitioners of 'art' and 'science', in contrast, for example, to the Romantic concept of the author as a 'lamp',[12] which in privileging contributions of 'personal expression' or 'creation', might confer authorship status only on Cox and Pattison, and deny it to the 'computer scientist' members of the team, for example, Levy.

While Cox considers all members of the team to be co-authors of the 'visualisation', the 'creators of the data' that the team uses are not co-authors of the visualisation, because their 'intent' in creating the data was 'to do research on that data'. This is in contrast to the 'final intent of the final creator', who is using that data as 'part of an art work ... [who] does so for a very different audience and very different purpose'.

The concepts which the 'Renaissance team' employ to determine authorship of the 'scientific visualisation' seem to be uninfluenced by copyright

doctrine. First, Cox's 'Renaissance' or 'mirror of nature' approach, which accords parity between contributions of artists and scientists, provides a different emphasis to tests of co-authorship in US copyright law.[13] Secondly, where convergence exists with the test of co-authorship in US law, this appears to be coincidental. For example, Cox's test of authorship based on 'intent' might, at a first glance, appear to converge with the US legal test of co-authorship, which following the Second Federal Circuit decision in *Childress v. Taylor* (1991) requires that the contributors intended to regard themselves as joint authors (which also involves the court considering a number of 'objective indicia' of intention, such as whether the contributors were billed as co-authors). However, this was a commonality with the law of which Cox was unaware.[14] Instead, she explained that her notion of authorship based on 'intention' came from her studies of art history, particularly conceptual art. Here Cox drew on the practices of the American artist Robert Rauschenberg (1925–2008), who came to prominence in the 1950s for his collages of 'found objects'. Just as Rauschenberg would 'walk around the streets of New York and find objects and include them in a final original work' so scientific data is an object which the artist uses; 'the authorship is about the invention of this new sum of the parts that becomes a new kind of thing'.

Notwithstanding the independence of the team's concept of authorship from that contained in law, the consequences of the status of authorship are firmly tied to copyright law. This stems from changes in the channels of distribution of 'scientific visualisations' since the mid-1990s. By way of background, in the 1980s, 'Renaissance teams' operated outside the commercial environment. As Cox explained:

> These early Renaissance teams ... were not budget driven. They were driven by curiosity. They were driven by people trying to get something back out of that new kind of research: out of creating graphics, out of exploring something that would give them their own rewards in their own systemic systems. ... They didn't get rewards other than academic feedback and academic rewards ...

This changed in 1994, when Cox was approached by the Smithonian Aerospace Museum, who sought a 'scientific visualisation' that would form part of an IMAX movie *Cosmic Voyage*. The film had a budget of USD5 million and was funded by a 'commercial partner': Motorola. It was 'the first time ever' that the 'visualisation of computational science' was provided for the cinema. Cox has continued to work on projects such as these ever since.

For example, the 'scientific visualisation' of Katrina formed part of the film *Dynamic Earth*, produced for the Denver Museum of Nature and Science, as an illustration of the film's narrative about the 'story of the complex systems of the earth'.

In this way, the 'egalitarian' concept of authorship which underpins the 'Renaissance team' entered into a commercial environment regulated by intellectual property agreements. For Cox, it was of great importance that co-authorship status as understood by the team was translated into both attribution and an ownership interest in the copyright in the visualisations, and she was instrumental in ensuring that the legal contracts secured this: 'I was drafting the first contracts here at the University, I could write into the contracts … the credit and the ownership. I hand wrote it first and then they drafted it on paper. … I made sure that we as a team got the appropriate credit … [and] ownership, so the collaboration as a true collaboration had to be preserved, and that was preserved through the funding model'.

Accordingly, Cox's analysis of authorship (outlined above) underpins the 'intellectual property agreements' that are 'vetted very carefully with lawyers', and concluded for each project involving Cox and the team. These provide that copyright in the final visualisation images is to be co-owned by Cox and the other team members, the University of Illinois and the company seeking to exploit the visualisation (e.g. IMAX Corporation). The same agreement specifies that any intellectual property arising as part of the production process, for example, copyright in software, is to be co-owned by Cox and her team. Further, the owners of any intellectual property in the underlying scientific data sign a 'data release form', making it available for use by Cox and her team for any purpose, whether academic or commercial.

In this way, for the 'Renaissance team', co-authorship is bound up with the consequences that flow under legal contracts and copyright law: co-authorship status within the team results in ownership of copyright and entitlement to royalties. As Cox noted in relation to the hurricane Katrina project: 'each of the co-authors – each of our team – … we all get royalties from the production … we are co-creators on the hurricane Katrina and we own it …'[15] Further, the provision of 'ownership' and 'royalties' to all team members, are matters which Cox considers instrumental in promoting collaboration. As she explained: 'My philosophy is that you build that organism and it really becomes an active creative organism, by people having personal buy-ins and ownership and rewards out of the product …' In this context, therefore, copyright's proprietary framework is employed such as both to support and reinforce a spirit of 'egalitarian' collaboration amongst multiple authors.

Case Study Two: Joseph Nechvatal and the Computer Virus Projects

'Artist' Joseph Nechvatal has worked on a number of Computer Virus Projects which involved him collaborating with two 'computer scientists' skilled in computer programming. For Nechvatal, this is an 'equalised exchange between disciplines' of 'science and art', as 'each side has gained something and feels a positive growth coming from the exchange'. The result of 'art and science … sharing and collaborating together' in this way, brings about 'beneficial things on both sides of the equation': the 'arts' are 'greatly enriched' in 'engaging with science and new technology', while 'the scientist gains … challenges to do things that they may not have conceptualised before'.

The first Computer Virus Project was completed in the early 1990s while Nechvatal was artist-in-residence at the Louis Pasteur Atelier and Saline Royal/Ledouz Foundation lab in Arbois, France. The project involved the development of computer software, written in Basic, by a computer programmer, Jean Philippe Massonie. The program enabled the launch of a computer virus onto Nechvatal's database of visual works stored on a computer. From this process, Nechvatal selected a series of still images capturing various stages of the virus 'attack'. These images were then transferred onto canvas using a robotic painting technique (conducted by a third party company), which involves the mechanical application of paint to canvas via the spray of an air-gun/nozzle pigment delivery system driven by a computer program. In addition, Nechvatal selected a series of moving images comprising part of the virus 'attack', which was exhibited as an animation.

The second such project, Computer Virus project 2.0, involved Nechvatal working with another computer programmer, Stéphane Sikora who specialises in 'Artificial Life' technology. The software, written by Sikora, launches unpredictable virus operations on Nechvatal's images that occur in real time, thereby creating a form of 'artificial life' (or 'A-life'). The resulting work was exhibited by Nechvatal in a solo show called *cOntaminatiOns* at the Château de Linardié in Senouillac, France. The exhibition featured digital prints and paintings (created by the robotic technique outlined above) of images which Nechvatal selected from the virus 'attack'. It also included two live electronic virus 'attack' art installations entitled *Viral Counter-Attack* which enable the audience to watch an attack in real time thereby simulating life and death-like phenomena on screen.

The 'collaboration' between Nechvatal and Sikora started out as a conversation at a conference called Virtual Worlds held in Paris in 2000 about virtual reality. Following this they met in Sikora's studio. Nechvatal

explained how he outlined the 'basic premises' or 'bigger ideas' of 'the vision of the project' to Sikora: 'I want to have an art work that can be penetrated by a computer virus-like algorithm that will treat my image as an ecosystem.' Nechvatal then left Sikora for a few days, to allow him to 'execute my vision'. Sikora would then be 'back and forth' from meetings with Nechvatal to programming, showing Nechvatal what he had achieved so far, and giving Nechvatal an opportunity for critique: 'I would say "yes" or "no" basically. "Yes, that's what I'm looking for" or "no, that's not what I'm looking for", to help him shape the result. And of course this is a cumulative process over several months. And in the end we reached the first plateau, where I was rather happy with the results … '

Nechvatal described his 'aim' as to provide 'aesthetically pleasing results'. While the computer programmers might 'understand' that aim, and be 'great partners', it is Nechvatal alone who determines what meets that aim. This understanding is consistent with Sikora's account of his work with Nechvatal, described in a paper published online (Sikora, n.d.). Sikora concludes the paper as follows: 'Above I have outlined the software architecture governing the simulation bases of J. Nechvatal's Computer Virus Project. This software permits the exploration of complex dynamics while adhering to Nechvatal's specific aesthetic demands.'

