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Navigating Barriers in Taiwanese Museums

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Table of Abbreviations

Abbreviation	Name
AMSW	Accessibility Measures Service Webpage
ADA	Americans with Disabilities Act
AT	Assistive Technology
CCP	Chinese Communist Party
CRPD	Convention on the Rights of Persons with Disabilities
DMB	Deutscher Museumsbund
DPO	Disabled persons organization
HW	Hardware Facilities & Equipment
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICOM	International Council of Museums
ICF	International Classification of Functioning, Disability, and Health
MCT	Ministry of Culture and Tourism of the People's Republic of China
MoC	Ministry of Culture
NHRM	National Human Rights Museum
NMH	National Museum of History
NMTH	National Museum of Taiwan History
NMST	National Museum of Science and Technology
NMTL	National Museum of Taiwan Literature
NMTH	National Museum of Taiwan History
NMTL	National Museum of Taiwan Literature
NPM	National Palace Museum
NSNS	National Museum of Natural Science
NTM	National Taiwan Museum
NTMOFA	National Taiwan Museum of Fine Arts
PDRPA	People with Disabilities Rights Protection Act
PRC	People's Republic of China
PWD	Person with disability
PWVD	Person with visual disability
RoC	Republic of China
SW	Software Services
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCAG	Web Content Accessibility Guideline
WHO	World Health Organization

1. Introduction

The inspiration for this thesis came from an advertisement that I saw in the Taipei Metro (MRT) in September 2023. The advertisement featured a picture of four figures seated in a row in the MRT. From left to right, there was an elderly man reading a newspaper, a young woman on the phone, a pregnant woman, and finally, a man dressed in historical attire. Only the last figure is a sketch and has been pasted into the picture. The first three figures were seated on light blue, regular seats, while the illustrated figure occupied a dark blue *boai*-seat[1]. On the far right of the advertisement, the following slogan was displayed (figure 1):

> "Hidden things may signify discomfort and are not necessarily a scheme #Maybe he has the need, you just can't see it
> 深藏不露的不一定是謀略而是身體嘸好#也許他有需要只是你不知道"

Figure 1: Advertisement for invisible needs in the MRT Taipei. (Source: Minna Hon / 2023)

The slogan referred to the use of the *boai*-seat. Just because someone using the *boai*-seat may appear outwardly healthy does not mean they are not dealing with invisible physical or mental afflictions. One should refrain from judging others based on outward appearances. The advertisement suggested that there is some level of public

[1] *Boai zuowei* 博愛座位. The notion is difficult to grasp, but roughly translates to "altruistic seating". They are reserved for the elderly, pregnant people, people with disabilities, sick people, injured people, etc.

engagement and outreach around inclusivity and accessibility, which surprised me because mental health issues have historically been stigmatized in Taiwan. This advertisement sparked my interest in exploring accessibility in Taiwan. For my thesis, analyzing accessibility is most feasible in cultural institutions that are open to the public and allow browsing without a time limit, making museums the ideal choice. Currently, many countries are facing a rising trend of an aging population, making disability a more relevant and pressing topic. In 2018, the total population of Taiwan was approximately 23.59 million people. According to the "Statistics of General Health and Welfare 2018", there were 1,173,978 people with disabilities, about 4.98% of the population. This was calculated with the old "Disability Manual" (*jiuzhi* 舊制) and the new "Disability Identification" (*xinzhi* 新制) holders, with potential unreported cases.[2] By 2022, the population of Taiwan decreased to approximately 23.26 million people. The "2023 Taiwan Health and Welfare Report", recorded 1,196,654 people with disabilities, about 5.14% of the population. This upward trend for the disability group is expected to continue, especially within the elderly population due to increased life expectancy. [3]

This thesis aims to assess the accessibility of Taiwanese museums for people with physical disabilities, specifically visual, hearing, and mobility impairments. For people with visual impairments, simply being able to arrive at a museum is not enough. Most museums rely heavily on visual elements. Even when video, audio, or other materials are available, they are usually tied to visual cues for context. Additionally, navigation can be extremely difficult for the visually impaired. If they decide to partake in a museum tour, they need sufficient support to reach the gathering point. Therefore, it is important to have descriptive information or staff trained to guide them. For people with

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[2] Ministry of Health and Welfare 衛生福利部, "Zhonghua minguo 107nian Weisheng fuli gonwu tongji" 中華民國 107 年衛生福利公務統計 Statistics of General Health and Welfare 2018 (Ministry of Health and Welfare, 2019), 344.
Disability Identification can be applied for online or at your household registration office (*Huji digongsuo* 戶籍地公所). After sending in the application, the condition of the applicant will commonly be evaluated by an authorized doctor and then reviewed by the Ministry of Health and Welfare (*Weisheng fulibu* 衛生福利部 MOHW). In the end an assessment will be made by the Department of Social Welfare (*shehuiju* 社會局, DOSW) and the disability identification is issued. See: EGOV 我的 E 政府, "Dai nin kan shenxin zhang'ai zhengming shenqing liucheng, shenxin zhang'aizhe zhichi fuwu yu cuoshi" 帶您看身心障礙證明申請流程 、 身心障礙者支持服務與措施 Guiding You Through the Application Process for Disability Certification and Support Services and Measures for People with Disabilities, EGOV, June 30, 2023, https://www.gov.tw/News_Content.aspx?n=26&s=677435.
[3] Ministry of Health and Welfare, "2023 Taiwan Health and Welfare Report" (Taipei City: Ministry of Health and Welfare, October 2023), 24, https://www.mohw.gov.tw/cp-137-76468-2.html.

hearing impairments, sign language is often their primary means of communication. Written descriptions should use simple, straightforward language, avoiding complex vocabulary. Guides who are proficient in sign language are preferred, and video or audio content should always include subtitles or transcriptions. For people with mobility impairments, such as wheelchair users, navigating spaces can also be a significant challenge. Ramps, elevators, and hallways – large enough to accommodate wheelchairs and allow for unrestricted movements – are preferred. Exhibits positioned only at the eye level of standing visitors can prevent wheelchair users from accessing the information. In the following thesis, I will examine how a select number of museums address these issues as examples of possible approaches, because there is no single correct solution. Using architectural, informational, and emotional accessibility as categories, I want to analyze the current state of accessibility in Taiwanese museums and how accessibility is implemented. Digital accessibility is warranted a special chapter to highlight its importance in Taiwan's digital transformation. This thesis serves as an overview on the topic of accessibility in Taiwanese museums and does not aim to represent any specific museum.

A few papers focus on a detailed approach to accessibility at certain museums, such as Chen Shihan (2022), Chen Jiali and Zhang (2012), and Lin (2023). Chen Shihan talks about his experience as a sign language guide at the National Museum of Fine Arts.[4] His paper contributes to the emotional aspect of accessibility and will be included in the part about the National Museum of Fine Arts to create more depth. Chen Jiali and Zhang depict the participation rights of people with disabilities by making case studies about museums in the UK and Taiwan. In Taiwan, they focus on special events for people with disabilities hosted by the National Museum of Science and Technology (NMST).[5] It is a comparative study conducted more than a decade ago and can be used to assess the current situation. Since then, the United Nation's Convention on the Rights of Persons with Disabilities (CRPD) has been implemented, and the

[4] Chen Shihan 陳詩翰, "Longting gongrong: Guomeiguan longdao jingyan yu xingsi" 聾聽共融: 國美館聾導經驗與省思 An Inclusive World for the Deaf and the Hearing: The Experiences and Reflections of a Deaf Tour Guide at the National Taiwan Museum of Fine Arts, in *Dang women tongzai yiqi* 當我們同在一起, ed. Chen Jiali 陳佳利, Bowuguanxue xilie congshu 博物館學系列叢書 (Taibei Shi: Yishujia chubanshe, 2022), 155–71.

[5] Chen Jiali 陳佳利 and Zhang Yingyan 張英彥, "Bowuguan yu Shenxin Zhang'ai Tuanti zhi Wenhua Canyuquan: Yingguo yu Taiwan de Ge'an Yanjiu" 博物館與身心障礙團體之文化參與權: 英國與臺灣的個案研究 Museums and the Cultural Rights of the Disabled: Case Studies of the U.K. and Taiwan, *Taiwan bowu jikan* 26, no. 2 (2012): 89–109, https://doi.org/10.6686/MuseQ.201204_26(2).0006.

Executive Yuan established the Ministry of Culture (MoC), which is the main body that oversees cultural institutions and cultural equality. Lin, a master's student, recently wrote about the accessible environment at National Taiwan Museum's (NTM) Railway Department Park, utilizing twelve semi-structured interviews. She reinforces the importance of accessibility measures, such as tactile maps, for people with visual disabilities (PWVD) to visit or return to a museum.[6]

Wang (2023) focuses on the newly introduced "Cultural Fundamental Act" of 2019 to discuss cultural equality in Taiwan, addressing the difficulties of implementation while recognizing that Taiwan is still at the starting point for policies of this kind.[7] The work provides valuable insights into Taiwan's cultural policies, but does not delve into the details of accessibility, and rather focuses on societal acceptance in Taiwan. Yi (2016) argues that providing accessibility services needs to be seen through the lenses of social justice and disability studies. She delves into the history of implementing accessibility measures in Taiwan's cultural sector. Museums have social responsibility, and her paper reinforces the purpose of my thesis, which is the importance of implementing accessibility measures in museums.[8] Zhao (2016) focuses on accessible exhibition design for people with visual impairment, analyzing museums both overseas and in Taiwan, while also making suggestions for improving accessibility.[9]

Looking at the current state of research, there are a lot of papers that touch upon my topic. Some describe the transformation to greater accessibility measures in Taiwan, while others delve into a detailed and comprehensive approach to accessibility. However, very few have attempted to paint a broader picture of accessibility in Taiwan with concrete examples rather than abstract framing. Notably, research on digital accessibility is scarce, particularly regarding the implementation of the Web Content Accessibility Guidelines (WCAG) on Taiwanese websites, with no studies about

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[6] Lin Shuhui 林淑慧, "Guoli Taiwan bowuguan tiedaobu yuanqu shizhangzhe wuzhang'ai huanjing jianzhi: yi qingyin gongtong huodong weili" 國立臺灣博物館鐵道部園區視障者無障礙環境建置: 以青銀共融活動為例 Built Accessibility Environment for the National Taiwan Museum Of Railway Department Park to Visual Impairment: The Case of Intergenerational Inclusion Activity (Master thesis, Taipei, Shih Chien University, 2023).

[7] Li-Jung Wang, "Cultural Equality and Policy in Taiwan: The Case Studies on Children/Adolescents and the People with Disabilities," *International Journal of Cultural Policy* 29, no. 2 (2023): 216–30, https://doi.org/10.1080/10286632.2022.2042276.

[8] Yi Junshan 易君珊, "Zhang'ai wenhua yu shehui zhengyi: Bowuguan wuzhang'ai kejixing fuwu de shijian yu fuwu guanxizhong de quanli yiti" 障礙文化與社會正義: 博物館無障礙可及性服務的實踐與服務關係中的權力議題 Disability Culture, Social Justice and Power in Museum Service and Accessibility Practices, *Bowuguan wenhua* 12 (2016): 5–42.

[9] Zhao Xinyi 趙欣怡, "Bowuguan zhi shizhang guanzhong zhanshi guihua yu canguan fuwu yanjiu" 博物館之視障觀眾展示規劃與參觀服務研究, *Bowuguan yu Wenhua* 12 (2016): 105–40.

museum websites. In 2004, Huang (2004) evaluated around forty Taiwanese websites based on the WCAG and found that none adhered to the guidelines.[10] Since then, there have been several updates to the WCAG and to Taiwanese websites. Taiwan recently established the Ministry of Digital Affairs as part of its path towards a digital future. In another master's thesis, Lin (2010) conducted a comparative analysis between the WCAG 1.0 and WCAG 2.0 and the inevitable update to 2.0 on Taiwanese websites.[11] Lin (2019) comes closest to my research goal in assessing web accessibility in Taiwanese libraries using an automatic assessing tool.[12] Her goal is to find common web accessibility mistakes and recommend solutions. It is a very detailed way to assess web accessibility, using and creating statistical efforts to explain the problems that arise while simultaneously explaining the needs of people with hearing and visual impairments. Hopefully, future research will focus on museum websites and come up with possible solutions. My own attempt on explaining the principles of web accessibility with the help of some museums' Accessibility Measure Service Webpage (AMSW) merely scratches the surface.

Structure of the thesis

In the chapter “Research Design”, I will outline the theory and method of my thesis. “Disability Laws in Taiwan – History and Development” explains the setting, how did disability laws develop and how are they relevant to the framework this thesis is working in. “Taiwanese Museums” will first define the museum and illustrate why the International Council of Museums' (ICOM) definition paves the path towards an inclusive museum. Taiwan’s definition in the “Museum Act” and the “Cultural Fundamental Act” establishes the necessity for accessibility being a right for people with disabilities, rather than just charity work – nice to have, but not guaranteed. “Architectural and Informational Accessibility” depicts the current situation in Taiwanese museums based on statistical data with photographic examples and explanations why it is deemed accessible. “Digital Accessibility” dives into the

[10] Huang Chaomeng 黃朝盟, “2003 Taiwan Diqu Wanglu Wuzhang’ai Kongjian Pinggu” 二００三台灣地區網路無障礙空間評估 2003 Evaluation of Web Accessibility in Taiwan, *Yankao Shuangyuekan* 28, no. 1 (2004): 69–80..

[11] Lin Chunling 林純伶, “Yi WCAG 2.0 tantao guonei wuzhang’ai wangye zhi chayi fenxi” 以 WCAG2.0 探討國內無障礙網頁之差異分析 A Comparative Analysis on Web Content Accessibility in Taiwan Using WCAG 2.0 Standard (Master thesis, Taipei City, Tatung University, 2010), National Library.

[12] Lin Qiaomin 林巧敏, “Shizhang ji tingzhangzhe quyong tushuguan wangye zixun zhi wuzhang’ai fenxi” 視障及聽障者取用圖書館網頁資訊之無障礙分析 Assessing Library Web Accessibility for Visually or Hearing Impaired People, *Tushu Zixun Xuekan* 17, no. 1 (2019): 83–116.

technological workings of an overlooked criteria. To understand this topic, assistive technologies used by people with disability are necessary before demonstrating web accessibility on museum websites based on the WCAG. Lastly, using case studies, the chapter “Emotional Accessibility” describes what efforts selected museums chose to address this category. It is recognized as most difficult to assess because there is no standardized way to implement this. Therefore, there have been many papers solely concentrating on this category only.

At this point I would like to thank the Taiwan as Pioneer (TAP) team for their scholarship to fund the on-site research in Taiwan.

For Chinese names and terms, Hanyu Pinyin will be used throughout the text. Hanyu Pinyin is used before any Chinese characters and displayed in italic font. To use disability friendly terms, “Guideline for Writing About People with Disabilities” written by the American with Disabilities Act (ADA) and “*Shenxin zhang’aizhe yiti baodao zhuyi shixiang* 身心障礙者議題報導注意事項” written by The League for Persons with Disabilities, R.O.C. (Taiwan) 中華民國身心障礙聯盟 were used as references.[13] Any resulting offensive language is unintentional. This thesis does not adhere to accessibility standards because of the author’s limitations and the thesis’ structural constraints.

2. Research Design

Within recent research work on accessibility in museums, Zhao and Wang (2023) have written about the specific case of Chinese museums.[14] To measure the accessibility, they decided on the following categories: architectural accessibility, informational accessibility, and emotional accessibility. This categorization was made according to a statement by An Laishun, the chairman of the International Committee of Museums

[13] ADA Knowledge Translation Center, “Guidelines for Writing About People With Disabilities | ADA National Network” (ADA National Network, 2018), https://adata.org/factsheet/ADANN-writing; The League For Persons With Disabilities, R.O.C (Taiwan) 身心障礙聯盟, “Shenxin zhang’aizhe yiti baodao zhuyi shixiang” 身心障礙者議題報導注意事項 Guidelines for Reporting on Issues Related to People with Disabilities, 身心障礙聯盟, September 21, 2022, https://www.enable.org.tw/issue/item_detail/980.

[14] Zhao Jie 赵杰 and Wang Luchun 王露纯, “Bowuguan wuzhang’ai huanjin jianshe xianzhuang chutan: jiyu guonei 23 jia bowuguan de diaocha” 博物馆无障碍环境建设现状初探: 基于国内 23 家博物馆的调查 Preliminary Study on State of Barrier-Free Environment in Museums: According to Surveys of 23 Museum in China, *Zhongguo Bowuguan* 5 (2023): 43–49.

(commonly known as ICOM)[15] for the Asia-Pacific Region from the People's Republic of China. Architectural accessibility means making the museum physically barrier-free. Informational accessibility focuses on making museum information accessible, whether that is in person, through written materials, or through digital means. Emotional accessibility addresses the emotional needs of the visitor, making the museum accessible on a personal basis. An Laishun stated, while architectural accessibility **must** be achieved, informational accessibility **should** be achieved, and museums **should try hard** to achieve emotional accessibility.[16] His statement and the authors criteria for the different forms of accessibility are based on the "Barrier-free Environment Creation Law of the People's Republic of China" (*Zhonghua renmin gongheguo wuzhang'ai huanjing jianshefa* 中华人民共和国无障碍环境建设法), which was enforced in the same year (2023 September 1st).[17] The study works within the framework of what they call the "Social Model" and divides the target group into people who have physical, visual, hearing, or mental impairment and other groups who have accessibility needs. To conduct this research, they used questionnaires on museums according to the categorization (see attachment 1). Only top level (level 1 and level 2) museums were chosen because of their accessibility requirements in the People's Republic of China (PRC). Furthermore, the chosen museums were assigned regions to account for regional differences.[18] Lastly, the museums were assigned different types (e.g., science museum, art museum, history museum, etc.) to have a representative sample. While the authors keep the idea of accessibility quite simple

[15] ICOM is a non-governmental organization which sets professional and ethical standards for museum activities. There are regional divisions, and the Asia-Pacific Region is one of them.
[16] An Laishun 安来顺 and Wang Qiuyi 王秋逸, "Wuzhang'ai bowuguan xiangguan yanjiu de huisu, xiangzhuang yu zhanwang: xie zai 'Zhonghua renmin gongheguo wuzhang'ai huanjing jianshefa' banbu shishi zhi ji" 无障碍博物馆相关研究的回溯, 现状与展望: 写在《中华人民共和国无障碍环境建设法》颁布实施之际 Retrospection, Status-Quo, and Prospect of Research on Accessible Museums, Written at the Time of the Promulgation and Implementation of the Barrier-Free Environment Construction Law of the People's Republic of China, *Zhongguo Bowuguan* 5 (2023): 40–41.
[17] 3rd Plenary Session of the Standing Committee of the XIV. National People's Congress 第十四届全国人民代表大会常务委员会第三次会议, "Zhonghua renmin gongheguo wuzhang'ai huanjing jianshefa" 中华人民共和国无障碍环境建设法 Barrier-free Environment Construction Law of the People's Republic of China (2023), https://www.gov.cn/yaowen/liebiao/202306/content_6888910.htm.
[18] Level 1 and level 2 are not described in detail. Apparently, museums in China are classified according to the "Standard for assessment of museum level" (Bowuguan dingji pinggu biaozhun 博物馆定级评估标准) published by the Ministry of Culture and Tourism of the People's Republic of China (MCT). Only level 1 and level 2 museums have the duty of "educational purpose" and "social responsibility". Chinese Museums Association 中国博物馆协会, "Guanyu kaizhan disipi quanguo bowuguan dingji pinggu gongzuo de tongzhi" 关于开展第四批全国博物馆定级评估工作的通知 Notice on the Fourth Revision of the National Museums Classification and Evaluation Work, July 16, 2020, https://www.chinamuseum.org.cn/detailss.html?id=19&contentId=9547.

and neither explain the details of An's statement and the law, nor illustrate how they extracted the criteria, the criterion is supported by other guidelines. Pressmann and Schulz in their book "The Art of Access" dedicate twelve chapters to guide the reader into the world of accessibility. There are chapters about environmental, cognitive, sensory, digital, and financial access. In our case, environmental access equals architectural accessibility, digital access is part of informational and environmental accessibility, and lastly, cognitive and sensory access are a mixture of information and emotional accessibility. At the same time, they write about different aspects of accessibility service in detail, such as partners and the involvement of people with disabilities in the accessibility process.[19] Their particular approach would take several years. The guide "Das inklusive Museum – Ein Leitfaden zu Barrierefreiheit und Inklusion", published by the Deutsche Museum Bund (DMB), divides accessibility into virtual and environmental accessibility, visitor-oriented service, texts, permanent and temporary exhibitions, education and communication service. According to my categorization, as previously mentioned, environmental accessibility is equal to architectural accessibility, but in this case, permanent and temporary exhibitions are also included. Virtual accessibility and texts account for informational accessibility. Visitor-oriented service and education and communication services are a part of emotional accessibility. This guide's approach focuses on tangible advice for making museums accessible. While details, such as how texts should be written are important, they are difficult to measure. Even though the categorization's wording seems to be quite different, there are many intersectional criteria if you look at the contents.[20]

The social model (of disability), which often stands opposed to the medical model, is not further explained by Zhao and Jie either. According to Zosia Zaks, the medical model emerged in the 1950s. It defined disability as an illness to be treated, a practice she describes as the "normalization" of their bodies and mind. In other words, it divides

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[19] Heather Pressman and Danielle Schulz, *The Art of Access: A Practical Guide for Museum Accessibility*, Art of Access (Blue Ridge Summit: Rowman & Littlefield Publishers, 2021), https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=6539901. Including People with disability (PWD) in the whole process is something that resulted from the disability movement "Nothing About Us Without Us" where PWD complained about authorities making decisions for them without consulting them, leading to implementations that were not a good fit and PWD being excluded again. James I. Charlton, *Nothing About Us Without Us: Disability Oppression and Empowerment* (Berkeley: University of California Press, 2000), 3. This has been an important point of criticism in Taiwan. Wang, "Cultural Equality and Policy in Taiwan: The Case Studies on Children/Adolescents and the People with Disabilities," 220; Chen and Zhang, "Bowuguan yu Shenxin Zhang'ai Tuanti zhi Wenhua Canyuquan: Yingguo yu Taiwan de Ge'an Yanjiu," 100.

