

**Julia Peyton-Jones and Hans Ulrich Obrist interviewed
Anthony McCall at his studio in New York, September 2007**

JPJ [Referring to material on the wall] The formulas are so beautiful; they are absolutely incomprehensible to me but utterly compelling.

HUO Who made those formulas?

AM Philip Ording, a mathematician. The formulas, as well as this wall of installation drawings, are part of the preparatory work for the film I'm working on presently. It's called *Leaving*.

JPJ And do you work with the same person or do you have a number of people around you when you are thinking about a new work?

AM I mostly work on my own. But when it comes to the computer scripting I need help, and I work with a couple of different programmers. The mathematician became involved only quite recently – the scripting hit a level of complexity that seemed insurmountable. Before I reach the programming stage, though, I have usually already spent months developing the ideas for the piece. This involves quite a bit of drawing. Then, once I'm ready, I prepare a production score, which describes the work in minute detail. This will usually consist of at least a dozen pages of diagrams, storyboards, description and measurements. I make a guess at each of the specific details – the speed at which a line moves, the amplitude of a wave-form, and so on – but the script that comes back to me from the programmer includes a variable interface, which enables me to change the values on most of the important elements of the piece. So having got the scripted piece back, I can then work in the studio on my own again, projecting the piece and changing its properties until I am satisfied.

JPJ So at what point do the storyboards come in, the storyboards behind you?

AM They came in quite early, during the private process of developing the idea. The drawings on the wall are in sequence with an interval of about five minutes between each step. So they form a kind of three-dimensional storyboard, each drawing being a quick rendering of the projected object. Sometimes my sequential drawings are two-dimensional, just showing what you would see on the screen. The thing is, with my films, I have to constantly go back and forth between two and three dimensions. In order to realise a three-dimensional installation I have to first make a two-dimensional film. And an idea can grow from either end. Sometimes I begin with an idea which is two-dimensional, just based on the movement of a line across a frame and I develop an idea about its progressive growth or change. Sometimes the idea will begin from a three-dimensional idea and I then have to work backwards to the two-dimensional to figure out how to make it. Sometimes it's a spatial idea, like the pieces on the wall with the intersecting beams. But then I will have to unpick the two intersecting beams, look at what they would look like in two dimensions and then work out a storyboard and production score for the two-dimensional, linear development.

HUO And how does it work? What we are seeing here in the studio is, on the one hand, an unrealised public project and on the other this new film. It is a long time since you have made a film. That seems incredible; can you tell us about it?

AM It's actually no different from any of the others. It's not a film in the sense of being on celluloid; it's a digital work. I confess that I have begun to use the word 'film' in a very loose way. By 'film' I just mean 'projected work of art'; I no longer mean 'the medium of film'. I know that this can be misleading but I like the word because it is just so simple, and it also implies that there is an explicit durational structure, which is absent from the word 'installation', for instance.

HUO The thing I was also curious about is that you mentioned formulas and I have a particular interest in equations and formulas. I was wondering what these formulas are that you are starting with? Are they mathematical formulas?

AM Yes, they are mathematical equations. However, I didn't start with them. When I originally develop an idea, I'll usually be imagining some kind of visual form in my mind's eye, which is growing or changing over time. The need for the maths comes later. *Leaving* has a simple enough visual structure. The film installation begins with a complete hollow cone of 'solid light', which over 45 minutes is gradually but systematically eroded until it is reduced to nothing. The cone has a slow rotational movement while a wedge-shaped form gradually invades and consumes it. The edges of the wedge are defined by a straight line, a curved line, and a travelling wave. So from second to second the position of every element and every co-ordinate, changes. There has always been mathematics involved in the scripting of my films; but this piece has proved itself to be unusually complex and, as it turned out, differential calculus was needed to resolve the multiple motions and speeds.

HUO These projects on the wall: one is actually a project for a bridge and the other one is a project for a tunnel. That is something we were interested in when we were thinking about your work: how your work relates to the public spaces it inhabits. We were particularly thinking in terms of ruins and suddenly public space seems to play a big role. Is this something which has always played a role?

AM It's a new thing. Each of those pieces was partly a response to a site. For instance, I was introduced to the Poughkeepsie Railroad Bridge a year and a half or two years ago.

HUO Poughkeepsie where Vassar College is.