Asked what these 'specific aesthetic demands' were, Nechvatal explained as follows:

> […] like I want to have an emotional effect of aesthetic quality that revolves around a certain set of colour or has an aesthetic relationship between colours, between the forms and the form of the virus and the form of the host … because it is the imagery that you are really seeing, in terms of the still images, and of course I have complete control over that, so it is about how the virus interacts with that host, what is the form of the virus, what is the colour of the form of the virus, how the images interact with the preceding and following image … These are the kind of aesthetic demands that I put … Now I want it to be more transparent, now I want it to be more colourful, this one is going to be black. These kinds of specifics.

Nechvatal described this 'collaborative' process as based on 'goodwill and mutual respect' and he could not think of a single instance where they had disagreed: 'I cannot think of one instance in which we have clashed over anything … It has been an amazing collaborative union.' If Sikora had disagreed, Nechvatal considered that it would have been 'tough' for their

project to continue: 'he is ... helping me execute my vision, and if we weren't going towards what I wanted to do, there would be no point in us working together any more.'

Asked about how he would characterise the computer programmer's contribution, Nechvatal said it was a 'creative' task. As he explained: 'I am demanding things that they have not done before, in fact perhaps that no one has ever done before. So they need to bring all their creative powers to the enterprise.' As he said of Sikora, 'his talent to be a programmer at that level is a form of creativity ... ' However, his view is that this did not amount to authorship or co-authorship. Instead, the works are solely authored by Nechvatal. As he expressed:

> [...] I am the sole author and my name is always on the work that we produce. I always credit my collaborators, but because the concept came from me, the desire came from me the context of the work came from me and continues through me, it is about my approach to art so generally it is my name on top and their name second. So they get credited, but it is my work and I own everything that comes out of the work, and again, it is a kind of respect and acknowledgement but this is my art work, and they are kind of helping me, collaborating with me to help me develop my work.

In the same interview, Nechvatal justified his position as 'sole author', on the basis that he is the 'director' of the project (a position which contrasts to that put forward by Cox in the previous Case Study):

> What I do is to throw out big challenges and ideas and I also say "no" a lot. They show me what they did, and I say "no that's not what I was interested in or where I'm going." Or "that's not acceptable for aesthetic reasons or other reasons." So, I am the project director and I am controlling what comes out of it, it came from my original intentions and my name is going to be on it, so I have to be the one that is completely pleased with the end result.

This understanding of 'authorship' is also present in other works on which Sikora has collaborated with 'artists' other than Nechvatal:

> Stéphane has worked with other artists, and they are always the author, almost always the sole author of the work ... So he is accustomed to this procedure ... He doesn't have a creative vision himself but he loves to work with artists and do creative work, and he has a big appreciation for art

and music and culture, it is just that he needs someone to direct him as to what the project is, what the goal of the project is. So he is the technician. [16]

As regards to those involved in making the arrangements for the robotic painting technique, Nechvatal considers them to be neither 'creative', as they are 'merely fabricating to my specification', nor 'authors', on the basis that they are providing a paid commercial service.

One issue explored in the interview was how the role of technology in Nechvatal's work (e.g. the role of the computer viruses in acting on his 'body' of visual work) might limit human authorship. Nechvatal has previously described the relationship between 'human agency' and 'non-human processes' in his work, as 'a dialogue ... conversation or dance' (Roniger, 2012). Asked what he meant by this, Nechvatal placed his work in the context of avant-garde thought of the 20th century, in particular John Cage's approach to music and art which 'embraces chance operations'. As he explained: 'What you want to do is, you author the work and control it tightly but then you leave it open for chance, for things to happen, or actually you design it rigorously so chance can happen. That is what I did with the program with Stéphane. What we do is we ... allow and dictate that chance will happen. So it is just a way of making the work more unexpected and a little more unusual than might be possible'.

While Nechvatal accepted that 'chance' might 'fuzzy the edges a little bit of authorship', he remained of the view that 'authorship' was an important concept: 'I don't see how that precludes the authorship of the work. It just is a technique for making work really.' Therefore, while technology played an important role in his work, it still made sense to speak of 'human authorship':

> [...] because ... it is me that is making selections and choices and presentations and within a certain context of my choosing, so again the chance element is just another angle of opening up the work but it is no way destroying its connection to me. ... I think it is very important that the human is dominant and I don't for one second want to be dominated by non-human processes, of machines ... particularly in aesthetics, I do not for one instance want to be subjected to dominance by machine processes, and I think part of our work, part of my work, is an attempt to resist that tendency.

Indeed, Nechvatal considered his 'authorship' of the work, to make it his 'property', on the basis that it would not exist without him: 'Do you consider your work to be your property?' 'Yes, absolutely.' 'And why do you feel that

way?' 'I never really question it, because I make it from nothing and because it wouldn't be there without me. And I sign it, and now I even sign it with my DNA so there can be no forgery. I never even question that it isn't mine, because without me it wouldn't exist!'

Consequently, if his work was copied without his consent, he said he would be 'shocked and dismayed', regardless of whether he was attributed or not. Notwithstanding this, he would not mind his work being copied if there was an 'educational context' for the use or if the use amounted to a 'new work'. As regards the latter aspect, Nechvatal related this to his understanding of the US legal test of transformative use:

> [...] if they are artists and they are putting their art on the market and they are using appropriation as part of their work, I can accept that. I know other artists that have done that successfully, Richard Prince most famously, and many others, say Jeff Koons, Warhol. Sometimes it is a question of degree and I believe that the legal view, especially in the United States is "was a transformation created', did the other artist transform the work or not.

Asked whether he felt that this approach was appropriate, Nechvatal responded: 'I do. Then there is a creative process that is happening, and I think that we have to be open to appropriation as part of the artistic dialogue because we live in such an image conscious culture.' In fact, the legal concept of transformative use, which stems from judicial interpretation of the first factor of the 'fair use' test set out in section 107 of the US Copyright Code, is not cast in such broad terms. Notwithstanding this, these comments indicate that while Nechvatal's art practice might not bring him into proximity to lawyers (as in the case of Cox's copyright exploitation contracts) copyright terminology resonated in his understanding of the limits of the control denoted by authorship, albeit in a form more accommodating of appropriation art than is currently contained in US law.

Case Study Three: The Open Ended Group, a 'Digital Art Collective'

The OpenEndedGroup (or 'OEG') comprises three members: Marc Downie, Shelley Eshkar and Paul Kaiser. Established in 2001 and based in New York, the OEG exhibits in galleries, public spaces and the stage, in both the USA

and Europe. This often involves installations involving projections produced using motion-capture technology.

A recent project was the production of huge floating 3D imagery that was projected onto the stage of a performance of Mark-Anthony Turnage's opera *Twice Through the Heart* at Sadler's Wells Theatre, London. The opera concerned a housewife abused by her husband, and the 'ethereal' imagery, visible to the audience wearing 3D glasses, sought to capture her sense of 'fear'. The imagery was produced from photographs which the members of the Group took of the interior of a 1980s-style Council flat in Dartington. The photographs were then processed by software, written by the Group, which could locate where the photographs were taken within the geometry of the room. The resulting images were then displayed on a computer screen, with all three members of the Group working together to produce the final imagery. Downie described this process of working on the imagery as follows:

> You capture a glimpse of an interesting shape or juxtaposition or mistake in the computer's recognition of an object, and you go back and try to craft that particular angle, that particular moment, that particular shape by either changing the photographs that you put in, or changing the way the material is revealed. ... You really are trying to work in dialogue with an algorithm, something which produces something unexpected. You are trying to take control over it, but it is not a situation where we are completely in control.

Asked about the different 'roles' of the various Group members, Downie explained that each brings different expertise. Downie's grounding is in natural science and physics, and he specialises in computer programming. Eshkar's emphasis is on drawing, computer graphics and the 'exploration of human motion', in particular through the use of motion capture technology. Finally, Kaiser's background is in filmmaking and art history. The OEG members' different backgrounds means that, as Downie acknowledged, 'there are some core things that we are each much better at that the others'. However, 'other than that it's a flat organisation', with the core activities performed by the three of them, working together as 'equals'. As Downie explained: 'If you were to be in the room while we're working you would see three people staring at 3D projectors, shouting out opinions about the way that things are drawn until we agree that what we are looking at is good ... When we are actually being creative it's usually us staring at something, changing it, and shouting out our opinions'.