[20] Arbeitsgruppe "Museen und Barrierefreiheit," *Das Inklusive Museum: Ein Leitfaden zu Barrierefreiheit und Inklusion* (Berlin: Deuscher Museumsbund e.V., 2013).

people into “normal” and “abnormal”, while denying access to societal resources to the latter.[21] Originally, the social model (of disability) describes that disability is a result of a “hostile cultural, social, and environmental barriers”[22], while impairments are personal restrictions.[23] While the social model is not flawless, it has been internationally recognized and serves as a tool to understand “economic, political, and social barriers encountered by disabled people.”[24] International classification systems, such as the International Classification of Functioning, Disability, and Health (ICF), developed by the World Health Organization (WHO), take the social model into account in their assessment of functional limitations. The ICF combines both the individual as well as society in its considerations, based on body function and structure, activity and participation, and environmental and personal factors. It has been recognized by the United Nations (UN) and is used in Taiwan as the eligibility criteria for disability support since 2012, replacing the medical model.[25] It is important to identify disabilities in detail. However, in this thesis, the division as seen on the museum’s accessibility measure service websites is used: visual impairment, hearing impairment, developmental and cognitive impairment and mobility impairment. This thesis only focuses on physical disabilities (visual, hearing, mobility). Mental and developmental disabilities are excluded because it is not possible to thematize them within the framework of this thesis. The case studies will mostly focus on visual disabilities.

This categorization was chosen because other forms were too wide-ranging and difficult to integrate into the thesis’ framework. Aside from architectural and informational accessibility, I selected representative topics to write about. Other than the categorization of Zhao and Jie, it was not possible to conduct my research in the same manner. Instead of quantitative questionnaires, a mixed-method approach was used to analyze the accessibility in Taiwanese museums. The quantitative analyzation of architectural and part of the informational accessibility follows data collected from the website called “Museum Island” (*Bowu zhi dao* 博物之島), where a total of 166

[21] Zosia Zaks, “Changing the Medical Model of Disability to the Normalization Model of Disability: Clarifying the Past to Create a New Future Direction,” *Disability & Society* 39, no. 12 (December 2, 2024): 3235–37, https://doi.org/10.1080/09687599.2023.2255926.
[22] Mike Oliver and Colin Barnes, “Disability Studies, Disabled People and the Struggle for Inclusion,” *British Journal of Sociology of Education* 31, no. 5 (2010): 552.
[23] Ibid.
[24] Ibid.
[25] Sue-Wen Teng et al., “Evolution of System for Disability Assessment Based on the International Classification of Functioning, Disability, and Health: A Taiwanese Study,” *Journal of the Formosan Medical Association* 112, no. 11 (November 1, 2013): 692, https://doi.org/10.1016/j.jfma.2013.09.007; Teng et al., 695.

museums are assessed.[26] On “Museum Island”, installed by the MoC in Taiwan, the respective museums are in charge of the information provided themselves[27] Their “Accessibility Services” are divided into “Hardware Facilities & Equipment” and “Software Services”. [28] “Hardware Facilities & Equipment” are used to replicate architectural accessibility and “Software Services” are used to replicate informational accessibility. The data is supplemented by real-life examples to illustrate why these services are considered barrier-free based on the “Smithsonian Guideline for Accessible Exhibition Design” and the “ADA Checklist”. The ADA in the latter stands for The Americans with Disabilities Act, which requires American institutions to be made accessible for people with disabilities as an effort to have equal participation rights.[29] The former is a guideline specifically adjusted for application in exhibitions that the latter lack.[30]

The museum homepages' digital accessibility will be analyzed separately as a part of informational accessibility because this part is often neglected and not understood. In a digital age, acquiring information commonly happens through browsing the World Wide Web first. In Taiwan, the standard for digital accessibility is the Web Content Accessibility Guideline (WCAG), an international standard for web content accessibility compiled by the World Wide Web Consortium (W3C), which has been recognized by the European Union among others.[31] Similar to the “Accessibility Services” above, key features of web accessibility are explained by using the museum homepages as examples.

Emotional accessibility is the most difficult to exemplify because certain conditions need to be met for the special needs of a wider array of visitors, and there is no single solution or standard to achieve emotional accessibility. In-person visits, sometimes accompanied by PWVD, will illustrate some aspects of emotional accessibility and serve as examples of potential solutions. Case studies feature the wide-ranging

[26] See attachment 3.
[27] See attachment 6.
[28] See attachment 2.
[29] Institute for Human Centered Design, “ADA Checklist for Existing Facilities” (ADA National Network, 2016), https://www.adachecklist.org/.
[30] Smithsonian Accessibility Program, “Smithsonian Guidelines for Accessible Exhibition Design” (Washington, D.C: Smithsonian Institution, n.d.), https://access.si.edu/museum-professionals.
[31] European Commission, “Web Accessibility,” Shaping Europe’s digital future, October 10, 2023, https://digital-strategy.ec.europa.eu/en/policies/web-accessibility.

services at the National Taiwan Museum of Fine Arts (NTMOFA) and experience with staff training at the National Museum of History (NMH).[32]

To clarify information, emails were sent to the National Science and Technology Museum, the MoC, National Human Rights Museum (NHRM), NHM, and the NMTH.[33] Additionally, qualitative interviews were conducted with three experts. For the qualitative interviews, a semi-structured interview method was used to understand the actual situation and challenges and documented in the form of memory protocols. The experts take on a representative role for their group, even though experiences might vary. Respondent A is a person with visual disability and works at a library servicing PWVD. Respondent A mainly speaks about one's life experiences as a blind person, the assistive devices needed to navigate life, and also the challenges in everyday life and when taking part in cultural activities.[34] Respondent B is a director (*lishizhang* 理事長) as well as a founding member of a nonprofit disability organization, which organizes trips on tandem bicycles for people with visual impairments, while being visually impaired oneself. While conducting the conversation, the main goal was to find out what the motivation behind establishing a new association was, what challenges they face, and their assessment of the current situation of accessibility in Taiwan.[35] Respondent C is a museum worker, who works in the department for accessibility services. The museum worker regularly does inclusive educational activities within the museum and aims to better understand one's training and experience in guiding people with special needs, as well as challenges faced in the process and how to navigate them.[36]

The museums visited were selected through their adherence to the conformity of the Web Content Accessibility Guideline[37] (WCAG), an international standard for web content accessibility by the World Wide Web Consortium (W3C), in this case museum websites. This decision was made with the assumption that (digital) accessibility issues must be important for the selected museums, especially if a triple A conformity website has been set up.[38] The triple A conformity websites for museums were set up in a separate space called "Accessibility Measure Service" (*youshan cuoshi fuwu* 友善措施

[32] For the latter see observation protocol in attachment 9.
[33] I did not receive an answer from the NHRM, else see attachment 5-8.
[34] See Attachment 10.
[35] See Attachment 11.
[36] Attachment 12.
[37] *Wangzhan wuzhang'ai guifan* 網站無障礙規範
[38] There is level A, AA and AAA conformity, with triple A being the highest level of conformity.

服務) by the MoC.[39] National-level museums were chosen because they tend to have a higher budget and more resources than smaller institutions, and not the same expectations can be applied to the latter.[40] The following museums were visited in this order: National Museum of Taiwan History (September 24, 2024), National Museum of Taiwan Literature (NMTL) (September 25, 2024), National Palace Museum – Southern branch (September 26, 2024), National Human Rights Museum (October 8, 2024), National Taiwan Museum (October 11, 2024), National Museum of History (October 16 & October 25, 2024), National Taiwan Museum of Fine Arts (October 17, 2024), National Museum of Natural Sciences (NMNS) (October 18, 2024), National Science and Technology Museum (October 30, 2024).

3. Disability Laws Taiwan, history and development

Taiwan, as a quasi-state, is not recognized by most states and international organizations such as the UN. However, Taiwan's adherence to international standards might relate to exactly their ambiguous state-like status in the world. DeLisle eloquently puts it:

> "Taiwan's unusual – and precarious – place in the world has made its commitment to, and implementation of, international human rights law and norms a resource in its persistent pursuit of international status and security. A good record of human rights has offered a way to safeguard and enhance Taiwan's international standing. Undertakings to meet the demands of the major international treaties and the rules of customary international law for human rights have been a means to strengthen Taiwan's claim to state, or state-like, stature."[41]

This status has historical reasons. As a result of the civil war in China in 1949, the government of the Republic of China (RoC), commonly referred to as Guomindang, fled to Taiwan after being defeated by the Chinese Communist Party (CCP). At first, the RoC was recognized as the official government of "China" by the UN and

[39] It turned out that these websites were set up without the decision by the individual museums and were a project by the MoC (see attachment 6).
[40] For a similar argumentation see Richard Sandell, "Museums and the Combating of Social Inequality: Roles, Responsibilities, Resistance," in *Museums, Society, Inequality*, ed. Richard Sandell (London: Routledge, 2002), 4.
[41] Jacques deLisle, "'All the World's a Stage': Taiwan's Human Rights Performance and Playing to International Norms," in *Taiwan and International Human Rights: A Story of Transformation* (Singapore: Springer, 2019), 173–74.

participated in its endeavors, but after 1971, the PRC took their place as the “rightful” China, and Taiwan consequently was left out of the UN. Until then, they were framed as the “free” China, in contrast to “communist” China on the mainland. After Taiwan lost its status and committed human rights violations during martial law, they began to face repercussions in the form of negative sentiments in US foreign politics. DeLisle argues that it is important for Taiwan to push for more human rights laws because of its reliance on the US for support to be recognized as a state. As a result, the Taiwanese government[42] was forced to push for more human rights to receive further support and presented themselves as a place you could still work with, which also pushed for democratic values that contrasted the PRC.[43] However, the conformity to democratic ideals and human rights protection now has a lot of limitations and may not be an indicator for a state-likelihood anymore.[44]

The first law, which touched on people with disabilities, was the “Law on the Welfare of Disabled Citizens” (*Canzhang fulifa* 殘障福利法), introduced in 1980. This law primarily states that responsibility lies with the individual, following the so-called medical model. People with disabilities were allowed their exclusive spaces, away from the rest of society, but the common spaces people without disabilities frequented were not required to accommodate their needs.[45] As a result, exclusion happened, and it was almost impossible for people with disabilities to navigate life outside of their designated spaces. Public spaces, such as public transport and public institutions, were not adapted for their use. Nowadays, designated seating, ramps, and elevators are used to accommodate different needs. In the past, there were no such services and people with disabilities were entirely reliant on family members to take them to their destination.

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[42] RoC in this case refers to the government ruling during martial law and Taiwanese government means the democratic government after martial law was lifted. It is only differentiated here for historical reasons. Taiwanese government, state, or government always refers to the current constellation as a governing body in Taiwan.

[43] deLisle, “‘All the World’s a Stage’: Taiwan’s Human Rights Performance and Playing to International Norms,” 174–78.

[44] deLisle, 197–98.

[45] William P. Alford, Qiongyue Hu, and Charles Wharton, “People Over Pandas: Taiwan’s Engagement of International Human Rights Norms with Respect to Disability,” in *Taiwan and International Human Rights: A Story of Transformation* (Singapore: Springer, 2019), 644.
An example for such exclusive spaces is an educational institution for people with disability, usually sorted by form of disability. According to conversations held, as children they are sent to these institutions without their parents, which are usually boarding schools. These schools are not available in every city and can be quite far from their hometown.

Grassroot movements led to some amendments growing nearer to the social model until the introduction of the “People with Disabilities Rights Protection Act” (PDRPA) (*Shenxin zhang’aizhe quanyi baozhangfa* 身心障礙者權益保障法) in 2007, which as the name indicates, focuses more on the rights of individuals. During Ma Yingjiu's presidential term, international human rights were introduced into Taiwanese domestic law, specifically the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR).[46] The same was attempted with the CRPD, that used the social model of disability. Activists lobbied for its incorporation into domestic law. The CRPD was first decided by the General Assembly of the UN in 2001 and adopted in 2006. It has since then been ratified by 186 countries worldwide.[47] The CRPD states its purpose is to “protect the legal rights and interests of people with disabilities, secure their equal opportunity to participate in social, political, economical, and cultural activities fairly, while contributing to their independence and development.”[48] It defines persons with disabilities as “those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.”[49] The CRPD defines disabilities, but does not specify what physical, mental, intellectual or sensory impairments encompasses. A more detailed definition is included in the PDRPA’s Article 5, on which Disability Identification Cards are issued.[50] In contrast, the law up to that point mainly focused on medical definitions and measures, rather than catering to the needs of people with

[46] Ibid., 645.
[47] Office of United Nations High Commissioner for Human Rights, “Status of Ratification Interactive Dashboard,” February 21, 2023, https://indicators.ohchr.org/.
[48] Sixty-first session of the General Assembly by resolution A/RES/61/106, “Convention on the Rights of Persons with Disabilities” (2008), https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities. Article 1.
[49] Sixty-first session of the General Assembly by resolution A/RES/61/106. Article 1.
[50] “People with disabilities in this Act refer to those who with the following deviation or loss resulting from physical or mental impairments, are limited or restricted to be engaged in the ordinary living activities and participation in the society; and they, after processes of evaluation & assessment by the committee composed of professionals from medicine, social work, special education and employment counseling and evaluation, can be regarded as suffering one of the following malfunction categories and issued a disability identification.[sic!]: These are divided into the following: “1,[sic!] Mental Functions & Structures of the Nervous System; 2. Sensory Functions & Pain ; The Eye, Ear and Related Structures; 3. Functions & Structures of / involved in Voice and Speech; 4. Functions & Structures of / related to the Cardiovascular, Haematological, Immunological and Respiratory Systems; 5. Functions & Structures of / related to the Digestive, Metabolic and Endocrine Systems; 6. Functions & Structures of / related to the Genitourinary and Reproductive Systems; 7. Neuromusculoskeletal and Movement related Functions & Structures; 8. Functions & Related Structures of the Skin.” Ministry of Health and Welfare, “People with Disabilities Rights Protection Act” (2021), https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=D0050046. Article 5

disabilities or preventing discrimination. At the same time, the number of disabilities were usually underreported, with approximately only 5% of Taiwan's population identifying as people with disabilities, based on reports by the WHO.[51] In 2014, the Act of Implementing the CRPD was passed and ratified two years later. The implementation had far-reaching effects. As a result, all governmental institutions were required to change their legislation and regulations in accordance with the CRPD. There was a call to action for people with disabilities, but also disabled persons organizations (DPO) to work with the government to make these changes possible. The CRPD requires the formation of a committee to enforce the CRPD, as well as a control mechanism, such as national reports that need to be reviewed. The Executive Yuan (*Xingzhengyuan* 行政院) then made a detailed plan on the changes they wanted to carry out between 2014 and 2019. This was the beginning of the introduction of the CRPD. In the years after, there were several reports on the implementation of the CRPD and how it could be improved. DPOs and researchers worked hard on the promulgation of the CRPD, but still face a lot of difficulties and barriers.[52] W.P. Alford et al. argued that there are still not enough administrative and societal efforts in addressing the needs of people with disabilities and including them in the conversation. They should be allowed to make decisions for themselves and be seen in a better light by other people. They have legal rights according to the CRPD to take back their rights in case of discriminatory acts in theory, but Taiwan fails to uphold their laws judicially.[53] Progress can be seen in education, as inclusive education is being fostered, while special education in specialized schools with specialized teachers is also available. However, there are still fewer opportunities for further education, particularly for girls and women, who tend to be less educated. In terms of employment, one-third of people with disabilities are employed. Whether the other two-thirds are unable to work or face other barriers to participation has not been officially analyzed.[54] The incorporation of the CRPD into the law was not only to politically show that Taiwan is a law-abiding member of the international community, but it was also a step forward, as activists and scholars can now push for more change under the ratified laws.[55]

[51] Alford, Hu, and Wharton, "People Over Pandas: Taiwan's Engagement of International Human Rights Norms with Respect to Disability," 646.
[52] Ibid., 648-651.
[53] Ibid., 652.
[54] Ibid., 655.
[55] Ibid., 657.

With the implementation of the CRPD and the concept of human rights into Taiwan's constitution, the rights of people with disabilities were consolidated. A shift from the medical model to the social model is becoming visible, while DPOs continue to fight for more representation in the government and better treatment of people with disabilities in society.

4. Taiwanese Museums

4.1 Museum definition and Museum Act

The introduction of a new museum definition by the ICOM in 2022 redefined the role of museums and led to a renewed discourse about it.

> "A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, **accessible and inclusive, museums foster diversity and sustainability**. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing."[56]

Even though museum communities have adapted to be more inclusive before this announcement, the definition now added "accessible" and "inclusive" as museum values, making it another part of their social responsibility. In comparison, the old definition, which has not changed since 2007, only required a museum to be open to the public, educate the visitors, and be enjoyable.

> "A museum is a non-profit, permanent institution in the service of society and its development, **open to the public**, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the **purposes of education, study and enjoyment**."[57]

A previous attempt to renew the definition was voted against by the majority of member states at ICOM Kyoto 2018.[58] It was criticized for using terms such as "democratizing"

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[56] International Council of Museums, "Museum Definition," accessed December 12, 2024, https://icom.museum/en/resources/standards-guidelines/museum-definition/.

[57] International Council of Museums, "Extraordinary General Assembly," August 24, 2022, 12, https://icom.museum/wp-content/uploads/2022/07/EN_EGA2022_MuseumDefinition_WDoc_Final-2.pdf.

[58] The proposed definition was as follows: "Museums are democratising, inclusive and polyphonic spaces for critical dialogue about the pasts and the futures. Acknowledging and addressing the conflicts and challenges of the present, they hold artefacts and specimens in trust for society, safeguard diverse memories for future generations and guarantee equal rights and equal access to heritage for all people. Museums are not for profit. They are participatory and transparent, and work in

and “polyphonic” as being too idealistic and abstract. Therefore, it met a lot of resistance because it does not account for regional differences and a realistic adoption. The introduction of the new definition in ICOM Prague 2022 was coined less idealistically, focusing on the social role of museums, and passed the vote without problems. However, issues like decolonization, restitution of artifacts, or other critical issues were not taken into account.[59] Taiwan is one of the ICOM member states. The definition serves as a framework and standard to work within and a leadership role towards the future.[60] After the new definition was publicly announced, it was widely discussed in the quarterly published museum magazine “Taiwan Natural Sciences” and a section was dedicated to this topic. Various scholars discussed how the new definition would change the operation of museums, and where to go from there.[61] It indicated the importance of ICOM for Taiwan.

Before ICOM changed its definition, Taiwan introduced the so-called “Museum Act” in 2015. The “Museum Act” gave museums a certain value within Taiwan's legal framework securing their position amongst other cultural institutions. It not only serves as a framework for public museums, but also addresses the often-elusive private museums as one of the most significant changes. The museums can make the

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active partnership with and for diverse communities to collect, preserve, research, interpret, exhibit, and enhance understandings of the world, aiming to contribute to human dignity and social justice, global equality and planetary wellbeing.” Martina Lehmannová, “224 Years of Defining the Museum” (International Council of Museums Czech Republic, 2020), https://icom.museum/wp-content/uploads/2020/12/2020_ICOM-Czech-Republic_224-years-of-defining-the-museum.pdf.

[59] Lin Wenling 林玟伶, “Bowuguan xindingyi jieguo chulu: Zouxiang weilai de qidian” 博物館新定義結果出爐: 走向未來的起點 The Announcement of the New Museum Definition: A Start Towards the Future, 2022 ICOM 布拉格大會系列報導 (Museum Island, July 5, 2024), https://museums.moc.gov.tw/Notice/NewsDetail/8d8a3e73-0f43-4b2e-a439-1e97eadc11f6; Gao Yuxuan 高郁媗, “Sikao shuyu women de bowuguan dingyi: bowuguan zaidingyi gongzuofang ji zuotanhui jishi” 思考屬於我們的博物館定義: 博物館再定義工作坊暨座談會紀實 Rethinking the Definition of Our Museum: A Recap of the Museum Redefinition Workshop and Seminar, November 26, 2024, https://museums.moc.gov.tw/Notice/ColumnDetail/14173fc3-1499-4484-b2a8-36d9c0654014; Léontine Meijer-van Mensch, “Thinking out Loud: Networks, Transparency, and Soft and Loud Sounds,” in *Museum und Ausstellung als Gesellschaftlicher Raum*, ed. Sønke Gau, Angeli Sachs, and Thomas Sieber, Edition Museum (Bielefeld: transcript Verlag, 2024), 27–29.

[60] Liao Huangding 廖凰玎, “Bowuguanfa de zhiding yu fazhan zhi tantao” 博物館法的制定與發展之探討, in *Bowuguan de gonggongxing yu shehuixing*, ed. Chen Shangying 陳尚盈, Bowuguanxue Xilie Congshu (Taibei Shi: Yishujia chubanshe, 2022), 47.

[61] See Huang Yingzhe 黃英哲, “Bowuguan fazhan shehui qiye gainian de wenchuang shangye moshi: yi Guoli lishi bowuguan ‘gongyi wenchuang’ weili” 博物館發展社會企業概念的文創商業模式: 以國立歷史博物館「公益文創」為例 Museums Develop Cultural and Creative Business Models with the Concept of Social Enterprises: A Case Study of “Cultural Creativity for Public Charity” of NMH, *Taiwan Bowu Jikan* 41, no. 4 (2022): 54–67; Wang Yaxuan 王雅璇, “Women suojian, suoxiang yu sowang: bowuguan dingyi zi kuozhan yu xinju” 我們所見、所想與所望：博物館定義之擴展與新局 What We Are Seeing, Thinking and Imagining: Development and New Stage of the Museum’s New Definition, *Taiwan Bowu Jikan* 41, no. 4 (2022): 6–13.

government take responsibility to act according to the law and take certain measures. At the same time, museums are subject to state resources and state administration and their supervision. While the law is concomitant with a more secure position, it is crucial to strike a balance between the museum's individuality and state involvement.[62] It not only integrates the earlier version of the museum's definition into Article 3 of their law, but also emphasizes the public nature of museums:

> "Article 3: A museum, as defined by this Act, refers to permanent non-profit institutions open for utilization by members of the public through activities such as exhibitions and educational outreach, whose purposes include the archival preservation, restoration, and research of tangible and intangible artifacts from human activities or the natural environment. The **public nature** of museums shall be upheld, with a diverse offering of services, content, and resources to members of the public. "[63]

It is not explicitly stated that museums have to be accessible and inclusive, but the "public nature of museums" is stated within the purpose of a museum in Article 1 as well.[64] A community-based approach to the museum ensures the participation rights for marginalized groups. It falls in line with the "Cultural Fundamental Act" (W*enhua jibenfa* 文化基本法), that enables participation rights in cultural activities for every citizen regardless of background.[65]

4.2 Social Responsibility

One of the first publications writing about the participation rights of people with disability in museums was the magazine "Museum" published in light of "The International Year of Disabled Persons" by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1981. The intention is to shine a light on the responsibilities

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[62] Liao, "Bowuguanfa de zhiding yu fazhan zhi tantao," 52–53.

