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Technology at the Manggha Centre

...Nearly a hundred years since the time when Feliks Jasieński's collection was compiled, Japan is no longer just a country of fascinating art to us. Nowadays, almost every day we encounter products manufactured by Japanese industry that arouse interest in the country that created them. This is the reason why we would love to see the collections of old Japanese art at the Manggha Centre accompanied by exhibitions of modern-day technology. We believe that this surprising juxtaposition of art of earlier periods with today's Japanese technology – which has no less impact on the direction of the world's development nowadays than Hokusai or Utamaro had on European art at the end of the 19th and the start of the 20th century – will show Polish people a Japan that rests with its wings on tradition and modernity and, much like a giant bird, takes off to fly into the 21st century.

Andrzej Wajda and Krystyna Zachwatowicz

Introduction

For years now, the Manggha Centre of Japanese Art and Technology has had an established position in the cultural landscape of Krakow, of Poland, and also abroad. Numerous exhibitions of painting and the graphic and decorative arts attract thousands of people. Also extremely popular are lectures, film and theatre shows, or tea ceremony courses. Quite a number of people are enrolled in Japanese courses at the language school established by the Kyoto–Krakow Foundation. However, despite the expectations of the Centre's founders, Andrzej Wajda and Krystyna Zachwatowicz, Japanese technology has been noticeably underrepresented so far. And yet technology, also rooted deeply in centuries of tradition, plays a tremendous role in the contemporary development of the Land of the Rising Sun, and last but not least, provides significant material for the art that is created there today.

The following is a brief review of the complex relations between technology and art, with examples focusing on Japanese experience. It is also a discussion of events related to presentation of technology at the Manggha Centre during the last year or so.

Technology vs. art

Art, in its broadest sense, is expression of creativity or imagination, or a combination of the two.[1] If this is the case, technology can be considered part of art. After all, it is beyond any doubt that creation of technology requires both creativity and imagination. In a narrower sense, art can be considered the result of the application of skill, characterised primarily by production of aesthetic qualities[2], albeit it is disputable whether all products that are considered art today have such qualities. Be that as it may, the relations between technology and art are sundry and their detailed description would go beyond the scope of this text. I shall therefore confine myself to presenting selected examples.

A technical object as a work of art

Many works of technology can be classified directly as works of art, if only in view of their aesthetic qualities. This obviously goes for many works of architecture, but also undoubtedly applies to certain cars or the Japanese high-speed train Shinkansen. At least the outward appearance of the vast majority of products on offer today is the work of fully trained designers, which is why we are increasingly surrounded by beautiful furniture or electronics, as well as pretty trinkets or gadgets, such as watches or even pens. Of course, we also encounter ugly products of technology, just as it is not difficult to spot ugly pictures or sculptures. But even these ugly objects can be works of conceptual art.

Technology as a means of expression in art

Ever since the dawn of humanity, technology has played a significant role as a means facilitating the creation of art. Musical instruments have always been technological products, starting with the primitive ones, such as drums or string instruments based on an arch, to such artefacts as traditional organs, to sophisticated electronic instruments. It would be hard to imagine grand music shows, for example those staged by Jean Michel Jarre, without microphones, amplifiers, gigantic speakers, lights or lasers. There have also been attempts at introducing elements of science and technology to composition of music. Examples include dodecaphonic or serial music, using mathematical and geometrical structuring. Fortunately, experiments involving automatic composition of music where the composers are computers with adequately-prepared software, have failed, so far at least. Similar failures have been recorded in the area of automated composition of poetry.

Technology has played a tremendous role in the development of painting and sculpting techniques. Technological experiments were not always a success, which is evidenced by some of Leonardo da Vinci's projects or the utter failure of asphalt paints. Printing and copying techniques that make it possible to multiply some themes were and are the daily bread of pop-art. Suffice it to mention the multiplied portraits of Marilyn Monroe made by Andy Warhol. Others, like Roy Lichtenstein, used commercial comics as their source of inspiration, and their detail often referenced printing techniques. Sculptures are increasingly becoming complicated moving devices, as for example those made by Niki de Saint Phalle in the *Stravinsky Fountain* near the Centre Pompidou in Paris.

Technology is rushing in in a wide wave onto areas previously reserved for painting, which is now having to compete with photography and increasingly popular video installations. The torrent of the latter is not always characterised by high quality, which could be easily noticed in January 2007 at the Zachęta Gallery in Warsaw, where most of the video installations shown at the exhibition of *21st Century Polish Painting* emanated sheer lack of inventiveness and poor workmanship (with some exceptions, fortunately). An earlier exhibition, however, also organised at the Zachęta to present the oeuvre of Krzysztof Wodiczko, who specialises in large size video projections, demonstrated that significant works can be created in this area as well. This artist is also known for making specialised technical tools (such as for example the "personal instrument" or the "rambler's walking stick") intended for creating works of art.

