A TAMED SHREW? IMAGES OF THE ATOMIC AGE IN DUTCH POPULAR CULTURE, 1945-1957

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Introduction

In the middle of the 1950s, many people in western countries were convinced that they were on the brink of, or had already entered, a new era in history: the atomic age.[1] It was claimed that nuclear power would create a new industrial revolution that would transform society more thoroughly than the nineteenth century industrial revolution had done.[2] It was not the first, nor the last time that a new technology was believed to have changed society completely: the ages of steam, chemistry and electricity had preceded the atomic age, and at the end of the twentieth century, computer technology claimed to be ushering in a new age of information and communication. Among these technological hypes, the atomic age stands out as the most Manichean of all. It was associated with either total destruction or the solution of practically all problems. The utopian version was propagated at a large exhibition, 'Het Atoom', which took place at

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[1] The research and writing of this article was done at the Netherlands Institute for Advanced Study in the academic year 2006-2007. It is part of two projects. One will analyse how Dutch culture reacted to and tried to assimilate dramatic new technologies, which also include, for example, automation and electronics. The other project is an international comparison of popular representations of the nuclear age in six countries between 1945 and 1962. Many thanks to Anne Simpson at NIAS for correcting my English.

[2] E.g. W.F. Ogburn, "Sociology and the atom" in *The American Journal of Sociology* LI/4 (jan 1946), 267-275; Snow, *The two cultures*, Cambridge (1959); CUP 1998, 30, sees the industrial revolution as a combined effect of nuclear power, automation and electronics. In the Netherlands e.g. the popular book by L. de Vries, *Het atoom. De grootste speurtocht aller tijden die de mensheid een van de machtigste wonderen der natuur openbaarde* (Amsterdam, Brussel: Elsevier 1957) 141.

Schiphol Airport in the summer of 1957. The title of this article derives from a report about this exhibition in the illustrated magazine *Panorama.* Nuclear energy, so long associated with bombs, had now been tamed and should no longer be feared, the magazine said. It would be an endless source of energy, would heal the sick, and even improve the climate in barren parts of the world. A few weeks after the exhibition opened, the minister of economic affairs presented a plan for large government investments in nuclear energy.

The campaigners for nuclear energy were confronted with great fears among the public however, as can be documented from archival material on the preparation of the 1957 exhibition and countless examples from popular culture of the time. The goal of this article is to map out these hopes and fears and to understand their relations. After a brief description of the Dutch encounter with nuclear energy, I will analyse popular images of the new technology from the Second World War to the late fifties. Then I will demonstrate how the rhetoric of the exhibition can be interpreted as an answer to the nuclear fears prevalent at the time.

The Dutch Encounter with Nuclear Technology, 1939-1960

The Netherlands was one of the countries which, immediately after the war, started its own nuclear research program, in spite of American and British efforts to monopolize nuclear knowledge and material.[3] It was in a good position to do so, for three reasons. First, there were several Dutch physicists with excellent contacts in the international networks of nuclear science. They were eager to catch up with their American and British colleagues who, thanks to huge military funding, had made great advances during the war. With government support, several research institutes were set up right after the war. Second, Dutch scientists had ten tons of natural Uranium at their disposal. This 'yellow cake' had been bought, on the advice of one of those scientists, from the Belgian Union Miniére by the

[3] J.A. Goedkoop, *Een kernreactor bouwen. Geschiedenis van de Stichting Energieonderzoek Centrum Nederland. Deel 1: periode 1945-1962* (Bergen: Beta Text 1995); J.A. Goedkoop, *Geschiedenis van de Noors-Nederlandse samenwerking op het gebied van de kernenergie* ('s-Gravenhage: Reactor Centrum Nederland 1968); A. Lagaaij, G. Verbong, *Kerntechniek in Nederland 1945-1974* (Den Haag, Eindhoven: Kivi, SHT 1998); J. van Splunter, *Kernsplijting en diplomatie. De Nederlandse politiek ten aanzien van de vreedzame toepassing van kernenergie, 1939-1957* (A'dam, diss politieke wetenschappen, 1993).

government in 1939, a few months after the sensational publication on the splitting of the Uranium atom. It had been hidden both from the Germans and the allies during the war. Finally Philips, the light bulb and electronics firm in Eindhoven, and an experienced builder of X-ray machines, had started constructing a cyclotron. The firm had strong ties with the academic community of physicists. Military applications were strictly excluded from Dutch research, which was aimed entirely at scientific and medical uses, as well as experiments with materials that might be used in a power reactor. From 1951 on, Dutch and Norwegian scientists cooperated on a nuclear reactor in Kjeller, close to Oslo, using Dutch natural Uranium and Norwegian heavy water. The government left the project to the scientists, even including the arrangement of international agreements. Although the Kjeller reactor was proudly announced, the general activities of the scientists were hardly discussed in parliament or the press. It was not Dutch science, but American and Russian bomb tests which dominated the public image of nuclear energy, as we will see.

