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A Sense of Wonder: John McHale, from Sci-Fi to Future Studies

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Abstract: In his article "'I wonder...', A short history of amazement," the art historian John Onians dissects the multiplicity of meanings of this expression. He explains that "to feel wonder" means to be aware of the impact that an "extraordinary sensory experience" has on us (Onians, 1994, p. 11), and also links the wonder with questioning and curiosity, hence its inherent tension towards the future. Indeed, the "sense of wonder" concept is widely used in science fiction circles where it catalyzes the blend of pleasure, excitement, and apprehension felt by a viewer when seeking to imagine that which is as yet unknown. This article details how this feeling serves as a guiding thread in the journey of artist and researcher John McHale, both for artistic experiments in the 1950s, and then for future studies research methods in the 60s and 70s. Investigating this historical moment, it bridges the gap between the reception of science fiction as a popular genre and the recognition of the methodological richness contained in the creative process that underpins it.

Keywords: *art history; amazement; sense of wonder; The Independent Group*

"Del Close told me later I was wandering around looking "wonderful... in the sense of full of wonder." That's the best description I can imagine."

Description of a situation of sensory and psychic destabilization by drugs, light and music (Claire Brush, quoted in Wolfe, 1968, p. 282).

[Figure 1] Eduardo Paolozzi, The Ultimate Planet, ca. 1952, part of the "BUNK" col-lages, printed papers on card, 25,1 x 38,1 cm, Tate collection, London, The Estate of Sir Eduardo Paolozzi, Photography © Tate

At the turn of the 1950s, Science Fiction invaded mass consumer societies' everyday visual space in a wide variety of forms and media—from comics, films, and television to advertising, toys, and industrial products—generating what has been called a "contamination of reality" (Valéry, 2013, p. 138).[1] The United States in particular, through a culture enhancing of scientific and technological development lined with an economic context that led to the rise of an entertainment industry, proved fertile ground for the genre's spectacular growth. In Great Britain, which was undergoing post-war reconstruction, it was enjoyed both in its own right and for its association with the US.

SF was a topic for discussion for a group of young people who met at the Institute of Contemporary Arts in London between 1953 and 1956, who came to be known as the Independent Group (IG). Three of its members were all deeply drawn to the US and its popular culture: the art critic Lawrence Alloway, the theorist Reyner Banham, and the artist John McHale.[2] As noted by the art historian Nigel Whiteley, their focus on SF was an indicator of their "mythologized and romanticized" view of US popular culture, as they were only looking at its *progressive* faction—the one that carried the manifestations of technological and cultural evolutions—as opposed to the *conservative* faction (soap opera, romantic literature, etc.) (Whiteley, 2002, p. 100). Inside this progressive faction, their main focus has not been on SF literature in itself, but rather on the visual forms emanating from the genre.[3] Current literary research suggests indeed that "science fiction was never a genuinely popular form of literature,

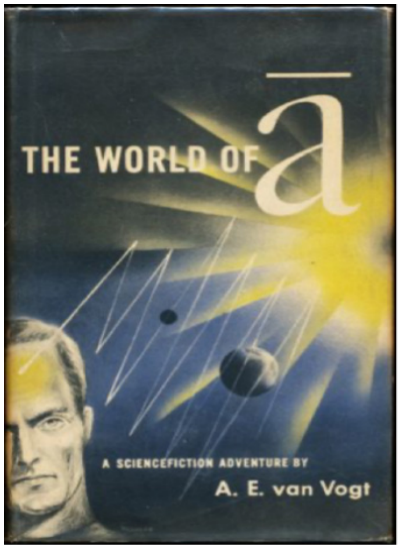
unlike crime novels, westerns, and romance" (Bréan, Klein, 2012). Even in the 1950s, it was consumed by a specific circle of aficionados and found its way into the elite spheres of high culture.[4] On the contrary, the IG members were precisely interested in SF's move towards mass consumption beyond the circle of literary insiders, and how it was received, consumed, and appropriated by popular audiences – this move was driven by its imagery and visual content.