There would be no film without technology, and it is not just about the simple recording of reality as initiated in 1895 by the Lumière brothers, but also about its creation, as seen in the recently numerous productions using sophisticated computer animation systems. There are quite a number of people who believe that the days of traditional cinema, with real rather than virtual actors, are already counted.

Science and technology have also been a stimulus for development of artistic techniques. *Zur Farbenlehre* (*Theory of Colours*), the book by the great poet Johann Wolfgang Goethe published in 1810, was the first systematised attempt at describing optical phenomena involved in perception of colours. It provided inspiration and guidance for numerous artists. Let me just mention here, by way of an example, the series of paintings by J.M.W. Turner, *Light and Colour (Goethe's Theory) – The Morning after the Deluge*, on display at the Tate Gallery in London.[3] There are even some who believe Goethe was a forerunner of abstract painting.[4]

Technology as the subject matter of art

Technical devices have been the object of artists' interest for centuries. It is now difficult to assess whether Leonardo da Vinci's drawings of *machinas* were works of art or just ordinary sketches of an engineer. In Utagawa Hiroshige's series of woodblock prints "Fifty Three Stations on the Tokaido Highway," my count of bridges comes to twelve, not to mention numerous buildings, boats or palanquins. Claude Monet painted trains stopping at the Saint-Lazare station. Early 20th century futurists were virtually obsessed with machines, portraying locomotives, cars, and aeroplanes. The famous picture *Radio Fire-Up* painted by Fortunato Depero in 1926 shows interestingly the components of a radio receiver of the time. Trains or speeding cars were painted by Rafał Malczewski, whose exhibition has recently closed at the National Museum in Krakow. Fernand Léger was fascinated with technology, which was reflected not only in his paintings, but also in his innovative film *Ballet mécanique*. Numerous paintings by the surrealists are full of deformed technology. Smoking chimneys and high voltage lines were the favourite theme with many a social realist. More examples can be easily indicated.

Also nowadays, when visual arts are less preoccupied with presentation of reality, artists take up themes relating to the functioning of technical devices or physical and chemical phenomena. A brilliant example here would be the video presentation *Der Lauf der Dinge* (*The Way Things Go*) by two Swiss artists, Peter Fischli and David Weiss.[5] I remember how difficult I found it to stop staring at it, in the Centre Pompidou, when I observed for the first time the unusual transfer of motion achieved by ordinary objects placed on rough concrete floor. The idea – in a more elegant form – was used in a superb commercial spot advertising the Japanese Honda cars.

Technology in the documentation, presentation and preservation of art

The use of technology in the documentation and preservation of art just cannot be overestimated. Documentation based on traditional photography is being replaced by storage of information about works of art in digital form in databases. Such a form of storage facilitates access, for example via the Internet. The whole collections of numerous museums can already be viewed on their websites. Obviously, this will not replace direct contact with a work of art, but it can be helpful in scholarly research or simply in planning a visit to a museum or a gallery. Thanks to new technologies, e.g. in cellular telephony, art can reach practically everyone. The digital storage of information about works of art facilitates their preservation and also prevention of counterfeiting and theft.

Virtual reality systems allow for widespread and safe "sightseeing" of facilities which cannot be made directly accessible due to preservation considerations, and even for "visiting" digitally reproduced structures or facilities which do not exist anymore. Would it not be interesting to take a stroll along the walls of medieval Krakow or through the streets of Kyoto during the reign of Emperor Kammu?

It would be difficult to imagine conservation of art works without a number of technical devices, for example in deacidification of books. Conservation specialists are also aided by progress in chemistry and materials science. In 2006, during its exhibition at the Manggha Centre, the Hitachi corporation presented a sophisticated system for restoration of images which reproduces missing parts based on extremely fragmented existing data.

It is also noteworthy that the very buildings of museums and galleries, their lighting, heating, air-conditioning, communication and security systems often involve the use of sophisticated technologies as well.

