IJCAS International Journal of Creative and Arts Studies

Volume 12 Number 2, December 2025
p-ISSN 2339-191X | e-ISSN 2406-9760
pp 105 – 119

Shifting Aesthetics: Why "*Appropriateness*" is the New Goal of Artistic Research in Design

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Abstract
This article is another facet of my thesis, a reflection on the process I've been through. I aim to bring the concept of "appropriateness" to life more fully in the realm of artistic research, which inherently encompasses not only functional aspects but also aesthetic, ethical, and moral considerations. Through this more profound understanding of appropriateness, the debate about what is "useful" and what is "good" shifts to a more fundamental and principled question: what is "true and meaningful." I address this understanding through the lens of design and ergonomics, which makes the body the determining subject, rather than the object to be measured. The argument I develop is a rethinking of the interaction between the body and the tool/product, beyond mere mechanics, to embody the body as a medium for generating design knowledge. This knowledge is divided into two categories: tacit knowledge and embodied knowledge, which will be integral to the development of user experiences.
The investigation in my thesis involved participants with spinal cord injuries resulting from work accidents, traffic accidents, and disaster survivors, who ultimately suffered paraplegia. The approach used was ethnography, specifically participant observation and ethnographic interviews, combined with the principles of somaesthetic design. During the investigation and design of mobility aids, shifts in sensation were identified as a form of user experience that occurs when the device/product is modified. The process of individuals with paraplegia fighting for the fundamental right to mobility involves social, ethical, functional, and aesthetic considerations. Based on my reflection on this research experience, I have developed a hypothesis about how to design user experiences through the principles of somatic work, which shape bodily experiences and are translated into design. The situation is more encouraging from my reflection on conducting research with those who have paraplegia, in that I learned how not to become a parasitic researcher.

Keywords: appropriateness, artistic research, bodily experience, paraplegia

Pergeseran Estetika: Mengapa "Kesesuaian" Merupakan Tujuan Baru Penelitian Artistik dalam Desain

Abstrak
Artikel ini merupakan aspek lain dari tesis saya, sebuah refleksi atas proses yang telah saya lalui. Saya bertujuan untuk menghidupkan konsep "kesesuaian" secara lebih utuh dalam ranah penelitian artistik, yang secara inheren mencakup tidak hanya aspek fungsional tetapi juga pertimbangan estetika, etika, dan moral. Melalui pemahaman yang lebih mendalam tentang kesesuaian ini, perdebatan tentang apa yang "berguna" dan apa yang "baik" bergeser ke pertanyaan yang lebih fundamental dan berprinsip: apa yang "benar dan bermakna". Saya membahas pemahaman ini melalui lensa desain dan ergonomi, yang menjadikan tubuh sebagai subjek penentu, alih-alih objek yang diukur. Argumen yang saya kembangkan adalah pemikiran ulang tentang interaksi antara tubuh dan alat/produk, melampaui sekadar mekanika, untuk mewujudkan tubuh sebagai media untuk menghasilkan pengetahuan desain. Pengetahuan ini dibagi menjadi dua kategori:

Received: 12 November 2025
Revised: 11 December 2025
Accepted: 17 December 2025

pengetahuan tersirat dan pengetahuan yang diwujudkan, yang akan menjadi bagian integral dalam pengembangan pengalaman pengguna.
Investigasi dalam tesis saya melibatkan partisipan dengan cedera tulang belakang akibat kecelakaan kerja, kecelakaan lalu lintas, dan penyintas bencana, yang akhirnya menderita paraplegia. Pendekatan yang digunakan adalah etnografi, khususnya observasi partisipan dan wawancara etnografi, yang dipadukan dengan prinsip-prinsip desain somaestetik. Selama investigasi dan perancangan alat bantu mobilitas, pergeseran sensasi diidentifikasi sebagai bentuk pengalaman pengguna yang terjadi ketika perangkat/produk dimodifikasi. Proses individu dengan paraplegia memperjuangkan hak fundamental untuk mobilitas melibatkan pertimbangan sosial, etika, fungsional, dan estetika. Berdasarkan refleksi saya terhadap pengalaman penelitian ini, saya telah mengembangkan hipotesis tentang bagaimana merancang pengalaman pengguna melalui prinsip-prinsip kerja somatik, yang membentuk pengalaman tubuh dan diterjemahkan ke dalam desain. Situasi ini lebih menggembirakan dari refleksi saya dalam melakukan penelitian dengan mereka yang memiliki paraplegia, karena saya belajar bagaimana untuk tidak menjadi peneliti parasit.