From the early 1950s on, nuclear energy slowly entered the public debate. In 1953, the physicists at Kjeller presented a design for a power reactor. Parliament approved a government proposal to build a Dutch research reactor, and a consortium, including several industrial firms, electrical utilities and the government, was created to finance and organize the project. The process was speeded up after Eisenhower, in a speech on 'The Peaceful Atom' at the General Assembly of the United Nations in December 1953, announced that Americans would share nuclear technology as well as fissionable material with other countries. While continuing cooperation with the Norwegians, the Dutch decided to buy an American reactor and American enriched Uranium (which created a greater neutron flux than the Kjeller reactor, and therefore increased research possibilities). The main argument of the physicists to claim government money, and that which the government repeated endlessly, was the prospect that worldwide industrialization would deplete fossil fuels. The Netherlands, which was also industrializing rapidly, would therefore become increasingly dependent on the importation of a diminishing power source. Nuclear energy was the only answer. This argument received strong reinforcement during the Suez crisis, in the fall of 1956, when oil imports from the Middle East were interrupted. The crisis induced the West European countries to overcome their disagreements and step up their economic cooperation, resulting in the

creation of Euratom and the European Community the next year.[4] It was in this atmosphere that the exhibition at Schiphol took place. The Dutch minister presented a memorandum to Parliament estimating that the government would need to invest 9.5 billion guilders in nuclear energy (2.6 billion more than would have been needed for conventional energy production) until the year 1975. Parliament and the public now needed to be convinced of this huge investment.

In the public's mind however, nuclear energy was still largely connected with bombs. Fears of war and radioactive fall-out increased dramatically after the Americans tested their first hydrogen bomb in November 1952. Within a year, the Russians tested their bomb, and thereafter the number of tests increased to an estimated record of 307 in 1957. There was a huge outcry when fallout from an American test rained down on Japanese fishermen in 1954. From 1955, however, American nuclear weapons were stationed in Western Europe, including the Netherlands. Famous figures such as Einstein, Russell and Schweitzer, as well as many churches, made powerful statements against nuclear testing and the arms race, which reached the public worldwide. These influential people inspired an anti-nuclear movement, which started with the Easter Marches in Britain and Germany in 1958. In the Netherlands, this anti-nuclear movement started only around 1961.

Public Images of Nuclear Power

Although there had been practically no public debate about nuclear policies, atomic energy was a prominent theme in the popular press and in the public mind as well. At the end of 1945, 50% of the population, when asked by pollsters, expected a new world war to erupt, and 32 % expected this to take place within ten years. In 1948, after the Prague coup and during the Russian blockade of Berlin, these figures rose to 71% and 52%. These fears subsided a bit after 1948,[5] but in 1951 government officials still spoke of 'fear neurosis' and 'apathy' among the population, and in 1958 there was even talk of a 'latent mood of panic'.[6] A 1961 poll showed

[4] R.H. van Lieshout, *De organisatie van de West-Europese samenwerking. Een voortdurende strijd om de macht* (Bussum: Coutino 1997), chapter 8.
[5] B. van der Boom, *Atoomgevaar? Dan zeker B.B. De geschiedenis van de Bescherming Bevolking* (Den Haag 2000), 26-27.
[6] Van der Boom, *Atoomgevaar?*, 56, 221.

that about a quarter of the Dutch population expected a world war to break out before long.[7]

While it is impossible to reconstruct the mindset of Dutch people in various age groups, classes, gender and so on during the fifties, we can analyze the images and explanations that were offered to them by the most popular media. I have selected the illustrated magazine *Panorama* for this purpose. With a print run of about 300 000 (for a total population of nine million), it had a wider audience than any newspaper. It avoided ideological commitments, because it tried to appeal to as many people as possible. Market research shows that it was successful in this. The magazine reached all classes of the population, men, women, and children from about age 12, both in the cities and in the countryside, although it was slightly less popular among the highest and the lowest income groups. It was read intensively, copies were often kept for a few weeks, and 40% of copies were handed on to others, increasing the readership far beyond the print run. *Panorama* competed with several other illustrated weeklies and therefore had to be sensitive to the moods and needs of this very mixed readership. This makes it likely that it more or less reflected the moods of a large part of the Dutch population.[8]

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[7] Van der Boom, *Atoomgevaar?*, 27.