The phenomenon of Japan

It is commonly believed that one of the sources of Japan's success in the last few decades was the strong connection between culture and technology.[6] It is not accidental that the society which managed to create the extremely precise elements of traditional samurai armour can now manufacture sophisticated electronic systems as well. The three principles underlying the widely-recognised quality of Japanese products: the improvement principle, the team principle and the rationality principle, are well rooted in the history and tradition of the Land of the Rising Sun. However, there are those who ascribe Japan's post-war success to American management experts, such as W. Edwards Deming.[7]

Art has always had close ties with technology in the Japanese Islands. Suffice it to mention traditional woodblock prints (*ukiyo-e*), which the Manggha Centre is actually quite famous for. Making them required very precise preparation and the use of all the elements designed to print the various colours. Consequently, we are not surprised by the success of Japanese computer printer manufacturers, such as for example Seiko Epson, whose presentation featured at the Centre in 2005. Traditional Japanese printers are recognised as masters of the craft.

A samurai's armour is a work of both traditional technology and art. All of its types, starting with *oyoroi*, through *doumaru*, *haraate*, *haramaki*, all the way to *touseigusoku*[8], amaze us with their precision and beauty of craftsmanship. Possibly the excessive emphasis on the beauty of this primary equipment of old-time warriors was what caused the premature decline of Japanese cavalry, which lost its significance after the bloody battle of Nagashino in 1575. Nearly ten thousand cavalrymen led by Takeda Katsuyori were virtually executed by about a thousand harquebusiers under Oda Nobunaga (the numbers of soldiers fighting in this battle differ considerably in various sources). It is worth mentioning that Polish hussars who resembled Japanese cavalry (except that they had wings made of feathers attached to their backs instead of banners) were still before their peak period at the time. In 1605, two and a half thousand Polish, or more specifically Lithuanian, hussars under Jan Karol Chodkiewicz crushed the Swedish army of more than ten thousand led by King Charles IX. The Swedish loss was two-third of the whole force while the Lithuanians and Poles lost only about a hundred horsemen. One of the factors of their success was their harquebus-bullet proof cuirass, whose front plate could be up to seven millimetres thick. The decline of Polish hussars, brought about by further development of firearms, did not begin until 1656, marked by their defeat in the battle of Warsaw. It is noteworthy that some sources claim that the main cause of the accelerated decline of Japanese cavalry was no other than small and slow horses available in that country at the time.

The precision that samurai armours were made with may, however, be the source of the success achieved by Japanese engineers designing modern devices in our times. The robots that they build play a paramount role in Japanese manufacturing industries, particularly automotive, and are also of increasing significance as aids for the disabled, or in entertainment. Technical solutions also played an important role in other Japanese arts, such as architecture, ceramics, fabric making or production of bronze artefacts. Also well known is the Japanese people's fondness for beautiful detail. This is evidenced for example by collections of intricately decorated Japanese sword guards (*tsuba*).

One of the phenomena characterising Japan was the enthusiasm with which new external ideas were accepted at some point. The modernisation of the country in the Meiji period is the best example here. The *Charter Oath* of 1868 rejected the "elementary customs of the past" with a view to replacing them with models drawn from the West.[9] Unfortunately, the process involved lack of appreciation for, and in some cases downright destruction of, the national heritage. Today, Japan is a model country skilfully taking over and improving creatively the whole world's ideas. Of course, absolutely original products or concepts are created there as well. Suffice it to mention such inventions in my area of interest as the optical fibre, which has revolutionised global communications, or the popular television antenna, a.k.a. dipole.

In this context, it is no surprise that Japan is now one of the world leaders in implementing new electronic and computer technologies in creation of art. A significant role in the dissociation from tradition and creation of avant-garde art was played by the Gutai Art Association (*Gutai Bijutsu Kyokai*) formed in the mid-1950s in Ashiya, near Osaka. In their *Gutai Manifesto,* the group's founder, Jiro Yoshihara, criticised traditional reproduction of reality with paints and other materials. Instead, he postulated creation of objects that had never existed before.[10] The group members' works included arrangements of various materials, and also of technical devices, e.g. twenty electric bells activated sequentially. The latter work was created by Atsuko Tanaka, known also for her 1956 *Electric Dress*, where a set of wires, over a hundred blinking coloured bulbs and neon lamps formed a motif of a Japanese kimono, which the artist donned during art shows.

One of important elements in contemporary Japanese art is reference to the passing of time and infinity.[11] A major representative of this theme is Tatsuo Miyajima, whose international debut was *The Sea of Time*, exhibited at the Venice Biennale in 1988. The pillars of his work are three Buddhist postulates: "keep changing, continue for ever, and connect with everything." Their practical materialisations include installations based on electronic counters displaying cyclically-changing patterns. Other artists, such as Noboru Tsubaki, Tabaimo (Ayako Tabata) or Tadasu Takamine, build complex moving devices, using robots and computer terminals. In Tabaimo's animated installations, e.g. in her *Japanese Interior*, despite the use of specialist computers, the *ukiyo-e* style pictures were painted by the artist the traditional way.[12]

Direct references to the Internet are used by the Exonemo Group, formed in 1996 by Kensuke Sembo and Yae Akaiwa.[13] For example, their somewhat perverse installation *Natural Process* involved transmission – from the Mori Art Museum in Tokyo to the Internet – of images from a camera pointed at a large-size oil painting presenting the initial page of Google.