AM Exactly. I was introduced to it by the late Diane Shamash, who ran Minetta Brook, which was rather like Artangel in London, in that they produced off-site projects. Minetta Brook tended to focus on sites connected to the Hudson River. Diane invited me to consider coming up with a piece for this disused railway bridge 120 kilometres north of Manhattan on the Hudson.

The bridge has a span of about 900 metres. Initially I did consider creating a repeating series of conical solid-light forms by projecting downwards onto the surface of the water from the underside of the railway tracks. Each of the three-dimensional forms would become visible through the mist rising from the water. But there were many reasons why this wouldn't work and I quickly realised that I had to think about this in a different way. That is when I came up with a durational structure that was based not on video-projected beams but on thousands of LED lights connected to a single computer. By the time I went to look at the Manhattan tunnel, I had already been thinking about sequenced LED lights. This was just as well, because although potentially the tunnel might have become a contained dark space where I could consider creating a 'solid light' installation, public health-and-safety laws made that impossible. The idea I came up with drew on a form of motion that I had first explored in the *You and I, Horizontal* series of films, 2006-07, but in my proposal for this bridge it was to be built from a double grid of LED lights that would line the two walls of the tunnel. Each grid would display a single straight line running the length of the tunnel. The motion of each of the two the lines would resemble that of a floating spar or plank rising and falling and changing angle as the waves passed through it. The two parallel lines stretching up the tunnel would be built from hundreds of single points of light, so the 'lines' would actually look like strings of landing lights at an airport; perhaps they are also reminiscent of the lines suggested by the repeating points of fire in my fire performances [such as the *Landscape for Fire* series, 1972-74].



Landscape for Fire II 1972
Performance view North Weald, London
Silver gelatin print
Photograph: Carolee Schneemann



Crossing 2007
Studies for LED tunnel installation
Wax pencil and ink on photograph

JPJ The grid: that seemed to be so important in your early fire pieces, which had such a particular structure; it seemed the grid was such a dominating pattern or structure, one could say.

AM Yes.

JPJ So was that actually something that really was important, or was it just an impression I got from looking at it?

AM It was central. I used that grid in almost all of the 1970s fire performances. The grid gave an armature to a medium which is very volatile; quite literally, being fire. All the fire pieces were based on measurement and counting: the measurement of space, the measurement of liquids (a given measure of petrol burns for a certain length of time), the number of points that made up the grid, the staggered lighting sequences, the walking speed, and so on. These decisions would create all kinds of controllable changes and configurations within the square armature. But it is hard to escape the grid: after all, the pixels on your computer screen, or the LED lights in my tunnel are, fundamentally, just simple grids.

JPJ I wanted to ask you just one thing. What is the importance of sound in the piece you were just describing and the importance of sound in relation to earlier work? Also did the way that you used sound in earlier works change in the piece that you are making at the moment?

AM I would want to say first that silence is also a sound. I don't consider the films silent at all, the ones that don't apparently have a soundtrack, I mean. They do, but it's provided by the projector, by the murmuring presence of people in the room and by ambient sounds. Soundtracks as such are aggressive: they cover over every real sound with a synthetic replacement. They also enforce mood, which I felt was anathema to the 'solid light' pieces. But the explicit sound element I used in the fire performances in the early 1970s was the foghorn. The foghorn was designed to carry sound over long distances, and I was making landscape pieces. The visual grid of the performance was only 30 square metres, but by using the foghorn I could extend that space by 400 metres in every direction. The foghorns would begin far away and then gradually move in towards the centre of the performance during the duration of the piece. More than 30 years later, I've become interested again in the spatial use of sound and, indeed, in using foghorns. The new single-projector, horizontal solid-light film, *Leaving*, will include a soundtrack based on five pitches of foghorn. To produce it, I am collaborating with the composer David Grubbs. The sound perspective will be similar to those early performances in that, to start with, the sounds will be so far away that they cannot be heard. The full conical form will begin its motion in silence. Gradually, as the foghorns converge on the projected object from all sides, the sounds become louder and louder. At the same time, the projected object is becoming more and more reduced, until eventually there is nothing left to look at. So what is being constructed is a kind of exchange where a sculptural object gives way to a sonic field.

HUO Could you also tell us about the early sound pieces? What are they? They were compared to Max Neuhaus.