At another point in the interview, Downie expanded on this further:

Really the bit that is us making art is about the three of us sitting in front of the screen shouting out things at it. That is the core of what we do. The drive that we have had to make pieces and distribute them has all been about maximising the time we spend together, as three artists staring at something and changing it. The common thread through all of our work, is that the reason that we write code is to be able to work in real time, even if what we are making is just a film, so you don't have to have code, but it has to be in real time so the three of us can sit in front of it as equals and change it.

As regards dynamics between Group members, Downie said that there is always a 'broad level of agreement' as to 'what a piece is going to be about'. Where disagreements arise as to particular issues, such as 'is this image good?', this 'simply leads to us working harder at it': 'If one of us thinks that an image is good, but another thinks it isn't there yet, we continue to manipulate it until we reach a consensus'. However, he considered disagreements that could not be resolved through consensus to be 'very rare', a matter which he attributed to the fact that they all have 'very similar aesthetics': 'We broadly agree about what images are good and what images aren't. If you put us in for blind testing and flashed images at us, and asked us to say which images we liked, we would actually end up with fairly similar conclusions. I think we would end up with different reasons for what we liked. So that then is the balance that we can reach similar end-points by different means with different justifications'.

Asked what would happen if an instance arose where no consensus was reached, Downie considered that the Group would probably 'abandon the work'; 'that would be the end of the piece'. As Downie concluded 'working by consensus is the only way that we can really work'.

Where expertise or assistance is required from outside, the OEG have developed a 'taxonomy of collaboration', which designates the parameters of the external person's participation. Downie described this as follows:

Well we internally have a taxonomy of people we work with. "Collaborator" is top of the pile. Collaborator is where there is an equality. We are equal with collaborators, though we might have different responsibilities. Collaborators are the ones who at least have the freedom to give ideas quite directly for what we are working on. But beneath that, or different to that, are "contributors", and beneath that still are "consultants". So

a "consultant" is where you have a very particular technical issue that we need a fairly constrained answer on. And there is almost nothing a consultant can do to surprise you. The answer to a technical question will be either "yes" this is how you do it or "no" that's actually impossible. A "contributor" is somewhere between those things, in that they could surprise you with the quality of what they do, but they are working within a fairly confined space, a space that you have pre-determined. What they are working on is not up for change. A sound designer for example might be a contributor. You have chosen the material that they will use and provided them with the actual piece of music or track, and simply you need someone with sound engineering competence to realise it and make it sound good in a gallery. So that would be an example of someone contributing to the art work. So they're important because if they screw up it sounds awful and if they are not there it is left to 3 people that aren't particularly good at sound devices, but it is not an open-ended equal class structure, in that sound designers aren't allowed to say "why don't you do that, it would be better", because that's not what they are being brought in to do. So that is the taxonomy of collaboration from our point of view.

'Collaborators' are credited alongside the OEG as 'artists', for example when the work is displayed, unlike 'consultants' and 'contributors'. Downie explained the purpose of the 'taxonomy' as follows: 'It is about accurately curating the voices in the room when you are all looking at something shouting out "that's right", "that needs to be over there" or "that's awful" or "that's really good, that bit there" or "we need more of that". So whoever is barking out those opinions at the crunch moments when we are really trying to discover what we've got, what we could make, so it's an invitation as to that, as that moment has to be very carefully constructed'.

The taxonomy of collaboration is very strictly enforced by the OEG, and 'collaborators' are '[selected] … very carefully' to ensure consensus with OEG members will be reached. Asked whether 'contributors' or 'consultants' ever sought to exceed their roles, Downie remarked that they stick to their taxonomy so rigidly 'that no one tries to exceed their role'. This contrasts to an earlier project, *How long Does the Subject Linger on the Edge of the Volume* (2005), when the Group was 'less experienced', where 'engineers' who were merely meant to 'provide engineering support', assumed they were 'equal participants in all artistic decisions'. As Downie explained: '… in that case we weren't nearly clear enough which caused a certain amount of heart-

ache amongst everyone. So since that point we've been much clearer about the status of people involved … So we've been more careful in choosing our collaborators and more careful in making sure that people who aren't collaborators know it …'

An example of the OEG's work with a 'collaborator' is *Stairwell*, displayed at the Hayward Gallery in 2010. The 'collaborator' in that instance was the dancer and choreographer Wayne McGregor. McGregor's movements in the space of the stairwell at the Hayward were recorded using specially designed motion-capture technology. The final work involved the 3D projection of that footage into the space of the stairwell. Downie described this process of working as follows: 'And that involved the three of us challenging Wayne, to do something in the particular curve of the stairwell, round the corner or vertically this way. Sort of giving him regions of space to work in and to improvise within them, a region marked out by cameras.' The footage was then edited by the three members of the OEG: 'After all of that … it was just me, Paul and Shelley sitting around the screen editing footage in real time, and then all of it is saved and sent off-site so it could be put on three screens – one at the bottom, one in the middle and one at the top of the stairwell. On site we continued to revise our editing. Finally the whole thing was played back in stereo.'

McGregor was, according to Downie, 'the motor of the piece' and the status of 'collaborator' denotes the influence and freedom which he was allowed to exert. As Downie explained in relation to his work with another dancer/choreographer 'collaborator': 'we were all influencing very strongly what each of us were doing, so all four of us had responsibility for the way the piece worked and we were all allowed to blurt out ideas, and we were all allowed to say "that's crap" or "this bit here, that's the good bit". We were all allowed to make those statements.'

This contrasts to 'contributors' who, while creative in the tasks they perform, are ultimately working under the control and direction of the OEG:

For example every time we need to film something, where we might care how it looks, so it's not just data capture, especially if it's in the US, there are a couple of camera men that we like so we'll bring them on, and they will be in a contributor role. They know how to hold a camera and have vastly more knowledge about where to stick the lights than us, about what to do. And they will be there on-site, with us directing. We have a very good rapport with them. So that would add two to the project but only for a few hours. Only for the shoot.

In this way, the OEG's taxonomy of 'collaborators', 'contributors' and 'consultants' can be seen as a way of restricting the number of participants that deserve equality of status with the OEG members, in the making of 'artistic decisions'. As Downie noted, 'the status of collaborator marks that relationship as different.' For Downie, 'artistic decisions' are:

> [...] when we are responding to material, and manipulating it, and navigating through possibilities, we are working very quickly, shouting out our initial responses to what we are seeing. There is a tremendous amount of instinct in that. The three of us and every other artist that we've worked with are capable of producing opinions about material very very quickly ... we are very quick in evaluating things. ... I think you have to marry that with the vision of being able to see the long-term consequences or potential of those things. So you see an image and you don't really like it but there is something in it that offers a glimmer of hope. ... So, if this is good it goes into the piece, or we grow that out into a section of a piece [...]

While the Group (and any collaborators) make the 'artistic decisions', and are credited as 'artists', Downie felt uncomfortable with any notion of authorship that denoted 'creation':

> [...] the sense of discovery, the sense that you are mining something out of material, weakens my claim to have authored it in a direct way, in the sense that I have had this idea, this idea has come from me, and I have given this life in the world. It is hard to be completely convinced about that when you feel like you have discovered something'.

In part, the resistance to the view of 'author' as 'creator' rests with the role of the technology itself as a 'collaborating agent'. As Downie explained (in a manner which differs in emphasis, from Joseph Nechvatal's views at Case Study 2 above): '... when you are working like this, it really does feel like there is an additional agency, be it of the algorithm or of the material as seen through a lens you have constructed, and even if you write your own code, or even if know intimately how things work, when this way of working is good is where there is an additional agency – you are working in collaboration with material or in collaboration with an algorithm.'[17] Further, Downie felt uncomfortable with the suggestion that the work might be the OEG's 'property'. In his view, the work felt like 'property of the world', again stemming from their work being 'more like discovery than creation':

> Quite often when things are going really well, the way that we work in particular, it feels less like creation. So you build some complicated system or analytical way of looking at some object in the world, and you craft it and change it, and suddenly you see something on the screen that you find surprising. Those are the moments which keep you going. It feels more like discovery than creation. You have found something that you have always suspected that was there, but you've found it. It's not like we've made it up. It's not like the process of drawing where a person uses his talents to create something from the blank page.

While unauthorised copying might 'upset' Downie 'slightly', this was not something which concerned him. In part this was due to the fact that the technical complexity of their work made close copying implausible:

> [...] an exact copy of our work, short of someone breaking into your computer and stealing it, is just so highly implausible. The indirection that goes into making a piece is so great, that defends off against many of these sorts of duplications. If someone stole all of my computers and then asked me to duplicate Stairwell, I'd have a pretty hard time doing it. We'd have a hard time copying ourselves.