[63] "第三條 本法所稱博物館，指從事蒐藏、保存、修復、維護、研究人類活動、自然 環境之物質及非物質證物，以展示、教育推廣或其他方式定常性開放供民眾利用之非營利常設機構。 博物館應秉持公共性，提供民眾多元之服務內容及資源。" Ministry of Culture, "Bowuguanfa" The Museum Act (2015), https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=H0170101.

[64] Article 1 This Act was promulgated to promote the development of the museum enterprise to enable comprehensive museum functions, as well as to raise the level of professionalism, public nature, diversity, educational capability and international competitiveness in the enterprise, which will enhance the caliber of culture and history, science and nature, arts and humanities, etc., among members of the public and represents the cultural integrity of the nation. 第一條 為促進博物館事業發展，健全博物館功能，提高其專業性、公共性、多元 性、教育功能與國際競爭力，以提升民眾人文歷史、自然科學、藝術文化等涵養，並表徵國家文化內涵，特制定本法。Ministry of Culture.

[65] Article 4. Ministry of Culture, "Cultural Fundamental Act" (2019), https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=H0170151.

of accepting people with disabilities as visitors of a museum. For this, the authors reflect on different issues, such as challenges people with disabilities face, whether environmentally or socially. They also highlight international examples to paint a broader picture and to promote this issue.[66] In this issue, research had begun to separate disabilities from diseases, divides individuals into normal and abnormal, and use of the word “handicap” was still common, which is avoided in more recent disability studies. Normality is rejected as a defining factor for disability because it neglects a diverse society and reinforces conformity towards an ideal idea of “normal” and ostracizes anyone outside those norms.[67] “Handicap” in the context of their time and as defined by this issue approximates the word “barrier” that is used today. The perspective though is entirely different. Their definition of “handicap” emphasizes the disadvantage based on disability, and “barrier” emphasizes the disadvantage based on society, the former putting the responsibility on the individual and the latter on society.[68] A more recent study by Sandell (2002) supports the notion of social responsibility of museums and discusses the different opinions about it. He argues within the framework of the relationship between museums and individuals, community, and society. Museums can have a positive effect on the life of marginalized individuals and as a result, empower certain communities to create a society that is more equal. For example, if people with disabilities can go to museums without barriers, the museum serves as a safe space and helps them learn to navigate public spaces before attempting more challenging spaces. At the same time, museums can open up dialogue with other members of the local community, where able-bodied visitors gain knowledge about the importance of accessibility services for people with disabilities, fulfilling the museum’s educational outreach responsibility. The impact on society is implicit because of the museums' inherent public nature. The most common opposing opinions were that museums lacked sufficient influence to change social equality or public opinion, and that inclusiveness is not part of the museum’s social responsibility. Sandell counters the first argument, stating that a single museum might not have enough influence to change, but in combination with mass media or schools, promulgation of social values can be achieved. Sandell acknowledges the second

[66] For examples see Maureen Gee, “The Power to Act,” *Museum* XXXIII, no. 3 (1981): 133–45; Hans-Albert Treff, “Educating the Public,” *Museum* XXXIII, no. 3 (1981): 151–55.
[67] Zaks, “Changing the Medical Model of Disability to the Normalization Model of Disability,” 3250–51.
[68] Zaks, 3238; Assen Jablensky, “Impairments, Disabilities) Handicaps: Predicaments That Can Be Ouercome,” *Museum* XXXIII, no. 3 (1981): 129–32.

argument, but comes to the conclusion that holding on to conservative beliefs will inevitably fall out of step with evolving societal values towards more social responsibility.[69]

In Taiwan, the first known law of this kind was promulgated in 1992 as the "Culture and Arts Reward Act" (*Wenhua yishu jiangzhu tiaoli* 文化藝術獎助條例), which laid out subsidies for people living in poor districts or rural areas to take part in cultural activities.[70] With the pressure of international organizations, such as UNESCO, who declared cultural rights, Taiwan also started to move in the same direction. There were no proper laws that guaranteed equal cultural participation until the "Cultural Fundamental Act" (*Wenhua jibenfa* 文化基本法) was promulgated in June 2019. It is a law that was introduced to "protect the cultural rights of the people, expand cultural participation, realize multiculturalism, promote the development of many cultures, and set fundamental principles and a policy direction for national cultural development."[71] This is a law which cements cultural equal rights, especially for marginalized citizens, such as children, old people, people with physical and mental disabilities, immigrants, indigenous groups, women and people of other gender, as well as people living in poverty, etc.[72] Wang and Wu argue that there is still room for improvement in the implementation. Marginalized people still face a lot of prejudice by the majority. They will often not be seen as individuals, but only as "useless", "disabled", and other similar negative viewpoints. This makes it difficult to include people, who are "different" because the majority might resist their participation in society. Wang and Wu divide the reasons for these difficulties into three categories: discrimination, barriers to cultural participation, and the lack of cultural inclusion in Taiwan. The first reason is attributed to lack of teamwork between different governmental institutions. While this law is within the jurisdiction of the MoC, which includes the Executive Yuan, not every aspect can be overseen by them. It is crucial for ministries to work together and involve legislative power and district governments so equal rights can be pushed through. The second is

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[69] Sandell, "Museums and the Combating of Social Inequality: Roles, Responsibilities, Resistance," 3–21.

[70] "Wenhua yishu jiangzhu tiaoli" 文化藝術獎助條例 Culture and Arts Reward Act (1992), https://lis.ly.gov.tw/lglawc/lawsingle?0^818181C0060681818181C0CB06818199A1C00626899181C9C806.

[71] Article 1. Ministry of Culture, "Cultural Fundamental Act" (2019), https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=H0170151. The law can be toggled between English and Chinese. Chinese original: "為保障人民文化權利，擴大文化參與，落實多元文化，促進文化多樣發展，並確立國家文化發展基本原則及施政方針，特制定本法。"

[72] Ibid.

attributed to three barriers. First, informational barriers: how can people acquire information that they are able to understand? For the indigenous population or immigrants, this takes the form of language barriers and for people with disabilities, this includes various other barriers, especially if you have visual impairments. Second, spatial barriers: accessibility measures in different spaces, such as whether exhibition objects can be seen by wheelchair users. Third, culture and understanding barriers: particularly children, old people, and people with cognitive disabilities will need simplified language, while others may need translations into different languages. Exhibitions should provide oral accounts, sign language, and subtitles. The third reason is why Taiwan lacks an inclusive culture because museums and creative spaces are not created with inclusiveness in mind. Marginalized groups cannot express themselves artistically and are not nurtured to do so.[73]

This is important because the mission of social and cultural equality is tightly intertwined with museums. Therefore, museums should be approachable for a broader audience, moving away from exclusiveness. But an accessible and approachable museum for people with disabilities still needs far more research to make cultural equality achievable. The authors discuss barriers in cultural participation and the lack of cultural inclusiveness in three layers. The first layer is attributed to societal ostracization, which targets people with disabilities, especially those with cognitive impairments. As a result, this group hesitates to enter museums. The second layer is attributed to barriers in cultural participation. To understand art, an artist interested in teaching their artistic process to children is needed, but finding suitable artists seems to be incredibly difficult because they do not have pedagogical knowledge to explain their process in an easy-to-understand way. At museums, the way art is curated is often too difficult to understand. This causes certain visitors to stay away. On the other hand, it takes the museums a lot of effort to make preparations as well. There are many points to take into consideration, such as setting up a small committee for cultural equality in museums to make special exhibitions for people with disabilities possible. This involves creating a mobile application for the exhibition, tactile exhibits, trained staff, and more. However, only by planning these kinds of exhibitions more frequently will the workflow

[73] Wang Lirong 王俐容 and Wu Jiexiang 吳介祥, “Wenhua Pingquan Zhengce yu Bowuguan” 文化平權政策與博物館 Cultural Equality and Museum, in *Bowuguan de gonggongxing yu shehuixing*, ed. Chen Shangying 陳尚盈, Bowuguanxue xilie congshu (Taibei Shi: Yishujia, 2022), 35–38. A good example of space for marginalized groups to express themselves artistically might be the Prinzhorn Collection in Heidelberg near the CATS campus.

become easier. The third layer is the lack of cultural inclusion in Taiwan. It is hard to imagine people in spaces that they have not been part of. Normalizing the inclusion of children, people with disabilities, and others in the process can naturally lead to constructive input on how to receive a broader audience.[74] In conclusion, the authors emphasize the social role of the museum as a space for everyone to participate in. However, they also point out why Taiwan, on its path to creating accessible museums, is meeting some difficulties and possible changes. If museums can prioritize these marginalized groups, they might make their narrative visible and understandable to other visitors as individuals. This would lead to a positive effect of removing existing prejudice and discrimination.

The framework of museums shifted with the new museum definition by ICOM in 2022. With added values such as inclusiveness, museums must find ways to achieve this. Even before ICOM changed the definition, the social responsibility of museums was already widely discussed, while Taiwan already adapted to social changes through the introduction of the Museum Act in 2015 and the Cultural Fundamental Act in 2019. It signals to improve the cultural accessibility of people with disabilities with judicial guarantees, even though there is still a lot of room for improvements, such as authorities failing to work together and to be liable for bad implementations. However, as Sandell has pointed out, the possibilities of inclusiveness can lead to more understanding within communities and social equality.

5. Architectural and Informational Accessibility

Using the data provided by the MoC on the website “Museum Island”, the number of museums were manually counted in Excel because detailed statistical data could not be found.[75] The website states that “‘Museum Island’ aims to provide you with friendly and convenient services that activate your access to the discovery of the museums and the local cultural halls.”[76] They list 300 museums and what they refer to as local cultural halls.[77] On the other hand, the statistical data they provide uses the terms

[74] Wang and Wu, 39–44.
[75] As of right now (Nov 26, 2024) the English version of “Museum Island” is not available, a screenshot of the error message is included in the accompanying USB flash drive. Therefore, every Chinese equivalent is going to be added in footnotes for readability and searchability purposes. Information only available on the English site is supplemented with screenshots on the USB flash drive as well.
[76] Ministry of Culture, “Who We Are,” Museum Island, October 23, 2024, https://museums.moc.gov.tw/EN/Home/Detail.
[77] Ibid. Listed in “Who we are” as of October 23, 2024.

"museums" and "local culture museums" and counts a total of 409 entries.[78] This suggests that the responsible staff has not checked for discrepancies in the museum entries and terminology on the English site. The listed sights are not necessarily museums, but rather points of interest intended to make sightseeing in Taiwan easier. On the website under the tab "Our Museums", all available "museums" can be searched for (see figure 2). On the arrow icon on the left-hand side, "Museum

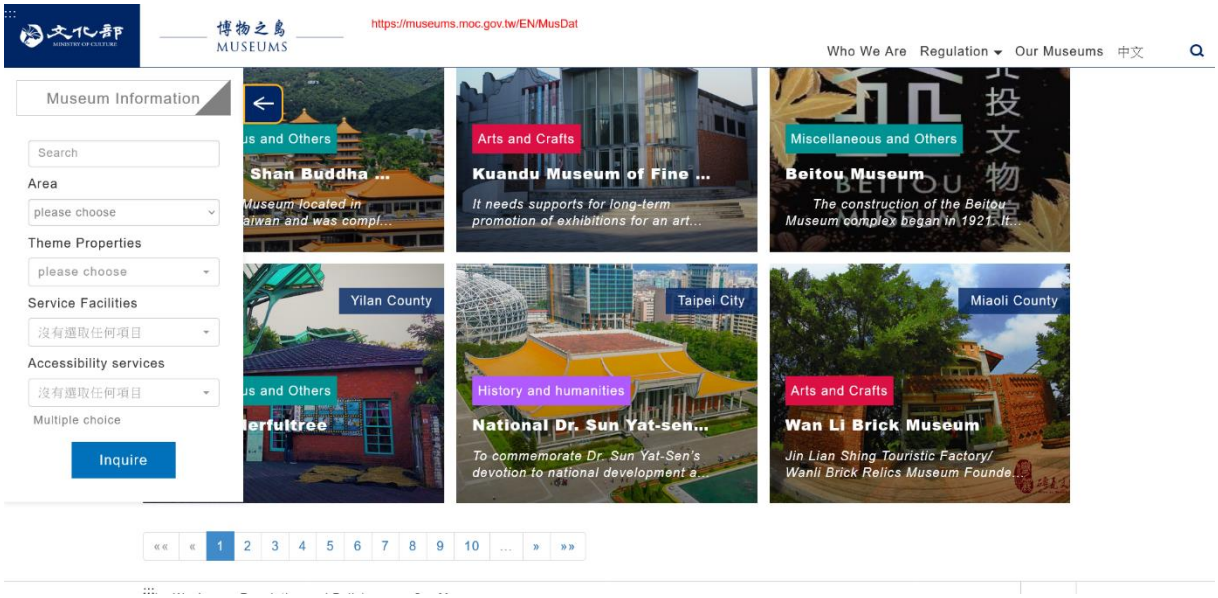

Figure 2: Screenshot of "Our Museums" on the Website "Museum Island". (Source: https://museums.moc.gov.tw/EN/MusData, accessed October 23, 2024)

Information" can be further filtered by "Area", "Theme Properties", "Service Facilities" and "Accessibility Services". A search function is available as well. Under "Area" you can filter by any region in Taiwan, sorted from north to south and then the islands under Taiwan's jurisdiction.[79] "Theme Properties" include "Arts and Crafts", "History and Humanities", "Life and Leisure", "Miscellaneous and Others", and "Nature and Science".[80] "Service Facilities" covers "Toilet", "Breast Room", "Dining Area", "Parking", "Parent Child Pavilion", "Store", "Elevator", "ServiceDesk", and "Gender Friendly Space".[81] These facilities are available in case you need any of those services. The

[78] Ministry of Culture, "Museum Island," Museum Island, 2024, https://museums.moc.gov.tw/EN/.
[79] Listed as follows: Keelung City, Taipei City, New Taipei City, Taoyuan City, Hsinchu City, Hsinchu County, Miaoli County, Taichung, Changhua County, Nantou County, Yunlin County, Chiayi City, Chiayi County, Tainan City, Kaohsiung, Pingtung County, Taitung County Hualien County, Yilan County, Penghu County, Kinmen County, Lianjiang County.
[80] Chinese phrasing following the original order. *Zhuti shuxing* 主體屬性, *zonghe yu qita* 綜合與其他, *yishu yu gongyi* 藝術與工藝, *lishi yu renwen* 歷史與人文, *ziran yu kexue* 自然與科學, *shenghuo xiuxian* 生活休閒.
[81] Chinese phrasing following the original order. *Fuwu sheshi* 服務設施: cesuo, 廁所, buji rushi 哺集乳室, canyinqu 餐飲區, *tingchechang* 停車場, *ertong huo qinziguan/qu* 兒童或親子館/區, *maidian* 賣店, *dianti* 電梯, *zixun fuwutai* 資訊服務臺, *xingbie youshan kongjian* 性別友善空間.

last option, which brings us to the core theme, filters museums by “Accessibility Services” (*wuzhang’ai fuwu* 無障礙服務). They are divided into “Hardware Facilities and Equipment” (HW) and “Software Services” (SW). The former includes “Barrier-free Access (ramp)”, “All paths are wheelchair or cart accessible”, “Barrier-Free Elevator”, “Barrier-Free [Seating/Seats]”, “Barrier-Free Lavatory” and “Barrier-Free Parking Space for Cars and Motorcycles”.[82] The latter includes “Friendly Guided Tour”, “Hospitality Service Desk”, “Hotline Service”, “WCAG Website (A Website meets the requirement of WCAG, Web Content Accessibility)”, “Charger for Electric Wheelchairs” and “Auxiliary Equipment Rental”.[83]

“Friendly Guided Tour”, “Hospitality Service Desk”, and “Gender Friendly Space” might be misleading in English, but for the words “friendly” and “hospitality”, the Chinese word “*youshan* 友善” is used, which means “friendly” or “amicable” if you translate it literally. This phrasing is specific to Taiwan and people from other Chinese-speaking regions might misunderstand it as well. It means friendly in the sense that restaurants would use “pet-friendly” or “family-friendly”. It creates spaces that explicitly signal that the target group is welcome. In Taiwan, this “friendly” can be attached to almost any person or object that allows them or it to be there. Some examples are laptop-friendly and children-friendly. It might sound confusing at first, but citizens in Taiwan will understand what is meant. For a translation that English speakers might understand, the word “inclusive” is commonly used, such as in “Inclusive Guided Tour” and “Inclusive Service Desk”. It means being friendly to all kinds of visitors and accessible to everyone, regardless of background. Anyone who wants to join this tour is welcome and anyone who needs assistance should receive it. After clicking on a museum entry, there will be an introduction to the site with more keywords and further information linked on the left column. These links usually lead to the site's social media pages or the homepage. Confusingly, some links lead to related blog posts instead of their homepage. If available, a Google Maps view of the interior is below the introduction. This is useful because you can check out the layout before a visit. Below, available Service Facilities

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[82] Chinese phrasing following the original order. *Yingti sheshi shebei* 硬體設施設備: *wuzhang’ai podao* 無障礙坡道, zhengti dongxian bianyu lunyi, shoutuiche tongxing 整體動線變於輪椅、手推車通行, *wuzhang’ai dianti* 無障礙電梯, *wuzhang’ai xici/zuowei* 無障礙席次/座位, *wuzhang’ai cesuo* 無障礙廁所, *wuzhang’ai (ji)chewei* 無障礙(機)車位.

[83] Chinese phrasing following the original order. *Ruanti fuwu* 軟體服務: *youshan daolan* 友善導覽, *youshan fuwutai* 友善服務臺, *zhuanxian fuwu* 專線服務, *fuhe wuzhang’ai biaozhun zhi wangzhan* 符合無障礙標準之網站, *diàndòng lúnyǐ chōngdiàn* 電動輪椅充電, *fuju jieyong* 輔具借用.

and Accessibility Services are listed, so visitors can immediately determine if this museum accommodate their needs. For further information on exhibitions, ticket pricing, and more, they can search the museum website. “Museum Island” gives a good overview of necessary information for a visit; while not being overwhelmed by the mass of information they might encounter on museum webpages.

Not all sites were “museums”, so a table with all the sites was made, and filtered by the word “museum” in their English names. With originally 400 entries, they were immediately shortened to around 166 museums across different parts of Taiwan (see attachment 3).[84] I filtered by the English word “museum” because the word for art museum “*meishuguan* 美術館” and the word for other kinds of museums “*bowuguan* 博物館” is not the same in Chinese, but is used for both instances in English. By using “museum” as a keyword, other sites such as parks, recreational places, and cultural centers were eliminated from considerations.[85] At the same time, this filtering method was limited because the results were not checked for adherence to the museum definition.

As expected, most museums were located in larger cities. More than ten museums are located in Taipei, Tainan, Kaohsiung, Taichung, New Taipei City, and Pingtung County in descending order.[86] Tainan, as a historical city, primarily has a lot of historical and cultural sites. Analyzing the hardware services, 12 museums provided none, 16 provided one, 29 provided two, 22 provided three, 37 provided four, 30 provided five, and 19 provided all six services. The most common hardware services are Barrier-free Lavatory, Barrier-free access (ramp), and wheelchair or cart accessible paths, mostly due to government regulations (see figure 3).[87] The low number of barrier-free seating/seats provided were rather surprising, as seats seem to be the easiest things to change inside a museum. For most of the other hardware services, some renovation might be in order. For software services, 6 museums provided none, 45 provided one, 39 provided two, 42 provided three, 20 provided four, 9 provided five, and 4 provided

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[84] Reading the preface of the monographic series *Bowuguanxue xilie congshu* 博物館學系列叢書 the stated number of museums is around 600, but do not discuss how this number was counted. “Museum Island” the museums themselves are responsible for their entry, that might explain some discrepancies (see attachment 7).

[85] See attachment 4.

[86] See attachment 5.

[87] For more information surrounding regulations seeMinistry of the Interior, R.O.C (Taiwan) 中華民國內政部, “Jianzhu wuzhang’ai sheshi sheji guifan” 建築物無障礙設施設計規範 Accessible and Buildings and Facilities Designing Standard (2008), https://www.arch.org.tw/Laws/bulletin_more?id=4facda4195b448da8f4d20ca750918c1.

all six services. The most common software services are Friendly Guided Tour, Hospitality Service Desk and Hotline Service. On the other hand, Charger for Electric Wheelchairs were only available at five museums.

