

Origins of Virtualism: An Interview with Frank Popper
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Conducted by Joseph Nechvatal

Joseph Nechvatal: Frank, you are, without doubt, a scarcity. Anyone who looks at the historical record of the juncture of art and technology finds you nearly unaccompanied when it comes to documenting this historical record between the years of the late-1960's up to the early 1990s. Basically there is you, Jack Burnham's book *Beyond Modern Sculpture* (1968), and Gene Youngblood's reference work *Expanded Cinema* (1970). Specifically, your books *Origins and Development of Kinetic Art* (1968), *Art, Action and Participation* (1975) and *Art of the Electronic Age* (1993) are indispensable research tools in helping us figure out how art got to where it is today - in your terms virtualized. This astonishes me in that technological-informational change is consistently cited as the splintering element which instigated mainstream modernism mutating into what has been called, for lack of a better term, postmodernism. Can you tell me why you first committed your attention as an art historian to this subject of art and technology when most historical and curatorial minds were focused elsewhere?

Frank Popper: One of the main reasons for my interest early on in the art and technology relationship was that during my studies of movement and light in art I was struck by the technical components in this art. Contrary to most, if not all, specialists in the field who put the stress on purely plastic issues and in the first place on the constructivist tradition, I was convinced that the technical and technological elements played a decisive part in this art. One almost paradoxical experience was my encounter with the kinetic artist and author of the book *Constructivism*, George Rickey, and my discovery of the most subtle technical movements in his mobile sculptures. But what seemed to me still more decisive for my option towards the art and technology problematic was the encounter in the early 1950s with artists like Nicholas Schöffer and Frank Malina whose works were based on some first hand or second hand scientific knowledge and who effectively or symbolically employed contemporary technological elements that gave their works a prospective cultural meaning. The same sentiment prevailed in me when I encountered similar artistic endeavors from the 1950s onwards in the works of Piotr Kowalski, Roy Ascott and many others which confirmed me in the aesthetic option I had taken, particularly when I discovered that this option was not antinomic (contradictory) to another aspect of the creative works of the time, i.e. spectator participation.

JN: What drew you to a study of movement and light in art?

FP: As I mentioned in my book *Réflexions sur l'exil, l'art et l'Europe*, in 1960-61 I was working on a doctoral dissertation at the Sorbonne entitled "*Autonomie et correspondance des arts selon Marcel Proust*". But then I saw a large Robert Delaunay exhibition and fully appreciated the dynamic qualities of his paintings. Simultaneously I met several artists, including Nicholas Schöffer and Frank Malina, whose works were founded on virtual and real movement - as well as on artificial or natural light. I was so impressed by their aesthetic, culturally topical, technical and spectacular qualities that I decided to change my dissertation subject to "*L'image du mouvement dans les arts plastiques depuis 1860*". At the same moment

I was also asked by the UNESCO Courier to write an article on the subject of "Light and Movement in Art". The results of the research undertaken by me at that moment confirmed my attraction towards movement and light, which I feel led me quite logically to the publications that followed.

JN: What were your interests prior to the Sorbonne that led you there? How did world events impact on your choices, for example?

FP: I don't think I can even succinctly enumerate all the personal and historic events that preceded my coming to Paris. As you know, I have tried to cover some of them in my Reflections book. What I can try is to single out one or two events and options that have perhaps a bearing on the subjects treated in my present book. On the personal front, I could mention my unusual initiation into research at a very early age at an experimental primary school in Vienna. My training and experience as a textile engineer there and in the Sudetenland may have had some influence on my later itinerary. But it was mainly my thirst for wide-open spaces - England and its dominions which, at the time, had privileged places for the research profession that attracted me. That thirst could have had an impact on my inquiry. Also, before joining the Royal Air Force as a wireless operator and technical interpreter, I joined a refugee Czech forestry workers camp in Somerset, England, where I met writers, artists and other intellectuals while at the same time teaching English literature there. Then came a long professional stay in Rome where I frequented the Sapienza University. I was particularly concerned with Etruscology and Italian classical, contemporary and even popular poetry. But then I came to stay in Paris - not only because I was interested in many aspects of French civilization, but simply because my wife, Hella Guth (1908-1992), a surrealist-abstract painter, needed this kind of Parisian environment. So I found myself a much-needed artistic and intellectual stimulant. There is no doubt that behind all these moves there was also a hidden motor made up of world events: the aftermath of the First World War, the advent of the Nazis in Germany, Austria and the Sudetenland, the Second World War and its consequences. But I have the impression that my basic attitude was influenced by the positive side of emigration and exile: a kind of creative nomadism that could be put into relationship with the present day political and cultural situation in which geographical frontiers and intellectual privileges and distinctions are being abolished - thus clearing the way to such all-embracing creations as can be found in virtual art.