Notwithstanding this, the attribution of the Group (and any collaborator) as the 'artists' of a particular work, was a matter of significance, as attribution ensured accurate 'critical discourse' about 'who did what' in the field:

> One of the things that makes me upset ... right now, is the quality of the critical discourse in our particular area of art. One thing is that if I'd feel that the world, or art historical record, is not getting the biography of the story straight, that would make me upset in that way. So when the critical history of the field can't figure out who did what. So I feel upset in the sense that people were getting the wrong idea in the sense of the genesis of something and can't figure out who did what.

Indeed, if the OEG's work was copied by another artist, in making a 'new work', they would want 'a general acknowledgement in any critical secondary literature'. In this way, while 'attribution' is important to Downie, like Cox the OEG's engagement with 'computer science' results in their distancing of their activities from any concept of 'authorship' as 'creation'. Yet, unlike Cox, the implications of this for Downie are that 'authorship' denoting 'ownership' or 'property' appears irrelevant.

Case Study Four: Ken Feingold's installations and Miltos Manetas' *jesusswimming.com*

Ken Feingold is based in New York. He specialises in installations using 'animatronic' sculptures of human heads or ventriloquist puppets, programmed using speech recognition and artificial intelligence software so they can have conversations with each other. Each character is programmed to have its own personality, so there are certain parameters to the conversations, but no one conversation is the same. Feingold has exhibited widely for example at the Museum of Modern Art in New York, the Centre Georges Pompidou in Paris, and at the Tate Liverpool in the UK.

Feingold explained that his 'animatronic' installations stem from his residency at the *Zentrum Fur Kunst und Medientechnology* (or 'ZKM') in Karlsruhe, Germany. This brought him into contact with computer programmers who, over a period of three years, developed complex software providing a series of modules for enabling pieces of language to interact with visuals. The software is used by Feingold, along with artificial voice technology by researchers at the University of Edinburgh which is made available for use on an open source basis. The installations also involve physical sculptures. Sometimes these are 'found' objects, for example ventriloquist dummies that are bought from a car-boot sale. More frequently, however, they involve new sculptures, occasionally, as in the case of *Self-Portrait as the Center of the Universe*, involving casts of Feingold's own head which are made at a workshop by a group of 'sculptors'. This involves moulding in latex and casting in silicone, to which fibre glass 'skin' is applied in such a manner that the mouth and eyes can open and close. Once this is done, stubble, facial hair and the feint appearance of veins is added using needles.

Feingold described his interaction with these computer programmers and sculptors as 'very close-up at times and other times very long distance'. With regards the programmers, Feingold usually develops 'a flow chart' to 'show the programmer the chain of events that have to happen', then leaving them to 'go through and write all the routines and the functions'. In the case of the sculptors of the 'animatronic' heads, Feingold provides them with photographs or drawings to give an example of what is required. The sculptors then produce a head in clay, as a model for the cast that will eventually be made in silicone. Feingold described the process of working on the clay model as follows:

> I would work with the sculptor who was essentially my hands, because she had a skill to be able to sculpt in clay in a photographic way. I mean her abilities are extraordinary. She would be able to make things look so

realistic and do things that I could never attain the skill to be able to do. So it would be very simple kinds of suggestions on my part, like let's make the lips fuller, let's make the chin narrower, let's make the jaw line squarer. And then she would do that and I would say "yes" "no" "less" "more".'

More than just 'technical skill', Feingold saw the programmers and sculptors as providing 'special knowledge', which placed them in a position 'occasionally' to make 'suggestions'. For example, he described how, on one project, the sculptor made a 'suggestion' about the size of the ears of a particular head. Feingold wanted the head to be of someone in their forties or fifties, and the sculptor had 'special knowledge' about that: 'she was right and that was what I wanted.' Similarly, the programmers have 'special knowledge' of mathematics, for example, as to the algebra required in order to move a figure in virtual space in an oval.

Feingold characterised the tasks performed by the programmers and sculptors as 'creative':

> I depend a good deal on the creativity of the people that I work with, they have a tremendous influence on the outcome of the project, and it is a quite interesting process to collaborate in that creative moment with computer programmers and with sculptors, because even the ones that are life cast have imperfections and they have to be adjusted in the making of them, both the physical moulding and the painting and the kinds of expressions that the faces have, lend a lot to what the experience of the work is.

However, the 'programmers' and 'sculptors' are not authors or co-authors; Feingold is the sole author. Indeed, the 'art part' consists of the tasks which Feingold performs in his studio alone:

> [...] so the work is physically put together and then set up in my studio where I then undertake the actual art part, which is working and reworking, writing, editing images and seeing how things work, how they sound. Spending time with the work, watching it unfold, noticing that it does things that I don't want it to do, taking things out that I don't want it to do, putting things in that I do want it to do that it's not doing [...]

Feingold explained his position as sole author, by drawing analogies with certain interpretations of the Auteur concept of authorship of a film by a film director:

> I would say that it is collaborative to the extent that people were helping me, but I always took it as one might think of a film director, that it was my project, I was not seeing this as co-authorship, neither with the programming nor with the sculptural factors, and so the works would be fabricated for me, the physical object would be fabricated for me and sent to my studio at which point I would assemble them into sculptural objects which appear in the final work.

At another point in the conversation, Feingold elaborated further on this analogy:

> I think about things in the framework of film-making to give myself a precedent for groups of people working towards an end to accomplish a particular person's vision. Auteur cinema where you have the director who is also the writer and who also does a lot of the camera work who also sits in or does quite a bit of the editing, some sound and creates the entire film, still there are many people who work on the project and they are considered contributors, absolutely, and valuable contributors, but the notion of authorship is the person who is the director as the person who is the individual who takes responsibility for the entire thing[18] [...]

As Feingold concluded, this 'is a monotheistic view of authorship, not a polytheistic view'. During the interview, Feingold referred to the 'author' as having an 'authority' as 'the primary creator of a particular work': '... this is the work that I've made and it's finished, I've done it. I've made this work and its mine'. Asked whether the reference to the art work as 'mine' denoted that it was his 'property', Feingold's answer was informed by his understanding of copyright law:

> We are talking about intellectual property ... I would say that art work has certain laws surrounding it. If an artist makes something they have the copyright. So how do we identify who it belongs to? Right now I think it has to do with who owns the copyright to it. Does that mean that that person has exclusive rights to do anything with it forever and ever. Perhaps legally yes, but ethically? I don't know.

Feingold said that he would object to unauthorised copying of this work, 'to the extent that it interfered with my economy'; his works are made in 'limited numbers', so their commercial value is 'in part due to their scarcity' (the installations having physical as well as digital attributes). In outlining

the kinds of copying he would consider unobjectionable, Feingold's answer was informed by his understanding of US copyright principles of 'fair use':

> [...] not to rely on the law but just to think which factors had been in the notion of fair use, one of them is whether or not it competes economically with the original work,[19] and I need to survive, this is what I do for a living, to a certain extent, you know my work as an analyst is one aspect and my work as an artist another, and these are my economic bases so if someone was to take one of them away because they found a way to commercialise something and I wasn't benefitting from that it would harm me and it would harm my ability to make other works. It would force me into another kind of working that I would then have to go into competition with someone who was changing my economy because of the way they were doing things.

Feingold's implicit endorsement of the general principle of copyright, contrasts with the very public denouncement of copyright law by the other interviewee in this Case Study: Miltos Manetas. Manetas is from Greece but is currently based in Rome. He founded the web art movement called *Neen* in 2000, which promotes the view of websites as art objects. As each URL is unique, each piece of website art is a 'unique edition' in that sense. The URL, therefore, provides the art work with a physical property that can be bought and sold by art collectors, through trades in ownership of the domain name at the various domain name registries. Indeed, Manetas sees the act of buying and owning the website, as ' "initiating" the artwork': the 'most important step' towards 'becoming the creator of the website' and the 'most important, because it's yours'. Therefore, while the Neen movement is characterised by emotive claims about the 'struggle to get free from the slavery of intellectual property and copyright', it advocates a different notion of 'property' – the 'real estate' of URLs (Manetas, 2002). On the point of Manetas' stance against copyright, it was interesting to note that one of his income streams is the licensing of applications based on his website art to i-phone. When asked what he was being paid for, he did not connect this to copyright; rather he considered it as akin to receiving a conference fee for speaking.