Kata kunci: *kesesuaian, paraplegia, penelitian artistik, pengalaman menubuh*

INTRODUCTION

This article reflects my research journey in the context of my dissertation. My research was figuring out the bodily experience process of individuals who have experienced traffic accidents, work accidents, and disaster survivors, resulting in spinal cord injuries and having paraplegia. I had been looking for how individuals adapt to their physical conditions, including their use of mobility aids. Through this investigation, I learned about the fundamental embodied context of individuals with paraplegia who had experienced radical changes in their physical condition. Based on the aspects explored (bodily experiences, thoughts, and feelings), the research method utilized ethnographic interviews and participant observation. This method was combined with somaesthetic design to understand the relationship between somatic aspects and design elements. A key point in this investigation is that, as a researcher, I must become a friend to gain insight into their natural behaviours, habits, and thoughts. I have been working towards this friendship since 2019, starting with one friend and then another, based on recommendations.

This article seeks to bring the concept of "appropriateness" into the realm of artistic research, which inherently encompasses functional, aesthetic, ethical, social, and moral considerations. Through a more comprehensive understanding of appropriateness, this article aims to shift the debate about what is "useful" and what is "good" to a more fundamental and principled question: what is "true and meaningful." Traditionally, design practice and artistic research have often been trapped in a focus solely on aesthetic aspects. However, the context of disability, particularly the fundamental need for inclusive mobility for individuals with paraplegia, demands a more responsible and comprehensive approach. This research is driven by the recognition that designers have a social and moral

responsibility that extends beyond market considerations, in line with Victor Papanek's call for empathetic and inclusive design.

Appropriateness can provide strong support for the realization of inclusive design. These arguments are based on a synthesis of functional, aesthetic, social, ethical, and moral aspects, which then manifest in the sensations felt by people with paraplegia. A more inclusive world cannot be achieved with just a single element, as we often overlook when we prioritize aesthetics. The world requires adjustments to all aspects to be habitable for humans. Design and technology attempt to address this issue, arguing that the ultimate goal of humans is to support shared life through the man-made world we inhabit. (Clarkson et al., 2003, pp. 1-25;250-265; Heylighen & Bianchin, 2013; John Clarkson & Coleman, 2015; Waller et al., 2010)

In relation to the aesthetic shift towards appropriateness, this research is important. It should be explored further because it focuses on the bodily experiences of individuals with paraplegia due to traffic accidents, workplace accidents, and disaster survivors. These groups undergo significant changes in their physical condition, necessitating comprehensive adaptations, including the use of mobility aids such as wheelchairs. This research develops arguments to redefine the interaction between the body and tools/products, making the body a medium for producing design knowledge, especially tacit/implicit knowledge and embodied knowledge.

Referring to Polanyi, tacit knowledge cannot be separated from embodied knowledge. For example, both are formed when a blind person recognizes and learns about their surroundings. They will try to feel with their hands or even tap their white cane around. Through the sound of the tap, the response in the form of vibrations, and scratches between the white cane surface and the material being rubbed, a blind person can recognize the texture and shape of objects or conditions around them, and then validate this recognition by touch. This knowledge is identified and explored more deeply through the involvement of the body and the entire sensory system, which is then compiled incrementally as knowledge through several validations that produce consistent results. Both kinds of knowledge, both tacit and embodied, were then formulated by Polanyi as "We can know more than we can tell". A blind person knows how to recognize objects, materials, conditions, and their surroundings, as well as the expressions of others; they create knowledge through bodily experience. However, it is extremely difficult when asked to explain, because this knowledge and understanding are only recognized by the whole body. The same principle applies when we forget our computer password, but as soon as our finger touches the keyboard, it is as if we can remember it again. (Kolb, 2015, pp. 15–19; Polanyi, 1962, pp. 71–260, 2009, pp. 1–25)

