

On the Reality and the Actuality in Computer Graphics: Case Study on the Invisible World Heritage Mietsu Naval Facility

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Abstract. In recent years, the concept of smart tourism has attracted attention. It is an approach to create new attractions by using the latest ICT in tourist spots. However, in implementing smart tourism, state-of-the-art ICT is just an enabler. Rather, I would like to insist that the critical success factor in the realization of smart tourism is that actuality supported by McConnell's "authenticity" is indispensable. Therefore, the purpose of this paper is to preliminarily consider the significance of actuality in smart tourism. For that purpose, I will introduce the case of Japanese world heritage: VR utilization in Mietsu Naval Facility/三重津官軍所跡. We will clarify the challenges and success factors of smart tourism from open materials and experiences of field visits. Perhaps, as far as the author knows, this study would seem to be the first paper on cases of utilization of virtual reality in Mietsu. The author would like to note this point.

Keywords: Smart Tourism, Virtual Reality, Authenticity, Actuality, Reality

1. Introduction

The purpose of this paper is to conduct preliminary considerations to examine issues of smart tourism. The purpose of this paper is to conduct preliminary considerations to examine issues of smart tourism. Smart tourism is the boundary or convergence of information system research and tourism research. Therefore, methodological diversity of research approaches is required. However, whether it is tourism research or information system research, many conventional researches tend to be oriented towards objective research that follows the natural sciences. It has adopted a third-party perspective rather than a tourist's position. Surely, natural science can be pointed out as "the science of the third person" that objectively describes the state and properties of "matter" (cf. [1]). On the other hand, tourism research subjects are human and information system research targets at "artifacts". In addition, in the latter the interests of research are related to the design and operations of the artifact which can achieve desirable functions. For that reason, it is important for us to commit ourselves to and intervene in the practice of an artifact rather than the description of the artifact. Therefore, it is said that we would have to depend on a scientific view different from natural science [2].

In other words, the new scientific view is a new view of knowledge. The knowledge related to information systems is regarded as different from the objective knowledge for which natural science may seek. The writer thinks that the characteristics are the knowledge related to practice, the knowledge inherent in the relationship between individual information systems and their users and the personal knowledge mentioned from field viewpoints of these users.

The author thinks it a useful direction that we pursue the knowledge mentioned from "a viewpoint of the first person" to consider the information system research, specifically, the interaction between human beings and computers [3]. In this respect, it would be important for us to point out the significance of "First person research" from the acknowledgement which only the research methods that regard objectivity as the first principle and seek for universality are insufficient even in the Japanese Society for Artificial Intelligence [4].

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We can elucidate such a difference of knowledge views through quoting two words expressing a sense of real, concepts of reality and actuality. As is well known, reality derived from *res* which means “thing” has a different sense of real from actuality which etymologically originates from “action”. Therefore, we would introduce the concept of “reality” and “actuality”. We can distinguish between reality and actuality in that actuality has a position related to the very functions of an action which works on the existing things while reality has a position which acknowledges and confirms things composed of the existing things [5: pp.12-13]. Thus, we can understand reality as the presence of the objective world and actuality as the presence related to human experience created by specific physical actions.

Therefore, in this paper, we would like to argue about the importance of human experience to achieve actuality through an example in Japan. In this paper, we would like to examine the interaction between human and machine (particularly, the technology of virtual reality: VR) with the clue of two concepts, reality and actuality.

Especially, we will argue about the importance of human experience to achieve actuality through an example in Japan (the VR use for the World Cultural Heritage of UNESCO). The selected example is the Mietsu Naval Facility/三重津海軍所 (dock, school and office) in Saga prefecture, Japan, which was registered in the World Cultural Heritage of UNESCO as “a heritage of Japan’s Meiji Industrial Revolution” in 2015. Of course, it is not a registration alone. It’s one of the heritage group that dot 8 prefectures (Yamaguchi, Fukuoka, Saga, Nagasaki, Kumamoto, Kagoshima, Iwate and Shizuoka). Some of the heritage became famous as Japan’s first extant running to heritage. However, the Mietsu Naval Facility is not existing any more. Consequently, the Mietsu become famous as a heritage which is invisible (in Japanese, it is called “*mienai/見えない*.” Pronunciation is truly underlined with the name Mietsu.). There is nothing to watch even if tourists visit the Mietsu site. Therefore, this site provides a high reality in tourist using the virtual reality technology.