In the art gallery environment, Manetas projects his websites onto blank canvas hung on the gallery wall. One such example is *jesusswimming.com* hosted at that URL, which was displayed in 2006 by projecting it onto a canvas 120 x 90 inches. The website depicts a simple animation of a bearded figure swimming slowly in the sea, accompanied by music. The toolbar of

the website reads 'Jesus Swimming by Miltos Manetas', but the website manetas.com, providing an overview of his work, states the following: 'Jesus Swimming, created by Miltos Manetas. Credits: Mark Tranmer (music), Joel Fox (animation)'.

When asked about these credits, Manetas explained the process of 'collaboration' as follows:

> [...] many times us artists work in collaboration. So I wake up with an idea, of jesusswimming.com. So I call up an animator, and I say could you please produce a Jesus swimming. I then call up a composer, and I say could you please compose music for him. Yes. Ok. And then I make the work. It is absolutely mine. It is a work of art by Miltos Manetas only, but in that work there are credits. Animation made by this person, music made by Joel Fox.

When asked what his instructions were to the 'animator' and 'composer', Manetas explained that they were 'not very detailed at all': 'The departure point for Jesusswimming.com was exactly the name of the website "Jesus swimming" and I just asked from the composer to write a music that brings in mind Jesus when he swims … [and to the animator] "please draw for me a Jesus swimming" …'. While the 'composer' and 'animator' were given little detailed guidance, Manetas retained the right to reject the contributions: 'if I didn't like the music or the animation, I wouldn't have used it'.

In Manetas' view, neither Tranmer nor Fox are co-authors; they are merely assistants working for a 'master', a practice which he analogises with the work of Michelangelo. Instead, Manetas is the 'sole author', a claim he supported by analogising his position to the 'director' of a film. After drawing attention to the fact that he had paid the 'assistants', he continued: 'Well, it is my art work. In that case, I am totally the artist 100%. It is my total art work. Because it is my creation. It exists only because of me'. At another point in the interview, he repeated that he was the sole author on the basis that: 'The artistic idea is completely mine in that case … the idea of the Jesus swimming'. In this way, for Manetas, 'authorship' denoted being the 'director' or person who 'created' the idea of the piece.

In addition, it was apparent that Manetas' views of what it meant to be an 'artist' were informed by perceptions in the wider 'art world'. As Manetas described in relation to jesusswimming.com, when he registered the URL, he did so 'as a private person, but 'not … as an artist': 'to own it as an artist I have to claim its artistic value, to somehow create interest around it and make it an artwork'. These comments were consistent with his view of an

'artist' as stemming from some form of 'art world' recognition: An artist defines himself as an artist and then if other people agree with him and he has a commercial success, he is an artist; if not he is just someone who has fantasies'. And does it matter who that other person is? 'This is the business of culture. Of course it matters. If it is the postman, it is one thing, but if it is the director of a museum, it is another thing. And if it is 10 directors of museums, then suddenly our conversation goes to the metaphorical.

As we noted above, the *Neen* approach to the work as 'property' relates to the property in the URL. Copying the content of the website is not something of concern. Instead Manetas appeared to be concerned with the use of his name, or the gallery display of the website at the URL by another 'artist'. As he explained, using one of his other website pieces, maninthedark.com as an example:

> If now you will invite people to see the exhibition of Miltos Manetas at that gallery, I would sue you. If you will invite the people, to see maninthedark.com, again, I will sue you. But if you will invite the people to see an exhibition of yours, and you have a simulation of my maninthedark.com there [i.e. an exact copy of the website, which appears to be hosted at maninthedark.com, though it is not at that URL], this is your art work, it is not mine.

Manetas' position, therefore, includes expectations of attribution in relation to the registered domain name (rather than the website content).

Case Study Five: Interactivity and the role of the 'audience' or 'user'

Interactivity is frequently noted to be an important aspect of digital technology as a 'creative' medium (Stallabrass, 2003, p. 60 and Paul, 2003, p. 8). As the art historian Frank Popper expressed in a much publicised interview, 'On the Origins of Virtualism', the emphasis on interactivity, that is, 'the work's openness to reciprocal creative action' by the spectator or user, is an important feature of such work (Nechvatal and Popper, 2004, p. 71).[20] A number of examples of this were encountered in the interviews.

The very first interactive works were developed by Lynn Hershman Leeson, an award-winning 'artist' based in California.[21] Her work *Lorna* from the late 1970s was issued in limited edition on a laser disc (later moved to DVD in 2002) and exhibited in galleries on a screen in a space that depicted Lorna's living room. Using a remote control, the audience could choose which steps Lorna took in her fear-dominated life. Other early forms of in-

teractive work were in the form of 'hypertext poetry' which, as Loss Pequeño Glazier recounted, involved users clicking on particular words triggering a different page to come up on screen. Most commonly, this would involve the 'user' choosing between different events in the story. [22] More recently, one of Glazier's own digital poems, *COG*, relies on the viewer to click on various coloured 'cog' shapes, which turn and release further words, letters or phrases into the poem. Similarly, Jason Nelson's recent work *Game, Game, Game and Again Game* involves the user 'playing' thirteen computer-game style levels, which contain his drawings and poetry.

Interactivity is also a central component of much installation work using digital technology. Don Ritter, a Canadian 'artist' currently based in South Korea, recently created a large-scale installation called *Vested* which involves a visitor putting on a military vest and walking in front of a 14 metre-high projection depicting a panorama of famous international buildings. When the visitor pushes a red button on the vest, a large explosion takes place on the projection triggered by complex digital technology. The interaction enables Ritter's work to capture the schadenfreude phenomenon and draw attention to the mass media's vested interest in depicting images of human tragedy. Similarly, Joseph Nechvatal has also displayed aspects of his Computer Virus Projects in the form of an interactive gallery installation. Under the title *Viral Counter-Attack*, the progress of the virus in 'attacking' Nechvatal's body of work was displayed in real-time on a touch-screen. Up to two members of the audience could touch the screen simultaneously, to influence the movement of the virus 'attack'.

A number of these interviewees noted the central importance of the position of the audience to these works. As Glazier notes, in respect of his own interactive poem *COG*, the 'reader is essential because if you just turn on the piece, there is nothing there'. Notwithstanding this, all interviewees were of the view that the 'user' is not a co-author of the work, pointing to the limited number of choices which users are faced with. As Leeson expressed, users might be active and also perhaps creative in their choices but they were not authors:

> Because it is pre-set. You know, somebody walks through a building, they are not the architect. But they could choose how to walk through it. The structure is already there, implanted. So in order to be an author, they have to start from scratch. Even though you can alter something and even if an interactive piece requires you to alter something, you haven't designed it, or come up with a conception, then you don't author it, then you are not really the original author.

Further, in Joseph Nechvatal's view, the role of the audience was 'mildly creative' in the 'choices' made and in 'helping explore the piece', but this did not make them authors or co-authors: 'Oh, no, [the audience is] not even close [to being authors]. ... Derrida ... claims that a reader is as much the author, as the author of a book, but I can tell you that that's not really true! ... Yes, they are using their consciousness and are anticipating an art event, but they are not creating an art event, they are receiving it'.

Similarly, Don Ritter thought that a participant in his works might be 'creative' in relation to their own experience of the work, but this did not amount to authorship. It was akin to deciding how to walk through a gallery displaying paintings and how long to spend in front of each work.

Indeed, a number of interviewees expressed the challenge of interactive work as located in how to constrain the audience's freedom of action, so as to ensure that their contribution forms part of the 'artist's vision'. Ken Feingold's early installations, for example, enabled gallery visitors to have conversations with the animatronic figures. However, he was unhappy with the result, as visitors tended to have open-ended conversations about their own concerns, rather than allowing Feingold's work to steer the conversation:

> I did find a certain shifting point where I was no longer particularly happy about the ways in which viewers become participants, would interact with works, and found that people wanted things from works, because of the metaphors that were involved, essentially you thought if you really were interacting in an open-ended way with an open-ended character you could talk about anything and it started to feel like crafting a very particular musical instrument, and putting it on a stage and inviting the audience up to let them play music. Now I wanted to play the music, so the more recent works involved computers interacting with each other, or programs within computers interacting with each other.