AM The early ones were all based on white noise. I only realised them in the studio, in fact, and they exist now as drawings. There was one [*White Noise Installation*, 1972] in which I moved a massive cloud of white noise from one end of the space to the other over and over again. White noise is similar to that dense, indistinct roaring sound you hear if you are inside a waterfall; it's kind of the sum of all audible sounds like white light is the sum of all colours. I was interested in the idea that you could physically move sound like a bundle through a space. The attack at the beginning of the sound would be very loud, like a retort, and burst out of the wall as it were, and then roar through the space and then disappear, getting softer and quieter as it left. A repetitive, spatial movement through a long, empty space. I thought of the white noise works as sculptural events. But in the end it was one of those threads that I didn't continue.

HUO So that's for brainstorming and for you to think about, if it can be activated.

AM I could easily get involved in the ideas again. In fact, strangely enough, yesterday I made some enquiries to see if I could borrow one of the white noise installation drawings for the exhibition, which would become a companion to the drawing of light being projected through air and water.

JPJ How interesting. I wanted to ask you a little bit about the physical impact of sound because earlier you were talking about sound and then started touching your stomach as though it was a visceral reaction that the viewer might have.

AM Yes.

JPJ But also that relates very strongly to the visceral reaction that the viewer has in terms of your works, which are absolutely present on the one hand and on the other hand absent. And that dichotomy is obviously an essential ingredient of the exhibition.

AM It is a paradox of the 'solid light' films that they are tactile and yet, of course, they are not. The difficulty is coming up with a word that describes what happens when you do look at them. Looking is not exactly what you do and you don't exactly touch them either, although you do try. They are all around you; you are incorporated within them. They are slowly moving and mutating, as you watch and move, and change position. You can move right through the walls of light or you can pretend that they're walls and go round them. To me what is interesting about foghorns is that they produce lower pitch sounds and that these sounds resonate in the body in a very different way from the visual forms. The idea in *Leaving* is that you begin with something immense and visual and room-filling, and you end with nothing. It all gradually disappears. And gradually replacing it you have the massing of the foghorns, creating a field of sound which produces a physical sensation in your ears and vibrations inside your body.

HUO Could we move on to talk about the Serpentine exhibition. We thought of structuring the exhibition as follows: in the first part there might be material which has to do with the London years, the performances, *Landscape for Fire* and also a piece called *Earthwork*, 1972. Then there would be a sort of a line followed by the 'solid light' pieces. In the London part there would also be your collective work at that time because you were part of numerous collectives.

AM That sounds very promising.

HUO Can you tell us more about that and about *Earthwork* in particular?

AM *Earthwork* was one of five short performance films that I made in 1972. Only two survive – the other being *Landscape for White Squares*. They were all made at a place called Dial House on the North Weald, which belonged to a group of artists working under the name *Exit*. This was the group who performed almost all of the fire pieces. Later, they became the avant-punk band Crass. Each of the one-and-a-half minute films was based on sequences of simple actions performed for the camera.

HUO What is the relationship between the individual and the collective? We live in a time when there are no more movements and yet you in the 1960s started out in all kinds of different collectives and communes. You mentioned a group called *International Local*, for instance. At the same time it's not that you had a very collaborative practice, because you signed most of the work. What was the relationship between your individual practice and the groups?

AM Yes, there are different orders of collaboration. There are collaborations where the creative efforts of a number of people are focused on realising a project that has been defined by a leading member; then there is collective collaboration where the ideas emerge out of the group. In the mid-1970s I was one of a group of 10 artists – most of them in London – who produced the bi-yearly *Wallpaper* (no relation to the later lifestyle magazine). We started it as a way to get our work out into the world. Each of us was a contributing editor, and each issue would include a piece by five or six of the group. The artists had absolute control over their own pages, so we didn't exercise any editorial control over each other's contributions. So we collaborated to produce the publication but the work within it was our own. A couple of years later (after I had completed the original 'solid light' series), I worked with Sarah Charlesworth and Joseph Kosuth in New York, collaborating on collectively produced projects under the name *International Local*. One of the projects was a large poster for the 1976 Venice Biennale titled *Where are You Standing?* Following that, I worked with an English journalist friend, Andrew Tyndall. Our numerous conversations about cinema led gradually into our making the film *Argument*, 1978. The film was many things, but in part it was a critique of the idea that art practice was apolitical. *Argument* was in turn critiqued by some feminist friends and we went on to form a new group with them which resulted eventually in our making the film *Sigmund Freud's Dora*, 1979, which un-picked Freud's first case-history. For me, collaboration is most productive when the work is allowed to emerge entirely out of the dynamics of the group, which means that the individuals in it may have to leave part of themselves outside the

door. This is often quite difficult but when it works it can be immensely rewarding – and surprising.