Then, as a methodology, case studies are used. We conducted case studies based on published information such as newspapers and magazines, public information of municipalities and the experience of the author's inspection (January 16, 2016).

2. Case: Mietsu Naval Facility / 三重津海軍所

2.1. Background of world heritage listing

In this section, we will explain the first overview. By the way, research methods that we have adopted is the case study. It is based on impressions that we have experienced and public information.

In the Edo/江戸 period, Mietsu was a place which the Saga Domain/佐賀藩 had managed its ships. A training school which would teach knowledge and techniques related to operations of western-style ships was established in 1958. It was functioned as a naval base which might provide facilities such as a public office, naval education and manufacture and repair of western-style ships in 1861. It is also famous that Ryoufu-maru/凌風丸, the first domestic steamship has been built. Then, it has finished its mission due to the establishment of prefectures in place of feudal domains.

Mietsu has proven to be the oldest existing dry dock in Japan through the excavation and research and it was designated as a historical site in 2005. Currently, in Tunetami Sano/佐野常民 Memorial Museum, which opened nearby, various exhibition and videos gives detail explanations of the Mietsu Naval Docks. Here, for Sano, we will introduce the description of the web site [6]. Tsunetami Sano was one of the “Saga no Shichi Kenjin/佐賀の七賢人” (seven intellects of Saga) and, from the end of the Edo Period until the Meiji/明治 Period, played a pioneering role in many fields, including politics, industry, science and art. In particular, Sano/佐野 is famous for establishing the Philanthropic Society (present day Red Cross Society of Japan) during the Seinan War/西南戦争, and is today referred to as the “Father of Japan’s Red Cross Society”. Further, Tunetami Sano had been involved in shipbuilding (Ryoufu-maru, as mention above) in Mietsu.

By the way, Tunetami Sano Memorial Museum was opened in 1973. When it was opened, Memorial Museum had been annexed to “Naka-Kawa-Soe community centre /中川副公民館.” Then, it was moved to the present location in October 2004. At the time, the area of Mietsu Navy Facility Heritage has been

developed as a “Historical Park”. Next December 2005, Sano Memorial and Historical Park that is combined Sano Memorial Museum and Historical Park has been completed. Since it is aimed at the World Heritage Site as an additional candidate to the configuration of assets “Kyushu-Yamaguchi modernization industrial heritage group”, expansion and maintenance of the Memorial Museum and Memorial Park has been made. After all, Mietsu Naval Facility was registered in the World Cultural Heritage as an asset composed of Japan's Meiji Industrial Revolution heritages (Iron and Steel, Shipbuilding and Coal Mining) in 2015.

2.2. An inestimable marketing strategy of Mietsu

Then, as mentioned above, we cannot directly see the remnants even if we visit the site which has the registered area of 3.14 hectares because the world heritage, a building built 160 years ago, was buried under the ground of the coast. It is currently buried back for conservation [7]. Therefore, it is operating public relations activities through setting a masochistic catch phrase “an invisible world heritage, Mietsu” with the pun of a Japanese word “mienai” which means invisible. It is Saga (city promotion office) that has proposed such a sales copy -- that is, “an invisible world heritage, Mietsu/見えない世界遺産三重津”(cf. [8], [9]).

Further, the Saga City Promotion Office has opened a channel on “YouTube” that is a video-sharing site. From September 25, 2015, they have published the video. Video is five in total [10]. In addition, they founded the web site for campaign of “an invisible world heritage, Mietsu.”

Now, not only are the archaeological finds from Naval Dock exhibited in Tunetami Sano Memorial Museum adjacent to it but also the experiential tours of Naval Dock using VR are offered. Such activity is referred to as “time cruising.” In the leaflet of its, the tour has been introduced in the follows. That is, “Soon, you’ll see what the Facility looked like in those days. Please take time to enjoy a “hands-on” experience full of new surprises, aided by computer graphics”. Specifically, they are indoor “Time Travelers” and outdoor “Mietsu Walker”.

In the former, people can experience the image video of Naval Dock in those days through using the head mounted display invented by Oculus Company and called Rift and the image output system for VR. Then, time travel is introduced as follows: In an instant, you transported back through time and space to the Mietsu Naval Dock in the late Edo period [12]. Fig. 1 is photograph showing the state of the use and appearance of the Time Travelers.