JN: The electronic music scene, in retrospect, was small but extremely strong in Paris beginning in the early 1950s when Pierre Schaeffer initiated the famous Groupe de Recherches Musicales (GRM) studio. Indeed the musique concrète experiments of Pierre Schaeffer and Pierre Henry from that time, and Edgard Varèse's purely electronic composition Poem Electronique from 1958, to me, still sounds extremely fresh to the ear. Indeed, I must say that it goes perfectly with many types of visual virtual art. Then too, in the same period there was a creative explosion near Paris at the Westdeutscher Rundfunk radio station in Cologne (WDR), where composers began to create electronic music directly onto magnetic tape. Of course Karlheinz Stockhausen then developed this studio in the early 1960s and did some of his finest work there. This surge in electronic music coincides with your falling under the influence of Nicholas Schöffer and other art-and-technology artists. Did you encounter a cross over of these two groups of artists? Were the electronic audio and the art-and-

notion of consciousness into his research. In that of Fred Forest, we see it when he inserted ludic interactive devices into his critical statements.

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JN: How is art and technology related to each other in the formation of what you are calling in this book an emerging "techno-aesthetic"? With techno-aesthetic virtualism, instead of simple postmodern pluralism, might we be seeing and experiencing a conglomerate connective art aesthetic made up of multiple techniques all of which are shepherding creative applications into a more poetically virtual - and consequently global - context?

FP: In order to explain and illustrate the globalization of virtuality and the emergence of a techno-aesthetic, I will take as example the method followed in constructing this book. Here I have established two leading lines of discussion: the technical and the aesthetic. The technical line, for current virtual art and artists (approximately 1983 to 2003), leads continuously from materialized digital-based work to multimedia on-line works (re: net art), passing through multimedia and multisensorial off-line works into the all-important interactive digital installations. The aesthetic line leads from cognitivetotelematic and telerobotic human issues in a coherent and uninterrupted - but not yet straight line - with a beginning and an end. Thus it touches a good number of extra-aesthetic regions, such as the political, economic, biological and other scientific areas. These areas are always treated with a certain distance and within an aesthetic context - as well as with an aesthetic finality. This explains the globalized open-endedness of virtual works. The choice of the artists for this book - and the order in which they are discussed - has been established through the criterion of predominance of one of the techniques in their work. And of predominance of an aesthetic option which is identified also. The order in which the artists are discussed in each section thus follows these two lines of thought and argument. But the overall consideration for these choices was whether, in the first place, they entered into the category of the humanization of technology through the artistic imagination. It is the combination of these two leading theoretical lines - illustrated by the work and itineraries of these virtual artists - which make up the emerging techno-aesthetic. This aesthetic is fostered by collective research in laboratories or on the internet in connection with a new attitude towards communication which affects the working methods both of artists and theoreticians.

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JN: It is true that for this book you have congregated an astonishing array of artists which span many different generations, tools and practices to say nothing of their disparate intentions. It contains a wealth of information on both relatively well-known artists mixed in with mostly unknown ones. Why so? This mix reminds me of the joy I felt in discovering overlooked artists of the modernist era in your book *Art, Action and Participation*, which I read as a young man. I'm thinking back particularly of the Event-Structure research group. But also it was there that I discovered the Dvizjenije movement in Moscow with its leader Lev Nusberg; work which adapted the cosmic ideas of the Malevich tradition and applied them to art-technology. Do you hope to serve the same function here to make accessible somewhat arcane information which you deem relevant to the emergence of a virtual art from the embryo of technological art?

FP: Yes, you are right. It is certain that I have a weakness for the outsiders and do not like to be only concerned by the favorites. But more generally, I find it would be a pity not to mention the work of lesser-known artists that often show at least one or two specific traits, which give

life and a wider context to an artistic tendency or an aesthetic theme. Even when I organized exhibitions I wanted to include some of these outsiders, although that invited criticism from art historians or gallery owners. For this book my intention was not to accumulate a maximum number of artists and examples, but to create a panoramic, historical and multi-generational view of virtual art in which the overall striking variety of artists would help in the public understanding what I mean by the term Virtual Art.

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JN: I want to briefly come back to something. Is the emergent virtual art that you identify here, for you, a counter-revolution against modernism and postmodernism or not?