HUO Could we see these films?

AM I can show you *Argument*, which is the film that LUX has recently restored and put into distribution.

HUO So we can do this as part of a collaboration with LUX.

AM Absolutely. They were instrumental in restoring it.

JPJ What prompted you to go into making these more discursive films?

AM The seven ‘solid light’ films formed a series that I felt were complete; I was not certain what would come next, and after that I more-or-less followed my nose. I had become increasingly interested in political theory and in narrative, both of which seemed to be outside what I had been doing. The starting place for my friendship with Andrew was my ignorance about Hollywood cinema and his ignorance about avant-garde film. It was a very good starting point.

JPJ Absolutely.

AM He was very interested, for instance, in the discourses around *Screen* magazine, which was applying postmodern theory to the cinema. ‘Cinema’ meaning specifically classical narrative cinema, of course. By contrast, the ideas that I was playing with had more in common with post-minimalism and conceptual art. So the film *Argument* grew out of the meeting of those two starting points. It’s rather appropriate that LUX have put it into distribution with Jean-Luc Godard’s *Letter to Jane* because that was a film that both Andrew and I admired very much when we started to think about our collaboration.

JPJ It was a huge tribute to you, and rightly so. I also wanted to ask a little bit about the 1970s in London; it’s entirely different to the London of today. And I wanted to ask you about the artist community at that time and the fact that you left it to go to New York. What prompted you to leave and also in what way did the culture of London at that time, and does the culture of New York today, impact on your work?

AM That’s a good question. That’s a lot of questions, actually! [Laughs] I had some close friends in London, other artists, in particular Anthony Howell, the poet and performance artist. For some 25 years he ran a group called *The Theatre of Mistakes*.

JPJ He is very well known.

AM And influential, I think. Many younger artists came through *The Theatre of Mistakes* or were taught by him in his time-based studies department at Cardiff Art School. Carolee Schneemann (the American painter and performance artist) and I met in London and lived together there from 1971

onwards. Through her I met people like David Lamelas, Valie Export, Felipe Ehrenburg (founder of the Beau Geste Press), and George Brecht, and I was certainly inspired by her own daring. *Wallpaper* represented a loose network of colleagues and friends: there was Anthony Howell, Susan Bonvin, Amikam Toren, Susan Hiller, Andrew Eden – and others. And actually the group was not just limited to visual art, there were poets and composers as well.

HUO So then the group was doing a magazine together.

AM Yes, we were doing a magazine together. Between 1974 and 1977 we produced seven issues. They were cheaply printed in black-and-white and hand stapled and bound in rather extrovert wallpaper, which would usually be bought from the job lot bin in the local wallpaper shop. It was distributed to friends mostly, and sold at a handful of bookshops.

JPJ It was also quite usual then, in a more modest way than Damien Hirst and Carl Freedman did with their project *Freeze* in 1988, for that kind of communal and very supportive activity to take place in self-organised displays and arenas for criticism.

AM That is true. The London Film-Makers Co-operative was another good example. A loose group of friends and colleagues, many recently out of art school, who were interested in filmmaking and began to work together. The Co-op was based in the old Camden Town dairy, and in retrospect what was so important was that there was film production going on as well as exhibition and distribution. So work was made, printed, screened, argued about, and an aesthetic emerged. Perhaps a number of aesthetics: structural-materialist film, landscape film, expanded cinema, and so on. It was a very productive situation for those who were part of it. The filmmaking culture was at the time a related but parallel universe to that of the art world, though they did overlap at certain moments: for instance, Part III of *A Survey of the Avant-Garde in Britain* at Gallery House (which was just down the road from the Serpentine) consisted entirely of film – John Latham, Peter Gidal, Ian Breakwell, Carolee Schneemann, myself, William Raban and many others. And I also had photographic work in Part II of the same exhibition. Other art places included Art Meeting Place, Camden Art Centre, Garage Art Limited, the ICA. There were others, I'm sure. The commercial galleries that I visited the most in London in the early 1970s were Lisson and Nigel Greenwood.

HUO And when did you leave for New York?