[8] The following is based on research on the readership of *Panorama* and other popular magazines, esp. *Enquête voorjaar 1949. Publiekstijdschriften. 1949.* Publicatie nr 1 of the Documentatiebureau Tijdschriftenwezen der Nederlandse Organisatie van Tijdschriftuitgevers; NIPO, *Rapport betreffende het onderzoek naar de betekenis als advertentiemedia van dagbladen en tijdschriften verspreid in Amsterdam*, verricht in opdracht van de Bond van Adverteerders, Amsterdam en de Ned Verg voor Erkende Advertentiebureaux (Amsterdam juli 1952); *De Spiegel – Panorama – Katholieke Illustratie. Documentatiegegevens* (Haarlem, Wageningen [1961]); Attwood Statistics, *Revue: lezerskringonderzoek. Algemene analyse van de lezerskring* (Amsterdam, De Geïllustreerde Pers, 1961); NIPO, *Op bezoek bij de abonnees van Panorama / Katholieke Illustratie* (Amsterdam, NIPO 1961).

Panorama, 1962

Table 1 presents the results of a simple content analysis that gives a first impression of *Panorama*'s coverage of nuclear themes. I have gone through each issue, counting every item on nuclear energy, whether an article, a photograph with caption, or a cartoon. I have not measured surface covered, but how often the subject occurred and whether it was evaluated in a positive or negative way. The table shows that during the first years after World War II nuclear energy mainly meant bombs. Weapons remained a prominent theme in the magazine throughout the period under discussion, but from 1948 other applications of nuclear technology were also shown, such as medical apparatus' and nuclear reactors for research and energy production. At first, these applications were usually portrayed in a positive or at least neutral way, but from 1956 the articles became gloomier.

On closer inspection, we may distinguish three types of items in *Panorama*'s articles on nuclear energy: factual reports, explanations of scientific and technical principles; and the meaning of nuclear power for society.

Reports were typically a combination of spectacular pictures and a brief text. Often the mushroom cloud following a nuclear test was shown, or a sequence showing the development of the cloud.

Panorama, 1946

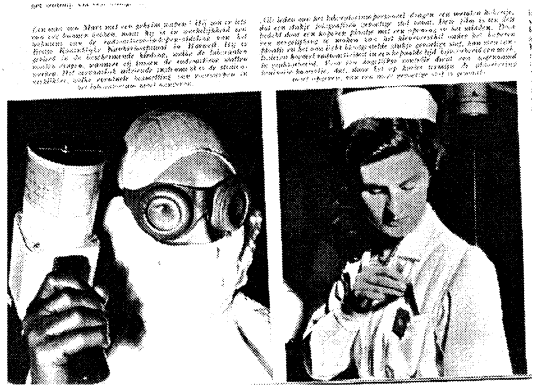
Other photographs depicted how night was turned into day more than a hundred miles from the test site, or warships destroyed during the tests. The texts attached to these pictures were either dryly factual (instruments at a test site, number of warships intentionally sunk, etc.) or attempts to describe the scene. In the latter case the language was often heavily symbolical, in the style that 18th century theorists had called 'the sublime'. The article on the first test, for example, which leaned heavily on the work of William Laurence, the only reporter the American authorities allowed at the nuclear facilities, described the thunderstorm during the night of the first test in July 1945. The thunderbolts seemed to be nature's warning to man not to violate her most dangerous secret. A vivid account of the frightening beauty of the colors on the mountain sides in the glow of the explosion followed. The article was openly ambivalent: this was a triumph for the scientists, but nature had given its warning. A new age had started with dizzying prospects, but nobody knew what it held in store.

Hiroshima and Nagasaki were never forgotten throughout the period.[9] The articles emphasized the incredible destruction and suffering of the cities rather than the defeat of a murderous regime. They expressed admiration for the quick rebuilding of the cities and for the way the Japanese

[9] *Panorama,* August 16 '46, March 16 '51, November 9 '51, December 25, '53.

commemorated the disaster. Other themes that *Panorama* regularly returned to were nuclear shelters and the first nuclear submarine, Nautilus, which was followed from its design through to its first test missions.

From 1948, peaceful, or not directly military, uses of atomic energy were increasingly discussed in *Panorama*. These articles reported, among other things, on nuclear reactors in several countries, including the Dutch-Norwegian one in Kjeller, medical applications, the C14 method in archaeology, and future space travel with atomic driven rockets. The texts of these articles emphasized the beneficial possibilities of nuclear power. The pictures however, especially those in medical articles, often were frightening because they emphasized the dangers of radiation. Similarly ambivalent, were articles on towns in the US where nuclear research was taking place, the so-called atomic cities. *Panorama* reported the ubiquitous danger signs and the constant surveillance that created a nervous and irritated atmosphere.