FP: I have already mentioned in the conclusion of Art of the Electronic Age that according to the critics of modernism, what I am now calling virtual art can be described as a purist rejection of both stylistic anarchism and historical traditionalism. This is so inasmuch as these critics consider that postmodernism eclectically combines a plurality of preceding artistic styles and revives history and tradition. They maintain that in postmodernism complexity, contradiction and ambiguity are favored over simplicity, purity and rationality. There is no doubt that in the work of some virtual artists many characteristics of either modernism or postmodernism can be found. But generally speaking, in our emerging virtual era the stress is no longer put on questions relating to style, purism or historical tradition. If complexity and ambiguity are not shunned, scientific rationality is equally admitted. In fact, the emphasis in virtualism lies now on techno-aesthetic issues that are linked to such notions as cognition, synaesthesia, and sensory immersion. But also this aesthetic pivots on individual, social, environmental and scientific options towards interactivity, neo-communication, as well as on telematic and/or telerobotic commitments. One could conclude provisionally that the status of the artist is somehow lost in these multiple commitments. Yet I feel that the specificity of the virtual artist is nevertheless maintained through the overall techno-aesthetic finality he or she pursues and by the very distance maintained towards the areas when explored humanistically. Thus an all-embracing virtuality in art is not really a counter-revolution against modernism and post-modernism, but widens considerably the spectrum of investigation open to the artist-conceptor.

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JN: Then is the challenge for virtualism now to chart a course between an idolatry of the new while avoiding a tyranny of the same?

FP: You are quite right in raising the problem of innovation with regard to virtualism. What is new in virtualism is precisely its virtuality, its potentiality and above all its openness. As regards virtual art, this openness is being exercised both from the point of view of the artists and their creativity and from that of the follow-up users in their reciprocating actions. Here again the point is that this openness implies a certain amount of liberty and freedom for action and creation but not at all to radically destroy what happened before. This open-ended virtual state corresponds to my mind both to the individual's and the society's needs to come to terms with the flux and the virtual dynamism that characterizes our present situation.

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JN: What part does the history of cinema, video, and recorded sound play in the technological to virtual trajectory?

FP: I am not dealing in this book with the large fields of video, cinema and electronic music except for some cursory allusions to them in the text and some references in the bibliography. These areas are closely related to the emergence of virtual art from technological art, of course, but have always been autonomous - or at least have become so in the 1990s. One can thus consider them as being off the main investigative track of my book. Here I set out to find a satisfying definition of the changes that occurred in art through its confrontation with digital technology by looking at artists who are considered primarily as coming from - or working in - the fine arts area.

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JN: What role did Marcel Duchamp play in your thinking?

FP: Before appreciating fully the contribution of Marcel Duchamp which he made to the development of a totally revised vision of contemporary art, I was mainly concerned with his treatment of virtual and real movement leading from the Nude Descending a Stair-Case to his Rotative Demi-Spheres. But I appreciated also very early on his second characteristic contribution which originated in his Dadaist attitude; the ironical and revolutionary spirit which leads straight to Tinguely, and nowadays to Ken Goldberg and others. I only began to appreciate gradually the third main trait of Duchamp's pioneering spirit; the one that influenced many of the "conceptual" artists and which is still discernable today in the work of artists practicing virtuality. But what also seems to me important in this context is the punning spirit that dominates one side of Duchamp's work, as well as Man Ray's undertakings.

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JN: Was your thinking also shaped by your exposure to Op Art in the early-1960s? It seems a natural predecessor to Virtual Art in that Op Art called attention to the spectator's individual, constructive, and changing perceptions - and thus called upon the attitude of the spectator to transfer the creative act increasingly upon him or herself. It seems to me that Op beckons forth a consideration of the enlargement of the audience's normal participation; both in regard to the spectators ocular aptitude to instigate variations in the perceived optic, as well as his or her capability to produce kinetic and aggregate exchanges on or within the work of art itself. Did your encounters here in Paris with the GRAV group, Carlos Cruz-Diez, Yaacov Agam, Jesus-Rafael Soto and, of course, Victor Vasarely have an impact? I ask in that what I find interesting in your thesis here is that even within modernism we can begin to find the rare seeds which grew into what you are calling Virtual Art. Is that your intention, to reveal these seeds?

FP: I certainly was aware of the possibilities of an enlarged perception and cognition in the public which was solicited by the members of the Nouvelle Tendance and other Op artists, including those specifically concerned with programmed and permutational art. Their activities formed not only a basis for the development of spectator participation into a still more global interactivity in the virtual era, but included also such plastic phenomena as virtual movement, virtual vibration, virtual light and virtual colors, both "musical" and environmental. This is clearly discernible already in the work of Victor Vasarely, Yaacov Agam, Carlos Cruz-Diez, Jesus-Rafael Soto and the GRAV group.