A Genre Swallowed Up by Imagery

For example, SF literature was quickly and broadly adapted for the cinema and, as noted by the writer Christian Grenier, the genre "was swallowed up by imagery" (Grenier, 1994, p. 108). As for the IG members, they were seeking to keep their own unprompted position of good consumers to better understand what these popular SF consumption practices said about the society in which they lived (Alloway, 1961). Most of them coming from middle-class or impoverished family backgrounds, they saw SF as a demotic cultural product that attracted interest from people from all backgrounds, including those denied formal education and access to high culture. Enjoyment was the only criterion for popular SF fans. This approach to cultural practices underpinned the art movement that the IG was then in the process of founding, Pop Art.[5] As Reyner Banham later wrote, "the key figures of the IG—Lawrence Alloway, John McHale, Eduardo Paolozzi, Richard Hamilton, Frank Cordell, even myself—were all brought up in the Pop belt somewhere. American films and magazines were the only live culture we knew as kids" (Banham, 1963, p. 16).

Cheap American pulp magazines rapidly became their preferred format for thinking about SF, focusing on their covers rather than their content.[6] From the start of the 1950s, another member of the IG, the artist Eduardo Paolozzi, used them in some collages—notably the cover of the *Thrilling Wonder Stories* pulp [fig. 1].[7] Lawrence Alloway clarified their approach in his article "Technology and Sex in Science Fiction. A Note on Cover Art": "If we focus on covers we are doing no more than good consumers do when confronted by magazines" (Alloway, 1956, p. 23).[8] The brightly coloured pulp covers, printed using the latest technology, put them at the forefront of an imagery of the time, in the broadest sense of what would be called today visual culture, i.e. a means of understanding the world made possible by way of images. At that time, long before the theorization of the *pictorial turn* by the theorist of media W.J.T. Mitchell (Mitchell, 1992), John McHale noted this primacy of imagery, explaining that in the 1950s, "much of what was going on, simply the language wasn't around to describe it" (McHale, 1977, p. 31).

From the outset, the IG members adopted a reflexive, analytical stance to the materials of mass culture, choosing to study the image of pop culture artefacts rather than the artefacts themselves. They were interested in all types of images, from mass media to advertising and from works of art to illustrations and so on: "[Man's] environment extensions, movie, TV, picture magazine, bring to his awareness an unprecedented scope of visual experience" (McHale, 1959, p. 82). Scientific imagery was also one of the basic visual materials they drew on for their own creations, using it directly in their collages and in their thinking and theorising. SF was the point where popular art and (high) scientific culture came together. These various sorts of images were of equal interest and the IG members refused to rank them on a scale of value.



[Figure 2] A. E. van Vogt (1948), *The World of Ā*. Simon & Schuster.

The IG's thinking on this point was influenced by Alfred E. van Vogt's futuristic novel *The World of Ā*, initially published in serial form in the magazine *Astounding Science Fiction* in 1945, then as a book in 1948 [fig. 2]. *Ā*, pronounced "Null-A", refers to a step away from Aristotelian logic, typified by duality—good vs. bad, for instance—and immutability—stability and immobility. The novel itself is based on the theory of non-Aristotelian logic developed by the philosopher and mathematician Alfred Korzybski, who believed that Aristotelian thought was no longer suited to the scientific discoveries of the time (Korzybski, 1933).[9] This could not help but capture the imagination of SF authors, who were always on the lookout for new scientific theories. *The World of Ā* has been an effective way of more or less skilfully conveying Korzybski's new scientific theory to a wider audience. The novel encouraged the IG to move away from predefined cultural values and hierarchies.[10] This reading prompted Lawrence Alloway to come up with the concept of the "fine art-popular art continuum" connecting elite and popular cultural practices in a horizontal, non-hierarchical spectrum. The criteria to grasp them were nevertheless to remain distinct; as Alloway wrote, "it is no good giving a literary critic modern science fiction to review ... and no good asking the music critic for an opinion on Elvis Presley" (Alloway, 1958, p. 84).