Other interviewees noted that the key to a successful interactive work was to ensure that the scope for audience participation is fairly constrained. For example, the OpenEndedGroup's *Into the Forest*, which opened for exhibition at the Museum of the Moving Image in New York in January 2011, involves a 3D projection of painterly imagery which enables the public to sense the daydreams of childhood. For one minute in every three or four, the piece projects the public's stereoscopic shadow back through a spotlight, thereby inviting the audience to respond to the work's projections. As Downie explained, the reason why this only happens for one minute

in every 3 or 4, is because 'we didn't want the interactivity to become the point of it.' As he elaborated:

> So, I mean I think you use the word "user" which is exactly the sort of relationship we want to avoid, and exactly the noun that I'd hope would never apply to any of our interactive pieces, especially a piece that uses computer vision of any kind. ... People actually act quite silly in most interactive pieces, and the relationship that they have is extremely non-contemplative, and they are trying to bring attention to them, and they are trying to push the boundaries of what the computer can see, so they start moving quickly to see if the computer can still follow them; they move in extreme ways. And none of that is what we want. If you stick a microphone in front of someone people will generally start making very silly noises, it is some sort of human desire to see what the envelope of interaction is, rather than paying attention to a particular piece. So the interactive pieces we've made have all tried to be completely autonomous, to have integrity by themselves, so the interaction is quite constrained in time like it was in *In the Forest*, or optional or invitational.

Instead of 'user' of an interactive work, Downie prefers the term 'participant'. In his view, this provides a different emphasis. As he explained, a 'participant' denotes a person 'who accepts the invitation from the work; who has accepted the invitation to walk into the spotlight and to follow and be part of the piece'.

Conclusions

As we noted at the outset, a perceived challenge of the digital for copyright stems from the assumption that the 'creative' practices of the 'digital age' involve the contributions of many. Not only is this thought to make the identification of the author more difficult but the presumed collaborative nature of such practices is thought to pose problems for authorship as a proprietary category. As we have seen, the interviews revealed that technology has in many cases in fact facilitated solitary work: as technology becomes ubiquitous, a number of interviewees today work alone on processes which in former times were collaborative. Further, as solitary work is now feasible, in certain spheres it is considered to be the working practice of preference.

Where collaborative practices do prevail, the case studies revealed diverse ways in which relations between contributors are understood,

reflecting diverse ideas about authorship. Indeed, a number of interviewees articulated positions which were diametrically opposed to each other. For example, Donna Cox juxtaposed her 'egalitarian' notion of the whole team as authors of the 'visualisation', against the solitary view of authorship inspired by Auteur cinema, of the 'artist' as 'director'. This was the very 'monotheistic' view of authorship, adhered to by interviewees such as Ken Feingold.

Another point of difference of opinion was on how the role of technology impacted on authorship. For the OEG, technology is a 'collaborating agent' restricting the 'control' that the Group felt over their work. The result is that the Group felt as if they were engaged in a process of 'discovery', and Marc Downie was uneasy with any concept of authorship related to 'creation'. By contrast, the language of creativity frequently featured in the interview with Joseph Nechvatal, who saw technology as subject to his human 'creative vision'.

The diversity of ideas about authorship revealed in the interviews means that it would be simplistic to use the views articulated by any one inter-viewee, as the basis for the reform of legal tests. For example, while the views of interviewees such as Joseph Nechvatal might accord with the legal test of originality as 'free and creative choices', explored by Stefan van Gompel in his contribution to this volume, other interviews such as that with Marc Downie, revealed the difficulties of a test that defines 'creative choices' in opposition to constraints: for the OEG the constraints posed by technology are an intricate part of their process of making 'art'. Notwithstanding this, a number of more general concluding observations can be made, with a view to presenting a more nuanced account of the perceived challenge of the digital.

First, authorship is an important category for the 'artists' and 'poets' interviewed. This is the case, even in the face of interactive technologies enabling audience participation which was the very development which scholars had thought would pose the most significant challenge to author-ship (Woodmansee, 1994, p. 26).[23] Indeed, while there may be differing posi-tions as to the degree to which technology limits human action, as is evident from his much publicised interview 'On the Origins of Virtualism' with art historian Frank Popper, the over-arching theme of 'digital art' discourse is 'how technology is – or can be – humanised through art' (Nechvatal and Popper, 2004, p. 72).[24] In this way, the discourses of 'digital art', with their focus on humanising technology, contrast to what one commentator thought to be the implications for copyright's concept of authorship of new technologies: the 'struggle over the soul of copyright' when the law protects

the products of machines, rather than human authorship (Ricketson, 1991–2, p. 2).[25] The implications of this for law are that tests that defer to some extent to social understandings of authorship, such as the US requirement of 'intention' as to co-authorship, remain relevant in the 'digital age', as 'authorship' remains a meaningful category.

Secondly, in some instances (though not all), it was striking that the law actively contributes to concepts of authorship. As we saw in the above case studies, law contributed to certain interviewees' understandings of authorship as denoting 'ownership' (in Case Study 1), or to the demarcation of the limits of authorial control (in Case Study 2 and Ken Feingold in Case Study 4), though, as we noted, the interviewees' understandings did not always accurately reflect current copyright law. Other interviewees directly resorted to copyright law to give their views on authorship as a proprietary, normative force. For example, David Em commented on his relation to his work as follows: 'Do you consider the work to be your property?' 'Absolutely.' 'And what do you mean by that?' 'If you take seriously the idea that there is such a thing as intellectual property, who else does this belong to, it came whole cloth out of my head, no one else could have come up with this, in a million years. And that makes it mine … when it comes down to it, this is what I've made. This is the only thing that I can attach my thumb print to in a sense and say this is something that I created. Nobody else created this. And I am very strong about defending that.'

Similar comments were made by Casey Reas[26] and Herbert Franke.[27] Moreover, copyright also appeared to influence other interviewees who, at a first glance, rejected proprietary authorship. For example, Jason Nelson initially rejected the idea that his work was his 'property' because: 'I want my work to spread and I love that notion that you have people in strange corners exploring my work'. Yet, later in the same interview, when asked how he would earn a living if he did not have his current academic position (at Griffith University, Queensland), he referred to revenue streams that are dependent on copyright. As he commented:

> I think that digital artists, especially net-based artists, are better positioned for making a living than a lot of other artists, and the reason for that is that there is beginning to be more streams of revenue for that sort of thing, so for example making an app, an i-phone app sort of thing … the ability to charge a dollar or two dollars for people viewing or playing around with your work is beginning to be an amazing stream of revenue for artists working in this genre.[28]

While these examples[29] illustrate that copyright law influences certain of the interviewees' understandings of authorship, the connection between 'art' and law should not be overstated. As we saw in Case Study 1, even where 'artists' conclude legal agreements about copyright, 'vetted very carefully with lawyers', the criteria which they use to determine who is an author, appears uninfluenced by that in law. Also, other interviewees, such as Miltos Manetas, articulated ideas which were antithetical to copyright concepts.

Drawing this chapter to a close, what is the significance of these observations for how we understand the challenge of the digital for authorship? As noted at the outset, no claim is made that the interviewees are representative of all practice involving digital technology. Indeed, a number of other qualitative empirical studies are currently in progress, investigating different 'spheres' of practice using digital technology and preliminary indications are that these uncover quite different experiences. For example, a recent Arts and Humanities Research Council (AHRC) funded study which is being conducted by Smita Kheria and Penny Travlou at Edinburgh University on Creation and Publication of the Digital Manual: Authority, Authorship and Voice, is examining authorship in the context of digital 'manuals', which function as resources for online communities, for example in providing a platform for online performances or instructions for using open source software or a medium for exchanging information about farming practices. The 'manuals' involve the contributions of many in the online environment. Travlou and Kheria's preliminary conclusions are that the interviewees 'struggle with the term author and the notion of authorship'. Further, a European Research Council-funded project in progress Music, Digitization, Mediation: Towards Interdisciplinary Music Studies (MusDig), lead by Georgina Born at Oxford University, has uncovered, amongst other things, the views of a younger generation of 'digital musicians' who would rather describe themselves as 'researchers' than 'authors', with the consequence of a lessening of feelings of authorship as an 'exclusionary' or 'boundary making' category.