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JN: In your seminal book Art, Action and Participation you contend that we must make a basic distinction between science and technology. For you, science, in its comprehensive sense, is the exact and rational knowledge of specific phenomena. Technology, on the other hand, is generally considered to be the application of science on the industrial level and originally on the pre-industrial level of arts and crafts. People, for example, Jacques Derrida, now speak of a technoscience where that distinction is blurred. Do you still hold to your original contention or have things shifted in this respect through cybernetic virtuality.

FP: As a matter of fact, in 1993 I wanted to give Technoscience Art as the main title of my book and Art of the Electronic Age only as a sub-title. The British publishers turned the main title down after consulting their American representative who thought the term to be already out of date. At the time and at present my idea was and is still that there is little difference between Science and its application in Technology, between Theory and Practice in general, and that this amalgamation is clearly visible in the work of the practitioners of cybernetic virtuality as well as in the presentation of their works in public spaces or on the internet.

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JN: Also in Art, Action and Participation you showed the convergence and specificity of the notions of environment and creative participation which combined to form a principal direction of art research in the theoretical and practical domains. Do you still feel that art is best when it involves all the senses because it is more conducive to the more complete involvement of the spectator?

FP: As regards the multimedia and multisensorial off-line works and the interactive digital installations described in chapters 4 and 5 of this book, I am still convinced that the complete sensorial involvement of the spectator is an advantage. However, this is less the case in the multimedia on-line works of chapter 6 and still less, of course, in the materialized digital-based works of chapter 3. In the former it seems to me that the conceptual involvement outweighs the sensorial one and that in the latter visual cognition issues largely dominate.

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JN: I would now like to ask you three rather large, but I think critical, questions which concern people in respect to the idea of virtual art flowing out of technological art. How does virtual art relate to truth? The epistemological question. How does virtual art relate to being? The ontological question. And finally, how does the virtualization of art relate to the other? The ethical question ... particularly important in light of abundant globalization - if one interprets globalization as American immanent hegemony rather than some form of a post-colonial technological discourse.

FP: The first part of your question suggests that you are asking if virtual art enlarges the epistemological range of previous art tendencies, such as technological art. The intelligible fact that virtual art encompasses many possibilities of actual art would indicate that a supplement of truth is at stake. Whether we take epistemology in the sense of the study of origins, nature, the limits of human knowledge, or only as a quest for understanding nature

scientifically, Virtual Art tries to make the best of both worlds: the scientific and the philosophical. Consequently, virtualism can be considered as an all-embracing area. We are here in the presence of knowledge that covers a multitude of natural, man-made and/or artificial phenomena, which by its very virtuality and interactive objectives involves us within an embracing aesthetic context. This aesthetic context serves us both on the level of empirical practice of human learning/perception and on the rationalist level by manipulating new theoretical concepts independent from experience. From an ontological point of view, contemporary virtual art represents a new departure from technological art since it can be realized as many different actualities. This can also be a useful way to understand the self in as far as the self is truly virtual: it has many potentialities. Thus the virtual self can be transformed into an actual, living personality as has been observed by John Canny and Eric Paulos in Ken Goldberg (ed.) book *The Robot in the Garden: Telerobotics and Telepresence in the Age of the Internet*, Cambridge, Mass.: MIT Press, 2000 (p.294). We are also here close to Edmond Couchot's interpretation of virtuality and of the virtual as a power opposed to the actual, but whose function, technologically speaking, is a way of being (un mode d'être) of digital simulation which can lead towards a certain expression of the subjectivity of the operator. This ontological tendency of virtual art can be clearly observed in the works of a good number of artists described in this book who have been using telepresence and virtual reality devices in this way. As I see it, virtual art can even play an ethical role in the present development of globalization by stressing more than any other previous art form human factors - both as regards to the artists and the multiple-users of the art. Yes, it could have an impact in a critical and prospective way on globalization. Ultimately (and idealistically) one could imagine that the overall human bias which I identify within this book by example would tip the scales in favor of intelligent, ethical control of nuclear and post-nuclear technologies. In particular armaments which will find themselves, sooner or later, in the hands of many collectivities. This stance in favor of responsible conscientiousness would allow the use of the new technologies and ways of communication to be operated - both economically and culturally - in the interests of all humankind.

JN: As an historian, how do you feel about the so-called disappearance, de-materialization or de-objectification of the artwork? For some, this, and other factors, leads inevitably to the end of art. What happens to art if it is practiced only as an unending, momentary activity? Will the future have any idea of what is going on now if the art which best typifies our electronic era is largely ephemeral and often becomes quickly obsolete technically speaking?