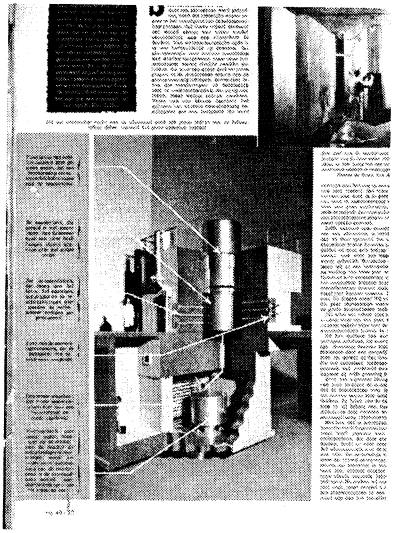
Panorama, 1950

Ever since the incident with the Japanese fishermen in 1954, radiation became an obsession in *Panorama*. One third of the items on bomb tests and half of those on non-military uses dealt with this. Famous scientists like Einstein and Russell, who warned that after an all-out nuclear war, radiation might wipe out humanity, were often quoted. Between 1953 and 1960, *Panorama* devoted eight articles to diseases caused by radiation, emphasizing the invisibility and the slow, cruel destructiveness of nuclear rays. Two major incidents with nuclear reactors, in Chalk River in Canada in 1952 and in Windscale, England in 1957, both of which led to

radioactive contamination in the surrounding countryside, were reported extensively.

Explanation

Occasionally *Panorama* tried to give a technical explanation, with extremely mixed results. Until around 1954, many articles contained serious mistakes. One example is an article which encouraged parents to teach their children the basics of nuclear physics, in order to remove their fears (January 1953). It mixed up reactors and cyclotrons, spoke of electron rays hewing atom splinters from gas, and argued that people could never receive much radiation – the last claim being in flagrant contradiction with several reports in the same magazine. On the other hand, the reactor at Kjeller and the accidents in Chalk River and Windscale were reasonably well explained.



Panorama, 1951. The Kjeller reactor.

The best articles, from the perspective of science popularization, were those in which scientists were interviewed or quoted extensively. Thus, in an article taken over from the *New Yorker* in 1956, a physicist whose eyes had been damaged by repeatedly gazing into a cyclotron explained the

machine's mechanism and how neutrons affect human tissue.[10] In 1958, John Cockcroft, leader of the British nuclear research centre at Harwell, gave a clear exposé of the difficulties of artificial nuclear fusion, a major research interest at the time.[11] In the same year a doctor at the Paris Curie hospital, where Yugoslavian victims of a radiation accident were treated, lectured journalists about blood cancer and bone marrow transplantation.[12]

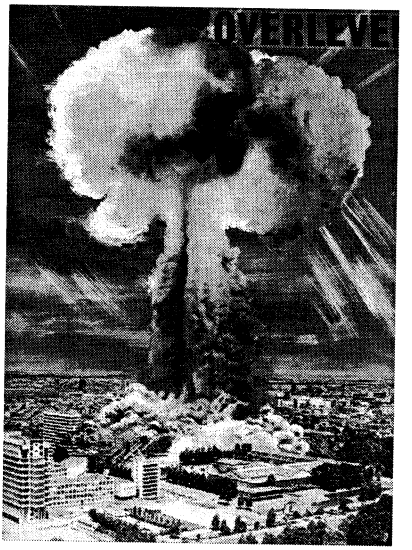
Social Consequences

When trying to explain the social meaning of nuclear energy and expectations for the future, *Panorama* gave very different, often contradictory, accounts, which changed somewhat over the years. We can distinguish four patterns during that period. The first appeared in items on nuclear war. Throughout the period under discussion, these articles were remarkably harsh, given that the magazine served mainly for entertainment and was also read by young children. In 1946, *Panorama* described a future war fought with atomic missiles, chemical and biological weapons, all launched and directed from a distance. Defense would be impossible, and within a day and a night all the cities in the world would be destroyed. In 1950 and 1960, *Panorama* showed the destruction that an atom bomb or a hydrogen bomb dropped on Amsterdam or Rotterdam would cause. We have already mentioned the frequent articles on warnings by scientists of the utter destruction a new war would bring.

On the other hand, there was the promise of a better world, which was mentioned from the beginning and sometimes elaborated. In 1955, in an unusually optimistic article, *Panorama* predicted a wonderful future, in which nuclear energy played an important role: irradiated food would remain fresh for a long time, homes, ovens and greenhouses would be heated by atomic power, cars and airplanes would be propelled by it and illnesses would be cured by radiotherapy. The writer completely ignored all misgivings about nuclear energy, even those in the pages of his own magazine. Nuclear weapons were simply not mentioned.[13] He built up this rosy (and, in his opinion, slightly boring) future by describing only desirable innovations and ignoring the economic and political context. The only context of nuclear technology was more technology. Thus the future

[10] *Panorama*, November 24, 1956.
[11] *Panorama*, February 15, 1958.
[12] *Panorama*, December 6, 1958.
[13] *Panorama*, November 12, 1955.

was 'technicized'[14], or in the writer's words: 'scientists create the future in their labs.' Two other optimistic articles were plainly propagandistic. In 1959, *Panorama* re-printed from an American magazine an interview with the American physicist Edward Teller, the driving force behind the American hydrogen bomb program. Teller pleaded for more tests, arguing that thermonuclear explosions could be applied to all kinds of peaceful purposes: creating harbor basins, changing the underground flows of water in order to irrigate arid areas, and so on. The other propaganda piece was a report on the exhibition Het Atoom in 1957, to which we will return in the next paragraph.