The notion of appropriateness in this article is based on Victor Papanek's approach, which I use to reflect on artistic research. Victor Josef Papanek is a design

thinker who believes that design is a science capable of shaping society through the "function complex" approach he has developed. Good design is not just about aesthetics or function, but rather a combination of various interrelated factors. Papanek's approach extends beyond traditional design that emphasizes beautiful objects; he delves deeper into design, incorporating ethics, ecology, and social justice into the process. The function complex comprises six aspects: method, association, aesthetics, need, telesis, and use. (Papanek, 1984, pp. 3–27)

Method	:	Refers to the processes and techniques used to manufacture an object, emphasizing the importance of efficient, sustainable production methods and attention to environmental impact.
Association	:	Related to the meaning and values associated with an object. A well-designed product can evoke emotions, memories, and a sense of cultural identity.
Aesthetics	:	While not the sole factor, aesthetics remains crucial in design; beauty should emerge naturally from an object's function and usefulness. The visual and sensory beauty of a product is determined not only by its appearance but also by how the user perceives it.
Need	:	Design should be driven by real human needs, not just desires or market trends. Designers must focus on solving problems and meeting basic human needs, both physical and psychological.
Telesis	:	Refers to the ultimate purpose of a product and its long-term impact on the environment and society to deliberate and purposeful progress. In the context of design, telesis means that design should aim to improve the quality of human life and create a better world.
Use	:	This aspect assesses how well a design fulfills its practical purpose. Design should be easy to use, effective, efficient, and appropriate to the user's needs, solving a problem.

These aspects represent points of view that evolve from "beautiful" to "meaningful" through designs that are more ethical, relevant, and also socially and morally responsible.

> "…, I must agree that the designer bears a responsibility for the way the products he designs are received at the marketplace. But this view is still too narrow and parochial. The designer's responsibility must go far beyond these considerations. His social and moral judgment must be brought into play long before he begins to design, since he has to make a judgment, an a priori judgment at that, as to whether the products he is asked to design or redesign merit his attention at all. In other words, will his design be on the side of the social good or not."
>
> (Papanek, 1984, p. 55)

Papanek encouraged designers to combine complex functions with social and moral responsibility by engaging with real-world issues such as the needs of children, the elderly, the sick, and people with disabilities. This scope not only addresses moral and social problems, but if forced to look at the market, it also

offers a sizable market. The most important thing and the contribution of design thinking to knowledge and the world is that by learning from children, older people, people in need of medical rehabilitation, and people with disabilities, so the designers can determine new minimum standards for design that will then become a reference for usability from many aspects and many parties, such as how older people and children can easily open a tumbler lid. Designers can incorporate more users into their designs, making the world a more inclusive place. (Papanek, 1984, pp. 48-59;122-167;342-367)

While Papanek provides a broad ethical framework, it requires a methodological lens to delve deeper into how design addresses ‘need and use’ at the level of individual experience—especially in the context of disability. This is where somaesthetic design becomes crucial. Somaesthetic design is an approach used to understand the relationship between somatic aspects (bodily experience) and design elements. This approach focuses on bodily experience, placing the body as the determining subject, rather than the object to be measured. This is an appropriate method because research seeks to develop assumptions about bodily experience rooted in the body's somatic functions and translate them into design elements. Somaesthetic Design helps researchers view the body as a medium for generating design knowledge. Knowledge generated through the body's interaction with tools/products is divided into two important categories: tacit knowledge and embodied knowledge. The two kinds of knowledge, embedded in the body and accessible only through a series of sensory and emotional processes, are at the heart of user experience development. (Fry, 2009, pp. 197–207; Hook, 2018, pp. 157–179; Papanek, 1984, pp. 54–105)