FP: For a long time I was satisfied by considering that the basic aesthetic triangle, the artist, the work of art and the spectator, was developing towards one that interrelated the conceptor, the creative process and the active participant. But I must say that the ephemerality of a good number of works in the electronic era did trouble me. At first, my reaction was that some of these works would share the fate of sculpture, where an original mould is the basis for the "tirage" of any number of "copies" and the question of the "aura" of the original work of art does not even arise. In other words, the registered data of the electronic work of art could survive and allow its reconstruction. Of course, the technical obsolence would hinder it to be more than a museum piece. But what we have to consider essentially is the difference between the historical value and the contemporary value of a work of art in the electronic era. The former can be maintained by the reconstruction of the work from the preserved data while the actual original is lost sooner or later in the vicissitudes of a computer or otherwise. The latter remains in the creative minds of the future conceptors, whose memories are impregnated by these models or by other means - such as descriptions, analyses and

reproductions in books - which allow the new creations to be adapted to contemporary issues and the state of the technology.

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JN: In your books *Origins and Development of Kinetic Art* and *Art, Action and Participation* you show how Kinetic Art played an important part in pioneering the unambiguous use of optical movement and in fashioning links between science, technology and art relating to the notion of the environment. The virtual artists that you assemble here, are they all directly related to movement hence speed? Does stillness regulate art to a pre-virtual status for you?

FP: No. Movement, real or virtual, is no longer a prerequisite for interesting myself in works of art. At present the most attractive criteria for me are, as I have perhaps already indicated, the work's openness to reciprocal creative action and their combined aesthetic and technical topicality.

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JN: Tell me about your experience with *Electra* an art exhibition that you curated at the Musée d'Art moderne de la ville de Paris in the early 1980s? How was that experience formative for you?

FP: What was particularly beneficial to me when I conceived and co-directed the *Electra* exhibition was the fact that I coordinated two very different teams: one consisting of the museum staff, and the other made up of teachers and students from my own university; Paris 8. Just as for my previous exhibition *Lumière et Mouvement* at the same museum, here I managed to elaborate a highly technical theme over a reasonable stretch of time - more as if we were in a research laboratory in which organizers, technicians and artists meet regularly and frequently. In the case of *Electra*, the exhibition team and I managed to integrate the different modes of competence into a coherent visual and intellectual make-up. Personally, I had an additional advantage in that I held a weekly university seminar for one year preceding the exhibition and during its run at the auditorium of the museum. In that seminar I developed the different themes with the members of the two teams, but also with some invited specialists who intervened particularly during the sessions that took place during the exhibition. Although I devoted a certain amount of my time and energy to practical matters, I managed to concentrate myself on acquiring a deeper knowledge of the many artistic, technological and scientific parameters involved. This allowed me first to write an Introduction to the catalogue, and later to incorporate some of these findings into my writings.

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JN: I suppose that science-fiction, more so than hard science, has been the leading inspirational force for many virtualizing artists I know. Certainly in my own case that is true. Unquestionably sci-fi engages the imagination in a gripping way at times. Very much so in that sci-fi has a concrete influence on what gets built from time to time like cyberspace. Has science fiction had a bearing on your passion for technology and embryonic virtualism?

FP: Unfortunately my real interest for science-fiction is very recent. This is perhaps surprising because of my frequent mixing with prominent kinetic artists who were influenced by science-fiction - or at least by popular science. They should have incited me already at the time to be more concerned with this subject. I should like to mention, once again in this

context, Nicholas Schöffer. He never failed to relate to me his latest readings or his cinematographic experiences in or close to science-fiction. However, our conversations never made a clear distinction between imaginative science and science-fiction. At a moment when he cooperated with other avant-garde creators - like the composers Pierre Schaeffer, Pierre Henry, Henry Pousseur, choreographers like Maurice Béjart and scenographers like Jacques Polieri - he took interest in the writings of Jacques Ménétrier, the author of *La médecine fonctionnelle* and *De la mesure de soi, un examen de conscience* and in Stéphane Lupasco, author of *L'énergie et la matière psychique*. In addition he was reading Werner Heisenberg and Herbert Marcuse. So it was this kind of imaginative scientific, literary, pluriartistic and philosophical mixture in our conversations that could have had an influence on my passion for technology and embryonic virtualism. I must also say that I had an early preference for popular travel and astronomic fiction like Jules Verne's or James Jeans's. This cannot be compared to the virtual artists' interest in science-fiction literature and films - or a book like *Neuromancer* by William Gibson, however.

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JN: Why did you think that science and technology could act positively as creative stimulants in the early 1960s? My memories of the late 1960s and early 70s involve a rampant back-to-nature aesthetic, at least among the artistic hippie anti-war people whom I associated with. What gave you "faith" in technology as a liberating force?