Panorama, 1960. Nuclear attack on Rotterdam

Until about 1950, *Panorama* sometimes tried to integrate these different perspectives, resulting in rather bland stories of humanity standing at a crossroads, having to choose between building up an increasingly destructive weapons arsenal or bringing atomic energy under international control and developing peaceful applications. For example, in 1946 *Panorama* reported a fictional tour with 'Alexander the Great' and the 'seven world wonders of the twentieth century'. After the airplane, the

[14] I borrow this expression from L. Hoelscher, *Die Entdeckung der Zukunft*, 152-162.

Empire State Building, the steamer Queen Elizabeth and other triumphs of human ingenuity, the atom bomb arrived. Standing on the scorched beach of Bikini, with the sunken ships on the shoreline, the writer said the hope was that the new source of energy would be put to peaceful uses. 'Here on Bikini, Alexander, we are standing at the cradle of a new glorious age in the history of humanity, or ... at our common grave. This was the last, the greatest of the seven world wonders of the twentieth century.'

Panorama, 1959. Edward Teller's Plowshare project

A frequently used concept was what the American sociologist William Ogburn had called 'cultural lag': the idea that technological innovations run ahead of society's capacity to put them to constructive uses.[15] The Dutch prime minister expressed this idea in its barest simplicity when he said in a speech to the General Assembly of the United Nations in 1946: 'We have more knowledge than wisdom.'[16] *Panorama* expressed the same

[15] Ogburn, 'Sociology and the atom'; on the history of this idea J.H.J. van der Pot, *Steward or sorcerer's apprentice: The evaluation of technical progress: a systematic overview of theories and opinions* (Delft: Eburon 1994), 772-789.
[16] Van Splunter, *Kernsplitsing*, 81.

basic idea in its article on Hiroshima in 1946: 'The city lies tarnished, as a warning to mankind, which has unleashed powers it may not be able to control.'[17] After 1950, this kind of general comment tended to disappear, except in the propaganda pieces. In the article on the Atoom exhibition in 1957, readers were told to catch up with the atomic age, which had already begun. More typically however, different aspects of the nuclear age were dealt with separately during this period.

A minor but significant pattern after about 1953 may be called accommodation. In spite of the prevailing pessimism, the nuclear age seemed to more or less settle in. A caption to a photograph of a bomb test in 1953 spoke of 'the almost good old mushroom cloud' [18], which thereafter became less frequent in *Panorama*'s pages. In the same year, the expression 'atom age' was called a cliché[19], and indeed: a story of a couple getting engaged to be married was called: 'romance in the atomic age'[20], Jews from Yemen emigrating to Israel were traveling 'from the Middle Ages to the atomic age'[21], and an explosion of a volcano was said to be 'worse than an atomic bomb.'[22]Atomic energy also entered the world of children. A science fiction comic strip that started to appear from 1954, featured atomic scientists being kidnapped and an invasion from Mars that was prevented by atomic fighter planes. In a very popular comicstrip for the youngest children, 'Sjors en Sjimmie', a friendly robot helped the young heroes with different kinds of radiation.[23]

A fifth pattern of imagery appeared in articles on nuclear power generation. Here the basic image was that of an international competition or a 'race.' In the article on the Kjeller reactor in 1950, for example, readers were reminded 'that the race for the control of atomic power is run practically all around the world and that the outcome may determine world history. Every country that does not participate will in the future be like a sailing vessel trying to overtake an ocean steamer. We are convinced that the atomic oven in Norway is a precious trump card for our country.' Even the development of peaceful atomic energy was therefore framed in the language of threat.

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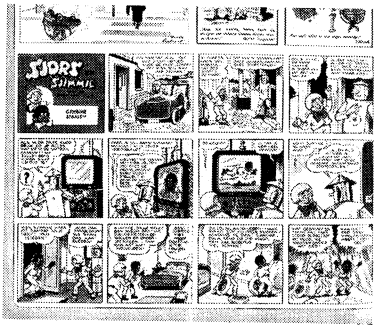
[17] August 16, 1946.
[18] *Panorama*, April 3, 1953.
[19] *Panorama*, September 25, 1953.
[20] *Panorama*, March 26, 1955
[21] *Panorama*, September 14, 1954
[22] *Panorama*, February 19, 1955.
[23] *Panorama*, April 27, 1957.