In this way, placing the observations of the current study in the context of these other qualitative studies reveals a complex picture about authorship in practices involving digital technology. On one level, these differences are unsurprising: the interviewees of the current study were taken from a list of 'notable individuals' and were all 'artists' or 'poets' whose work is directed towards fora for which authorship is well established as a structuring category. Donna Cox, for example, explained that 'the marketing model for art' in the 'high end art market' is geared towards 'the artist as a sole producer', and that she instead preferred working on films, as these had 'established'

models for multiple authorship. Similarly, Joseph Nechvatal presented 'digital artists' as working within the context of 'historical precedent':

> I think when someone is audacious enough to call themselves an artist … you put yourself in the context of all the artists that have come before and have come after and that are contemporary with you, so you have already conceptualised your activity […]

This empirical study, therefore, encompasses interviewees whose channels of work differ significantly from those engaged in making digital 'manuals' for use by online communities (interviewed by Kheria and Travlou), or musicians at the PhD stage (interviewed, amongst others, by Born). This suggests that the challenges to authorship may stem from the objectives of particular practices, informed by their context (e.g. online community resource as opposed to art gallery display), rather that the use of digital technology *per se*. Indeed this may go some way to explaining why a number of the 'digital' case studies explored in this chapter (e.g. Case Studies 3 and 4), evidence greater affinity with the hierarchical divisions between contributors described by Jostein Gripsrud in his empirical study of the 'analogue' practices of theatre (in this volume), than with each other. As well as indicating the variety of digital practice, placing the current study in the context of others, may therefore lead us to a more nuanced analysis of the challenges currently facing authorship.

Notes

1.   This is, of course, not a new challenge. See, for example, the nineteenth century case of *Nottage v. Jackson* (1882-83) concerning authorship of a portrait photograph: 'The idea of photographing the Australian Cricketers no doubt was the idea of one of [the photographic firm's] managers. The man who went to the Oval was the man who took the photograph. They said, 'Go to the Oval and photograph the Australian Cricketers,' and he had to do it. Well, he goes to the Oval. What had he to do? He had to arrange the group, to put them in the right position and the right focus. But he does not do it all, because I suppose there is another man who gets the plate ready; and there is another man who, when the thing is ready, takes the cap off. It is difficult to say who is the author of the photograph.' (Per Brett M.R. at 632).

2.   Similar observations were expressed by Georgina Born in a paper entitled 'Composer and Work Revised: Ontological Politics in Digital Art Music' at the conference Music and Digitisation held at Oxford University in January

2013. In the context of qualitative empirical interviews with 'musicians' who use digital technology, Born presented, amongst other things, the views of a new generation who saw themselves as 'researchers' rather than 'authors', with the consequence of a weakening of the exclusion or 'boundary making' denoted by 'authorship'.

3. Aspects of this paper were presented twice at the University of Amsterdam: in December 2011, at the HERA workshop *Trends in Authorship: Empirical Studies and Legal Implications* and in April 2013, at the HERA conference *Creativity That Counts*. I thank Lionel Bently, Paul Heald, Martin Kretschmer and Charlotte Waelde for their comments.

4. The general structure of each interview was as follows: the interviewees were first asked to introduce their work and how they use digital technology. Following this, interviewees were asked to give an example of a recent work and talk through how it was made, who was involved, whether it had an 'author' and if so the justifications for why 'authorship' was conferred on some contributors but not others. The interviewees were also asked whether they considered their work to be their 'property' and about how they had felt/would feel when/if their work was copied without their consent. In relation to the latter, the interview explored the different factors that impacted on how they felt, in particular whether or not they were attributed and whether the copying was exact or modified.

5. The names were verified as genuine by Simon Biggs of Edinburgh College of Art, the Project Leader of the ELMCIP project, a HERA funded sister project to Of Authorship and Originality. No claim is made that the sample is representative of all creative practice in the digital arts. However, it was considered by Simon Biggs as providing a good spread of examples. I was also grateful to Nicholas Lambert of Birkbeck College, London and Bronac Ferran of the Royal College of Art, London for early discussions regarding project design. The full list of interviewees is as follows: Philippe Bootz, Donna Cox, Marc Downie (of the OpenEnded Group), David Em, Ken Feingold, Herbert Franke, Loss Pequeño Glazier, Lynn Hershman Leeson, Miltos Manetas, Michael Mandiberg, Joseph Nechvatal, Jason Nelson, Casey Reas, Don Ritter, Lillian Schwartz and Alan Sondheim. The interviews took place in August 2011. A second round of interviews was conducted in August/September 2012 with interviewees whose work today frequently involves the contributions of others: Donna Cox, Marc Downie (of the OpenEnded Group), Ken Feingold, Lynn Hershman Leeson, Miltos Manetas and Joseph Nechvatal. Philosopher Laura Biron participated in the second round of interviews, asking a separate line of questions about the interviewees' views on 'relational' theory concepts, which relate to the subject of a separate paper.

6. Lillian Schwartz joined Bell Labs, the research and development arm of AT&T in the late 1960s, where she worked closely with a number of computer scientists such as Kenneth Knowlton. See further Schwartz, 1992.

7.   Jet Propulsion Lab, Pasadena, USA, specialised in the creation of visuali-
     sations from data collected by NASA missions. David Em was 'artist in
     residence' from 1977 to 1984.

8.   Herbert Franke was based at the Academy of Fine Arts, Munich from 1973-
     1997, and is author of one of the earliest books on the subject of 'computer
     art', which was published in 1971 under the title *Computergraphik – Com-
     puterkunst* (Franke, 1971). Speaking through his translator Franke explained:
     '[collaboration] was in former times very usual. Because all these machines
     that he was using in former times were not accessible to him without
     collaboration. Always a scientist or a programmer is, in early times where
     you haven't had a PC at home, where he had to go in laboratories, to the
     industry, in new research centres, and he asked, "is it possible to get your
     instruments to do some artistic work with those instruments?", instru-
     ments which had a totally different purposes, for medicine for instance. So
     scientific research tools... in the medical field, or big computers for space
     flight and so on, and he got there and got the possibility to work there at
     night for instance, he had to find somebody there who would be interested
     in working with him together, and with those guys together he did work. It's
     changed in the last twenty or thirty years.'

9.   The website of the Electronic Poetry Center can be found at: http://epc.buf-
     falo.edu/. See further Pequeño Glazier (2002).

10. See Petry (2011), who traces this practice back to the work of Marcel Du-
     champ, who in 1917 famously submitted a mass produced porcelain urinal
     signed 'R. Mutt' for exhibition at the Society of Independent Artists in New
     York.

11. Donna Cox is also Professor of Art and Design at the University of Illinois
     Urbana-Champaign (UIUC).

12. For a detailed exploration of these differences see Abrams (1971).

13. In the USA, the 'scientific visualisations' will be copyright subject matter, as
     audiovisual works (S.101 US Copyright Code defines 'audiovisual work' as a
     'series of related images which are intrinsically intended to be shown by the
     use of machines or devices such as projectors, viewers or electronic equip-
     ment...'). The statutory definition of 'joint work' is contained in s.101 of the
     US Code: 'a work prepared by two or more authors with the intention that
     their contributions be merged into inseparable or interdependent parts of
     a unitary whole.' Amongst other things, the US doctrine of 'joint works' re-
     quires that each co-author's contribution is 'independently copyrightable',
     such that it amounts to an 'original expression that could stand on its own
     as subject matter of copyright'. See *Erickson v. Trinity Theatre* (1994, para.
     46). In this way, for example, if the computer scientists contribution to the
     'audiovisual work' is merely to facts and ideas (e.g. to background research
     or to technical facts regarding the scientific principles which the still/mov-
     ing images illustrate), they may not be co-authors as a matter of law. This is
     illustrated by the facts of *Childress v. Taylor* (1991) where it was held insuf-

ficient for joint authorship of a play to merely contribute facts and details about the play's leading character. Further, following the Ninth Circuit District Court decision in *Aalmuhammed v. Lee* (2000), co-authorship doctrine in the case of audiovisual works focuses on the question of 'creative control' and it might well be held that this rests with the 'artistic decisions' of Pattison and Cox, and not the 'computer scientists'.

14. When explained that the legal doctrine of co-authorship includes a requirement of 'intention', Cox responded: 'No I had never heard of that… The reason why I talk about intention is because in my art history, when I was taking classes at Madison, intention in the books that I'd read, was the definition that really changed artists in the 1970s. It was why certain artists could put stripes on trains and call it art… And it is my understanding that these conceptual artists that would do these large projects, or… have piles of dirt inside an art museum, it was their intention, their intention to contextualise, or Marcel Duchamp, it was his intention to contextualise the urinal or a bicycle to make it art. That's where I got that.'