It should be pointed out that, as opposed to numerous European artists, their Japanese colleagues have forsaken video tapes and discs, and instead they now use computers of considerable processing power, allowing for complex animations in very high definition.

Since 2005, the Japan Science and Technology Agency for has been providing funding for projects in the area of the so called "Device Art". Artists representing this movement consider their work to be the continuation of the work of dadaists and surrealists, and their goal is to integrate art and technology with entertainment and popular culture. In their works, technical devices are not only a tool for achieving a specific effect, but they produce the effect themselves. Kusahara compares such use of devices to the tea ceremony or ikebana: "...It is obvious that the goal of a tea ceremony is not to just enjoy a cup of tea. The importance lies in the whole experience, including the process and the devices used, such as teaspoons and bowls. These tools are functional and made of appropriate materials, and yet there is something more to them than just usefulness. We know that refined tools can make one's life easier. They also serve as a medium in communicating with others. In a tea ceremony, correctly chosen devices change the whole experience."[14] One of well-known representatives of Device Art is Nobumichi Tosa, working with his Maywa Denki Group. They make strange-looking robots, which are subsequently used during public presentations.

Technology presentations at the Manggha Centre

Ever since its formation, the Manggha Centre has been combining art with technology. After all, as a work of architecture, is its superb building, designed by Arata Isozaki, not an expression of such unity? Technical objects have appeared on a number of occasions in the Centre's chambers, for example in 1999, during the exhibition of 1920s' marine posters and ship models, or during the *Common Things* exhibition prepared in 2000, where we could see a Syrena car and a Frania washing machine, among other industrial design exhibits. For some time, a Japanese engine made by Isuzu could be admired in the Centre's lobby. Another exhibition organised in 2000 was *The Art of Mitsubishi Electric Technology*, presenting e.g. robots and industrial process control systems.

Two years later, a major event was the Japanese Emperor's visit to the Centre, where he viewed the exhibition of Utagawa Hiroshige's woodblock prints and the multimedia exhibition *The Road,* which accompanied it. That multimedia exhibition by Aleksander Janicki, a distinguished Krakow artist, combined Hiroshige's classic work with state-of-the-art technologies, creating a magical virtual space. Additionally, the CD-Rom *ukiyo-e Hiroshige multimedialny* was published.

Recent years have seen a greater presence of technology in the Manggha Centre's activity, not only in the capacity of technical devices, such as plasma displays made by Japanese companies NEC, Pioneer or Hitachi, or multimedia projectors and computers, which obviously facilitate the Centre's work, but also carefully-devised exhibitions and presentations showing the tremendous potential – but also the beauty – of Japanese technology. In April 2005, a surprisingly interesting series of Seiko Epson piezography demonstrations was organised. Piezography allows for extremely precise processing and printing of images. The high-fidelity reproduction of details makes this technique useful for both documenting and creating works of art. Particularly impressive were large-size printouts of characters found in *gagaku*, the traditional Japanese courtly performing art, and also of spectacular mandalas. May I add that piezography is used widely to create high-quality reprints of paintings, graphic art works or book illustrations. Students of the Joshibi University of Art and Design used piezography to prepare copies of their own works, which were posted as flags on lanterns in the Tokyo district of Ginza, as part of the Community Communication Ginza 2004 project.

Between November 2005 and January 2006, Manggha Centre visitors could admire *Rising Imagination, a Digital Exhibition on Today's Japan*, organised in cooperation with Canon. It showed the history of the photographic camera and interesting cross-sections of the most recent digital cameras, as well as modern printing technologies. The exhibition also featured digital photographs by the young Japanese photographer Noriyuki Araki, documenting the picturesque areas surrounding Hiroshima.

In June and July 2006, a very carefully-prepared exhibition of Hitachi technologies, *The World Rolled Out in Frames*, offered an opportunity to become familiar with the achievements of that renowned company, covering a wide range, from television and display technology, to computer memory and medical diagnostics systems, to apparatus used in the protection of natural environment and high-speed trains. A tremendous impression was made, particularly on young viewers, by the juxtaposition of 1950s' black-and-white television sets, the first Japanese colour TV from the late 1960s, and modern-day flat plasma or LCD screens. We could also see the display device of the future, showing 3D images, as well as electronic paper, which can revolutionise the publication of newspapers and books. What was really convincing was the presentation of a mobile hard disk drive which could hold data from 1200 conventional CDs. The achievements of nanotechnology were illustrated by a presentation of the world's smallest diamond ring, of merely 30μm (0.003mm) in diameter.