Panorama ,1957

A striking aspect displayed in several articles was the distrust of authorities. American authorities had denied, later belittled, the radioactive contamination of a worker in Texas in 1957, reported *Panorama.* In the same year British authorities dealing with the Windscale accident had at first told the people in the neighbourhood not to worry, then had prohibited the use of milk in the area. The imagery in this article is striking. In trying to convey the way people in the neighborhood looked at the reactor and its personnel before and after the accident, the writer played on the 'creamy whiteness' of the building and the personnel's uniforms. Before the accident, men with big watchdogs on their rounds waved at the farmers. The atmosphere seemed friendly. The building started to lose its innocence when the villagers learned that Plutonium for hydrogen bombs was made there. '... the men in white coats hurrying in the enclosed yard were nuclear scientists – mysterious figures, who held humanity's fate in their hands.' After the accident everything turned around: 'behind those white walls, sorcerer's apprentices in white coats desperately tried to contain the forces they had conjured up and which now threatened to destroy them.'[24] This loss of confidence in the 'white coats' also seems to be implicit in articles about prominent scientists who had unwittingly sustained large amounts of radiation during their work. Could one trust even nuclear scientists, the only true experts in these matters?

On balance, the picture *Panorama* offered its readers was both confused and threatening. It was best at presenting the spectacular outward appearance of the new technology, it offered a mixed menu of good and bad technical explanations and hardly any information on the economic

[24] *Panorama*, November 30, 1957.

and military structures which financed and directed nuclear development. However, the general impression was gloomy. Even the optimistic articles confirm this pattern. The report on the Atoom exhibition in 1957, for example, argued that scientists had tamed the atomic shrew. The atom is the world's fear, while it should be its pride, wrote *Panorama*. Student guides at the exhibition confirmed this prevailing mood when they told a journalist that many visitors were worried about radiation.[25] Let us now take a closer look at this exhibition.

Exhibition Het Atoom, 1957[26]

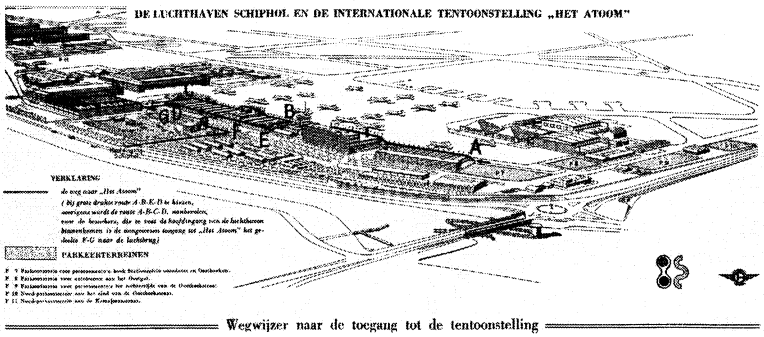
In the summer of 1953, G.H. Knap, a journalist from Amsterdam who worked for a business journal, proposed to the president of his city's chamber of commerce to organise an international exhibition in order to advertise Amsterdam as a commercial centre, just as Rotterdam had successfully done a few years earlier. Atomic energy has been so much on the public's mind, would be an excellent subject, Knap argued, but he proposed connecting it with other examples of hi-tech, like jet planes and space flight. An organising committee was set up, consisting of the president and some Amsterdam businessmen, and a special office was opened to prepare the exhibition. The city mayor supported the plan and the municipal council agreed to finance it. From the beginning, some of the best Dutch nuclear physicists were involved. Conceived at first as a publicity stunt for Amsterdam, the project evolved into a serious attempt at popularization of the uses of nuclear energy, first for power generation, but also for all kinds of other applications. Scientists wrote most of the content of the scientific explanations. The main goal of the exhibition was, in the words of the organisers, to create a 'healthy atmosphere' for decisions Parliament had yet to take about nuclear energy. This referred to the minister's proposals for government investments in nuclear power, mentioned above. To create the right attitudes towards nuclear energy, 'unmotivated fears' had to be overcome, and the public had to be shown

[25] *Het Parool*, July 2, 1957 in the collection of clippings of the archive of the exhibition.

[26] The following is based upon the archive of the exhibition at the Amsterdam Municipal Archives. Especially useful were the exhibition's official guide booklet and the report made up after the exhibition closed: inventarisnummer 144: Verslag van de Stichting Internationale Tentoonstelling Het Atoom, Amsterdam, Schiphol 28 juni – 16 september 1957. The preparation for the exhibition can be traced in the archive of the Amsterdam Chamber of Commerce: Noord-Hollands Archief Haarlem, Toegangsnummer 453, Inv nr 1213, Dossier 796D.

that it had already entered the nuclear age, which would turn out to be 'an entirely new world'. To maintain its position in this new world, the Netherlands needed a 'reservoir of scientists and technicians', which meant that the exhibition needed to address the young especially.