15. Other comments made by Cox during the interview, illustrating this tying of co-authorship/co-creator status to copyright ownership are as follows: 'I co-author with my group and I share all the royalties with my group'. The 'final images of that work are co-owned by the company with whom we are contracting and the University of Illinois, and with myself and members of my group who are the primary creators because we create the visualisations from the numerical data.…'

16. Cf. Cox's critique of treating 'technologists as technicians' above.

17. This is explored in detail by another member of the OEG, Paul Kaiser in Kaiser (2004): 'you also collaborate with your materials, onto which you do not simply impose your vision, but rather discover it there… The responsive and even intelligent quality of our "material" (ie, the program itself) deepened my sense of tools and materials as active collaborating agents. Who can doubt that this sort of man/machine collaboration will only intensify in the future?'

18. Also on the comparison with the film director, Feingold explained: '… in the sense that we talk about it in art, in a way again I use the analogy of a film, people have roles, and who would call the film theirs, generally the director.… yes there are a lot of people that worked on it, but you would say that this is a new film by so and so, Jean Luc Godard has made this film. We know that he had camera people, lighting people, sound people, make up, costume, sets you know people who were moving the equipment around and who drove the trucks to bring it from one location to another. People who made the food you know, people who edited it, people who made the copies and who distributed it, but still we say this is a film by Jean Luc Godard.' Another analogy that Feingold used is with the position of a writer of a literary work, who may rely on the skill of those with knowledge of type-setting, yet will still be accepted as the author of the book: 'the analogy I might

use is if you are going to do an old fashioned book, where you have to take it to a printing-press, and you needed someone to set the type. So they might suggest using Baskerville instead of Times New Roman for the book because it is going to read better or because the ink sits in the paper better, or they might suggest a certain binding or page size or something like that. And you would rely on their experience and their ingenuity to present you with choices and I like making choices, I like it when someone would say "we could do it like this or like that", and then I'd say "oh, that's good, what about doing it like that?" And then they'd say "oh I can do it like this" or "I can't do that", and if it wasn't possible we would come up with a solution.'

19. This is most likely a reference to the fourth 'fair use' factor set out in Section 107 US Copyright Code, which requires the court to consider, amongst other things, 'the effect of the use upon the potential market for or value of the copyrighted work.'

20. See also Popper, 2007, p. 1, after terming developments in the relationship between 'art' and 'technology' as giving rise to 'virtual art': 'virtual art represents a new departure – new in its... emphasis on interactivity, its philosophical attitude toward the real and the virtual, and its multisensorial outlook.'

21. In 2010 Hersmann Leeson received a 'ddaa' lifetime achievement award from the Museum of Digital Arts, Berlin.

22. To quote the example that Glazier gives: 'Jane is stuck in the woods, should she go in the direction of that rock or follow that frog, and then you click on it.'

23. Martha Woodmansee commented, at the advent of the internet, as follows: 'More significant... however is that hypertext can be interactive; and when the reader begins actively to intervene in the text, adding to, subtracting from, and modifying it from his or her keyboard, the boundaries between author and reader disintegrate.... By contributing... the reader becomes an overt collaborator...' (Woodmansee, 1994, p. 26). Cf. in particular to Nechvatal, quoted above.

24. The passage continues: 'A main thread in your new book, and the reason that you stress the biographical details of the artists, I believe, is your desire to show how technology is – or can be – humanized through art.'

25. Ricketson was considering the implications for authorship of the expansion of copyright subject matter to include 'computer programs' as a category of 'literary work' as well as the UK's protection of 'computer generated works' (defined under by s.178 of the Copyright Designs and Patents Act 1988 as works for which there is 'no human author'). He presented this as a challenge of the 'machine age' and stemming from 'a fundamental dispute about the nature and meaning of the concept of authorship.' (Ricketson, 1991-2, p.1 and 2). For a discussion of how the computer programmer was presented in the interviews and how this compares to copyright concepts of 'authorship' of software, see Cooper (2012).

26.	'And you say that you... feel that you have "ownership" over the work, why do you feel that way? Well, because it is a product of my mind and something that I worked hard to produce. It is my labour... I do this work out of interest and passion and it is incorrect and unethical to use the work if I am not consulted or if it's used against how I've chosen to license the work or how I want it to be used. As far as I understand, under copyright law, it is illegal as well.'

27.	Speaking through his translator, Herbert Franke commented as follows: 'does Herbert consider his work to be his property? Yes. It is his work and in this sense it is his property, yes. And what is it that makes him feel that it is his property? Because it is his creational work.... It's his intellectual property.'

28.	Unlike Miltos Manetas (see above), Nelson accepted that these licensing transactions were dependent on copyright.

29.	Another example is Michael Mandiberg. He is well known for his 'appropriation' work www.afterSherrieLevine.com which enables visitors to the site to print off copies of digital photographs which he took of photographs by Walker Evans (1903-1975), as a means of playing with the concept of 'reproduction', explored in the analogue environment by Sherrie Levine. Yet, other aspects of his work fall firmly within the copyright framework through his use of attribution Creative Commons or GPL licences. This is well illustrated by his response to a comment left on his page entitled 'Michael Mandiberg – Three Creative Commons Case Studies' at http://vimeo/6303349 (accessed 19 August 2011) which complained that the problem of 'open source' projects was that others 'use them "word for word"' and then 'credit themselves'. Mandiberg replied by invoking the legal framework: 'but they have to credit you, and keep the code GPL licensed. If they don't they are breaking the contract of the GPL. How you choose to remedy that situation is up for debate (a polite email to their creative director, calling them out publicly, or getting lawyered up)... it is imperative that these covenants are kept. And that requires us to force the issue when someone breaks the covenant.'

References

Books and articles

Abrams, M.H., 1971. *The Mirror and the Lamp: Romantic Theory and the Critical Tradition*. London, New York: Oxford University Press.

Cooper, E., 2012. 'Of People Not Machines: Authorship, Copyright and the Computer Programmer'. In: S. Biggs, 2012. *Electronic Literature as a Model of Creativity and Innovation in Practice: Remediating the Social*, Norway: University of Bergen, pp. 138–141.

European Commission Green Paper on Copyright and Related Rights in the Information Society, COM(95)382 final of 19 July 1995.

Franke, H., 1971. *Computergraphik – Computerkunst*. Munich: Bruckmann.

Kaiser, P., 2004. *On Creative Collaboration*. Available at: <http://openendedgroup.com/writingIndex.html>, accessed summer 2012.

Manetas, M., 2002. *Websites, the Art of Our Times.* Available at: <http://www.manetas.com>, accessed August 2011.

Nechvatal, J. and Popper, F., 2004. 'Origins of Virtualism: An Interview with Frank Popper'. *Art Journal*, 63, pp. 62–77.

Paul, C., 2003. *Digital Art*. London: Thames & Hudson.

Petry, M., 2011. *The Art of Not Making: The New Artist/Artisan Relationship*. New York: Thames & Hudson.

Pequeño Glazier, L., 2002. *Digital Poetics: The Making of E-Poetries*. USA: University of Alabama Press.

Popper, F., 2007. *From Technological to Virtual Art.* Cambridge, Massachusetts and London, England: The MIT Press.

Ricketson, S., 1991–2, 'The 1992 Horace S. Manges Lecture – People or Machines: The Berne Convention and the Changing Concept of Authorship'. *Colum – VLA J.L. & Arts* (16) 1.

Roniger, T., 2012. Interview with Joseph Nechvatal – Part 4. Available at: <http//www.on-verge.org/conversations>, accessed summer 2012.

Schwartz, L., 1992. *The Computer Artist's Handbook: Concepts, Techniques and Applications*. New York, London: Norton.

Sikora, S., n.d. 'Balancing Art and Complexity: Joseph Nechvatal's Computer Virus Project'. Available at: <http://www.eyewithwings.net>, accessed summer 2012.

Stallabrass, J., 2003. *Internet Art: The Online Clash of Culture and Commerce*. London: Tate Publishing.

Woodmansee, M., 1994. 'On the Author Effect: Recovering Collectivity'. In:

M. Woodmansee and P. Jaszi (eds), *The Construction of Authorship: Textual Appropriation in Law and Literature*. USA: Duke University Press, pp. 15–28.

Cases

Aalmuhammed v. Lee 202 F.3d 1227 (9th Cir. 2000)

Campbell v. Acuff-Rose 510 U.S. 569 (US Supreme Court, 1994)

Childress v. Taylor 945 F.2d 500 (2nd Cir. 1991)

Cariou v. Prince 714 F.3d 694 (2d Cir. 2013)

Erickson v. Trinity Theatre 13 F 3d. 1016 (7th Cir. 1994)

Nottage v. Jackson (1882–83) L.R. 11 Q.B.D. 627