AM I moved to New York in 1973. During the late 1960s and early 1970s much of what I was drawn to seemed to be happening there. For instance, I can still remember the extraordinary Rauschenberg exhibition at the Whitechapel in 1964. A real eye-opener for an 18-year-old: some 30 Combine Paintings and the entire set of Dante Inferno drawings. I still have the small, black-and-white catalogue with its text by John Cage. By the time I'd left art school, I had discovered the Happenings movement. And in the very early 1970s I was encouraged by the conceptualism of Sol le Witt and Mel Bochner.

HUO So was Alan Kaprow a hero?

AM I took Kaprow very seriously. John Cage also. I was taken by what I had read of the work of Yvonne Rainer and Simone Forte at Judson, particularly the idea of the task or the 'conceptual' idea that could generate a work. On an earlier visit to New York, in 1971, I saw Yvonne Rainer's final dance performance – a piece that eventually became the basis for *Lives of Performers*, the first of her series of films. I was awarded a travelling fellowship from the Gulbenkian Foundation at about the same time and Carolee and I sailed together on the SS Canberra without any particular plans – we didn't see it as a move, exactly, just a shift. But I was very pleased to be in New York and immediately set about looking at work and going to see some of the people that interested me. New York in the 1970s was very different from the New York of now. And compared to London, the art world was quite centralised. There were a few vital galleries like Leo Castelli, Sonnabend, Paula Cooper, John Webber and Bykert, but at that time very few of my generation had galleries. So we went to each other's studios and showed in downtown alternative spaces like Artists Space, the Clocktower, Idea Warehouse, or The Kitchen, and in avant-garde film spaces like Millennium Film Workshop and the Collective for Living Cinema. For me that was the 1970s; the sharing of ideas and work completely under the commercial radar.

HUO So who were your friends then, who were the people you would hang out with in New York in the 1970s?

AM My closest friend was Bruce Wolmer, who was a wonderful friend to have, an intellectual who had grown up in New York and knew the ins-and-outs of both the downtown poetry scene and the art world. We went around together a lot and talked about almost everything. He later became the editor of art magazines like *Art & Auction*. Others that I used to see around a lot included Lynne Tillman the writer, the Fluxus artist Larry Miller, the filmmakers around the Collective for Living Cinema like Renee Shafransky and Ken Ross. I must have first met Richard Serra and Joan Jonas around this time, also Fred Sandback and Mel Bochner. Betsy Sussler arrived in New York at about the same time as I did – she later founded the arts quarterly, *Bomb*. And I would see Paul Sharits when he came down from Buffalo.

JPJ And you had a studio at that time?

AM Carolee and I shared her original studio on 29th Street, which she had sublet during her years in London, and then around 1976 I got my own studio – the very one we are sitting in here.

JPJ Really? Fantastic!

HUO Moving about New York also coincides with your inventions, one could say. Something that is interesting if one looks at *Line Describing a Cone*, 1973, is that it's like when a scientist makes a major invention. I was wondering how this invention happened?

AM It was a transatlantic invention in that I had been thinking about these ideas for a good year before I came to New York, but I conceived and made the film here. When I started making art I started with performance. Performance always raises the question of documentation and ,indeed, very early on in the *Fire* performances I decided to make a film of one of them. I wasn't a filmmaker, so I set about learning how to do it. *Landscape for Fire*, 1972, was more-or-less my first film, and by the time I finished it I had learnt to cut and to edit. I felt very comfortable with the medium. When I began to show the film I was struck by the paradox of showing a record of something that was not, for me, the primary event. The primary event was the performance, which was now in the past. So the question I began to ask was something like, 'if you were to make a film that was only a film, what would it look like?' *Only* meaning that it did not refer to a past time and a past place, but only existed at the moment it was being watched, at the moment of projection. My answer to that question was *Line Describing a Cone*, a film that required the spectator to turn their backs on the screen and to watch the coming-into-being of a conical plane of light in three-dimensional space. But having made it, I was unprepared for two things that seemed to come with the new territory. One was that in backing away from cinema I had backed into sculptural space. The other was the fact that part of what the spectator looked at now was other spectators. In this sense, it was also a kind of performance space. But the issue that I explicitly went on to address was how duration – the length of a work – constructed, or deconstructed the formation of an 'audience'.

HUO You mean like in *Long Film for Four Projectors*, 1974 and *Long Film for Ambient Light*, 1975?