FP: At a time when artists were engaged in creating happenings, land art and other early ecological statements they were also making ironical and prospective machinistic experimentations. I felt that this combination would be the seed for further developments provided that the goal of all these undertakings was concerned with the liberty of the individual, not only of that of the artists/conceptors but also of that of the culturally-ascending ordinary citizens. It was again the great variety of artists I met at that time, Jean Tinguely, Yaacov Agam, Malina, Schöffer and the members of the GRAV and the Nouvelle Tendance, all of them interested in science and technology developments, who confirmed my belief that this combination of the two types of creation would be conducive for an advent of a new social and cultural climate where this apparent antagonism would disappear.

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JN: 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. It is true that something exciting happens when one looks at a familiar subject not as a closed conceptual system, but to find an opening conceptual edge in this case the increasing humanization of technological virtualism. That is what I have always detected in your work as an art historian and what I see in your expansive research here: that opening edge. I think that this conceptual edge is ever more important today after we have learned that both fundamentalist and modernist reductionist assumptions are not easily changed by mere postmodern negations. What seems to be needed globally are mutating conceptual models to think differently with; connectivist conceptual models that are never just the completed or inverted objectivity of the common conceptions. Does the technological into virtual dialogue you illustrate here offer such a modulating model? What I am asking is: do you think that technology and virtuality can allow us to think differently about our humanness? To think better? To become more human?

FP: In fact, the virtual model I propose has its epistemological, ontological and ethical connotations as we remarked before. But it has also its aesthetic and philosophical "humanist" sides that should allow us to better understand the multiple existential changes that our society and every individual undergo at the present historically accelerated moment. I shall try to explain myself as far as virtuality and as the contribution of virtual art are concerned. As I see it, I am going one step further from what Oliver Grau and Christine Buci-Glucksmann define as the social implication - or the aesthetics - of the virtual. According to Grau, media art, that is, video, computer graphics and animation, Net art, interactive art and its most advanced form of virtual art (with its sub genres of telepresence art and genetic art), is beginning to dominate theories of the image and art. With the advent of new techniques for generating, distributing and presenting images, the computer has transformed the image and now suggests that it is possible to enter it. Thus, it has laid the foundations for virtual reality as a core medium of the emerging information society. Christine Buci-Glucksmann approaches the aesthetics of the virtual through the idea that the development of the new technologies of the virtual has caused a major historic transformation that touches all the artistic practices: the passage from the culture of objects and of stability to a culture of flux and instability. Thus the premises in both art and architecture can be established that lead to an aesthetics of transparency and of fluidities. If I accept and try to incorporate these points of view in my own theoretical approach of virtual art, I do so to take an additional theoretical step by assuming that our wider consciousness which is affected by technological advancement - permits us to better assume both our intellectual and our emotional human status at the beginning of the XXIst century.

JN: Many technophiles believe that technology is making us less and less human and more machinic. Then too there is much talk of post-humanism today. Take two fairly recent books, for example: Katherine Hayles's *How We Became Posthuman* and Robert Pepperell's *The Post-Human Condition*. They both suggest that we already live beyond the state of humanness. Correspondingly, Michael Heim, in his book *Virtual Realism*, has identified a transhuman attitude which consists of artistic and psychological strategies contrived to break through well-worn perceptions. What is it about virtual art that confirms your commitment to humanist values in our age?

FP: I must say that the notion of the human for me is not linked to the classical heroic idea stemming from the Greeks and Romans. Rather, the humanist notion symbolizes for me our basic human needs and personal achievements. This does not preclude this idea from also being connected to wider - even universal issues, of course. Virtual Art enters this current anti-human and post-human dialogue - a context fraught with the most explosive anti-human and post-human dangers - precisely with the intention of humanizing technology by taking into consideration the need for human survival: a survival concerned with biology and freedom. Humans are beings who try to preserve in all circumstances their elementary needs for a certain amount of personal integrity and liberty. A virtual artist's activities can deal with these fundamental issues while preparing a blue-print for some working solutions of both personal and universal dimensions.

JN: When you speak, as you do, of art humanizing technology through the artist's rudimentary human goodness; does that not lead artists and art into politics? Might it lead into what, in her book *Thinking Past Terror*, Susan Buck-Morss calls (and calls for): the global

progressive Left (or, alternatively: the radical cosmopolitan Left)? By this idea of a connected global Left, Ms. Buck-Morss stresses the connectivist aspect of globalization as a communitive humanizing force when theorizing a post-9-11 politics as Hegelian negative dialectics. What role did politics and philosophy play in the construction of your commitment to and one might say obvious delight with - art-technology?