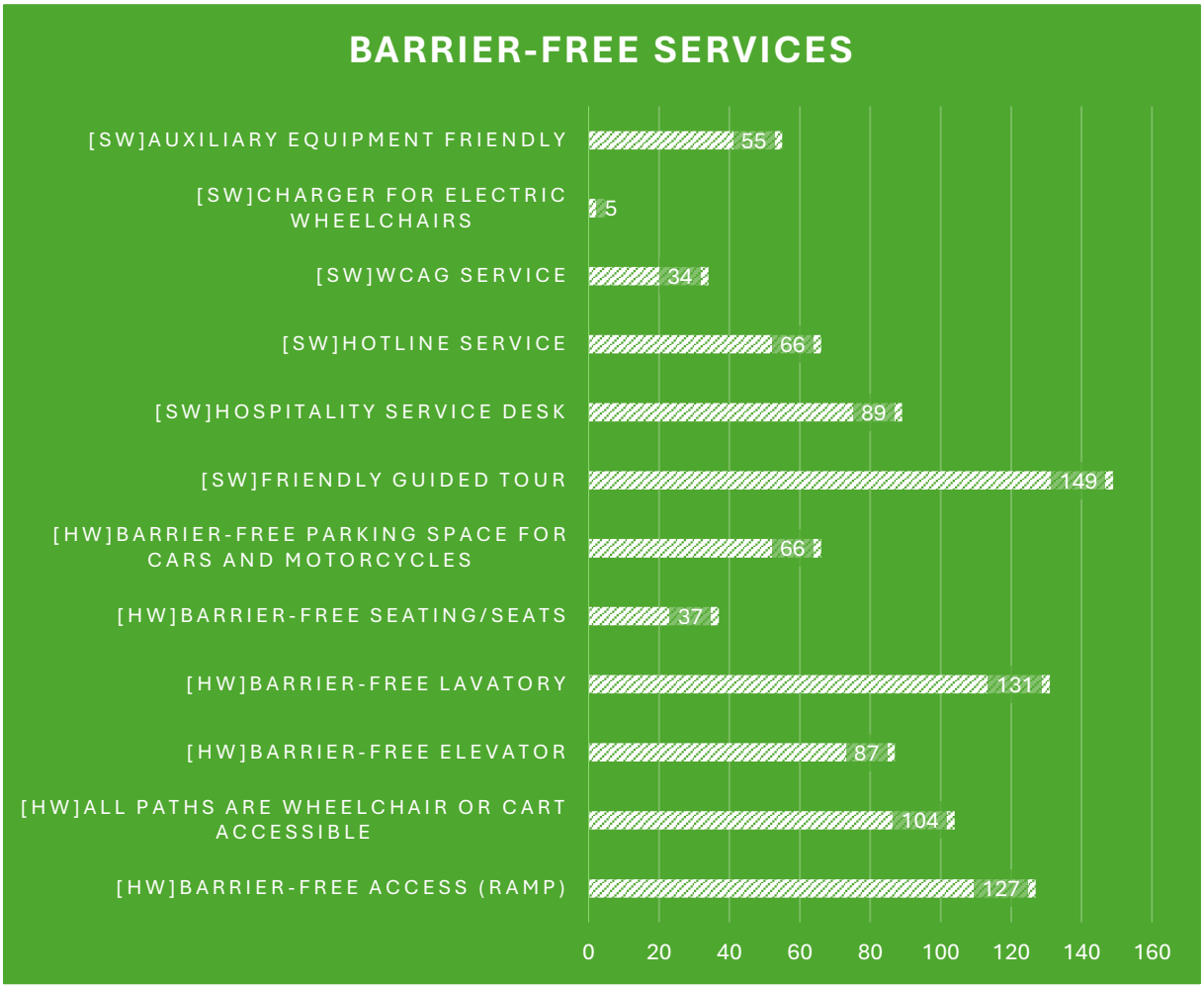

Figure 3: Own representation of an analysis of Hardware Services and Software Services of 166 museums based on information provided by the website "Museum Island" (Source: https://museums.moc.gov.tw/, accessed June 17, 2024)

In the following, the HW will be analyzed for architectural accessibility and the SW for informational accessibility, based on the "ADA Checklist for Existing Facilities" and the "Smithsonian Guidelines for Accessible Exhibition Design". However, the main focus of informational accessibility will be discussed in the next chapter "Digital Accessibility".

5.1 Architectural Accessibility – Hardware Facilities and Equipment

Hardware Facilities and Equipment were more commonly implemented, but faulty implementation is not uncommon.[88] It is notable that not all museums have parking, depending on the size and location of the museum. Accessible parking spaces are larger than normal parking spaces and have a certain amount of space next to the parking space (indicated by diagonal lines) to fit a wheelchair. This space needs to be connected to a path that allows the wheelchair user to get to the entrance. They are marked by the international symbol of accessibility. At the National Palace Museum – Southern Branch, the accessible parking was placed closest to the path to the museum, but there was no ramp leading up from the space with the diagonal lines to the curb. People using wheelchairs would have to go around to a lowered curb on the left (figure 5).

Figure 4: Accessible parking space at the Southern Branch of the National Palace Museum in Taiwan (Source: Minna Hon / September 2024)

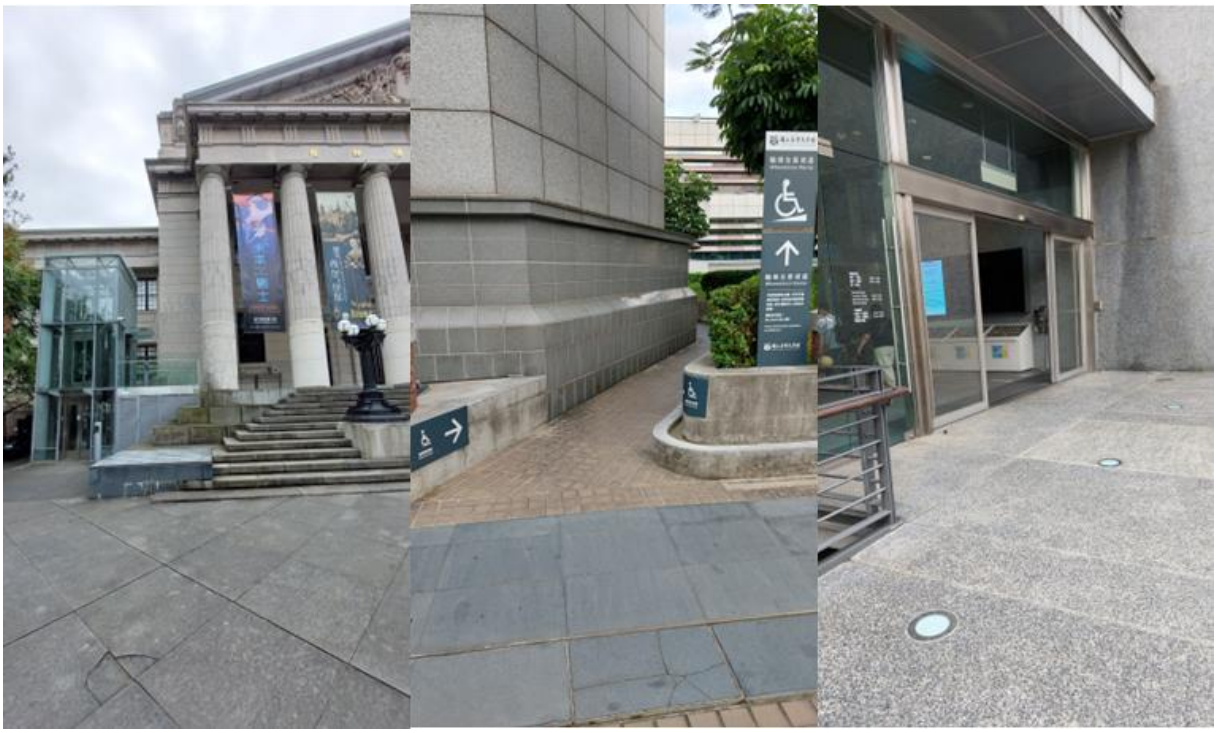

Figure 5: Accessible Entrances at the National Taiwan Museum (left), National Museum of Taiwan Literature (middle), and National Taiwan Museum of Fine Arts (right). (Source: Minna Hon / 2024)

[88] See attachment 11.

Barrier-free access (ramp) means that you can enter the building without problems. A ramp or an elevator is needed if the entrance is elevated – meaning you reach the main entrance through stairs (left picture figure 4). Sometimes the accessible entrance is not at the main entrance, but has to be clearly visible and indicated in these cases (middle picture figure 4). The National Museum of Taiwan Literature opted for this option and decided to move the accessible entrance to the back entrance, where a narrow path is wheelchair-accessible and marked as such. A sign at the main entrance points to an available wheelchair-accessible entrance and its location. Unfortunately, this entrance does not seem to always be open, which creates a barrier to entering the premises. The visitor in need of using this entrance needs to call a service number to gain access. Having an accessible entrance also includes ensuring the entrance door is accessible. The easiest way to manage this is by setting up an automatic door (right picture figure 4). Other ways are specific, easy-to-use door handles. In these cases, the doors are not supposed to surpass a certain weight. The Barrier-free Lavatory has a special set up. When entering, there should be no threshold, and the door should be easy to open, ideally with sliding doors or automatic doors as another option. Inside, there should be enough room to move around in a wheelchair, and grab bars near the toilet bowl and the sink. Grab bars help people with mobility impairment in gaining leverage or help wheelchair users with pushing themselves up onto the toilet. The handwashing sink, as well as the hand soap, paper towel dispenser, hand dryer, and mirror should be lowered. The sink should be designed in a way for people using wheelchairs to get close enough for comfortable use.

Figure 6: Accessible elevator with tactile paving at the Southern Branch of the National Palace Museum. (Source: Minna Hon / 2024)

An accessible elevator needs to be wide enough so a wheelchair can fit through. If the doors do not open on both sides, meaning you enter through one side and out the other, the elevator must be large enough for a wheelchair to turn around. In the elevator, there needs to be audible announcements for when the doors open and close and for which floor you are heading to. Braille needs to be a part of the elevator buttons' tactile parts. In the National Palace Museum – Southern Branch, tactile paving (*daomangzhuan* 導盲磚) leads to the accessible elevator (figure 6).

Visitors using a white cane can ascertain if information is available to them. The dotted paving (*tingzhizhuan* 停止磚) tells the white cane user to stop, and the lined paving (*xingjinzhuan* 行進磚) tells them to go straight. In this case, the dotted paving in front of the operating panel tells the white cane user that they can perform an action here, such as pushing the buttons for the elevator. Accessible seating differs from other seating because of the handles you can see in figure 7. Particularly, elderly people need the handles to help them stand up. With handles, it is easier to gain leverage to stand up. Lastly, All Paths Are Wheelchair or Cart Accessible as its name indicates, needs the museum facilities to be flat and without stairs to be accessible. This led to some impressive ramp systems in some museums.

Figure 7: Accessible Seating at the National Science and Technology Museum. (Source: Minna Hon / 2024)

5.2 Informational Accessibility – Software Services

Within the software services, another translation error seems to be “Auxiliary Equipment Friendly”. The Chinese word used is “*fuju jieyong* 輔具借用”, which literally means “assistive equipment rental”. This includes auxiliary devices, wheelchairs, baby strollers, and any kind of special equipment some museums offer. Charger for Electric Wheelchairs is self-explanatory. It is worth noting that electric wheelchairs are uncommon and relatively expensive. WCAG Services means that the museum website adheres to Web Content Accessibility Guidelines, which will be discussed in detail in another chapter. Governmental institutions are required to have WCAG Service, so the 34 museums listed might all be public museums supported by the government. The hotline service is a telephone service, where you can make inquiries and be referred to the correct department. You can also book special tours and other services.

Figure 8: Hospitality service desk at the National Museum of Taiwan History. (Source: Minna Hon / 2024)

The hospitality service desk, which includes the word *youshan* again, means that all visitors are welcome to inquire regardless of age, gender, disability, ethnicity, and more. The desk is lowered, and seats will be available in front of it (figure 8).

Friendly Guided Tour does not mean that it will be a barrier-free tour, but all visitors are allowed to take part in that tour. It is usually recommended to book a tour in advance if you have special needs, such as needing a sign language interpreter or audio descriptions.[89]

Taiwan has started to make museum information easily accessible by setting up the website “Museum Island” to allow potential guests to search by needs. This is a remarkable effort to make things straightforward without too much information and adhering to Level A of the WCAG. With the search for accessibility services focusing on basic needs, such as gaining access to a museum and acquiring information, it does not cover the emotional part of accessibility, which – to be honest – is difficult to do if there is such a wide variety of services. Only six museums adhered to all HW services and only four to all SW services, leaving room for improvement. At the same time, my method of analyzing could have been improved. Simply counting the services used and not accounting for their location and type of museum can distort the results. In other words, not every criterion in HW and SW are needed by accessibility standards. For example, not every museum has parking spaces, barrier-free elevators, or electronic wheelchair chargers, but that does not mean the museum is not accessible anymore. At the same time, something simple, such as barrier-free seating, is overwhelmingly underrepresented and even more important in an aging society. Putting chairs with armrests inside a museum does not seem like an insurmountable challenge for accessibility. Otherwise, important accessibility features like accessible entrances, barrier-free toilets, and barrier-free exhibition rooms seem to be widespread and have been confirmed in every museum visited, though with small margins of errors. Within the SW, the service-oriented area, such as hotline service, hospitality desk, and friendly guided tour seem to be a step in the right direction. That means staff training is being taken seriously to take on a non-discriminatory nature. Based on my own experiences with phone calls to museum staff, even if the hotline service does not have the correct information at hand, they will refer you to the correct department for inclusive services. Staff working there seem passionate about their work and do their best to ensure a smooth visit. Currently, museums offer to pick up people with disabilities from the MRT station if the museum is located in Taipei City. Online services,

[89] See attachement 8.

such as making WCAG conform museum websites available, still seem to be a minority with recent efforts to push for more digital accessibility.

6. Digital Accessibility

In Taiwan, web accessibility is the responsibility of the Ministry of Digital Affairs (Shuwei fazhanbu 數位發展部), thereafter MODA. MODA was recently established on August 27, 2022, and is responsible for "promoting Taiwan's overall digital policy innovation and reform […] to ensure national cybersecurity, encourage cross-sectoral digital transformation, and enhance digital resilience for all."[90] With its establishment, Taiwan is working towards their goal of "Smart Taiwan", in which they hope to be a global leader in digital democracy. MODA states that Taiwan has already been successful in managing the global COVID-19 pandemic in 2020 and 2021, which is internationally recognized.[91] In Article 52-2 of the "People with Disabilities Protection Act", it guarantees that "the websites established by all levels of government agencies (institutes) and their subsidiary agencies (institutes), and schools should obtain the first priority access-free examination and receive the certificate marks. The central authorities in charge of specific business should prescribe the examination criteria, methods, frequency, and certificate issuing rules mentioned in the above paragraph."[92] All national museums fall under the category of "government agencies". "Central authorities" in this case point to the Ministry of Digital Affairs and their examination criteria is set by the W3C's Web Content Accessibility Guideline. Formerly known as the WCAG 2.0, the guidelines are slowly being updated to WCAG 2.1 since 2021.[93] The reading of the official English version to "[…] obtain first priority access-free examination and receive the certificate marks" is a confusing translation of the Chinese text.[94] It implies that the aforementioned establishments will receive first priority in getting a web accessibility examination, mistranslating "*wuzhang'ai* 無障礙" as "access-free" instead of accessibility. Yet, the Chinese original states they should

[90] Ministry of Digital Affairs, "Policy Elucidation," Ministry of Digital Affairs, May 15, 2023, https://moda.gov.tw/en/major-policies/policy-elucidation/1305.
[91] Ministry of Digital Affairs, "Smart Taiwan: A Model of Democracy," Ministry of Digital Affairs, December 22, 2022, https://moda.gov.tw/en/aboutus/introduction/404. 1
[92] Ministry of Health and Welfare, People with Disabilities Rights Protection Act.
[93] Ministry of Digital Affairs, "Guanyu benpingtai" 關於本平台 About This Page, 無障礙網路空間服務網, September 23, 2023, https://accessibility.moda.gov.tw/about.https://accessibility.moda.gov.tw/about#
[94] "應通過第一優先等級以上之無障礙檢測，並取得認證標章" Ministry of Health and Welfare 衛生福利部, "Shenxin zhang'aizhe quanyi baozhangfa" 身心障礙者權益保障法 People with Disabilities Rights Protection Act (2007), https://law.moj.gov.tw/LawClass/LawAll.aspx?pcode=D0050046.

Figure 9: Accessibility badges used on Taiwanese Websites, featuring level A level 2A), level 3A conformance from top to bottom. (Source: https://accessibility.moda.gov.tw/Accessible/Detail/3?Category=8, accessed December 16, 2024)

obtain a level **higher** than the first level of the chosen examination method.[95] In MODA's Web Accessibility Service Space[96] (WASS), both private persons and government agencies can apply for the so-called Web Accessibility Badge (*Wuzhang'ai biaozhang* 無障礙標章) (see figure 9). The platform allows users to check which websites successfully applied for a Web Accessibility Badge, their Badge level (*wuzhang'ai dengji* 標章等級), and their effective period (*biaozhang youxiao* 標章有效日).[97] The three levels of badges differ by design. Level A shows a single A, level AA two As, and level AAA three As in yellow. To apply for a badge the website must pass the web accessibility examination tool "Freego" first. Afterwards, the Web Accessibility Badge can be applied for by logging in via EGOV or a personal account and will be personally checked for eligibility. If the website passes, the appropriate Badge level will be given and will be effective for three years.[98] At the same time, WASS does educational work on the topics surrounding web accessibility; it explains what web accessibility means, whom it is designed for, what certain terminology means and what assistive technologies are.[99]

6.1 Assistive Technologies

For people without disabilities, it is common to navigate computers with a keyboard and a mouse, but for people with visual impairments or physical restrictions, this is not always possible. To use a mouse, the mouse icon needs to be perceivable on the computer screen, making it a hand-eye coordination movement with your hands on the physical mouse. The same applies to the use of a keyboard. As an able-bodied user, you can find the correct keys with your eye(s) and physically push the keys to write text or input commands. Nowadays, keyboards do have tactile markers to indicate keyboard position. On a QWERTY keyboard, these markers are on the letters "F" and

[95] The WCAG and their different levels are going to be explained in a later chapter.
[96] *Wuzhang'ai wanglu kongjian fuwuwang* 無障礙網路空間服務網
[97] See attachment 13.
[98] Ministry of Digital Affairs 數位發展部, "Biaozhang shenqing jiance zuoye shuoming" 標章申請與檢測作業說明 Explanation of Badge Application and Examination, 無障礙網路空間服務網, April 26, 2023, https://accessibility.moda.gov.tw/Accessible/Detail/109?Category=8.
[99] Ministry of Digital Affairs 數位發展部, "Xianshang xuexi zhuanqu" 線上學習專區 Online Lessons, accessed December 5, 2024, https://accessibility.moda.gov.tw/Accessible/Category/3/1.

“J”. If you cannot see clearly, have trouble coordinating your movements, cannot move your hands, or have other physical or mental restrictions in operating a computer, it will pose a challenge to use the computer. To circumvent these challenges, there are different assistive technologies developed for different kinds of needs. Most of the information about these technologies is taken from the Web Accessibility Service Space by the Ministry of Digital Affairs. Assistive technologies are especially necessary for users with visual impairments and physical restrictions. Users with visual impairments are confronted with challenges in acquiring the information on the screen and interacting with the interface. For them, to input information through the keyboard and mouse is basically impossible. In the case of Taiwanese users, this is especially true because PWVD do not have a notion of Chinese characters and do not know what they look like. The whole process of choosing the correct input method – for Taiwan in most cases either the phonetic alphabet, Cangjie (a component-based input method) or Hanyu Pinyin – and then choosing the correct character is not feasible. Screen readers (*yingmu yuedu ruanti* 螢幕閱讀軟體) are used to acquire the information on the page, which can transform the text on a page into braille script to read on a Braille display machine (*dianzi chumo xianshiqi* 點字觸摸顯示器). The Braille display machine can transform the text into audible speech or change the keyboard to Braille input (*bajian shuru moshi* 八鍵輸入模式) as well.[100] Braille input uses eight keys of the QWERTY keyboard to represent the eight dots in braille. This machine displays around 40 characters at a time with dynamic dots that change according to the line being read. Apparently, the Braille display machine is not fully covered by state subsidies and is relatively expensive. One machine costs around 100,000 NTD (about 2,932€) and only around two-thirds of that amount is covered. This leaves approximately 33,333 NTD (about 978€) people with visual impairments have to pay out of pocket.[101] In addition to buying a computer, this machine will add to the cost “just” to browse the internet. People who are naturally blind are used to Chinese braille script, but this knowledge is not common.[102]

[100] Technology Development Association for the Disabled 中華民國無障礙科技發展協會, “Wenda ji shitong” 問答即時通 Q&A, 中華民國無障礙科技發展協會, accessed December 12, 2024, http://www.twacc.org/faq.php?id=1&root=1.
[101] See attachment 10.
[102] Taiwan uses a Braille method based on the phonetic alphabet. For more information see Eleni Andrist, “Writing Systems for the Visually Impaired,” in *Encyclopedia of Chinese Language and Linguistics Online* (Brill, March 2, 2017), https://doi.org/10.1163/2210-7363_ecll_COM_00000045.

Some users with physical restrictions cannot use the provided keyboard and mice and must find other ways to operate computers. For people who have trouble with the clicking motion, there are mice which have a big rolling ball cursor instead and bigger buttons to press down on. If you have restricted usage of your arms or if you do not have arms, there are control-panel-like controls, designed to be operable with your feet. Other ways of operating a computer include technologies working by sight, muscle movement, and even brain signals. There are bigger keyboards, differently designed keyboards, touch panels, and glove controls as well.[103]

As described above, setting up a computer for people with disabilities already poses various challenges. They have to acquire several kinds of hardware and software and make them work on a computer, which is impossible without assistance. After installing the devices, they have to get used to the different devices first, and are then confronted with web pages that oftentimes are not designed for them.

6.2 Explaining WCAG (Web Content Accessibility Guidelines)

Web Content Accessibility Guidelines refers to an international standard set by the World Wide Web Consortium (W3C). The W3C is an international nonprofit organization, which deals with anything regarding the web. There are several Guidelines for WCAG throughout the year, beginning with WCAG 1.0 introduced in 1999, with the newest guideline being WCAG 2.2 introduced in 2023, and currently, the W3C is working on WCAG 3.[104] Taiwan primarily uses WCAG 2.0 and 2.1, with websites slowly upgrading to 2.1. Version 2.0 was released in 2008, and version 2.1 is an updated version first released in 2018 and updated in 2023.[105] Before illustrating web accessibility on Taiwanese museum websites, it is crucial to understand what WCAG encompasses and in what way it contributes to accessibility in a digital context. In this thesis, only WCAG 2.1 will be explained. The two main documents explaining the WCAG are the documents “Web Content Accessibility Guidelines (WCAG) 2.1”,

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[103] Ministry of Digital Affairs 數位發展部, “Shizhang yiwai zhangbie shangwang shebei” 視障以外障別上網設備 Online Asstive Equipment for Disabilities Other Than Visual Impairments, 無障礙網路空間服務網, March 21, 2014, https://accessibility.moda.gov.tw/Accessible/Detail/111?Category=6.

[104] Word Wide Web Consortium (W3C), “Web Content Accessibility Guidelines 1.0 Publication History,” W3C, 2024, https://www.w3.org/standards/history/WAI-WEBCONTENT/; Word Wide Web Consortium (W3C), “W3C Accessibility Guidelines (WCAG) 3.0 Publication History,” W3C, 2024, https://www.w3.org/standards/history/wcag-3.0/.