Social Benchmarks

The 1950s paved the way for mass communication, which developed particularly out of experiments with electronics in the United States during World War Two, leading to key technological breakthroughs. Alongside advances in the information and communication sectors came the development of nuclear energy and the space race, all unprecedented new departures in humanity's relationship with its environment.[11] More than a genre, SF was a *mode of discourse* opening up thinking on the present age (Grenier, 1994, p. 12.). By taking up the most salient issues facing society, it spoke to what interested, troubled, and fascinated people most. Notably through visual means, SF was one important way for a mass audience to come to terms with these last advances. As Alloway accounted for, SF played into "the assimilation of the mounting technical facts of this century" (Alloway, 1958, pp. 84-85) and helped "to give currency to new ideas [...] by translating new concepts into memorable images. This is worth doing and, on the whole, the fine artists have given us no recent aid in this kind of visualizing" (Alloway, 1956, p. 23). In an age of loss of historical reference, SF's offshoots destined for a mass audience—pulps and films—provided more evocative social benchmarks than traditional art forms associated with high culture, which was a central factor in its popularity as a genre. According to McHale, fine arts "may no longer be accorded the prime role in conveying the myths or defining the edge of innovation in society" (McHale, 1967a, p. 10). Rather, SF, among other popular culture productions, took over the role; as the art historian Valérie Mavridorakis has explained, it produced "the perfect symbiosis of techno-scientific themes and pop aesthetics" (Mavridorakis, 2011, p. 17), standing at the juncture of two fields that came to the fore in the 1950s—technology and mass culture.[12]

SF authors sought inspiration as much in the hard sciences as in the human sciences. Of SF imagery, Alloway wrote that "the currency of such symbols [...] is an index of the acceptance of technological change by the public in the United States" (Alloway, 1956, p. 20). The US thinker Fredric Jameson has likewise outlined that its aim is not "to give us 'images' of the future [...] but rather to defamiliarize and restructure our experience of our own *present*" (Jameson, 2005 p. 286). The editorial team at the magazine *Astounding Science Fiction* [fig. 3] foregrounded this idea in 1953 when they wrote of "the immense and joyous stimulus of living in a period when the world is changing, accelerating, faster than it ever did before" (Campbell, 1953, as quoted in Robbins, 1992, p. 8) and insisted on the importance of cultivating a sense of wonder at such changes.

A Sense of Wonder

The *Oxford Dictionary of Science Fiction* defines the sense of wonder as "a feeling of awakening or awe triggered by an expansion of one's awareness of what is possible or by confrontation with the vastness of space and time, as brought on by reading science fict-

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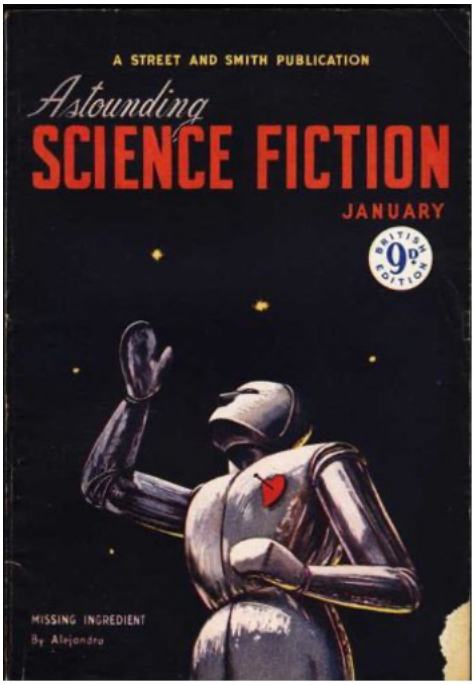
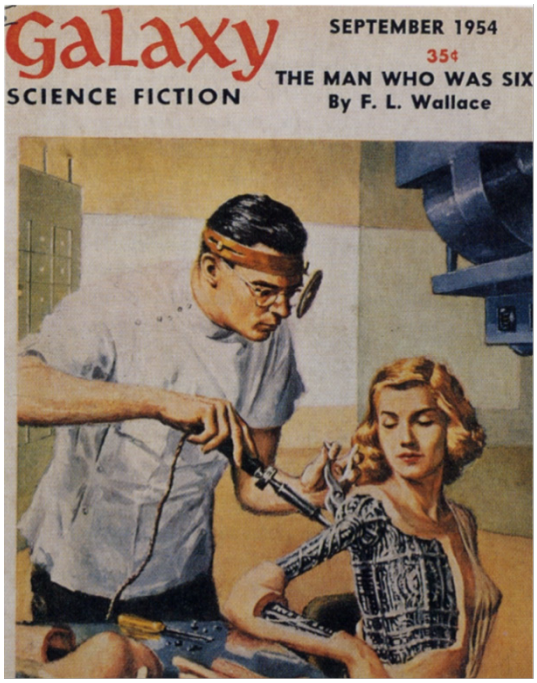


[Figure 3] Cover of Astounding Science Fiction's British edition, January 1950, by Alejandro de Cañedo © 2021 Penny Publications LLC/ Dell Magazines. Reprinted with permission.