FP: Although it is quite difficult and hazardous to try to reconstruct the elements that make up my present commitment to the art-technology option, I shall attempt to trace these elements first of all from the area of theory but not necessarily only from philosophy - and secondly from action - but not necessarily only from politics. It would be easy for me to quote a myriad of names that could have had an influence on my present commitment, but that would resemble name-dropping without really showing any essential traits. So I will limit myself to indicating some ideas and their authors that come to mind immediately. There is no doubt that Maurice Merleau-Ponty's analysis of perception, Gaston Bachelard's epistemology, and Etienne Souriau's correspondence of the arts (with his analysis of the work of art and his comparing aesthetic method) have had to do with my comprehension of cognitive, multisensorial and interactive elements in technological and virtual art. Also Walter Benjamin's theory of the aura in lieu of reproducibility and Gilles Deleuze's aesthetics of the cinema and his criticism of psychoanalytic concepts played an important role. However, as regards interactivity, I cannot exclude the influence of some psychoanalytical thought on my thinking, particularly that of Sigmund Freud, whose theories cannot be fully appreciated unless they are put into the perspective of a combination of imaginative science, neurophysiology and psychological insight. Of course I was aware of Alfred Adler's individual psychology, Carl Gustav Jung's archetype theories and Jacques Lacan's interpretation and development of Freudian concepts along with Emmanuel Levinas's philosophy of the Other. They all played a formative role in my thinking. But another influence on my commitment to technological and virtual art can be traced to the theories of Umberto Eco and other aestheticians as regards the openness of the work of art - and more recently Eco's consideration of the computer as a spiritual tool. But my basic neo-humanist attitude was originally formed by the thought of philosophers like Nietzsche, Hegel, and Adorno and the literature of Franz Kafka, Jaroslav Hasek, Elias Canetti, Vladimir Nabokoff and Primo Levi. These authors anticipated or described, each one in their own manner, the basic events that made up 20th century tragedy - a tragedy which combined bureaucratic obsession, widespread persecution and outright murder with the misuse of technology. We are now close to the second point I am trying to make regarding politics and action in my ideological make-up, but this time in a more positive perspective. Let me single out the most striking date and event that comes to my mind regarding that period. It is May 1968 here in Paris. May 68 was not really a revolution, nor simply a cultural revolution, but a virtual cultural revolution that was felt as such by many artists and intellectuals, especially cosmopolitan ones. This virtual cultural revolution - with its unheard-of possibilities and opportunities and its effective, real extensions - was anticipated and felt by me deeply and it effectively changed my life and opened up some possibilities for a realization of my cultural ambitions which were very much directed towards a theoretical consideration of the art and technology relationship and its practical application. In fact, I was not the only one to experience this phenomenon. People such as Isidore Isou and the Lettrists also, in their utopian way, were convinced that they had anticipated and even provoked, in many of its details, this cultural upheaval. In any case, this gave me the effective opportunity to enter, still as a foreigner, the teaching staff of the experimental university at Vincennes and I met there, among others, some members of the information department - such as Hervé Huitric and Michel Bret. They later entered the art department which I directed and for which I managed to muster technologically oriented cultural practitioners like Edmond Couchot and Jean-Louis

Boissier people who had already collaborated with me on the exhibition Cinétisme, Spectacle, Environnement at the Maison de la Culture in Grenoble in 1968. These observations regarding 1968 Paris could be transposed into the present world situation and even its future circumstances whose countenance will appear when extreme nationalism and fanatical religious movements make way for a pacific, socially and economically just distribution of technological and cultural achievements. Let me just add that 1968 was also the year when the journal Leonardo came to be and an opportunity was given to me - and to many others - to get acquainted with, and to measure the importance of, theory and action in the art/science/technology field on an international scale.

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JN: But how did politics impact on the early development of the juncture between art and technology, which has led to virtualism? We know of the valiant but failed Soviet Constructivist experiments using the coupling of art/technology/socialism following their revolution. One thinks of Varvara Stepanova's, Aleksandr Rodchenko's and Vladimir Tatlin's art and technology splice which theorized a move away from representation and speculation towards intellectual production based in the actual material conditions of life. But Constructivism declared art irrelevant in a society committed to creativity and the aesthetics of everyday life and then itself became inapplicable and taboo. How do you see the juncture between art and technology and collective social action serving as a humanizing influence today? Does it function as a leftist utopian influence for you?