AM Exactly. But I was also exploring related ideas in the fire performances, and it was with one of these that I first tested some limits. Most of them lasted about one to two hours, which meant that the whole performance was witnessed by an assembled audience (albeit a small one), watching together. Many of the performances were based on a 36-point grid which was surrounded by open space. But with *Fire Cycles III*, 1974, I reduced the grid from a 36-point square to a 9-point square while simultaneously expanding the scale dramatically. The grid went from occupying a 30 by 30 metre space within the landscape, to being indistinguishable from the entire available space – perhaps 100 by 100 metres. So the spectator was incorporated within this very open and very spare grid. Then I extended the duration to 13-and-a-half hours – from dawn until dusk – which meant that now, instead of an assembled audience, visitors chose when they would come and how long to stay. So the spectator was surrounded, both spatially and durationally. *Fire Cycles III* was realized in Oxford in June 1973 and within a month I was back in New York working out related ideas for *Long Film for Four Projectors*.

JPJ It's interesting that you don't mention sculpture, drawing or painting in your description. One of the artists that occurs to me from that time is Al Held, for example: a painter who really pushed that description of the plane, really hard. I wondered about the degree to which there was any

relationship between your work and hard-edged abstraction; whether they were part of your group or whether it was a very different sort of discussion in a very different dynamic.

AM It was quite different I think. For instance, in the early 1970s I was impressed by the work of Robert Ryman and Robert Mangold, but their work never seemed particularly relevant to what I was doing. The work of Mel Bochner or Sol Le Witt, on the other hand, did. Their centre-of-gravity was quite different. You might say that for the former the surface of the work was everything. For Bochner and Le Witt the generating *idea* was primary. Drawing is another matter: I consider drawing to belong to all the arts, and everyone uses it differently. In my case, I mostly use drawing to think through durational structure, so my drawing style is based far more on the story-board, the flow-chart, the diagram, or the musical score than it is on fine art draughtsmanship.

JPJ My question stems really from the division of the picture plane and for that reason, and perhaps because my own history is in painting, and also of that period, too, it occurs to me as something much more present – even though I fully accept that for you it was something on the margins – on the periphery.

AM I suppose that I was pursuing a set of ideas about film, performance and duration, and that those ideas were ones I had to work out on my own. I was fortunate that in Anthony Howell I had a friend with whom I was able to talk everything through. We had overlapping interests and despite the fact that he was based in London and I was based in New York we saw enough of each other to maintain an ongoing dialogue and exchange. In his writing at the time he was experimenting with permutation, which, as I recall, came out of his interest in Gertrude Stein. I began to play with it myself as a way to solve the problem of maintaining formal consistency within radically extended time-structures. In fact, the spatial and temporal structure of both *Fire Cycles III* and *Long Film for Four Projectors* is based on exhaustive permutation.

HUO So that is a link to literature and I was wondering if it was a link to architecture because your work obviously has a lot of repercussions in the world of architecture. Looking at photographs of your installations one often thinks of architectural, almost utopian, drawings also. What is the link to architecture?

AM There is a way perhaps that the ‘solid light’ films create a plausible spatial experience that may remind the visitor of architectural space. The planes of light define and enclose quite large volumes that ask to be occupied. But at the same time these spaces are impossible, purely imaginary: you may be incorporated within them but then you find that while you are there, they are very gradually advancing or contracting or altering their shape entirely.

HUO Architecture brings to mind the whole unrealised dimension as well.

AM In the way that architects make drawings rather than build buildings?

HUO Or that the drawings produce reality sometimes, yes.

AM The idea of drawing as a script or a score, a set of thoughts that can generate performances or objects is very interesting. It's an idea that perhaps I do share with both architects and musicians. The fire performances all began as scores – some of these are in the exhibition. The notation is very precise, specifying both the spatial shape of the pieces as well as their temporal structure. The films are also based on scores, or in fact, a relay of scores. Before my programmer can write the computer script for one of the films, I must draw up the form in every detail: the lines, the transitions they undergo, the temporal shape of the transitions, the specific algorithms that control the structure, and so on. That is score number one. Then, in turn, the programmer reads that score and writes the computer script: that is score number two. Then the computer reads the script (in real time, actually, at the moment of projection) and produces the drawing; then the projector takes the drawing and projects it through mist, which produces the object.

HUO And is drawing for you a daily practice?