On June 28 1957, Prince Bernard, the Queen's consort, opened the exhibition at Schiphol airport by swaying a silver rod containing some uranium oxide, which activated an electric circuit that made a large diagram in the wall light up, showing a nuclear chain reaction.



Het Atoom at Schiphol Airport

Next to it the exhibition's motto appeared: 'Tomorrow's Energy Source.' The exhibition was a great success: 750 000 people came to visit, on average 9 000 every day. The organisers attributed this success, among other things, to the fact that the exhibition was not a collection of separate stands, but presented a coherent story. This story consisted of a rather thorough lesson in nuclear physics and its applications, but its subtext was a systematic attack on nuclear fears. Let us take a look at the rhetorical strategies employed here.

The story of the exhibition consisted of two historical arguments. At the beginning of the exhibition, the visitor was shown the development of energy uses, from primitive man to the present. This development led inexorably to the depletion of fossil fuels and, consequently, a descent of mankind into poverty. The second line was the development of science, culminating in nuclear physics, which delivered the only viable solution to the problem: nuclear energy. That notion that nuclear energy was not only necessary but also entirely safe was demonstrated more implicitly.

First of all, radiation was made visible in a reassuring way. The main scientific advisor of the exhibition committee, professor Aten of the University of Amsterdam, explained in the exhibition guide that nuclear power was easy to understand, based as it was on the release of magnetic power, which in other forms had been commonplace for ages. Being a simple phenomenon, it could also easily be contained, he suggested. Under the caption 'Radiation, visible for everyone', the exhibition showed not only models of atoms, but also a Wilson cloud chamber in which visitors could see traces of alpha particles from a real radioactive sample. The top attraction was a working nuclear reactor, which the government had bought in the United States for the Technical University in Delft. It was called a swimming pool reactor because the fuel rods were placed in an open, concrete basin filled with distilled normal water. Since the rods were seven meters below the surface, visitors could safely look from the top into the open basin, where they could observe a marvelous blue glow caused by radiation - apparently demonstrating both the beauty and the safety of radiation. The accompanying explanation said that any irregularity would automatically lead to the stopping of the reactor, so that 'under no conceivable circumstance can this reactor create dangerous situations.' Thus visibility, alleged simplicity and safety, and linked together, they were to refute mystery and dispel the fear of the invisible killer rays.

Second, nuclear energy was put in a very specific historical context. The protagonist of historical tales of energy needs and scientific findings was 'mankind'. The exhibition abounded in phrases like 'mankind searches feverishly for new energy sources', or 'mankind has always tried to unravel the secrets of nature'. In the case of science, 'mankind' was represented by famous figures, but they all seemed to be either unravelling the secrets of nature or trying to help mankind by finding new energy sources. Thus Fermi's first pile (nuclear reactor) at the University of Chicago, which had become critical on December 2, 1942, was presented as an important step in the development of nuclear energy. In this way, the exhibition managed to avoid the subject of nuclear weapons entirely. It did not mention that Fermi's pile was built in order to make Plutonium for bombs. The historical context of war and industry was edited out in favour of a bland story of mankind's progress.

This story of progress was underlined by linking nuclear energy with airplanes. One room at the exhibition was dedicated to the history of flight ('man flying'), a technology quite unrelated to the subject of the exhibition,

but very useful to make the point that a technology could quickly develop and become a much appreciated part of life. Fifty years from now, the visitors were told, we will realize that we were on the threshold of the atomic age, just as the previous generation experienced the beginning of the age of flight. Visitors were invited to look around at Schiphol airport, the site of the exhibition, and realise the recentness of its history. As illustrated magazines like *Panorama* show, airplanes were by far the most glamorous and most frequently depicted machines in the fifties. Schiphol was a favourite location for outings. At the exhibition, the beauty of flight was therefore made to shine upon nuclear energy. As if that were not enough, visitors could also watch displays on computers, radar and other high tech implements. The connection with nuclear power was the 'micro-world' of electrons. But the goal was, to associate nuclear technology with all kinds of useful, harmless and impressive hi-tech. It was a strategy that was at odds with the message of simplicity, at the beginning. The exhibition tried to simplify and overwhelm at the same time, but with the purpose of making nuclear power seem part of controlled and beneficial technological progress.