FP: There is no doubt that the political impact on contemporary art in our time now of world-wide social, economic and intellectual upheavals is as great as at the end of the First World War. However, since the main characteristics of the present situation are now, as I see it, totally different, there is a real necessity to consider the art/technology problem in a completely different light. This means abandoning, as much as possible, used political terms. Of course it is difficult to find entirely new substitutes for such notions as democracy, socialism, capitalism etc. without falling into a 100% utopian attitude. Nevertheless, my experience at the Experimental University at Vincennes - with the clash between anarchists, Maoists, Trotskistes, lined-up communists and traditional socialists on the one side and simple students attempting to understand all the political and cultural implications of their time on the other - have influenced me in such a way that even in a complex question, such as the relationship between art and technology leading to an open-ended virtuality, I take up the case of the latter: their "humanist" case, which seems to me to prevail in the long run.

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JN: Your spirit differs radically from what I see as typical of French apocalyptic-chic negativism. Take for example recent proclamations by the skeptical - now famously reactionary - technophobe Paul Virilio concerning virtuality (not to mention the eminent Monsieur Baudrillard). Is it your involvement with factual individual artists and their work that makes the positive difference?

FP: Yes, my personal commitment and working method explain why I have such a different attitude to the art-technology problem than Virilio or Baudrillard. This commitment and method is closely connected with my encounters with artists and their work - and my status as a non-mainstream art historian. Indeed, when I describe myself as an "art historian", I simplify matters - just as I do when I meet someone in the street who asks me who I am and what I do. I thus tend to avoid misunderstanding when I say that I am an aesthetician, an art

theorist with a degree in the science of art, an art exhibition organizer, a teacher, or an art critic - although I am a little bit all of these things! This personal profile is in fact directly associated with my working method, which establishes the closest relationship possible with the artist. I have applied this method of affinity as I wrote art books, taught art in an experimental university, and organized exhibitions that had an impact on the public awareness of avant-garde artistic issues. This explains also my positive attitude as an alternative art historian who takes a completely different stance than does Paul Virilio. Monsieur Virilio's attitude is based on the assumption that accidents and other catastrophic events are inevitable and which can only be recorded by the artists who are unable to propose other possibilities or virtualities. According to him, the work of these artists cannot have any impact politically or intellectually on the course of events, which is of course not at all my opinion. Perhaps I should add that already in the 1960s - when I wrote my book on Kinetic Art which formed part of my doctoral dissertation - I had to discover the existence of several hundred artists in many different countries who largely ignored each other's work, but who all pursued aesthetic goals with the aid of real or virtual movement and natural or artificial light. One can of course argue that there was something arbitrary in my assumption that these artists had sufficient matters in common to be classed together under the term of Kinetic (or Luminokinetic) Art. But my way of proceeding was based on some ideas that were in the air at the time, which justified, in my mind, this kind of procedure. Of course, many of the artists, if not all, were not quite satisfied with this classification, but alternatively made use of the term. Some did categorically reject being called kinetic artists. However, even though any kind of classification can irritate artists (or others) I think nevertheless that it is necessary to proceed in this way if one wants to situate the work of an artist with regard to timely ideas - thus showing, among other things, the work's involvement with these timely issues and the way this work engages or transcends them. After my prise de conscience regarding motion and light, I have tried similar operations based on the assumption that there was a significant relationship to be analyzed between two aesthetic ideas current at the time: artistic endeavors to create works on an environmental scale and spectator participation. This gave rise to my book Art, Action and Participation, which you previously mentioned, for which I was again in touch with a considerable number of creators - this time also belonging to other disciplines than the visual arts. I must say that a similar procedure led me to write Art of the Electronic Age. For this book likewise I contacted directly artists engaged in the problem of art and technology. This type of procedure is also the basis of my present research into virtuality; research founded on the hypothesis that a new departure in Technological Art has recently been made which can be termed Virtual Art. For this exploration I have established relations and opened discussions with artists whose inquiry takes place within the categories of digital-based projects and environments, multimedia off-line compositions, and on-line works in which interactivity and multisensoriality play a more radical role than before. Here again I fear that some artists will object to be called virtual artists (or artists practicing virtuality), but I still feel that a non-arbitrary classification is necessary and can be regarded as a first step towards a combined mastering of the aesthetic problems of virtual creation.

JN: Do you think that virtual art will continue to unfold under its own weight from the point of view of extended and connected virtuality, with the next set of arising lyrical questions necessarily having to do with how the virtual itself is to be understood and constituted in the future? Or do you see a reactionary resistance to emergent virtualism on the horizon?

FP: I cannot really foresee the future of virtualism. Nevertheless, I have a feeling that political reactions such as ecology and corresponding scientific and technical discoveries

made in contemporary and future biological research will alter the general context. The result will necessitate a readapting of the individual to a new synthesized environmental condition. Art research will no doubt both anticipate and assume this situation - and perhaps find a new term for this advanced virtualism.

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