The latter is a tour that people may walk on the historical site with an offered map and a VR SCOPE. A device which check points can loom up on the map when the sunlight shines on it is offered. If they peek into the VR SCOPE in individual spots, they may watch the appeared panoramic video which images Naval Facility in those days with voice guidance. Thus, it tries to make the invisible world heritage visible by providing people with the video full of presence. Mietsu Walking is introduced as follows: With map in hand, earphone in one year, and the VR SCOPE around your neck, it’s time to set off for the Mietsu Naval Facility Site! Head for the Sightseeing Point while listening to the audio guidance. Take a look through the VR SCOPE, and you’ll see a panoramic image of Mietsu Naval Dock as it was about 160 years ago.

After the recommendation by ICOMOS (International Council on Monuments and Sites), that is, May 4, visitors of Mietsu Naval Dock site and Tunetami Sano Memorial Museum had rapidly increased. Before the recommendation, the average number of visitors per day was 130 people. However, 1600 people visit there on the next day of recommendation (May 5), and 2,050 people was recorded on two days later of the recommendation (May 6). Then, museum office was coped with by opening the closing date (Monday except holidays). Then, the number of visitors are 3,738 (April), 19,086(May), 10,027 (June), 20,149 (July), 19,708 (August) people (City Council Minutes: August regular meeting years 27, September 11 issue -03). Visitors total number of five months of April to August is about 72,000 people. This number is already about twice the last year of annual visitor total about 38,000 people [13], [14], [15], [16], [17].



Fig. 3 the appearance of “Time Traveler” (photograph taken by the author)



Fig. 4 the appearances of “Mietsu Walker” and VR SCOPE (photograph taken by the author)

According to the newspaper article, users of VR SCOPE feel admiration for high reality and someone who use it said “I could understand that the old days of state has been found” [18]. When those services started, the number of prepared SCOPE was 40. However, they were fully operational state. The day after the recommendation, the number of users is 362 people. And two days later, 465 people use the VR SCOPE. On the day that many visitors use the VR SCOPE, the service office paused a rental for the charge of it.

However, as the visitor (tourists and traveller) is increased, some of the challenges has become clear. In this paper, we understand the tourists as “people who do not do business while traveling.” (cf. Tourism Satellite Account [19]). About the challenges, we want to consider in the next section.

3. Unintended Consequences: Emergence of New Problems

In general, it is said that it becomes apparent problems which are not intended throughout operations. But, some issues that are predicted to some extent. That is, dissatisfaction that cannot be seen was expected from the beginning. In fact, it is said that there are many opinions that want to see the real thing [7], [20]. Further, there are some people that surprised to visit without knowing that it is not seen real heritage [7]. Then, in 26 November 2015, as the location and size of the remains can be seen from the ground, actual size photograph of a panel of the remains have been placed on the ground by the city [21]. In addition, for realizing and clarifying the image of naval facility, it was proposed the need for reconstruction possible aboard “Ryoufuu-maru/凌風丸”. In fact, the ship as play equipment has been installed in the memorial park. However, in response to the recommendation of the playground equipment is not suitable as a World Heritage Site, it has been removed. Therefore, it has become nothing park. To restore is difficult in the world heritage (repelling of UNESCO is expected), some measures to compensate for the “dissatisfaction” of historic sites have been studied [22]. In addition, being hurried the CG creation, it has revealed that research into the period was insufficient [23].

In fact, the purpose of this paper is to discuss the social implications of ICT especially VR system. Therefore, the panel exhibition and some measures are no effort to do with ICT. However, panel exhibition, will be one of the evidence that reality provided by the VR system is insufficient. Especially, From the view point of actuality, in the case of Mietsu Naval Facility, low sense of reality has become a problem. In other words, it is weak actuality to support the sense of real. Certainly, speaking from our experience, it is not the impression of realism.

Off course, it is said that there are many satisfied tourists in VR. For example, it is said that there are many satisfied tourists in VR. At 27 December 2015, NHK (Nihon Housou Kyokai/日本放送協会: Japanese Broadcasting Corporation) were reporting the news, such as the following. That is, the results of the questionnaire survey Saga City was carried out has revealed that nearly 70% people has a high evaluation. However, it is a satisfaction for the VR technology, it is not known whether satisfaction with the site.

However, it is a satisfaction for the VR technology, it is not known whether satisfaction with the site. Therefore, from the perspective of actuality of tourists, satisfaction with the technology itself is not the concern of this paper. Rather, it is concerned on whether VR could provide realism for the visitors. Speaking from our experience, however, it is not the impression of realism. That is, the virtual reality of Naval Facility has not gotten expected good results against the catch phrase. It also means that there are a few tourists who can image the situation in those days even if it was built just 160 years ago and people cannot feel it real when they watch the video because there are no existing remnants. In addition, VR is still in a low level. In the next section, we want to consider the social meaning (or sense of real) of VR from the point of view of the reality and actuality.