[105] Word Wide Web Consortium (W3C) and Web Accessibility Initiative (WAI), “WCAG 2 Overview,” Web Accessibility Initiative (WAI), December 12, 2024, https://www.w3.org/WAI/standards-guidelines/wcag/.

and the “WCAG 2.1 Understanding Docs” posted by the W3C.[106] While the former gives the reader a broader understanding of the WCAG 2.1, the latter concentrates on the details.

> “Web Content Accessibility Guidelines (WCAG) 2.1 covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content more accessible to a wider range of people with disabilities, including accommodations for blindness and low vision, deafness and hearing loss, limited movement, speech disabilities, photosensitivity, and combinations of these, and some accommodation for learning disabilities and cognitive limitations; but will not address every user need for people with these disabilities. These guidelines address accessibility of web content on desktops, laptops, tablets, and mobile devices. Following these guidelines will also often make Web content more usable to users in general.”[107]

As cited, accessibility recommendations for people with disabilities using the world wide web are the main purpose of the WCAG. As stated before, this thesis only covers the parts that cover recommendations for people with physical disabilities, such as visual, hearing, and mobility disability. Not every user’s needs can be addressed, but the W3C tries to cover as much as possible to approximate a barrier-free use of the internet. The WCAG surrounds four key components: **principles, guidelines, success criteria, and conformance** (see visualization in figure 10). Firstly, the principles represent the main idea behind web accessibility that must be accomplished. They are divided into **perceivable** (blue)**, operable** (orange)**, understandable** (green)**, and robust** (violet). Even though they are quite self-explanatory, I will try to explain them in a simple way. People with disabilities have different needs from people without disabilities. They might **perceive** things differently if they have trouble with their sight, hearing, or other senses and navigate their lives in different ways. They might have physical restrictions, such as missing limbs, blindness, or hearing loss. Therefore, adjustments are needed to still be **operable**. To be **understandable,** measures must be taken to provide supplementary information for things that they have difficulties perceiving, such as images. In conclusion, web content is to be adjusted accordingly.

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[106] Alastair Campbell et al., “Web Content Accessibility Guidelines (WCAG) 2.1” (World Wide Web Consortium (W3C), September 21, 2023), https://www.w3.org/TR/2023/REC-WCAG21-20230921/; Accessibility Guidelines Working Group (AG WG) Participants, “Understanding WCAG 2.1 | WAI | W3C” (World Wide Web Consortium (W3C), November 20, 2024), https://www.w3.org/WAI/WCAG21/Understanding/.

[107] Campbell et al., “Web Content Accessibility Guidelines (WCAG) 2.1.”

Principles			
1. Perceivable	2. Operable	3. Understandable	4. Robust
Guidelines			
1.1 Time-based media	2.1 Keyboard Accessible	3.1 Readable	4.1 Compatible
1.2 Text Alternatives	2.2 Enough Time	3.2 Predictable	
1.3 Adaptable	2.3 Seizures and Physical Reactions	3.3 Input Assistance	
1.4 Distinguishable	2.4 Navigable		
	2.5 Input Modalities		
Success Criteria			

(How to fulfill Guidelines)

Conformance

(based on which kind of success criteria you fulfill, A, AA or AAA Level will be given)

Figure 10: Own representation of a simplified table of the WCAG 2.1 arranged by Principle, Guideline, Success Criteria and Conformance. (Source: https://www.w3.org/TR/2023/REC-WCAG21-20230921/, accessed September 13, 2024)

That means, if a person is fully blind, things have to be read out loud or translated into Braille output for them to know what content is shown because they cannot see the screen. At the same time, they should also be operable in the sense that there are other ways to navigate a website. While able-bodied users can navigate a website with a mouse and see where to click, it is easier for blind people to rely on tactile or speech-based input systems, which the website has to allow. While navigating, content needs to be understandable. An image of text can be easily discerned by a sighted user because they can recognize text, whereas the system only recognizes that there is an image without knowing the contents. Therefore, it should be configured in a way that allows assistive technologies to distinguish the content in similar ways. The last principle, **robust,** might be the most abstract and relates to accessibility in a systematic way. The website should be compatible with assistive technologies, but also compatible across different systems and devices. As the technical components of computers or other devices are outside of the author's expertise, the last principle will

only be explained briefly. Thirteen guidelines (color-coded by principle in figure 10) are under the principles and are goals to achieve accessibility. To verify that the guidelines are followed, there are control mechanisms called success criteria, that can be tested. Depending on which success criteria are met, the conformance level will be higher or lower. There are three levels of conformance: A, AA, AAA, with A being the lowest and AAA the highest level of conformance. There are different requirements for the conformance levels. Level A is the lowest level and represents the minimum level of conformance and must fulfill all level A success criteria. Level AA conformance must meet the requirements for level A conformance and additional success criteria for level AA conformance and the same scheme applies to level AAA conformance. A more detailed table with success criteria and their conformance level can be found in attachment 15 or better understanding. The higher the level of conformance, the higher the level of accessibility. The conformance level should be applicable not only for parts of a web page, but for all the contents of a website. While Level AAA conformance poses the highest level of web accessibility, the W3C emphasizes that these guidelines are only approximations of accessibility and do not contain the standards of complete accessibility. At the same time, level AAA conformance is not recommended for regular websites because it is difficult to have a working website that meets all the level AAA Success Criteria for some content.[108]

6.2.1 Accessibility Measures Service Webpage (AMSW)

As part of their “Cultural Equal Rights Guideline” (*Wenhua pingquan zhengce* 文化平權政策), the MoC has introduced an “Accessibility Measures Service Webpage” (AMSW) for about 18 governmental cultural institutions. I decided on the acronym, AMSW, even though it directly translates to “Friendly Measure Service Page”. “Accessibility” seems to align closer to its purpose in the English language. When I first entered AMSW, it was still named “*wuzhang’ai cuoshi fuwuwang* 無障礙措施服務網” in Chinese, which translates to the same in English. At first, I thought this might be the popular switch from barrier-free to friendly, to avoid the characters for “disabled”, but it was corrected after confirming with the MoC. It was renamed to avoid confusion between MODA’s accessibility page and the MoC’s accessibility page because they

[108] Accessibility Guidelines Working Group (AG WG) Participants, “Understanding Conformance | WAI | W3C” (World Wide Web Consortium (W3C), April 16, 2024), https://www.w3.org/WAI/WCAG21/Understanding/conformance.

sounded too similar.[109] The use of friendly (*youshan*) has already been discussed

Figure 11: Front Page of the Accessibility Measures Service Webpage. (Source: https://accessibility.moc.gov.tw/NMTHNEW/Accessibility.aspx?n=4799, accessed September 10, 2024)

before. To use the wording “accessibility” and not “inclusion” is based on the context of Web Accessibility and the naming pattern in this thesis. Within these institutions there are six museums: The National Museum of History, the National Taiwan Museum of Fine Arts (NTMOFA), the NTM, the National Museum of Prehistory, the NMTH, the NHRM, and the National Museum of Taiwan Literature. They are required to reach a conformance level of AAA and are designed especially and separately from the standard museum homepage. These pages for the museums are all designed similarly as seen in figure 11. Horizontally, from left to right, the museum’s name and logo, Help, MoC’s AMSW, Site Navigation, Search, and lastly, font size adjustment are placed. Every item is placed in a black-rimmed, white square box, with black lettering as well. Below, sometimes an introductory video of the institution is inserted, with explanation on keyboard control for the audio. Following the video, four bigger squares in the form of a big square are not only differentiated by titles in white letters, but also by colors, and are easily perceivable. The boxes are divided into the rubrics: Visiting Information in dark blue, Services in red, Event Information in brown, and Educational Information in green. Each rubric is further divided into smaller sections, visualized as smaller yellow boxes. Visiting information comprises Transportation, Opening Hours, Ticketing Information, Exhibition Floor Plan, Reservation, and Traveling without Barriers. Every other rubric except Visiting Information is divided by the forms of disability, namely Visual Impairment, intellectual, and developmental disabilities, Hearing impairment and Mobility Impairment, and others.[110] The pages’ main audience seem to be people with disabilities, while others in need of accessibility services can find necessary information as well. While the described setups of the web pages are all similar, the contents differ from museum to museum. The reason for choosing the six museums was not disclosed after asking, but there do not seem to be any plans to include more museums in the AMSW service either.[111] The content differs from museum to museum because the respective museums are in charge of its content, but editing rights seem

[109] See attachment 6 for the name change. Correspondence with the NMTH showed that they seem to think that “barrier-free” is more straight forwards and conversations with PWVD showed that they might try to look inside out of curiosity if the friendly phrasing is being used. (see attachment 8)
[110] The official translation based on the Ministry of Health and Welfare’s Health Report would be: Visual Impairment, Intellectual and Developmental Disabilities, Hearing Impairment and Moving Functional Limitations. See: Ministry of Health and Welfare 衛生福利部. “Zhonghua minguo 107nian Weisheng fuli gonwu tongji” 中華民國 107 年衛生福利公務統計 Statistics of General Health and Welfare 2018. Ministry of Health and Welfare, 2019. In common language use I have not seen it written like this at all and more common words were chosen. Others do not only point to other disability services, but also accessibility services, such as stroller rental, first aid kit, drinking area etc.
[111] Attachment 6.

to differ. While I have confirmed that the NMTH is waiting for the MoC to contact them regarding new information, museums such as the NTM and the NTMOFA seem to have their own editing rights without contacting the MoC.[112] This can be deduced from the update frequencies on their websites as well. Its content is not examined in this chapter. This chapter focuses on how web accessibility has been implemented. While explaining the WCAG's principles, I will illustrate them using examples from the Accessibility Measures Service Webpage. Success Criteria that are circumvented on the AMSW, but which I deem important, will be explained with other examples from other museum websites. There will be no meticulous rundown on every success criterion and how it has been implemented. Besides some success criteria not applying to the website, some things are not within the scope of my abilities as, because I am not a web developer. How assistive technologies, website coding, and backward and forward compatibility work is not common knowledge. For an overview of the WCAG 2.1 system, a comprehensive table is attached to the appendix for better understanding, and it is advised to use it as guidance and to keep track of the following parts.[113]

6.2.2 Perceivable

The guidelines for "perceivable" are text alternatives, time-based media, adaptable, and distinguishable (see figure 10). Text alternatives are needed if you have non-text content, such as pictures, videos, and similar formats, that can explain what you are supposed to see or hear. Text Alternatives applies because we have so-called non-text content. In this case, non-text content usually refers to images. This guideline targets blind users, as they cannot read out the contents of an image if they are not tagged in a correct way.[114] To find this, you have to look at the source code of the website. As

Figure 12: Source code for AMSW of the National Museum of History. (Source: https://accessibility.moc.gov.tw/NMH/CP.aspx?n=4758#194, accessed September 12, 2024)

[112] Attachment 8.
[113] Attachment 14.
[114] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Success Criterion 1.1.1: Non-Text Content | WAI | W3C" (World Wide Web Consortium (W3C), April 30, 2024), https://www.w3.org/WAI/WCAG21/Understanding/non-text-content.
Tags are identifiers in code for variables such as images, text, forms etc.

seen in figure 12 is the map of the NMH's source code. The marked source code shows how the image is implemented. The "img" tag signifies that the object in question is an image and the "alt" attribute – alt is the abbreviation for alternative description – provides the image description, which says: "[click to enlarge] Image of the National Museum of History's map". The information in the square brackets contains additional information for an action. When a screen reader reads the information, the user knows they can enlarge this image by clicking on it, as well as what is seen on the image. In

Figure 13: Verifying code for CAPTCHAS on the National Human Rights Museum's contact form. (Source: https://www.nhrm.gov.tw/w/nhrm/ContactUs, accessed October 22, 2024)

conversations, another big issue concerning CAPTCHAS came up.[115] CAPTCHAs are verifying mechanisms to test that you are human and most often require the user to type a verifying code (*yanzhengma* 驗證碼) on an image (see figure 13). The ASMW circumvents this issue by not requiring CAPTCHAs, but they are often needed to write emails to museums via their inbox on the museums' website. To make the images unreadable by bots, alternative text cannot be used and often an audio recording of the image's text will be provided instead. To play the audio a button is placed right next to the image and says, "play verifying code".

Time-based media mainly refers to audio and video content, which means other ways to perceive the content should be provided. Some examples include subtitles, audio descriptions, and sign language. Time-based media applies because the NMTH provides an introductory video. It is pre-recorded, so the following success criteria apply: 1.2.2 Captions (Prerecorded) and 1.2.6 Sign Language (Prerecorded).[116] In this case, captions are subtitles that are a transcript of the audio. There is no need for audio descriptions because the video material is of the informational kind and specifically made for the AMSW (see figure 11). The audio helps users with visual impairments and the captions help users with hearing impairments. For the level AAA, sign language

[115] CAPTCHA stands for Completely Automated Public Turing test to tell Computers and Humans Apart.

[116] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Success Criterion 1.2.2: Captions (Prerecorded) | WAI | W3C" (World Wide Web Consortium (W3C), April 16, 2024), https://www.w3.org/WAI/WCAG21/Understanding/captions-prerecorded; Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Success Criterion 1.2.6: Sign Language (Prerecorded) | WAI | W3C" (World Wide Web Consortium (W3C), April 16, 2024), https://www.w3.org/WAI/WCAG21/Understanding/sign-language-prerecorded.

is necessary as well. On the NMTH, there is a space on the right next to the actual footage, where a person signs the information shown. This is a service mainly for users with hearing disabilities (see figure 11).

Adaptable means that actions that must be taken on a website have to be adapted to individual use. The web interface needs to adapt to smartphone in either landscape or portrait display orientation mode, but also the varying window sizes on the computer. The information should always fit into the size of the display. For example, text should not go out-of-frame and always be readable without scrolling to the left or right.[117]

Distinguishable ensures that content should be perceivable by all. There should be enough color contrast, easy-to-read type fonts, and disruptive factors should be avoided. Disruptive factors arise when too much information is shown in similar colors, when you cannot see the differences between the foreground and background, and when background sounds are louder or the same volume as foreground sounds.[118]

For being distinguishable, the following success criteria apply: Use of Color, Contrast (Minimum), Resize Text, and Visual Presentation. Use of Color applies to every museum's AMSW front page (see figure 11). Color differences or colors may not be perceivable by certain users. In addition to different areas of the front-page being color coded, they are also differentiated by headers and square layout, such as different fonts and their clear distinctions between the rubrics by design. If colors are used, the contrast needs to be high enough to be perceivable.[119] For Contrast (Minimum), the text and their surrounding colors must have enough contrast to be readable. Depending on font sizes, the contrast is adjustable. This should also be true if text images are used.[120]

In 1.4.4 Resize Text, available text should be scalable up to 200% of their original text size, without losing functionality or readability. There should be no need for assistive

[117] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Guideline 1.3: Adaptable | WAI | W3C" (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/adaptable.

[118] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Guideline 1.4: Distinguishable | WAI | W3C" (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/distinguishable.

[119] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Success Criterion 1.4.1: Use of Color | WAI | W3C" (World Wide Web Consortium (W3C), July 10, 2024), https://www.w3.org/WAI/WCAG21/Understanding/use-of-color.

[120] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Guideline 1.4.3: Contrast (Minimum) | WAI | W3C" (World Wide Web Consortium (W3C), April 16, 2024), https://www.w3.org/WAI/WCAG21/Understanding/contrast-minimum.

technologies for the text to be scalable (see figure 14).[121] For 1.4.8 Visual Presentation,

Figure 14: Horizontal Bar on the National Taiwan Museum's AMSW on 200% zoom. (Source: https://accessibility.moc.gov.tw/NTM, accessed December 12, 2024)

one of the five conditions is, that there should not be more than 80 characters in one line, in our case 40 characters, because CJK characters[122] require more space than Latin characters.[123] With these restrictions, it is easier to follow the text. The text should not be justified, so that the spacing between the words remains the same and the user won't be confused by a lot of white space.[124] Furthermore, the lines should not be too close together and there should be enough space within and between paragraphs. The space between paragraphs should be 1.5 times larger than the line spacing. In other words, there is almost one empty line before a new paragraph starts. All the above criteria for distinguishable service users with limited vision, but also cognitive and developmental disability.[125]

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[121] There are exceptions for smartphone interfaces because the zoom functions differently. Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Success Criterion 1.4.4: Resize Text | WAI | W3C" (World Wide Web Consortium (W3C), August 7, 2024), https://www.w3.org/WAI/WCAG21/Understanding/resize-text.

[122] Chinese, Japanese, and Korean characters according to Unicode.

[123] There is quite a lot of research on accessible font for Latin characters, but almost none for Chinese characters. While the authors of this section cite some Japanese sources, I think there is not enough research into Chinese characters to make them as accessible as a script. Jia Weiyang (2016) is the only person I found, who wrote specifically on accessible Chinese characters, but also laments the lack of research on this topic. There should be more than font size to take into consideration, if more complicated characters are kept in mind. Jia Weiyang 贾巍杨, "Jianzhu wuzhang'ai biaoshi zitil lianghua sheji yanjiu" 建筑无障碍标识字体量化设计研究 Research on Font Quantitative Design of Architectural Acessible Signs, *Jianzhu yu wenhua* 6 (2016): 108–9.

[124] For Chinese this does not make much sense because the language works differently, and spaces are not commonly used. This thesis would be an example of worst practice for accessible reading because it is written in justified format.

[125] Accessibility Guidelines Working Group (AG WG) Participants, "Understanding Success Criterion 1.4.8: Visual Presentation | WAI | W3C" (World Wide Web Consortium (W3C), August 7, 2024), https://www.w3.org/WAI/WCAG21/Understanding/visual-presentation.

6.2.3 Operable

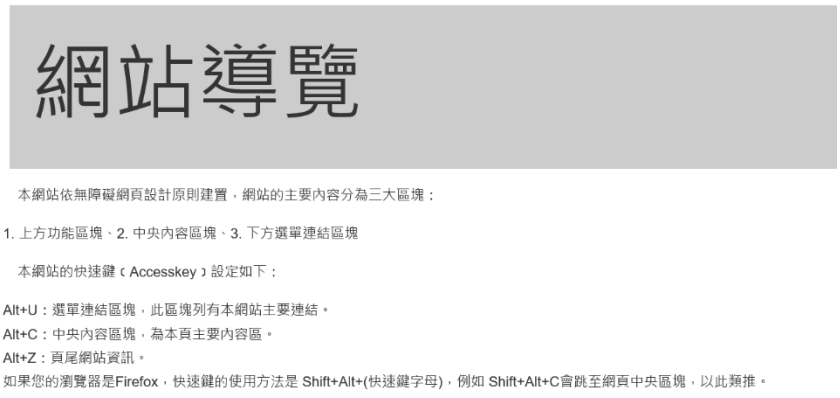

Figure 15: Site Navigation on the MoC's AMSW. (Source: https://accessibility.moc.gov.tw/SiteMap.aspx, accessed December 16, 2024)

The second principle, “operable”, is not only connected to accessible hardware, but also accessible website navigation and user-friendly interface. They are divided into the guidelines: “Keyboard Accessible”, “Enough Time”, “Seizures and Physical Reactions”, “Navigable”, and “Input Modalities”. The last one was recently added into WCAG version 2.1. “Keyboard Accessible” means that the functionality of the website can be accomplished solely by keyboard input.[126] As assistive technologies also function over the keyboard input, this is an important guideline for accessing websites for people with disabilities. All success criteria have to be fulfilled to make this function. Additionally, the last success criterion 2.1.4 Character Key Shortcuts is implemented through the Site Navigation on the horizontal bar on top of the AMSW pages (see figure 11).[127] Clicking on the Site Navigation the Access Keys will be taught and explained. For example, on a Window's keyboard, pushing the “Alt” and the “U” key simultaneously will tell the user the most important links on the horizontal bar (see figure 15). “Enough time” means, that time limits should be abolished and another framework adapted instead. If some actions on a website require you to do something within a certain time frame, it will technically be impossible for people with disabilities to get to the next step because they cannot fulfill the requirement within that time frame.[128] This guideline is circumvented by not

[126] Accessibility Guidelines Working Group (AG WG) Participants, “Understanding Guideline 2.1: Keyboard Accessible | WAI | W3C” (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/keyboard-accessible.
[127] “Understanding Success Criterion 2.1.4: Character Key Shortcuts | WAI | W3C” (World Wide Web Consortium (W3C), August 30, 2024), https://www.w3.org/WAI/WCAG21/Understanding/character-key-shortcuts.
[128] Accessibility Guidelines Working Group (AG WG) Participants, “Understanding Guideline 2.2: Enough Time | WAI | W3C” (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/enough-time.The new authentication method of Heidelberg University is the best example of bad practice. Not only do I have to sign in via VPN on a computer, but also sign in via an authentication application on my phone, that refreshes every 30 seconds. The time needed to listen to the audio and remembering the verifying code, before going

implementing actions that need time and fulfills the success criterion “No Timing”. “Seizures and Physical Reactions” are a preventive measure for light sensitivity that can trigger physical reactions. At the very minimum, the user should be warned about possible side effects beforehand.[129] This warning is most often seen at the beginning of motion pictures or video games. It does not apply to the AMSW because there is no content that might trigger seizures or physical reactions. “Navigable” means it is easy to infer how to navigate the website. Usually, setting headers will help with navigation. The user should never get lost and know where they are at all times and where they are being led to. Information should also be limited so the user does not get lost in the mass of information.[130] This is part of the coding process and, as a result, cannot be discussed further than the theory. However, it can be said that only the most necessary information is put on the AMSW websites without flashy content or descriptions using a lot of adjectives. The new addition in WCAG 2.1 in contrast to WCAG 2.0 is “Input Modalities”. "Input Modalities" points to input methods aside from keyboard input. This is particularly important because newer technical appliances such as smartphones, tablets, and more rely on touch input, voice input and others.[131]

6.2.4 Understandable

“Understandable” refers to the fact that users know how to navigate a website and also understand the contents. It is divided into three guidelines, namely “readable”, “predictable” and “input assistance”. Readable means that text content has to be readable and understandable. For example, avoiding using pictures of a text because AT cannot read pictures if there are no picture descriptions and ensuring the text language and reading direction of the text is in the website code. The text language on AMSW is Chinese, so it should be set to Chinese, so that AT can pick up this information and output the text correctly. The reading direction is important if arranged

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back to another device to input the code, is already well over half a minute. A lot of two factor authentication methods are not accessible because they rely on a count-down.

[129] Accessibility Guidelines Working Group (AG WG) Participants, “Understanding Guideline 2.3: Seizures and Physical Reactions | WAI | W3C” (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/seizures-and-physical-reactions.