Conclusion

The exhibition of 1957 was only one manifestation of a whole flood of publicity celebrating the new atomic age.[27] It is easy to mistake this hype as an 'unlimited faith in technological progress' prevailing in the Dutch population, as several writers have done. [28] Our analysis has shown that we should rather read the exhibition as a response to a prevailing mood of fear and confusion. Strength of rhetoric indicates strength of opposition. The strategy was to avoid the most terrible subject (nuclear war), make peaceful uses of nuclear energy appear harmless, dispel the sense of mystery surrounding the main fear of radiation, create an impression of technology as an overwhelming force for progress that one could only adapt to, and depict this adaptation as waking up in a world of wonder.

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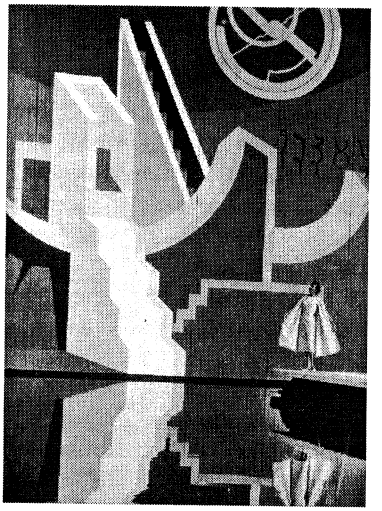
[27] Disney's famous book was translated as *Onze vriend het atom* (Amsterdam: Gïllustreerde Pers 1959). Similar books were produced in the Netherlands, e.g. L.Vries, *Het atoom*.

[28] G.P.J. Verbong, J.A.C. Lagaaij, 'De belofte van kernenergie' in J.W. e.a. (ed), *Techniek in Nederland in de twintigste eeuw*, vol II (Zutphen: Walburg Pers 2000), 239-255, there 239; G.P.J. Verbong e.a., *Een kwestie van lange adem. De geschiedenis van de duurzame energie in Nederland* (Boxtel: Aeneas 2001), 23; H.W. Linsten e.a., *Made in Holland. Een techniekgeschiedenis van Nederland 1800-2000* (Zutphen: Walburg Pers 2005), 349.



Panorama ,1957, Het Atoom

Based on the later articles in *Panorama* as well as the opinion polls cited earlier, it is hard to believe that this strategy could succeed. Less than three months after the exhibition closed, *Panorama* reported on the Windscale disaster, and during the next year several cases of contamination in nuclear facilities were reported. One may even hypothesize that the public began to recognize nuclear rhetoric as the propaganda it was, and that the propaganda therefore contributed, in the longer run, to undermining the faith in large technological systems and the technicians who built and maintained them. The movement against nuclear energy of the nineteen seventies should then have its roots both in the fears of the nineteen fifties and in the attempts to assuage those fears.

Table 1

Panorama and the atom

Year/ theme	Weapons of which:	Weapons: bombs, tests	Weapons: fallout shelters	Weapons: submarines	Weapons: protest	Weapons: Other	Peaceful +/-	Peaceful and/or weapons +/-	Total	Pages per issus; frequency; no. of issues per year	Main events
1945											Trinity test. Hirsohima. Nagasaki.
1946	5	5							5	16p Two weekly, from June 15 issues	Tests Bikini.
1947	2	2							2	26 issues	
1948	2	2						2	4	24p Weekly from August 37 issues	
1949	4	2	2				2 +		6	52 issues	Sovjet-Unie tests atom bomb.

1950	3	3					2 +	1	6	40p 52 issues	Norwegian-Dutch reactor at Kjeller.
1951	5	5				1	3 +++		9		
1952	8	6		2			5 ++++ -	1 -	14		First H-bomb test. Nuclear reactor Chalk River (Canada) burns. First Britain nuclear test.
1953	6	2	2	1		1	3 +++)	4 - +	13		Fall-out on Japanese fishermen after Bravo test. First Russian H-bomb-test Eisenhower: Atoms for peace.
1954	9	5	1	2		1	1	1	11		Nuclear submarine Nautilus
1955	7	5	1	1			1 +	3 +	11	48-60p	Reactor Centrum Nederland (RCN)
1956	2	2					3 + -	7 ----	12		Parliament approves decision nuclear wepons in NL

1957	4	3			1		1 +	2 -	7		Exhibition Het Atoom in Amsterdam Windscale burns Sputnik; beginning of missile race Pacifist Party started.
1958	1			1			1 +	3 -- +	5		Easter marches in England and Western Germany
1959	5	2	1	2			2 - +	4	11		First French nuclear test.
1960	3	1		1	1		2	2 -	7		
1961	16	4		3	8	1			16		Berlin crisis.
1962	3	2				1	1		4	48-72p	Cuba crisis.

All issues have been studied. The number of items of all kinds (article, photo, joke) is indicated. + indicates a positive tone, - a negative one. When the tone is neutral neither sign appears.