The Centre makes sure that its youngest audiences have hands-on experience of technology as well. In June 2005, Japanese kaleidoscope demonstrations and workshops were organised, to show kaleidoscopes of varied size and different materials, e.g. porcelain, or made of large boxes, three or four metres in height, also electronic and other ones. The workshop participants had an opportunity to make their own kaleidoscopes, under Professor Takaaki Sonoda's helpful supervision.

An important part of the Manggha Centre's activity includes exhibitions, presentations and discussions on architecture – the area where art and technology are inseparable. The most significant event was the exhibition *3_2_1_New Architecture in Japan and Poland*, whose initiator and main contributor was the renowned Krakow-based architect Krzysztof Ingarden. The exhibition, followed by a seminar[15], proved an international success, reaching venues in Rome, Milan, Padua and Bratislava, after a Polish tour including Wroclaw, Lodz and Katowice. The Italian supplement to the exhibition, in the form of multimedia presentations, was shown at the Manggha Centre in December 2006.

Ever since 2003, the Centre has been the venue of regular lectures in the "What Is Architecture?" series. Its curator, Adam Budak, has ensured the participation of distinguished architects and theoreticians of architecture, such as: Michael Rutschky, Heinz Paetzold, Jacek Dominiczak, Marco De Michelis, Colin Fournier, Gerald Zugmann, Hani Rashid, Klaus Kada, Kurt W. Forster, Anne Lacaton, Diana Agrest, Odile Decq, Didier Fiuza Faustino, Justus Pyssal, and Nikolaus Hirsch.

Currently, discussions and specific works are underway with a view to organising more exhibitions of Japanese technology at the Manggha Centre. Last year, much initiative in this area was shown by the then Japanese Ambassador, Mr Masaaki Ono. A number of student projects were prepared at the AGH University of Science and Technology in Krakow, including proposals of exhibition stands, interactive in most cases, devised to illustrate new solutions and achievements of Japanese technology. This issue was also the subject matter of two master's theses defended in 2006 by Electronics and Telecommunications students at that University. One of them, *Japanese Telecommunications Technology – an Interactive Exhibition Proposal* by Szymon Buczek, offered a broad review of diverse solutions in the area of communication. The other one, *The Wave in Telecommunications, a Multimedia Exhibition* by Weronika Wolny (whose topic was inspired by Michał Jasieński), explored creatively the theme of wave in physics and telecommunication systems. The author of this diploma project was aided in designing her beautiful exhibits referencing Japanese culture by Annamaria Kedves, a student at the Faculty of Architecture of the Technical University in Budapest, Hungary. The proposed exhibition is to be put on together with a display of Japanese works of art focusing on the theme of wave, such as the famous woodblock print *The Great Wave Off Kanagawa* by Katsushika Hokusai.

Conclusion

Technology and art are tied together by a number of bonds. Technology enables us to shape our environment; it makes our lives easier, and often actually saves them; it enables us to enjoy life. Without engineers and scientists, we would not be able to travel by car or by plane, watch television shows or communicate at considerable distances. Had it not been for them and their less-recognised predecessors, the drawings in the caves of Altamira and Lascaux, or on the rocks in northern Australia, would probably remain the top achievements of human art.

Andrzej Wajda and Krystyna Zachwatowicz's idea to combine Japan's art and technology at the Manggha Centre made a profound sense. You cannot understand the Land of the Rising Sun without getting to know both these aspects of it. We used to believe some time ago that technology exhibitions would attract young people to the Centre, who would then also get to know Japanese art, once they got here. Now it appears to be the other way round: it is the art that attracts crowds and makes it easier for them to become familiar with the achievements of technology. Technology which shapes our present and which our future depends on to a significant extent.

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[5] Peter Fischli & David Weiss, *Der Lauf der Dinge*, DVD, C-Sales / éditions à voir, 1987.

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[11] Gregory Burke, "Inside Mediarena: Contemporary Art from Japan in Context," *New Zealand Journal of Media Studies*, vol. 9, no. 1, 2002.

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[14] Machiko Kusahara, "Device Art: A New Form of Media Art from a Japanese Perspective," *Intelligent Agent*, vol. 6, no. 2, 2006.

[15] Krzysztof Ingarden, *3_2_1*, Directions, Proceedings of the Seminar*, Manggha Centre of Japanese Art and Technology, 29–30.11.2004.