[130] Accessibility Guidelines Working Group (AG WG) Participants, “Understanding Guideline 2.4: Navigable | WAI | W3C” (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/navigable.As learned at the workshop at the National Museum of History, especially PWVD, who rely on their ears, cannot remember too much information heard at a time. This can lead to confusion and exhaustion.

[131] Accessibility Guidelines Working Group (AG WG) Participants, “Understanding Guideline 2.5: Input Modalities | WAI | W3C” (World Wide Web Consortium (W3C), April 2, 2024), https://www.w3.org/WAI/WCAG21/Understanding/input-modalities.

in traditional style (i.e. reading from right to left and from top to bottom). However, this is not applicable here because the reading direction is set from left to right. Predictable means that websites should be built similarly so they are easy to navigate. When navigating, there should not be any kind of unpredictable changes. The AMSW websites are all built in the same way and should not encounter any such problems. Input assistance refers to the design of a website that avoids input errors and notifies you of your error, so it is still usable by the user. It also implements ways to double-check your information before you hand in an online form. This again is not applicable in this case because there are no forms on the AMSW websites and no information to double-check. The AMSW websites solely provide information regarding any aspect interesting to people with disabilities to visit the respective museums.[132]

6.2.5 Robust

Robust is a very technical principle and will only be mentioned for a comprehensive overview. It has only one guideline called “compatible”, that basically says that it should be usable by different versions of assistive technologies with different user agents and systems.[133] Variables and commands should stay the same if possible and not randomly changed, so they can be recognized by older, contemporary, and future systems. An easy example would be the command “lang” for language.[134]

The MoC recently recognized the need for digital accessibility and set up a dedicated accessibility space for cultural institutions. At the same time, by not considering expanding this service to more institutions, the MoC is sending mixed signals. Why were these institutions and museums chosen, and not others? Why was the NHRM chosen, even though there are more popular museums, such as the National Palace Museum? This chapter showed what it means to set up a triple A conformity website. While CAPTCHAS, time-limited authorization methods, and form-filling are most difficult for people with visual impairments, this AMSW eliminated the need for any of these services. However, when using other services, it is a crucial part of everyday life when you want to book something or buy something online. Sometimes it is almost impossible to circumvent without help from a third person. The AMSW enables anyone

[132] Campbell et al., “Web Content Accessibility Guidelines (WCAG) 2.1.”
[133] User agents are for example different web browsers like Google Chrome, Internet Explorer, Mozilla Firefox, Opera etc. This makes it easier to use for users. Systems are operating systems, such as Windows, Apple IOS, Linux, Android etc.
[134] Campbell et al., “Web Content Accessibility Guidelines (WCAG) 2.1.”

with disabilities to be able to perceive and navigate its contents with their preferred assistive technologies and gain information to specific museums. This chapter does not explain, however, how well the AMSW works and did not test how often a potential user gets stuck.

7. Emotional Accessibility

As the title states, emotional accessibility is more than just gaining access to the museum. Accessibility encompasses more than just gaining architectural and informational access; it does not mean that the emotional needs of visitors with disabilities are addressed. The following three case studies lay out the ways the NTMOFA, NMH, and the NTM decided to fulfill this criterion.

7.1 Special services at the National Museum of Fine Arts

At the center of Taichung City, in the west of Taiwan, stands the National Museum of Fine Arts surrounded by a sculpture park. It was established in 1988 and seems to hold a special place in the Taiwanese museum world, as the pioneer in regard to accessibility and inclusion because they were designated to be a model museum for the visually impaired[135] by the MoC in 2013 as part of their "Cultural Engagement Program for the Disabled"[136]. They "actively promote cultural equality and diversified inclusive services, and the museum has pioneered new models for cultural accessibility and inclusive exhibitions, specifically tailored to audiences with visual impairments, hearing impairments, and other special needs. It has established a people-centered concept of the 'Inclusive Museum' (IM), providing all visitors with more equitable opportunities for cultural participation." [137] Cultural equality (*wenhua pingquan* 文化平權) refers to the concept of cultural accessibility (*wenhua jinyong* 文化近用), which means making culture available for everyday use by everyone without

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[135] *Shenxin zhang'aizhe wenhua canyu zhi shizhang fuwu shifan guansuo* 身心障礙者文化參與之視障服務示範館所.

[136] *Shenxin zhang'aizhe wenhua caiyu tuidong xiaozhu* 身心障礙者文化參與推動小組

[137] "[…]積極推動文化平權與多元共融服務，特別針對視障、聽障及其他特殊需求的觀眾，開創了文化近用與博物館共融展示的新模式，建立起以人為本的「全人友善博物館」（InclusiveMuseum，簡稱 I M）理念，為所有觀眾提供更加平等的文化參與機會." National Taiwan Museum of Fine Arts 國立臺灣美術館, "國立臺灣美術館十年共融之路——全人友善服務發表暨專業交流座談探討文化近用新視野(新聞稿)" The National Taiwan Museum of Fine Art's Inclusive Path in the Last Ten Years - Presentation of Person-Centric Inclusive Services and Professional Exchange Seminar: Exploring New Perspectives on Cultural Accessibility (Press Release), 國立臺灣美術館, September 28, 2024, https://www.ntmofa.gov.tw/News_Content.aspx?n=1383&s=224777.

differences and having equal opportunities.[138] Now the NTMOFA regularly offers services, such as audio descriptions, tactile guides, and sign language guides for visitors with hearing or visual impairments and are mindful of every visitor with special needs.[139]

Aside from the SW and HW services mentioned in chapter 5, the NTMOFA has a lot more to offer. Firstly, after taking a look at their AMSW, the page is divided into the same four categories as every AMSW: visual impairment, hearing impairment, intellectual disability, and mobility impairment. Since this thesis focuses on physical disabilities, services for intellectual and developmental disability will be left out. NTMOFA has a service called "Plan for Exploration without Sight" (*feishijue tansuo jihua* 非視覺探索計畫) – a special event for visitors with visual impairment. This is a recurring event on a Thursday morning every month from 9 a.m. to 11 a.m. To sign up, you can simply call or send an email. The group numbers ideally amount to around five to ten participants. Usually, schools or other organizations apply for one appointment. Volunteers will guide each participant individually to enable the best experience possible. During summer holidays, they encourage students without disabilities to join their event, in order to make awareness training in early years.[140] Another monthly event is held for people with hearing impairments. There is no set weekday or time. A museum guide is accompanied by a sign language interpreter and leads a tour through the museum's current exhibitions. Since 2017, the museum invites a deaf museum guide with a background in art history to do tours during the period of summer vacation.[141]

Chen Shihan (2022) describes his occasional job as a guide at the NTMOFA, where he uses sign language to bring the artworks to the audience on a personal level. He is a teacher at a special education school for pupils with hearing impairments. In his article he reiterates certain milestones in his life, which led him to be interested in the

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[138] Ministry of Culture 中華民國文化部, "Wenhua pingquan" 文化平權 Cultural Equality, 中華民國文化部, May 29, 2024, https://www.moc.gov.tw/cp.aspx?n=137.

[139] National Taiwan Museum of Fine Arts, *National Taiwan Museum of Fine Arts Annual Report 2023* (Taichung Shi: National Taiwan Museum of Fine Arts, 2024), 6–9; National Taiwan Museum of Fine Arts, 72–73.

[140] National Taiwan Museum of Fine Arts 國立臺灣美術館, "Shizhang huodong" 視障活動 Activities for Visual Impairment, 國立臺灣美術館 友善措施服務介紹網, n.d., https://accessibility.moc.gov.tw/NTMOFA/News_Accessibility.aspx?n=5036&sms=13833.

[141] National Taiwan Museum of Fine Arts 國立臺灣美術館, "Tingzhang huodong" 聽障活動 Activities for Hearing Impairment, 國立臺灣美術館 友善措施服務介紹網, n.d., https://accessibility.moc.gov.tw/NTMOFA/News_Accessibility.aspx?n=5038&sms=13833.

art field and his wish to translate his interest to people with hearing disabilities. He describes his experiences with various museum guides, explains difficulties that result from hearing disabilities, and elaborates on the skills one needs to be a guide who uses sign language. Less written words, more pictures and a more engaging explanation method are needed, while a guide needs to be well-read. He has to understand the exhibitions to be able to transmit meaning in an understandable way. As a reason for the lack of visitors for these special tours, he states the small size of the deaf community – with around 125,000 holding a Disability Identification Card and only around 12,000 being born with hearing disabilities. There are other barriers, such as education, upbringing, overwhelmingly script heavy museums, and method of communication.[142] Educational barrier refers to schools not planning extracurricular activities to museums. The option of visiting museums does not come naturally to their parents either. Barriers in upbringing can lead to the estrangement between the hearing-impaired and their parents. This results in communication difficulties if hearing parents do not learn sign language and cannot build a bond with their child. The lack of communication leads to the child learning less about the outside world. The barrier of script-heavy museums speaks to writings not being in their "mother tongue". Having to read too much in a difficult language might put a burden on their mind. It might be a factor why people with hearing impairments turn away from certain activities and spaces. The barrier of relatability refers to a lack of connection to museums and what they have to offer if you have hearing impairment. People with disabilities tend to be a community-based group, who move within their own peers and do activities together and museums are not a part of their choice of entertainment. Servicing a "community" that does not have a "common language" poses difficulties for institutions that have limited resources and a wide customer range.[143]

As part of my research, I was able to visit this "Inclusive Museum" space, mentioned earlier, within their special exhibition "A Pluralistic Art History for Future Generations" in October 2024 (see figure 16).[144] The special exhibition is divided into three parts: "Exhibition of Collection", "Exhibition of Restoration and Conservation", and "Exhibition

[142] Not every person with hearing impairment (PWHI) will know sign language and some prefer other forms of communication.
[143] Chen, "Longting gongrong: Guomeiguan longdao jingyan yu xingsi," 155–71.
[144] This is within a special plan by MoC, namely "Reconstructing the History of Art in Taiwan", under the banner "The Forward-looking Infrastructure Development Program" to promote preservation of the history art in Taiwan. Yung-Chun Huang et al., "Brochure of the Exhibition: A Pluralistic Art History for Future Generations" (National Taiwan Museum of Fine Arts, 2024).

Cultural Accessibility". The last part uses the idea of "Inclusive Museum: Accessible Exhibition design"[145], called "Taiwan Art's Human-Centric Path of Inclusion"[146].

Figure 16: Introduction to the Inclusive Museum space at the NTMOFA. (Source: Minna Hon / 2024)

This exhibition is the culmination of ten years of efforts toward creating an inclusive, accessible museum experience. It is available from September 7, 2024, until March 16, 2025. The exhibition space uses a "human-centric"[147] exhibit design and presents key portrait works from Taiwan's art history, with a focus on accessibility and inclusivity. The portraits are divided into eight themes, that include *Female Empowerment, Family Memories, Indigenous Portraits, Labor Scenes etc.*[148] The exhibition showcases Taiwan's art history and aligns with modern museum goals to foster inclusivity and equal access to cultural experiences, while implementing the idea of "not only providing a service for the underprivileged, but also working towards the mutual understanding of diverse groups."[149] This exhibition space provides various aids making the exhibit accessible to visitors with various needs. It is called "Inclusive Museum" so anyone regardless of their background can visit.[150]

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[145] *Quanren youshan bowuguan: zhanchang youshan sheji* 全人友善博物館: 展場友善設計.
[146] *Taiwan meishu yirenweiben de gongrong zhi lu* 臺灣美術以人為本的共融之路.
[147] yirenweiben 以人為本 (literally: with the human as center).
[148] National Taiwan Museum of Fine Arts 國立台灣美術館, "Zhi weilai shidai de meishushi" 致未來世代的美術史 Reconstructing the History of Art, November 11, 2024, https://event.culture.tw.
[149] 「不僅服務弱勢，更促進多元族群相互理解」(https://www.ntmofa.gov.tw/News_Content.aspx?n=1383&s=224777).
[150] For a more detailed background information, see a presentation to this exhibition room "'Zhi weilai shijdai de meishushi - Taiwan meishu yirenweiben de gongrong zhi lu' quanren youshan fuwu fabiao ji zhuanye jiaoliu zuotan" 「致未來世代的美術史—臺灣美術以人為本的共融之路」全人友善服務發表暨專業交流座談 Presentation of People-Centric Inclusive Services and Professional Exchange Seminar

Focused on accessible art appreciation, the exhibition provides accessible tools such as tactile tools, audio descriptions, sign language interpretation, and Braille script. The little screen in figure 16 shows a sign language interpreter describing the contents of the exhibit. For a written aide, subtitles have been added. At the start of the exhibit's walkabout, there is an aisle with explanations about this inclusive space, featuring a tactile map, tactile sculptures and tactile artworks. The tactile maps' (figure 17) exhibit region is divided into different colors and tactile patterns, making it visually and tactually distinct. The colors and patterns are then explained on the left-hand side of the map. The map provides explanation in Chinese, English, and Braille. The tactile patterns are differentiated with diagonal lines, dots, plaid lines, and more. Artwork is provided with a tactile reproduction on a wooden desk next to it (figure 18). Under the title, a Braille description is available. The tactile parts encircle contours of the woman, focusing on the artwork's main component. The QR code beneath it leads to the artwork's audio description in text format, which can be read aloud by a smartphone's text-to-speech function. Both a Chinese and an English version is accessible.[151] For people with hearing impairment, a different QR code sits next

Figure 18: Tactile Exhibition Map at the NTMOFA (Source: Minna Hon / 2024)

Figure 17: Tactile artwork description with QR Code at the NTMOFA. (Source: Minna Hon / 2024)

for the Exhibition "Reconstructing the History of Art in Taiwan: A Pluralistic Art History for Future Generations," October 8, 2024, https://www.youtube.com/watch?v=zdJbK0OI6X8.

[151] National Taiwan Museum of Fine Arts 國立台灣美術館, "'Moxiang' huazuo zixun yu koushu yingxiang" 〈默想〉畫作資訊與口述影像 Meditation: Art Work Information and Audio Description, 2024, https://dvs.org.tw/Accessibility_2024/T_05.html.

to the artwork's lower left corner and leads to an explanation in sign language on YouTube.[152] For people using wheelchairs, all paintings and desks are lowered for easy access. Within the exhibition space, the museum provides some rare accessible seating. Accessible seating differs from other seating because of the handles you can see in figure 5 in chapter 5.1. On the seats' side pockets there were booklets about the exhibition in extra-large font and simple language.

True to their model status, the NTMOFA uses various means to enable not only access to their facilities, but also emotional access to services. These include guided tours accompanied by a sign language interpreter and specific days each month to a special exhibition, which makes it a recurring event. For a non-permanent service and exhibition, the museum put a lot of thought and effort into designing the exhibition room in a people-oriented and inclusive way. While this is an impressive effort for an inclusive exhibit design, the museum failed to advertise this special exhibition room and made it almost impossible to search for online. On the Chinese version of the exhibition page, this exhibit is introduced at the very end and does not stand out at all. The outreach for this program seems non-existent, as a Google search did not provide any conclusive results, creating obstructions for informational accessibility. I did find a similar project on AMSW in the past, but no update on this event, which defeats its purpose.

7.2 Staff Training at the National Museum of History

The National Museum of History (NMOH) was established in 1955 and now holds around 50,000 artifacts. It is located in the center of Taipei City, near Chiang Kai-shek Memorial Hall. The museum closed their doors in 2018 for six years due to their modernization efforts and switched to an online appearance and exhibitions in other venues. As recently as February 2024, it reopened.[153] The facilities are modern and renovated with accessibility in mind. Even though stairs lead up to the main entrance, a ramp leads up to the second entrance with an automatic door not far to the left side of the main entrance. Inside the museum, every floor is leveled without a need for

[152] "'Zhi weilai shijdai de meishushi - Taiwan meishu yirenweiben de gongrong zhi lu' zhi huazuo gongrong daolan yingpian 01 'Moxiang'" 「致未來世代的美術史—臺灣美術以人為本的共融之路」之畫作共融導覽影片 01 〈默想〉 Inclusive Video Guide 01 for the Artworks in "Reconstructing the History of Art in Taiwan: A Pluralistic Art History for Future Generations," 「致未來世代的美術史—臺灣美術以人為本的共融之路」之畫作共融導覽影片 (國立台灣美術館 National Taiwan Museum of Fine Arts, 2024), https://www.youtube.com/watch?v=IfwxC9ISWFU.

[153] National Museum of History 國立歷史博物館, "Benguan yange" 本館沿革 Museum's History, 國立歷史博物館, 2024, https://www.nmh.gov.tw/cp.aspx?n=7112.

ramps and can be accessed through an elevator. Enough space is available for a wheelchair to move around. Almost every floor has a barrier-free toilet. The signs to the facilities (i.e. toilets, water fountain, lockers, etc.) are supplemented with Braille. While this specific measure is not very useful because one will have to find the signs first, it is appreciated as a symbolic effort. In the middle of each floor, a bigger seating area is available, but less within the exhibition rooms to the left and right. No specified barrier-free seating could be ascertained.

I was invited to a workshop held in the museum on October 18 and was told this would be a three-part event, held on October 18, October 25 and November 5. The topic of the talks were accessibility services for people with disabilities – in this case specifically for people with visual impairment. The workshop was part of a series called “Creative Boom! Sunlight Treasure Box”[154] and the lecture itself was called “Audio Descriptions and Inclusive Services in Museum at This Moment”[155]. The speaker was Zhao Youci 趙又慈, a professional in audio descriptions, who was and is invited to speak at various museums nationwide and pushes to create more awareness for cultural accessibility. The first session introduced the basics of the needs of visually impaired individuals and was open to the public, serving as awareness training for museum staff and volunteers.[156] The last two sessions were for volunteers only and were arranged by the museum for their staff training, but because it was held on a voluntary basis on weekdays, it was hard to accommodate everyone and in the end, there were people who could not attend all three sessions. The second session, a practical workshop conducted on October 25, focused on role-playing exercises where volunteers alternated between guiding and being blindfolded visitors inside the museum. This session, which I attended, emphasized empathy, safe navigation techniques, and effective communication. The third session, an introduction to the use of assistive devices for museums, scheduled for November 5, trained volunteers on the use of assistive devices and audio description techniques within the museum, while guiding

[154] Creative Boom! *Riguang baohe* 日光寶盒.

[155] *Cike – bowuguanzhong de koushu yingxiang ji quanren youshan fuwu* 此刻 – 博物館中的口述影像及全人友善服務.

[156] It can be looked up online for more information: National Museum of History 國立歷史博物館, “Jiangzuo: cike - bowuguanzhong de koushu yingxiang ji quanren youshan fuwu” 講座：此刻－博物館中的口述影像及全人友善服務 Lecture: Audio Descriptions and Inclusive Services in Museum at This Moment, n.d., https://event.culture.tw/mocweb/reg/NMH/Detail.init.ctr?actId=40040.

PWVD. Although I did not attend this session, I received audio recordings to review its content.

The participants in the Practical Workshop were primarily middle-aged museum volunteers. The training involved practicing “human-guide methods”, which emphasized clear communication, situational awareness, and proper physical guidance techniques. Participants learned that during their initial interactions with visually impaired individuals, it is important to introduce oneself first and ask if assistance is needed, and inquire how the individual prefers to be guided. Guidance typically begins with a light touch on the back of the hand, allowing the visually impaired individual to grip the guide's elbow. This is taught at every school for people with visual impairments and therefore basic knowledge. Guiding movements involves always walking slightly ahead of the individual while providing clear verbal descriptions of surroundings, obstacles, and upcoming actions, such as stairs or narrow spaces. Volunteers practiced signaling movement changes with brief pauses and moving their arm backward before entering narrow spaces to indicate the need to walk in single file. Verbal cues like “Let’s move forward” or “Here’s a handrail on your right” were stressed to maintain clarity. In situations requiring seating or use of facilities, the guide assists by helping the individual feel the back of a chair or the edge of a table before seating and provides clear descriptions of restroom layouts, including the location of toilets, sinks, and trash bins. Volunteers were reminded to avoid rearranging personal belongings without explicit consent and to communicate clearly if any adjustments were necessary. In the museum context, volunteers were trained to use descriptive narration to convey exhibit details, focusing on key features, emotional context, and cultural meaning while employing comparisons and metaphors to bridge understanding. The workshop also introduced audio description techniques aimed at creating accessible experiences by providing detailed and meaningful descriptions of visual elements. The approach emphasized a structured methodology beginning with an overall context to provide a “big picture,” followed by highlighting focal points or compositional elements and ending with finer details such as textures and colors. This structured flow helps listeners build a mental image without overwhelming them. Common challenges included avoiding overly technical language, using simple and conversational terms, employing relatable comparisons such as object sizes relative to people, and prioritizing concise descriptions to prevent listener fatigue. Finally, assistive tools like 3D models of museum objects and tactile paintings were introduced

to complement audio descriptions and diversify accessibility. However, as I did not attend this session, I was unable to observe or analyze these tools in practice.[157]

All in all, with the opportunity of reconstruction because of the modernization efforts, the museum laid importance to a foundation in staff training and their service area. It takes some practice before it can be used effectively on a day-to-day basis or when the need arises. These efforts are worth appreciating, nonetheless, marking a shift towards customer-based service and therefore emotional accessibility. Getting to know the struggles of PWVD can enforce more empathy and more patience in dealing with special needs. At the same time, the speaker Zhao led this three-part event only with an assistant – both able to see – and I wonder how it would have turned out if they found someone with visual disability to speak on their own behalf. The lack of voices from people with disabilities has been critiqued in recent literature. At the same time, I overheard museum staff worried about the lack of volunteers attending because the second session was especially important for the hands-on approach. Including myself, there were at most fourteen attendees.

7.3 Tactile Explanation of the National Taiwan Museum

The NTM is the oldest museum in Taiwan located near Taipei Main Station. The NTM's extensive collections cover various fields, including anthropology, earth sciences, zoology, and botany. In addition to its main exhibitions, the museum operates the Natural History Branch, the Nanmen Branch and the Railway Department Park. I was accompanied to this museum by a person with visual impairment and her guide. The former offered to make the appointment by phone and as a result, we were awaited at the entrance on the date of the visit, but another option to be picked up at the Metro Station (MRT) is available as well. PWVD can get certain assistive tools at the service desk on demand and free of charge. In return, any kind of identification card has to be used as deposit. To use the assistive tools, it is recommended to download the accompanying application “NTM audio guide for visual disability” (Taibo shizhang daolan 臺博視障導覽) on your smartphone.[158] A download at home will prevent connectivity issues when visiting. The assistive tools include a box of plastic models and a booklet written with Chinese characters accompanied by Braille (Figure 19). To

[157] For a protocol see attachment 9.