[Figure 4] Cover of Galaxy Science-Fiction, September 1954, by EMSH: "showing ROBOTS REPAIRED WHILE U WAIT". Used by John McHale in "The Expendable Ikon" (February 1959) © Galaxy Science Fiction

ion" (Prucher, 2007). For instance, in 1959, McHale describes the emotion triggered by pictures of an augmented humanity that create a dizzying impression of what humans might soon become when merged with technology: "Robots, mutants and mechanomorphs furnish an image in the likeness of man which carries the strongest sense of wonder with a hint of dread" (McHale, 1959, p. 82) [fig. 4 & 5].

At that time, McHale implemented such a sense of wonder, meant as awareness of what is currently happening in the unprecedented expansion of the human sensorium, in his work as an artist in the proposition he made. Together with two other IG members, the artist Richard Hamilton and the architect John Voelcker, McHale worked on the exhibition *This is Tomorrow*, held in London in 1956. Working as a group, they proposed an environment they called "Fun House," reporting on the exponential rate of technological and social change in humanity's daily surroundings. This "Fun House" is generally seen as the founding act of Pop Art and is widely studied as such. However, its relation to Science Fiction is often reduced to its use of Robbie the Robot, a leading character in the recently released SF film *Forbidden Planet* (1956).[13] A picture taken from the film poster was presented on the "Fun House" wall [fig. 6]. The group also had the idea of bringing Robbie the Robot "in person" to the exhibition's opening night, in the form of a promotional mascot.[14]

While Robbie the Robot's presence in *This is Tomorrow* is an obvious sign of the IG's interest in SF as a popular visual art form, with all the symbolic resonance that implies, there is also a subtler link to be drawn between SF and the "Fun House" environment. Recreating the stimuli saturation of contemporary daily life in popular culture, it triggered visitors' five senses with a soft floor that smelled of strawberries, a juke box playing top twenty hits, paintings of optical illusions, a display of a large quantity of mass culture imagery, and so on, thereby seeking to give an account of the sense of wonder potentially sparked by

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[Figure 5] Illustrations from John McHale's article "The Expendable Ikon", Architectural Design, vol. 29, February 1959, p. 82, section "Out of Frankenstein, by IBM" © Architectural Design

[Figure 6] The "Fun House" in the exhibition This is Tomorrow, Whitechapel Art Gallery, London, 1956. © RIBA Collections

the changes underway in everyday life, whose effervescence is hard to detect in the black-and-white photographs of the time. While the exhibition's name, *This is Tomorrow*, might suggest a focus on the future, the members responsible for the "Fun House" explained that this title corresponded to their search in the immediate present for ways of thinking about the future, advocating the development of various new potentialities of perception in the audience and of symbolising the interactions they develop in relationship with their surroundings (McHale, Hamilton, Voelcker, 1956). Richard Hamilton said as much in a *BBC* radio programme: "We aren't intending, I don't think, to act as prophets, we're not trying to show what the future is, but we do feel that the only way to find out about what's going on in the future is to look very closely at what is going on at the moment" (Hamilton, 1956, p. 3).

The British SF author J.G. Ballard was close to several IG members, and especially to Eduardo Paolozzi, as he recalled in his autobiography (Ballard, 2008). He visited the exhibition and gave this interesting account:

> They [the IG] were interested in a fresh look at the consumer goods and media landscape of the day, regarded it as a proper subject matter for the painter. I felt their approach had a certain kinship with that of science fiction (in which they were all extremely interested) and I went along to the *This is Tomorrow* exhibition [...] It struck me that these were the sorts of concerns that the SF writer should be interested in. Science fiction should be concerned with here and now, not with the far future but with the present, not with alien planets but with what was going on in the world in the mid-'50s (Ballard, 1984, as quoted in Tsai, 1988, pp. 71-72).