Keywords of this section are “reality” and “actuality” of the above. We would like to repeatedly emphasized that “reality as the presence of the objective world” and “actuality as the presence related to human experience created by specific physical actions”. And we understand that the sense of real is supported by two of the concept. From this point of view, if actuality is weak, people will feel low reality to immediate events. Moreover, if actuality is too strong, people will get a feeling of “déjà vu” even for real for the first-time experience.

In this case, the tourists in charge of it are considered to be those who would like to enjoy the world outside the ordinary environment. In other words, the tourists would not like to pursue and experience a reality but they seek for the experience of the sense through spending time on the spot and the consumption of actuality. If so, it will need to consider the actuality without pursuing the reality.

However, a sense of reality by virtual space is the pursuit for reality. Rather, if many tourists want the significance to experience the industrial remnants or the actuality, it will need to provide people with something else but a sense of reality provided by VR. Nevertheless, we have no choice to mention that the VR and exhibition contents at the present stage are not in the level that can sufficiently experience the actuality which witnesses an industrial heritage that has supported Japan’s Industrial Revolution. Of course, if the tourists positively commit themselves to the industrial heritage, they may enjoy the experience filled with a sense of reality. However, it may be too severe to ask the tourists to have the background knowledge.

In recent years, people focus on a serious game which allows them to simulative experience such scenes as disaster relief. The time and space achieved there have not only programmed realities but also the aspect of actuality supported by the planners’ sense of purpose and their personal ambitions. It is not until the planners can build their own independent space (the space extended from their bodies) in an objective environment different from daily life that they can make reality coexist with actuality. However, it may be difficult to expect the tourists to have such a definite sense of purpose and an incentive to learn. In other words, I conclude that it is difficult to create “a sense of reality just like what they have done there” just by ICT without showing the tourists the methodology which should be called industrial archaeology.

4. Conclusion

The history of research on utilization of virtual reality in tourism is not very new. Early studies can be traced back to 1995 (cf. [24], [25]). However, the possibility of the technology has been discussed mainly there. For example, discussions such as sightseeing while staying at home, helping to protect ruins, etc. have been done. In other words, there are advantages for study the study and conservation of heritage. As a result, tourism experience in the virtual space was a keyword. For example, Guttenta [26] claims “planning and management, marketing, entertainment, education, accessibility, and heritage preservation are six areas of tourism in which VR may prove particularly.”

However, in recent years, combined use of VR at sightseeing spots has become a focus of attention. That is, it is a smart tourism. Research keywords were replaced by “tourist experiences.” It can be said that the weight of education and entertainment such as immersion experience and additional information in sightseeing spots has increased (cf. see [27], [28]).

Of course, smart tourism is not a magic wand. In the case of smart tourism, new problems arise. It is said that the problem of smart tourism, especially tourism using tourist spots in virtual reality, cannot build human relationships in the real world, but instead is completely immersed in the simulated environment [29].

In the case of Mietsu, information was provided by virtual reality at sightseeing spots where the remains cannot be seen. Specifically, Time Traveler is oriented toward immersive experiences and Mietsu Walker which provides presence. The former provides sufficient immersive experiences, although there is a problem of era verification. Therefore, as mentioned above, we cannot deny weak in the construction of human relations in the real world. Thus, from the experience of the author, the relationship between these two virtual reality services is a little confusing. However, more important problems are the following.

It seems that the actuality that sightseeing the site of the industrial remains, which is the reason for the registration of World Heritage, is not enough. It seems that the actuality that sightseeing the site of the industrial remains, which is the reason for the registration of World Heritage, is not enough. What kind of things cannot be experienced without traveling to the site? If it is said that it is a virtual reality service, it is very disappointing. The reality provided by the virtual reality of this case is not "authenticity" claimed by McCannel [30].

The author would feel that I need something to experience with virtual reality service. In this paper, we call such a factor not as a reality but as an actuality. Reality is provided by virtual reality. However, actuality is a sensation accompanied by the feeling that it is promoting commitment by tourists, and now is staying here in tourist spots. In order to provide such a sense, it will be necessary to conduct first-person research as a tourist rather than objective third person's research. This is the first conclusion of this paper.

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