[158] The download is restricted to the region of Taiwan though and could not be downloaded by my smartphone device. As a result, screenshots of the application are not available because I looked at the other participant’s phones.

Figure 19: Booklet with Braille and tactile description at the NTM (Source: Minna Hon / 2024)

start, the first chapter of the application is supposed to be played. The interface of the app can easily be manipulated by an iPhone's and Android smartphone's accessibility functions. There were no technological difficulties encountered while operating and functions such as audio output and audio speed could be easily adjusted. The NTM is the only museum visited which incorporated an introduction to the museum's architecture and its special features. The accompanying booklet serves as an introduction to the structure of the building, its most famous characteristics, and most famous exhibit. Different parts of the museum's characteristics, such as the triangular ceiling, the dome and the pillars were assigned different tactile patterns, which were described in Braille. On the next page the two-dimensional building is reproduced with the different tactile patterns layered on top. These patterns are traceable with fingers.

Figure 20: 3D models accompanying the booklet. (Source: Minna Hon / 2024)

Three-dimensional models (figure 20) were used to recognize the introduced patterns. The rest of the booklet followed the same formula. After going through the booklet, the museum can be visited with the acquired information. A notable point was the PWVD touching an actual pillar inside the museum. Visual disability, especially for those born with it, makes spatial perception very different. Without being told and experiencing how long a room is for example, it is difficult for

them to imagine. Even describing a pillar as three stories high will be difficult to understand. Touching the pillar made other valuable insights on the actual size and structure of the pillar compared to their expectations. This illustrated that even if three-dimensional models are available, touching the actual thing in its original shape is difficult to replace. It is recommendable that such efforts are made to teach about the building a visitor is entering because surrounding areas always seem to be a point of interest. On the third floor, balustrades for PWVD feature Braille stickers on the underside (figure 21). These will tell the PWVD how many steps you have to walk until you get to the end of the exhibition. PWVD do not have a sense of direction and having this support will guide them in the right direction without additional support. Unfortunately, this balustrade is not continuous and is only provided at the first and last exhibition hall of the third floor. The NTM's approach allows visitors to learn about its own building while providing information and models about its most famous exhibits. It follows the basic approach to audio descriptions learned at the National Museum of History first outlining the most important features of the NTM with short descriptions and then offering you the option to explore the parts you find most interesting afterwards. It makes the visit easy on an individual level because PWVD can visit any time with their companion and ask for the assistive tools without prior appointment.

Figure 21: Braille on the balustrade on the NTM's third floor. (Source: Minna Hon / 2024)

8. Conclusion

This thesis seeks to show how accessibility has been implemented in Taiwanese museums. The introduction of international disability laws, museum laws, and cultural laws over the last decade has created the right environment to navigate existing barriers. Because this area is still in its early stages, there is room for improvement and people working on better services. Architectural, informational, and emotional accessibility are key features to cater to the needs of people with disabilities. When

reading existing literature, I wondered why certain measures were said to be accessible. As a result, it was important to provide real-life examples with explanations because many measures are not self-explanatory. Why must an elevator be accessible? Are all elevators not accessible? While working on this project, I understood why other research focused on certain fields. Based on my research, working within accessibility requires flexibility because there is no single standard, just different approaches. This resulted in faults within my own calculating work. Counting the accessibility measures implemented can be erroneous because it cannot account for buildings naturally not needing certain measures. If a museum only has flat surfaces everywhere and only one floor, what need would there be for an elevator or a ramp? Construction errors are also difficult to see, but ramps are commonly too steep for wheelchair users. In the future, it would be best to do research with a better calculating method. It is not easy to measure architectural and informational accessibility in the way I approached it. For informational accessibility, I focused on digital accessibility and tried to elucidate the importance of acquiring information online and what struggles people with disabilities have to deal with on a daily basis because simply turning the computer on and off is not a possibility for them. This part is only theoretical in nature and further research into how well the websites actually work and how often users still get stuck using the accessibility features on phones will be even more interesting. Another part which I spend a lot of time on was font type and font size. Research on Latin characters seem to be extensive, while research on Chinese characters mainly relies on Japanese researchers. Spacing, bold, and cursive fonts will skew the character heavily, making Chinese characters even less distinguishable. If you imagine the character 龜 for turtle in bold **龜**, it already makes the character less distinguishable in font size 12pt. And other characters such as *wu* 戊 and *dai* 代 are very different, but for Optical Character Recognition (OCR) as well as people suffering from dyslexia, or people who have very limited vision, the two characters can easily be mixed up because Chinese characters same as other scripts often differ only in small changes. Finally, emotional accessibility could only be explained through detailed examples in museums. Efforts to be emotionally attentive extended beyond what the museum stated. Almost every museum I visited had some form of service or at least allowed disability groups to visit with their own guide. It was encouraging to see all the ways a museum could be made accessible to people with visual impairments, from exploring the museum's building with tactile patterns to touching and listening to sea specimen. Staff training was and

is available in many museums where it is important to the museum's management. It is worth noting that in the museums visited, not any exhibitions were seen that discussed disabled artists or disabled people in history, which has been criticized by other researchers. How can you feel connected to art if you do not have a precedent? How do you connect to history if you do not see yourself represented? Future research analyzing museums that takes this into consideration is one potential direction to go beyond this thesis. This problem arises in the planning process as well. While people with disabilities are asked for advice and input in certain projects, they do not appear to be involved in exhibition design or development. Overall, this thesis serves as an overview of available services - similar to a literature review - and can highlight gaps in research in various areas of accessibility in Taiwan.

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10. Table of Appendices

Attachment 1: Criteria for architectural, informational, and emotional accessibility according to Zhao and Wang. (Source: Zhao and Wang 2022)

1. Architectural accessibility

1.1. Accessible entree-way

1.2. Available museum maps or models

1.2.1 placed at visible places

1.3. No stairs or steep slopes in the exhibition hall

1.4. Wheel-chair rental

1.5. Accessible restrooms

1.6. Accessible elevators

1.7. Glass doors as entrance

1.7.1 Automatic doors open within opening hours

1.8. Tactile sculptured map

1.9. Noticeable division of different exhibition space by lighting, colour, sound or different floor material

1.10. Places with limited lighting have visible signs, handrails or other methods to help find the way

2. Information accessibility

2.1. (Information) Booklet with bigger font (no less than 14pt)

2.2. Pamphlets written in Braille (provided)

2.3. Audio guides

2.4. Exhibition film material with subtitles

2.5. Film material with sign language

2.6. Sign language guidance service

2.7. Provides long term sign language guidance service

2.7.1. provides sigh language guidance service long-term

2.7.2. provides sign language guidance service regularly

2.8. Hearing aids for visitors with hearing disability

2.9. Circulates information on accessibility information over their official homepage, their official accounts on social media, pamphlets etc.

2.10. Museum homepage is set up to at least WCAG level A conformance (it allows screen reader software to read the webpage, customization of font size, text-to-speech function, and other rudimentary accessibility functions)

2.11. Digital tours with audio description, subtitles, sign language and other accessible assistive devices

3. Emotional accessibility

3.1. Training employees in direct contact with visitors on the ethics of accessibility and skills in handling of people with disabilities or special needs (e.g. non-discriminatory behaviour towards special population groups, rules of speech and how to act in case of emergencies when dealing with special population groups etc.)

3.2. Provide professionally trained guides, use specific exhibit display methods or any other organizational strategies to assist visitors with cognitive and developmental disability to visit the museum

3.3. Holding events for art therapy

3.4. Allows guide dogs or other working dogs to enter the premises

Attachment 2: Hardware Facilities & Equipment and Software Services according to Museum Island (Source: https://museums.moc.gov.tw/EN/MusData, accessed October 23, 2024)

Hardware Facilities & Equipment

- Barrier-free access (ramp)
- All paths are wheelchair or cart accessible
- Barrier-free elevator
- Barrier-free seating/seats
- Barrier-free lavatory
- Barrier-free parking space for cars and motorcycles

Software Services

- “Friendly Guided Tour”
- Hospitality service Desk
- Hotline Service
- WCAG Website
- Charger for Electric Wheelchairs
- Auxiliary equipment friendly

Attachment 3: Museum data collected from "Museum Island" (Source: https://museums.moc.gov.tw/EN/MusData, accessed June 17, 2024)

Name [Eng]	Name [Chi]	Region [Eng]	Region [Chi]	Classification [Eng]	Classification [Chi]
National Museum of Marine Science & Technology	國立海洋科技博物館	Keelung	基隆市	Nature and Science	自然與科學
Keelung Art Museum	基隆美術館	Keelung	基隆市	Arts and Crafts	藝術與工藝
YM Oceanic Culture & Art Museum	陽明海洋文化藝術館	Keelung	基隆市	Miscellaneous and Others	綜合與其他
National Taiwan Museum - Nanmen Park	國立臺灣博物館 - 南門館	Taipei	台北市	History and humanities	歷史與人文
National Museum of History	國立歷史博物館	Taipei	台北市	History and humanities	歷史與人文
National Taiwan Museum	國立臺灣博物館	Taipei	台北市	Miscellaneous and Others	綜合與其他
MOCA Taipei (Museum of Contemporary Art)	台北當代藝術館	Taipei	台北市	Arts and Crafts	藝術與工藝
National Taiwan Museum - Land Bank Exhibition Hall	國立臺灣博物館 - 古生物館	Taipei	台北市	Nature and Science	自然與科學
Postal Museum	郵政博物館	Taipei	台北市	History and humanities	歷史與人文
NTU Museum of Anthropology	國立台灣大學人類學博物館	Taipei	台北市	History and humanities	歷史與人文
Evergreen Maritime Museum	長榮海事博物館	Taipei	台北市	History and humanities	歷史與人文
NTU Museum of Zoology	國立台灣大學動物博物館	Taipei	台北市	Nature and Science	自然與科學
Taiyuan Asian Puppet Theatre Museum	台原亞洲偶戲博物館	Taipei	台北市	Arts and Crafts	藝術與工藝
Kuandu Museum of Fine Arts	國立臺北藝術大學關渡美術館	Taipei	台北市	Arts and Crafts	藝術與工藝
Beitou Museum	北投文物館	Taipei	台北市	Miscellaneous and Others	綜合與其他
Taipei Astronomical Museum	臺北市立天文科學教育館	Taipei	台北市	Nature and Science	自然與科學
National Taiwan Museum - Main Building	國立臺灣博物館 - 本館	Taipei	台北市	Miscellaneous and Others	綜合與其他
Postal Museum Taipei Branch	郵政博物館臺北館	Taipei	台北市	History and humanities	歷史與人文

NTU Museum of Medical Humanities	國立台灣大學醫學人文博物館	Taipei	台北市	History and humanities	歷史與人文
Sun Yun-Suan Memorial Museum	孫運璿科技 人文紀念館	Taipei	台北市	History and humanities	歷史與人文
National Taiwan Museum - Railway Department Park	國立臺灣博物館 - 鐵道部園區	Taipei	台北市	History and humanities	歷史與人文
National 228 Memorial Museum/Memorial Foundation of 228	二二八國家紀年館 / 財團法人二二八事件紀念基金會	Taipei	台北市	History and humanities	歷史與人文
Hong-Gah Museum	鳳甲美術館	Taipei	台北市	Arts and Crafts	藝術與工藝
AMA Museum for Peace and Women's Human Rights	阿嬤家 - 和平與女性人權館	Taipei	台北市	History and humanities	歷史與人文
Museum of National Taipei University of Education	國立台北教育大學北師美術館	Taipei	台北市	Arts and Crafts	藝術與工藝
Taipei Fine Arts Museum	台北市立美術館	Taipei	台北市	Arts and Crafts	藝術與工藝
Taipei 228 Memorial Museum	台北二二八紀年館	Taipei	台北市	History and humanities	歷史與人文
National Taiwan University Museum	國立台灣大學博物館群	Taipei	台北市	Miscellaneous and Others	綜合與其他
Fire Safety Museum of Taipei City Fire Department	台北市政府消防局防災科學教育館	Taipei	台北市	Miscellaneous and Others	綜合與其他
National Palace Museum	國立故宮博物館	Taipei	台北市	Miscellaneous and Others	綜合與其他
Shung Ye Museum of Formosan Aborigines	順益台灣原住民博物館	Taipei	台北市	History and humanities	歷史與人文
YuYuYang Museum	楊英風美術館	Taipei	台北市	Arts and Crafts	藝術與工藝
Pinglin Tea Museum, New Taipei City	新北市坪林茶業博物館	New Taipei City	新北市	History and humanities	歷史與人文
Tamsui Historical Museum, New Taipei City	淡水古蹟博物館	New Taipei City	新北市	History and humanities	歷史與人文
Juming Museum	朱銘美術館	New Taipei City	新北市	Arts and Crafts	藝術與工藝
Jingtong Mining Life Museum	菁桐礦業生活館	New Taipei City	新北市	History and humanities	歷史與人文

XPX Coal Mine Museum	新平溪煤礦博物園區	New Taipei City	新北市	History and humanities	歷史與人文
National Human Rights Museum	國家人權博物館	New Taipei City	新北市	History and humanities	歷史與人文
Gold Museum, New Taipei City Government	新北市立黃金博物館	New Taipei City	新北市	Miscellaneous and Others	綜合與其他
New Taipei City Yingge Ceramics Museum	新北市立鶯歌陶瓷博物館	New Taipei City	新北市	Arts and Crafts	藝術與工藝
Yo-Chang Art Museum	國立台灣藝術大學有章藝術博物館	New Taipei City	新北市	Arts and Crafts	藝術與工藝
Tamsui Historical Museum, New Taipei City	新北市立淡水古蹟博物館	New Taipei City	新北市	History and humanities	歷史與人文
The Shihsanhang Museum of Archaeology	新北市十三行博物館	New Taipei City	新北市	History and humanities	歷史與人文
Wulai Atayal Museum, New Taipei City	新北市利烏來泰雅民族博物館	New Taipei City	新北市	History and humanities	歷史與人文
Museum of World Religions	世界宗教博物館	New Taipei City	新北市	Arts and Crafts	藝術與工藝
Daxi Wood Art Ecomuseum	桃園市立大溪木藝生台博物館	Taoyuan	桃園市	History and humanities	歷史與人文
Hsinchu City Military Dependents' Villages Museum	新竹市眷村博物館	Hsinchu	新竹市	History and humanities	歷史與人文
Image Museum of Hsinchu City	新竹市影像博物館	Hsinchu	新竹市	Arts and Crafts	藝術與工藝
Glass Museum of Hsinchu City	新竹市玻璃工藝博物館	Hsinchu	新竹市	Arts and Crafts	藝術與工藝
Hsinchu City Fire Museum	新竹市消防博物館	Hsinchu	新竹市	Miscellaneous and Others	綜合與其他
Aborigines Museum of Wufeng Township	五峰鄉原住民族館	Hsinchu County	新竹縣	History and humanities	歷史與人文
Long Ying Zong Literary Memorial Museum	龍瑛宗文學館	Hsinchu County	新竹縣	History and humanities	歷史與人文
Dr. Liu Xing Ching Education Comic Museum	劉興欽漫畫教育博物館	Hsinchu County	新竹縣	History and humanities	歷史與人文
Deng Nan-Guang Memorial Museum	鄧南光影像紀念館	Hsinchu County	新竹縣	Miscellaneous and Others	綜合與其他

Taiwan Hakka Museum	台灣客家文化館	Miaoli County	苗栗縣	Miscellaneous and Others	綜合與其他
Wu Zhou Liu Museum of Art and Literature	吳濁流藝文館	Miaoli County	苗栗縣	History and humanities	歷史與人文
Wan Li Brick Museum	灣麗磚瓦文物館	Miaoli County	苗栗縣	Arts and Crafts	藝術與工藝
Sanyi Wood Sculpture Museum	三義木雕博物館	Miaoli County	苗栗縣	Arts and Crafts	藝術與工藝
Tayal Museum	苗栗縣泰雅文物館	Miaoli County	苗栗縣	Arts and Crafts	藝術與工藝
Miaoli Ceramics Museum	苗栗陶瓷博物館	Miaoli County	苗栗縣	Arts and Crafts	藝術與工藝
saySiyat Museum, Miao-li County	苗栗縣賽夏族民俗文物館	Miaoli County	苗栗縣	Miscellaneous and Others	綜合與其他
National Taiwan Museum of Fine Arts	國立台灣美術館	Taichung	台中市	Arts and Crafts	藝術與工藝
Asia University Museum of Modern Art	亞州大學附屬現代美術館	Taichung	台中市	Arts and Crafts	藝術與工藝
Taichung Military Kindred Village Museum	台中市眷村文物館	Taichung	台中市	Miscellaneous and Others	綜合與其他
National Museum of Natural Science	國立自然科學博物館	Taichung	台中市	Nature and Science	自然與科學
Museum of Fiber Art Taichung	台中市纖維工藝博物館	Taichung	台中市	Arts and Crafts	藝術與工藝
The Lin Family Garden in Wufeng Lin Hsien - Tang Museum	霧峯林家花園林獻堂博物館	Taichung	台中市	History and humanities	歷史與人文
National Museum of Natural Science, 921 Earthquake Museum of Taiwan	國立自然科學博物館 921 地震教育園區	Taichung	台中市	Nature and Science	自然與科學
Lai Kao-Shan Art Museum	賴高山藝術紀念館	Taichung	台中市	Arts and Crafts	藝術與工藝
Assembly Affairs Museum, Legislative Yuan	立法院議政博物館	Taichung	台中市	History and humanities	歷史與人文
Fengyuan Lacquer Art Museum	豐原漆藝館	Taichung	台中市	Arts and Crafts	藝術與工藝
Museum of Contemporary Literature, Mingdao	明道中學現代文學館	Taichung	台中市	History and humanities	歷史與人文
Lifu Museum of Chinese Medicine, China Medical University	中國醫藥大學 立夫中醫藥博物館	Taichung	台中市	Miscellaneous and Others	綜合與其他

Taichung Literature Museum	台中文學館	Taichung	台中市	History and humanities	歷史與人文
Taiping Old times Countryside Heritage Museum	太平古農莊文物館	Taichung	台中市	History and humanities	歷史與人文
Changyuan Hospital - Lukang Historical Image Museum	長源醫院鹿港歷史影像館	Changhua County	彰化縣	History and humanities	歷史與人文
Changhua County Museum of Traditional Nan Bei Music and Theater	南北管音樂戲曲館	Changhua County	彰化縣	Arts and Crafts	藝術與工藝
Tai-xi Village Museum of Photography	彰化縣大城鄉台西村影像館	Changhua County	彰化縣	Miscellaneous and Others	綜合與其他
Wang Gong Story Museum	王功故事館	Changhua County	彰化縣	Miscellaneous and Others	綜合與其他
Changhua Christian Hospital Historical Museum	彰基文史博物館	Changhua County	彰化縣	History and humanities	歷史與人文
Bamboo Art Museum	竹藝博物館	Nantou County	南投縣	Arts and Crafts	藝術與工藝
Nantou Ceramic Museum	南投陶展示館	Nantou County	南投縣	History and humanities	歷史與人文
Yunlin Glove Puppetry Museum	雲林布袋戲館	Yunlin County	雲林縣	Arts and Crafts	藝術與工藝
Xiluo Cultural Museum	西螺延平老街文化館	Yunlin County	雲林縣	Miscellaneous and Others	綜合與其他
hosanna museum	祥太文化館	Chiayi County	嘉義市	History and humanities	歷史與人文
Chiayi Art Museum	嘉義市立美術館	Chiayi County	嘉義市	Arts and Crafts	藝術與工藝
Dr. Kuo Sie-Hien Memorial Museum	許世賢博士紀念館	Chiayi County	嘉義市	History and humanities	歷史與人文
Chiayi Municipal Museum	嘉義市立博物館	Chiayi County	嘉義市	Miscellaneous and Others	綜合與其他
National Radio Museum	國家廣播文物館	Chiayi County	嘉義縣	History and humanities	歷史與人文
Southern Branch of the National Palace Museum	國立故宮博物院南部院區	Chiayi County	嘉義縣	Miscellaneous and Others	綜合與其他
Meiling Fine Arts Museum	梅嶺美術館	Chiayi County	嘉義縣	Arts and Crafts	藝術與工藝
Xikou Township Culture and Life Museum	溪口鄉文化生活館	Chiayi County	嘉義縣	Miscellaneous and Others	綜合與其他