His approach to SF aligned with the IG's concerns regarding the social impact of technological innovations. As Eugenie Tsai notes, "rather than fantasize about

technological innovations, Ballard speculates about the effects a technologically altered environment might have on the human psyche" (Tsai, 1988, p. 73). Similarly, McHale later recalled that "if on the surface we were concerned with technology in many senses, our preoccupations were with the social implications of that technology... we saw that technology expanded the human range" (McHale, as quoted in Robbins, 1990, p. 87). There is a tangible move here from an interest in pulp imagery to enter into the very potential of the SF as a research tool. Ballard later leads the British current of the New Wave and emphasize the literary creative potential of SF in opposition to the hard SF forms centered on techno-scientific predictions. In this respect, Ballard and the IG share a common vision of SF as an experimental way to approach the present.[15]

From Visual to Future Studies

McHale moved to the United States in 1962 and soon began devoting less time to art. Instead, after a Ph.D. thesis entitled, "The Future in Social Thought: With Reference to the Social Theories of Saint Simon, Comte, Mead and Parsons," published as a book entitled *The Future of the Future* (McHale, 1969), he began to focus on Future Studies. How should this shift be read? While his later experiences might seem to be particularly at odds with the IG, they in fact reveal the long-lasting impact of the group's spirit in shaping his later work. In the 1960s, while future research gave way to a plethora of varied methodologies, McHale developed a practice aimed to incite humans to engage with their immediate responsibilities over the long term in building the future according to social and ecological consequences (McHale, 1968). Not at all was he practicing future research as a forecasting activity.

Future Studies is not simply a theoretical discipline; rather, it aspires to implement detailed action plans that, once undertaken, would set the course for the future. The first goal is to identify the objectives for such actions and the fields such elements fall into —sociology, technology, organizational, and so on. SF's contribution to Future Studies has been widely explored (Michaud, 2017). The margin of freedom enjoyed by SF in the art of speculation is, of course, not the same as that dictating how Future Studies is conducted within an academic methodological framework. Still, both are built by extrapolating trends from the present.[16] A paper in the futurology journal *Futuribles* has argued that "by means of a deconstruction of certainties and an exploration not only of possibilities but also of impossibilities, SF plays its part in the transformation of the social representations we draw on to act and to explain the world" (Gendron, Audet, 2016, p. 76). SF pushes the gaze past certain ecological, technological, and political points and adopts a fictional standpoint to observe the possibilities for human life in new conditions from which in reality there would be no way back. Political science researcher Yannick Rumpala has studied SF's "intellectual labour of 'possibilisation'" in its bold exploration of new paths extending beyond our familiar frames, particularly socio-political ones (Rumpala, 2016, p. 58). The same labour of possibilisation is shared by future researchers, who consider the various potential directions the future might take depending on key choices made in the present. What SF does in fiction, Future Studies does as scientifically as possible, studying the consequences of collective actions and choices on the future. In McHale's specific case, he was not so much interested in SF for futurological fantasies as for its conception of interweaving temporalities, which he was to express with this maxim: "The future of the past is in the future. / The future of the present is in the past. / The future of the future is in the present." (McHale, 1969, incipit).

McHale soon opened his own research hub for Future Studies, the Center for Integrative Studies.[17] The research strands he developed drew on a theoretical model inherited from the IG's continuum, placing the various disciplines that fed into Future Studies on a horizontal spectrum. In this ideal theoretical model, the hard and human sciences were interconnected, forming a non-hierarchical network in which each element contributed equal value. The aim was to digest the content of various fields of study and their methodologies, not simply to be passively subjected to their influence. This act of taking ownership of each field is what prompted the choice of the adjective "integrative" in the Center's title. The concept of integration

is here to be understood as the reverse of synthesis: the aim is not to take elements from each discipline to form one coherent whole, which would involve a degree of loss. It rather turns the entire set of various disciplines into a new system while leaving them enough margin to flourish in their own right.

The Artist-Scientist

In 1967, in his capacity as a future researcher, McHale

[Figure 7] Cover of *Architectural Design*, 37, February 1961, Special Issue 2000 +, edited by John McHale © Architectural Design

edited a special issue of the journal *Architectural Design* on the theme 2000+, looking beyond the threshold of the year 2000. Its cover [fig. 7] features a close-up of an astronaut's head and shoulders against a deep red background; the human being is completely hidden behind his opaque helmet and technological equipment. The image, highly effective in visual terms, says far more than any enticing slogan about the special issue's content. McHale's introduction restates his belief in the primordial power of images over human minds: "[...] the 'imagery' of technology may be as powerful an agency of change as the rational understanding of its scientific and technical basis" (McHale, 1967b, p. 64).