AM Drawing is a daily practice. Small drawing is, anyway: sketches, diagrams, notes, that sort of thing. Formal drawing I do less often.

JPJ Just to get back to the architecture discussion: work is defining space and that is one of the principles of architecture. The space confounds the visitor to begin with: one is not clear about what space one is in.

AM Yes, the forms operate on rules which they only gradually disclose.

JPJ And also that you are creating something which is both present and absent and there is a dichotomy about that, on the one hand, with the smoke and how that articulates shape. But also running in parallel is the result of the beam of light in terms of the projection. So it seems to me there are counter opposites about what is and what isn't there and the tremendous play with these ideas

AM Yes.

JPJ I'm thinking also about the idea of 'taking a line for a walk', [Paul Klee], and this seems to me what you are doing in a time-based way and, of course, in a cinematic way. Although the hand is apparently absent, there is a very strong feeling of the hand being involved in your work. And it is one of the immense strengths of your work that it can resonate so strongly with so many different art forms and so many different intellectual positions.

AM I'm pleased that you recognise the presence of the hand. Digital production is often accused of being colourless and mathematical, lacking the presence of the hand. And if you compare the quality of the projected line in *Line Describing a Cone*, 1973, which was made on film, and the quality of the projected line in *You and I, Horizontal III*, 2007, you

will indeed notice a difference. In the former the line is of uneven thickness, it shakes a bit, and at the point where the line is supposed to be continuous, there is a break. The latter, by comparison, has lines of consistent thickness and the unfolding of the forms is continuous and fluid. But, nevertheless, I would maintain that the digital is closer to the hand because at every moment of production you can review the piece in every detail, and modify whatever part of it you wish. With conventional animation, it was a question of taking a deep breath and entering the long and arduous process of animation, only discovering whether or not you had made technical mistakes or made the wrong aesthetic decisions after the entire project was completed. Digital production is rather like the process of drawing with a pencil: every mark is provisional and easily altered, right up to the moment until you declare it finished.

HUO It's most fascinating because you bring in the whole digital dimension. One of the things I was wondering, also, is this fact that there is a break. It is similar to Hans-Peter Feldman in Germany, for example, who did a lot of art in the 1960s and 1970s and then in the 1980s he said, 'No more', then came back in the 1990s. With you there is also a parallel reality because you started to do a lot of graphic design. You designed about two or three hundred books. Your work as a graphic designer coincided with a moment when graphic design used the computer much earlier than the art world used it.

AM Yes.

HUO Maybe that's also somehow related. So I wanted to ask you a bit about that, because I couldn't find anything in your interviews about your period as a graphic designer and how that relates or doesn't relate to your work. Is it a parallel reality?

AM [Pause] It's hard to talk about, because for me they were just two completely different worlds. There was a time in the 1980s when people would assume there were two Anthony McCalls. [Laughs]

HUO Like two personae.

AM Indeed. In fact it was quite hard for me to imagine they were the same person. I didn't make a decision to abandon art and go into graphic design. I originally began doing it because I couldn't support myself doing avant-garde film, and then it gradually took over. In the end I did effectively turn my back on the making of art for 20 years. Of course, it didn't come out of nowhere. I had studied graphic design at Ravensbourne [College of Art] in the mid-1960s. It was a quasi-Bauhaus department teaching what these days would probably be called Information Design. I learnt some important things like how to use a camera and lenses, how to print and manipulate photographic images. And typography is as good a way as any other to learn about the grid; as the typographer Anthony Froshaug once put it: typography is a grid. But as an artist I am self-taught and I didn't really begin making art until 1971 or 1972, so that was three or four years after I left art school.

HUO Maybe just to finish on the subject of graphic design: of all of your 300 books, what is your favourite book? Is there one catalogue or one book you designed where you felt you extended boundaries?

AM There are a couple of books that I particularly liked, but I make no special claims for them. One was published in 1990 by the Whitney Museum, and is still in print: *The New Sculpture 1965-75*. Pre-Mac, of course, so the 360 pages were produced on a drawing board with T-square, set-square and rubber cement. Then there was a book made for LA MoCA in 1998: *Richard Serra Sculpture 1985-1998*. That was one of the few books where I was credited as one of the co-editors, a role that I often performed but that was usually unacknowledged. That was more or less the last book I produced before I stopped and returned to making art.

HUO Thank you very much. That was a great interview.