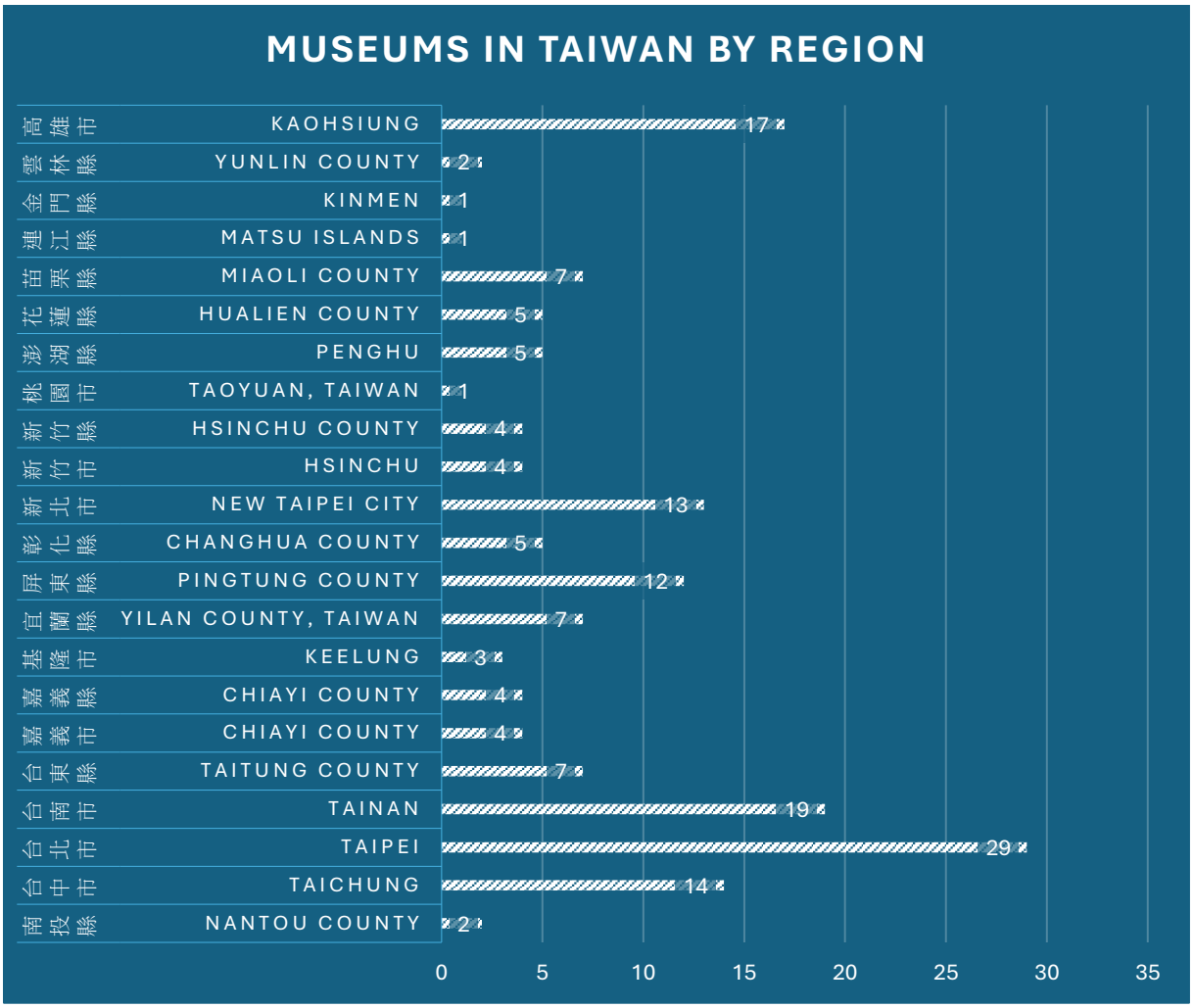
Museum of Archaeology, Tainan Branch of National Museum of Prehistory(N M P)	南科考古館	Tainan	台南市	History and humanities	歷史與人文
Treevalley Life and Science Museum	樹谷生活科學館	Tainan	台南市	Nature and Science	自然與科學
Tainan Art Museum	台南市美術館	Tainan	台南市	Arts and Crafts	藝術與工藝
Yang Kui Memorial Literature Museum	楊逵文學紀念館	Tainan	台南市	History and humanities	歷史與人文
Siao-Long Children's Museum of Art	蕭壠兒童美術館	Tainan	台南市	Arts and Crafts	藝術與工藝
Tainan Old Water Work Museum	台南山上花園水道博物館	Tainan	台南市	History and humanities	歷史與人文
The Indigenous Cultural relic Museum of Tainan City	台南市原住民文物館	Tainan	台南市	History and humanities	歷史與人文
Anping Local Culture Museum	安平鄉土文化館	Tainan	台南市	History and humanities	歷史與人文
National Museum of Taiwan History	國立台灣歷史博物館	Tainan	台南市	History and humanities	歷史與人文
Yeh Shih-Tao Literature Memorial Museum	葉石濤文學紀念館	Tainan	台南市	History and humanities	歷史與人文
Cahamu Museum	札哈木原住民公園、原住民文化會館	Tainan	台南市	none	無
Tainan Children's Science Museum	兒童科學館	Tainan	台南市	Life and Leisure	生活與休閒
Tainan City Museum	台南市立博物館	Tainan	台南市	History and humanities	歷史與人文
Tsai-Liao Fossil Museum of Tainan City	台南左鎮化石園區	Tainan	台南市	Nature and Science	自然與科學
Anping Canal Museum	台南運河安平海關	Tainan	台南市	History and humanities	歷史與人文
Tainan Science Education Museum	台南市南瀛科學教育館	Tainan	台南市	Life and Leisure	生活與休閒
Furniture Manufacturing Eco-Museum in Tainan	台南、家具產業博物館	Tainan	台南市	Arts and Crafts	藝術與工藝
National Cheng Kung University Museum	成功大學博物館	Tainan	台南市	Miscellaneous and Others	綜合與其他

National Museum of Taiwan Literature	臺灣文學館	Tainan	台南市	History and humanities	歷史與人文
Taiwan Fastener Museum	台灣螺絲博物館	Kaohsiung	高雄市	Arts and Crafts	藝術與工藝
Taiwan Pineapple Museum	臺灣鳳梨工場	Kaohsiung	高雄市	History and humanities	歷史與人文
Taiwan Sugar Museum	台灣糖業博物館	Kaohsiung	高雄市	History and humanities	歷史與人文
Takao Railway Museum	舊打狗驛故事館	Kaohsiung	高雄市	History and humanities	歷史與人文
Xiaolin Pingpu Cultural Museums	小林村平埔族群文物館	Kaohsiung	高雄市	History and humanities	歷史與人文
KAOHSIUNG MUSEUM OF SHADOW PUPPET	高雄市皮影戲館	Kaohsiung	高雄市	Miscellaneous and Others	綜合與其他
Namasia For Aboriginal Cultural Museum	高雄市那瑪夏區原住民文物館	Kaohsiung	高雄市	History and humanities	歷史與人文
National Science and Technology Museum	國立科學工藝博物館	Kaohsiung	高雄市	Miscellaneous and Others	綜合與其他
CHILDREN'S MUSEUM OF ART	兒童美術館	Kaohsiung	高雄市	Arts and Crafts	藝術與工藝
Kuo Chang-Xi Weapon Art Museum	郭常喜兵器藝術文物館	Kaohsiung	高雄市	Arts and Crafts	藝術與工藝
War and Peace Memorial Park and Theme Museum	戰爭與和平紀念公園主題館	Kaohsiung	高雄市	History and humanities	歷史與人文
Fo Guang Shan Buddha Museum	佛光山佛陀紀念館	Kaohsiung	高雄市	Miscellaneous and Others	綜合與其他
Cishan Station Sugar Railway Museum	旗山車站糖鐵故事館	Kaohsiung	高雄市	History and humanities	歷史與人文
Hamasen Museum of Taiwan Railway	哈瑪星台灣鐵道館	Kaohsiung	高雄市	History and humanities	歷史與人文
Kaohsiung Museum of Labor	高雄市勞工博物館	Kaohsiung	高雄市	History and humanities	歷史與人文
Kaohsiung Museum of Fine Arts	高雄市立美術館	Kaohsiung	高雄市	Arts and Crafts	藝術與工藝
Kaohsiung Museum of History	高雄市立歷史博物館	Kaohsiung	高雄市	History and humanities	歷史與人文
Pingtung Hakka Museum	屏東縣客家文物館	Pingtung County	屏東縣	History and humanities	歷史與人文
Taiwu Township Library and Cultural Relics Museum	泰武鄉立圖書文物館	Pingtung County	屏東縣	History and humanities	歷史與人文

Pingtung Literature Museum	屏東文學館	Pingtung County	屏東縣	Miscellaneous and Others	綜合與其他
Laiyi Indigenous Museum, Pingtung County	屏東縣來義鄉原住民文物館	Pingtung County	屏東縣	Arts and Crafts	藝術與工藝
shizi township heritage museum	屏東縣獅子鄉文物陳列館	Pingtung County	屏東縣	History and humanities	歷史與人文
National Museum Of Marine Biology & Aquarium	國立海洋生物博物館	Pingtung County	屏東縣	Nature and Science	自然與科學
Pingtung Art Museum	屏東美術館	Pingtung County	屏東縣	Arts and Crafts	藝術與工藝
Sandimen Indigenous Museum, Pingtung County	屏東縣三地門鄉原住民文化館	Pingtung County	屏東縣	Arts and Crafts	藝術與工藝
RUKAI CULTURE MUSEUM	屏東縣霧台鄉魯凱族文化館	Pingtung County	屏東縣	Miscellaneous and Others	綜合與其他
Military Song Museum	青島玖柒(休館)	Pingtung County	屏東縣	History and humanities	歷史與人文
Sun Li-Jen General museum	孫立人將軍行館	Pingtung County	屏東縣	History and humanities	歷史與人文
The Taiwanese Opera&Puppet Museum in Pingtung	屏東戲曲故事館	Pingtung County	屏東縣	Arts and Crafts	藝術與工藝
Bunun Cultural Museum of Haiduan Township	海端鄉布農族文物館	Taitung County	台東縣	Miscellaneous and Others	綜合與其他
Taitung Art Museum	台東美術館	Taitung County	台東縣	Arts and Crafts	藝術與工藝
Taitung Story Museum	台東故事館	Taitung County	台東縣	Miscellaneous and Others	綜合與其他
NATIONAL MUSEUM OF PREHISTORY	國立台灣史前文化博物館(康樂本館)	Taitung County	台東縣	History and humanities	歷史與人文
Chenggong Township Museum of Formosan Aborigines	臺東縣成功鎮成功鎮原住民文物館	Taitung County	台東縣	Miscellaneous and Others	綜合與其他
Lanyu Museum	蘭恩文化園	Taitung County	台東縣	History and humanities	歷史與人文
Taitung County Museum of Natural History	台東縣自然史教育館	Taitung County	台東縣	Miscellaneous and Others	綜合與其他
Hualien Archaeological Museum	花蓮縣考古博物館	Hualien County	花蓮縣	History and humanities	歷史與人文

Taiwan Aboriginal Culture Museum	花蓮縣台灣原住民族文化館	Hualien County	花蓮縣	Arts and Crafts	藝術與工藝
Shoufong Indigenous Museum	壽豐鄉原住民文物館	Hualien County	花蓮縣	Life and Leisure	生活與休閒
Hualien County Stone Sculptural Museum	花蓮縣石雕博物館	Hualien County	花蓮縣	Arts and Crafts	藝術與工藝
Chimei Aboriginal Heritage Museum, Ruisui Township, Hualien County	花蓮縣瑞穗鄉奇美原住民文物館	Hualien County	花蓮縣	Miscellaneous and Others	綜合與其他
Gueishan Island Fisherfolk's museum	龜山島漁村文化館	Yilan County	宜蘭縣	History and humanities	歷史與人文
Yilan Museum Of Art	宜蘭美術館	Yilan County	宜蘭縣	Arts and Crafts	藝術與工藝
Nanfang’ao Fishing Culture Museum	南方澳討海文化館	Yilan County	宜蘭縣	Miscellaneous and Others	綜合與其他
Taiwan Theater Museum	台灣戲劇館	Yilan County	宜蘭縣	Arts and Crafts	藝術與工藝
Pearl Straw Craft Museum	珍珠稻草工藝館	Yilan County	宜蘭縣	Arts and Crafts	藝術與工藝
Taiwan Bowl & Dish Museum	台灣碗盤博物館	Yilan County	宜蘭縣	Arts and Crafts	藝術與工藝
Yilan County Lanyang Museum	宜蘭縣立蘭陽博物館	Yilan County	宜蘭縣	Miscellaneous and Others	綜合與其他
Shagang GuangShengdian Relic Museum	砂港廣聖殿文物典藏館	Penghu	澎湖縣	History and humanities	歷史與人文
Penghu Living Museum	澎湖生活博物館	Penghu	澎湖縣	History and humanities	歷史與人文
Dayu culture and lifesylte museum	大嶼常民生活文物館	Penghu	澎湖縣	Life and Leisure	生活與休閒
Penghu Ocean Resource Museum	澎湖海洋資源館	Penghu	澎湖縣	none	無
penghu fossil museum	澎湖化石館	Penghu	澎湖縣	Nature and Science	自然與科學
Historical Folk Museum in Kinmen	金門歷史民俗博物館	Kinmen	金門縣	History and humanities	歷史與人文
Matsu Folklore Culture Museum	馬祖民俗文物館	Matsu Islands	連江縣	History and humanities	歷史與人文

Attachment 4: Own representation of museum distribution in Taiwan (n=166). (Source: https://museums.moc.gov.tw/EN/MusData, accessed June 17, 2024)



Attachment 5: Email correspondent with the National Science and Technology Museum and its English translation (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 6: Email correspondence with the Ministry of Culture and its English translation (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 7: Email correspondence with the National Museum of History and its English translation (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 8: Email Correspondence with the National Museum of Taiwan History and its English Translation (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 9 Observation Report made after a visit to the National Museum of History (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 10 Memory Protocol Respondent A in Chinese and English and the consent form. (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 11: Memory Protocol respondent B in Chinese and English, and the consent form. (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 12: Memory Protocol respondent C in Chinese and English, and the consent form. (Source: Minna Hon / 2024)

Redacted for privacy reasons.

Attachment 13: Information about the NMNS' accessibility badge. (Source: https://accessibility.moda.gov.tw/Applications/Detail?category=20230420113447, accessed July 2, 2024)

標章資訊

標章狀態	啟用
機關代碼	A09070000E
機關名稱	國立自然科學博物館
網站名稱	國立自然科學博物館官方入口網
網址	https://www.nmns.edu.tw
標章等級	AA
登錄日期	112-04-20
標章啟用日期	113-04-26
標章到期日期	115-05-08
FreeGo 檢測紀錄	通過
備註	

我要申訴

Attachment 14: Own representation of the Web Content Accessibility Guidelines (WCAG) 2.1 (Source: https://www.w3.org/TR/2023/REC-WCAG21-20230921/, accessed September 13, 2024)

Annotation:
Number scheme (Num): **x.** Principle**, x.x** Guideline, **x.x.x** Sucess Criteria
Blue: Perceivable, orange: Operable, green: Understandable, violet: Robust
The same principle will have the same kind of color gradient, with lighter coloring showing the hierarchical structure. Every success criterion has its own conformance level indicated by A, 2A, 3A and shows backward conformance, i.e. 3A means 2A and A as well, whereas the grey areas show non-applicable levels.

Num	WCAG 2.1	Conformance Level			Explanation
1.	Perceivable				Information and user interface components must be presentable to users in ways they can perceive.
1.1	Text Alternatives				Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.
1.1.1	Non-text content	A			
1.2	Time-based Media				Provide alternatives for time-based media.
1.2.1	Audio-only and Video-only (Prerecorded)	A			
1.2.2	Captions (Prerecorded)	A			
1.2.3	Audio Description or Media Alternative (Prerecorded)	A			
1.2.4	Captions (Live)		2A		
1.2.5	Audio Description (Prerecorded)		2A		
1.2.6	Sign Language (Prerecorded)			3A	
1.2.7	Extended Audio Description (Prerecorded)			3A	
1.2.8	Media Alternative (Prerecorded)			3A	
1.2.9	Audio-only (Live)			3A	
1.3	Adaptable				Create content that can be presented in different ways (for example simpler layout) without losing information or structure.
1.3.1	Info and Relationships	A			
1.3.2	Meaningful Sequence	A			
1.3.3	Sensory Characteristics		2A		
1.3.4	Orientation		2A		
1.3.5	Identify Input Purpose		2A		
1.3.6	Identify Purpose			3A	
1.4	Distinguishable				Make it easier for users to see and hear content including separating foreground from background.
1.4.1	Use of Color	A			

1.4.2	Audio Control	A			
1.4.3	Contrast (Minimum)		2A		
1.4.4	Resize Text		2A		
1.4.5	Images of Text		2A		
1.4.6	Contrast (Enhanced)			3A	
1.4.7	Low or No Background Audio			3A	
1.4.8	Visual Presentation			3A	
1.4.9	Images of Text (No Exception)			3A	
1.4.10	Reflow		2A		
1.4.11	Non-text Contrast		2A		
1.4.12	Text Spacing		2A		
1.4.13	Content on Hover or Focus		2A		
2.	Operable				User interface components and navigation must be operable.
2.1	Keyboard Accessible				Make all functionality available from a keyboard.
2.1.1	Keyboard	A			
2.1.2	No Keyboard Trap	A			
2.1.3	Keyboard (No Exception)			3A	
2.1.4	Character Key Shortcuts	A			
2.2	Enough Time				Provide users enough time to read and use content.
2.2.1	Timing Adjustable	A			
2.2.2	Pause, Stop, Hide	A			
2.2.3	No Timing			3A	
2.2.4	Interruptions			3A	
2.2.5	Re-authenticating			3A	
2.2.6	Timeouts			3A	
2.3	Seizures and Physical Reactions				Do not design content in a way that is known to cause seizures or physical reactions.
2.3.1	Three Flashes or Below Threshold	A			
2.3.2	Three Flashes			3A	
2.3.3	Animation from Interactions			3A	
2.4	Navigable				Provide ways to help users navigate, find content, and determine where they are.
2.4.1	Bypass Blocks	A			
2.4.2	Page Titled	A			
2.4.3	Focus Order	A			
2.4.4	Link Purpose (In Context)	A			
2.4.5	Multiple Ways		2A		

2.4.6	Headings and Label		2A		
2.4.7	Focus Visible		2A		
2.4.8	Location			3A	
2.4.9	Link Purpose (Link Only)			3A	
2.4.10	Section Headings			3A	
2.5	Input Modalities				Make it easier for users to operate functionality through various inputs beyond keyboard.
2.5.1	Pointer Gestures	A			
2.5.2	Pointer Cancellation	A			
2.5.3	Label in Name	A			
2.5.4	Motion Actuation	A			
2.5.5	Target Size			3A	
2.5.6	Concurrent Input Mechanisms			3A	
3.	Understandable				Information and the operation of the user interface must be understandable.
3.1	Readable				Make text content readable and understandable.
3.1.1	Language of Page	A			
3.1.2	Language of Parts		2A		
3.1.3	Unusual Words			3A	
3.1.4	Abbreviations			3A	
3.1.5	Reading Level			3A	
3.1.6	Pronunciation			3A	
3.2	Predictable				Make Web pages appear and operate in predictable ways.
3.2.1	On Focus	A			
3.2.2	On Input	A			
3.2.3	Consistent Navigation		2A		
3.2.4	Consistent Identification		2A		
3.2.5	Change on Request			3A	
3.3	Input Assistance				Help users avoid and correct mistakes.
3.3.1	Error Identification	A			
3.3.2	Labels or Instructions	A			
3.3.3	Error Suggestion		2A		
3.3.4	Error Prevention (Legal, Financial, Data)		2A		
3.3.5	Help			3A	
3.3.6	Error Prevention (All)			3A	
4.	Robust				Content must be robust enough that it can be interpreted by a wide variety of user agents, including assistive technologies.
4.1	Compatible				Maximize compatibility with current and future user agents, including assistive technologies.
4.1.1	Parsing	A			

4.1.2	Name, Role, Value	A			
4.1.3	Status Messages		2A		

Attachment 15: Glossary

English	Chinese	Annotation
Ableism	健全主義 殘障歧視	
Access	參觀平等	
Accessible	可近用性	
Accessibility	可及性 近用性 無障礙可及性服務 友善平權 (new term)	
Approachable	可即性	
Autonomy	自主性	
Disability Identification Card	殘障手冊 身心障礙證明	PRC Taiwan
Visitor Studies / audience research	觀眾研究	
Barrierefreiheit	无障碍	
Bottom-up approach	由下而上的方式	
Cognitive or Neurological Disabilities	認知障礙或神經疾病	
Critical dialogue	關鍵對話 重要對話	
Cultural empowerment	文化賦權	
Cultural accessiblity	文化近用	近 as in for immediate use
Cultural equality Cultural equity Cultural equal rights Access & Social Inclusion	文化平權	
Cyber security	資通安全	
Democratizing	民族性	
Department of Social Welfare	社會局	
Diaspora	離散	
Digital optimization	數位優化	
Digital transformation	數位轉型	
Digitization	數位化	
Diversity	多 樣 性 多元性 多元文化	
Disability	身心障礙	
Mental Functions & Structures of the Nervous System	神經系統構造及精神、心智功能	English Translation according to the ICF, the terms used in the annual health record by the Ministry of Health and
Sensory Functions & Pain ; The Eye, Ear and Related Structures	眼、耳及相關構造與感官功能及疼痛	
Functions & Structures of / involved in Voice and Speech	涉及聲音與言語構造及其功能	

Functions & Structures of / related to the Cardiovascular, Haematological, Immunological and Respiratory Systems	循環、造血、免疫與呼吸系統構造及其功能	Welfare are slightly different
Functions & Structures of / related to the Digestive, Metabolic and Endocrine Systems;	消化、新陳代謝與內分泌系統相關構造及其功能	
Functions & Structures of / related to the Genitourinary and Reproductive Systems	泌尿與生殖系統相關構造及其功能	
Neuromusculoskeletal and Movement related Functions & Structures	神經、肌肉、骨骼之移動相關構造及其功能	
Functions & Related Structures of the Skin	皮膚與相關構造及其功能	
Ductility	延展性	
Exclusion	排除 排他性	
Case studies	個案研究	
Grassroot movement	草根性行動	
Hearing Disabilities	聽力障礙	
Household registration office	戶籍地公所	
Inclusion	參與平等 共融 融納	
Inclusive	包容性	
Inequality	不平等	
Internet	網際網路	Taiwan
Ministry of Digital Affairs	數位發展部	
Ministry of Health and Welfare	衛生福利部	
National Human Rights Museum	國立人權博物館	
National Museum of History	國立歷史博物館	
National Museum of Prehistory	國立臺灣史前文化博物館	
National Museum of Natural Sciences	國立自然科學博物館	
National Museum of Taiwan History	國立臺灣歷史博物館	
National Museum of Taiwan Literature	國立臺灣文學館	
National Palace Museum – Southern Branch	國立故宮博物院 – 南部院區	
National Taiwan Museum	國立臺灣博物館	
National Taiwan Museum of Fine Arts	國立臺灣美術館	

National Science and Technology Museum	國立科學工藝博物館	
Outreach	教育推廣服務	
Participatory	人民參與	
Patriarchat	父權	
Physical Disabilities	肢體障礙	
Polyphonic	多音性	
Power position	權力位置	
Public engagement	公共參與	
School for pupils with cognitive disabilities	啟智學校	
School for pupils with hearing impairments	啟聰學校	
School for pupils with visual impairments	啟明學校	
Screen reader	螢幕閱讀器	
Service provider	服務提供者	
Social justice	社會正義	
Sociomuseology	社會博物館學	
Sustainability	可 持 續 性 永續	
Tolerance	容納力	
Visual Disabilities	視覺障礙	
Web Accessibility Initiative (WAI)	無障礙網路創制	
Web Content Accessibility Guideline	無障礙網頁內容可及性規範	
World Wide Web Consortium (W3C)	全球資訊網協會	