McHale invited his collaborator, the architect, engineer, and future researcher Richard Buckminster Fuller, to write a piece for the special issue. The choice of an architecture journal to develop this theme 2000+ might seem surprising, but Buckminster Fuller and McHale's joined work expanding the notion of architectural design at the time made it possible to bring in a broad approach to present and future impacts of technological change on humans and their environment (Wigley, 1999, pp. 38-49). In the 1960s, the two men were working together on a project at the crossroads between architecture in this broader sense and future research, i.e. data-based planning: the World Game (Wasiuta, 2021).[18] The program, often described as utopian, aimed to improve the distribution of resources across the planet to combat inequality and cope with the significant population increases forecast for the future, and to redefine the standards of industrial societies to make their development beneficial to all. Buckminster Fuller, the renowned inventor of the geodesic dome, was one of the key figures of the twentieth century for his visionary work and the extent of his inventiveness, which easily bridged the gap between the narrow sphere of the household and the global scale of the planet. After they met in the mid-1950s, it was Buckminster Fuller who brought the artist McHale to future research as a science, ignoring the artificial categories generally assigned to the "specialists" in each arena:

> I find it difficult to speak of artists or scientists, I prefer the term, artists-scientists. I think there is hardly any difference between so-called artists and scientists. Really great artists are scientists and really great scientists are artists (Buckminster Fuller, archive, undated).

For Buckminster Fuller, artists and scientists alike were characterized by the way they worked with their intuition, a property that was hard to pin down, because it was born of the interaction between the subconscious approach to a subject proper to an individual, the questions they asked themselves consciously, and

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the work carried out to answer them.

> The artists-scientists have not lost their intuitive coordinating power [between these three elements]. They are the ones who completely transform the environment of man by virtue of which man's problems do get solved (Buckminster Fuller, archive, undated).

McHale, for his part, saw the ability to assimilate a quantity of facts to be synthesized into the building blocks for new sets of concepts as simply the use of a creative faculty: "The link between science, humanities and arts is the creative capacity to continually restructure human experience, i.e., the accumulation of facts about environment into fresh configurations" (McHale, 1966, p. 1). As a future researcher, he, like others, faced many biases that could potentially skew the due process of scientific research, including the cultural bias of a researcher enclosed in his own social world, the temporal bias of a researcher who observed only trends of change in the recent past, and so on. All such biases threatened the validity of his work and were to be avoided as far as possible. The cognitive bias, or the limits of imagination, is of particular interest for the present study. As François Briens has explained, Future Studies includes "an essential exploratory dimension that requires mistrust of preconceived ideas, a broadening of the frames of analysis, and calling everything into question. Imagination is not the opposite of reason in this case; rather, the two are complementary" (Briens, 2016). In the 1960s, Buckminster Fuller's and McHale's World Game project represents an important future research initiative on a global and super-political scale; it was the first of its kind, whose method was characterized by its reliance on both rigorous statistics and mathematics—using the data then available—and on a capacity for imaginary projection. Only the combination of the two faculties allowed decisions to be taken in the present for actions leading to a desirable future. "Man's future is most likely that which he may most imaginatively conceive of, which, in turn, will determine his action towards its accomplishment," McHale wrote in the special issue *2000 +* (McHale, 1967b, p. 65).

Desirable Futures

At this time, a whole sect of Future Studies, grouped around an organization named *Mankind 2000*, approaches its research activities as an active enterprise of free social design and a space of creation. "Many future researchers in their aim to be taken seriously lack in intellectual courage. Many of today's scientific anticipations and projections are not much more than extensions of the present," regrets Robert Jungk, one of the founders of the organization, in a conference titled "The Role of Imagination in Future Research" (Jungk, 1970, as quoted in Andersson, 2018, p. 166). Their method is as follows: *Mankind 2000* researchers distinguish possible futures, probable futures and desirable futures—all plurals—as shown by their triskell header symbol with psychedelic overtones [fig. 8]. Their work around the concept of desirability leads to a renewed approach to knowledge, which is now envisaged by speculation and is therefore not based on data but on invention. Here, the future cannot be apprehended by a simple empirical observation and the application of scientific forecasting methods; research is extended to human values through an ideological postulate claimed as non-rationalist. Only in a second step are structures and action plans elaborated, which could not have been invented through the opposite forecasting approach. It is a means of leaving space for the imagination (Masini, 2000, p. 491). Thanks to this change in the nature of knowledge, it is now possible for them to envisage true social design work.

[fig. 8] *Mankind 2000* header symbol representing the interlacing of possible, desirable and achievable futures, undated. *Mankind 2000* materials, Committee for Nuclear Disarmament and Peace archives, box 700 (reproduced in

Andersson, 2018, p. 154).

McHale easily made his place in this *Mankind 2000* group where, apart from his very work and numerous publications in the field of future research at that time, he was likely to find a form of legitimacy as an artist. The constant valorization, inside the group, of ways to tackle the cognitive bias of inoperative imagination happens to be what made McHale's "artistic" baggage truly operative in his new research field. "Artistic" is here to be understood in terms of the development of alternative and open modes of thought. To a high-ranking American officer who questioned McHale's qualifications to collaborate on a scientific study of subatomic structures, the latter replied: "My field of expertise? Oh—I paint a bit, you know!" (McHale, as quoted by Banham in Kotik, 1984, p. 37). Throughout his future studies career, he has attempted to never lose, in research methods, the blend of excitement and the sense of wonder provided by other creative means, in order not to be locked up into rational scientific thought, instead allowing imagination to roam free, facing the dizzying future.

Notes

[1] I would like to thank the Centre André Chastel (UMR 8150) for its support for this essay.

[2] All three moved to the United States in the 60s for the rest of their lives.

[3] For more details on this theme, see Robbins, David (1992). "Modernist Sources," The Independent Group: Postwar Britain and the Aesthetics of Plenty, exhibition catalogue, pp. 60-62.

[4] In France, for instance, American SF texts were published in the prestigious journal *Les Temps Modernes*. See Bozzetto, Roger (2003). "Et si l'on définissait les territoires de de la Science- Fiction ?", Quarante-deux [online].

[5] Alloway and McHale are thought to have coined the phrase in around 1954.

[6] Britain was producing its own pulp magazines at the time, but American publications remained the point of reference in Western culture.

[7] Paolozzi initiated the movement of interest on popular imagery with his talk "BUNK" in 1952, then Alloway and McHale organised an IG panel discussion in 1955, focusing largely on contemporary mass culture images.

[8] Lawrence Alloway gave a lecture on SF at the ICA on

19 January 1954.

[9] The complex formulations mask a study of the mechanisms of representation at work in the relationship between man and his actual environment.

[10] One of the group's discussions at ICA, "Dadaists as non-Aristotelians," focused on this theme in April 1955, with the speakers John McHale, Anthony Hill, Donald Holmes, and Toni del Renzio.

[11] The major invention in electronics is the transistor, developed in 1947 by the American laboratory Bell, which later perfected the technique. In 1952, America tested a nuclear bomb on Bikini atoll which was five hundred times more powerful than that dropped on Hiroshima. In 1957, the USSR sent *Sputnik I* and *II* into space, triggering the space race; NASA was founded the following year.

[12] "Science fiction, a mode of expression historically concerned with progress and technology, was then understood as the paradigmatic expression of modern mass culture, whose imagination, themes and techniques offered the easiest means of commenting on, and even subverting, modern society." Achouche, Mehdi, Samuel Minne (2015). "La culture visuelle de la science-fiction, entre culture populaire et avant-garde : Introduction". *Res Futurae, 5* [online].

[13] *Forbidden Planet*, Metro-Goldwyn-Mayer Studios Inc., produced by Nicholas Nayfack, directed by Fred M. Wilcox. The exhibition was divided into 12 sections. The members of section had a great deal of help from the IG members Terry Hamilton, Frank Cordell and Magda Cordell, who were not officially part of the *This is Tomorrow* exhibition.

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[14] An ICA member wore the mascot costume to the gallery opening, and walked around the audience before giving a speech written by Lawrence Alloway.

[15] Ballard considered science fiction had the most to offer as a literary form, as he would soon affirm through his publications in *New Worlds* in the 1960s.

[16] This is the extrapolation Banham meant when writing, "History is to the future as the observed results of an experiment are to the plotted graph—that is, you plot on the graph the results of which you are sure, you seek for a line that connects them convincingly and you produce it beyond the last certain point to see where it will lead—so too with all major works of historical philosophy; they extrapolate present trends into the future condition of men." Banham, Reyner (1961). "The History of the Immediate Future.", *Journal of the Royal Institute of British Architects, 7*, p. 252.

[17] The CIS opened in 1968 as part of the School of Advanced Technology at Binghamton State University of New York. In 1977, it moved to the College of Social Sciences at the University of Houston-Clear Lake, Texas.

[18] The two were in contact from 1954 and progressively put in place a joint research programme.

A Sense of Wonder, continued

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