Papanek believes that the formation of design knowledge involves responsible design practices that can create and verify new design knowledge, continuously considering many aspects, including ecological and social contexts. Designers need to become accustomed to thinking and acting within the context of comprehensive, integrated design, considering multiple factors in decision-making. An integrated, comprehensive design will be anticipatory, examining data and trends and continuously calculating future scenarios to inform planning and building. Thus, the complex function offered by Papanek is to view the formation of design knowledge as a closed cycle, where practice is understood as the implementation phase of learning and evaluation of practice as the regeneration phase of knowledge. Through this, it is hoped that designers will become more fluent and wise in the synthesis process that underlies design decision-making, which has intrinsic social and moral responsibility. (Papanek, 1984, pp. 342–367)

Artistic research also shares the same conditions as those offered by Papanek, in that it makes creative practice a means of seeking new knowledge, as Henk Borgdorff argues. "Research in the Arts" is a term coined by Borgdorff to

describe artistic research. This differs from "Research into the Arts", which examines art as an external object, and "Research for the Arts", which aims to produce practical knowledge for art. Borgdorff argues that knowledge need not be in textual form, since some knowledge is tacit or implied; therefore, it can be delivered through works produced through creative practice. However, Borgdorff also provides strict criteria for determining whether a work constitutes academic knowledge, namely that it presents verbal arguments that incorporate research questions, research methods, and research conclusions. In addition, Borgdorff also states that verbal arguments must be structured within a systematic framework, contribute to knowledge, and produce discursive articulation. (Borgdorff, 2011, pp. 44–63)

Bogdorff's thinking on artistic research is based on Frayling's concept of "Research in Art and Design." Frayling divides art or design research into three areas: 1) "Research into Art or Design," which examines art or design as a cultural object or phenomenon; 2) "Research for Art or Design," which researches art or design for the sake of art or design, generating knowledge and resources that can be used to support the process of creating art or design; and 3) "Research Through Art or Design," which conducts research through art or design, as a creative process in creating works and making them the primary method of inquiry. The work or product also serves to present the knowledge gained from creative practice. Therefore, considering the similarity in views on how to gain knowledge from creative practice between Borgdorff and Frayling, the terms "Research into Arts" (Borgdorff) and "Research Through Art or Design" (Frayling) are congruent. (Frayling, 1994)

Likewise, Danny Butt and Julian Klein share a similar argument about the purpose of artistic research: to expand knowledge and understanding in the field of art by exploring new ways of knowing. Julian Klein, in her reflection, stated that artistic research is always scientific research and is never categorically separated from academic research; therefore, Klein prefers to call it "Research as Art." Meanwhile, Danny Butt, through his observations on artistic research practices in the academy, noted that research begins with curiosity that is explored, tested, and reflected upon through the creative process, thereby producing an aesthetic outcome or new work. Both Butt and Klein share a common understanding of aesthetics as the core of artistic experience. Klein argues that aesthetics is a mode of perception that reflects the artistic experience itself and produces tangible knowledge. This knowledge is deeply embedded in the body and can only be acquired through a series of sensory-emotional processes that are inseparable from the artistic experience itself.

On the other hand, Butt views aesthetics as a functional mechanism of a work that is integrated with the viewer's freedom of perception. Aesthetics is seen

as an operationality and functions as a membrane within which several aspects, such as sensation, concept, and feeling (affect), are combined into a single experience, with the viewer's freedom of interpretation in exploring the artistic experience. (Butt, 2017; Klein, 2017) This view aligns with Dewey's perspective, which pragmatically asserts that aesthetics is not a property of an object, but rather a comprehensive experience derived from the rhythm and interaction of life. Aesthetic experience has a unity and consummation inherent in the process of experiencing, rather than in the object itself. (Dewey, 1958, pp. 3–19)

Based on the perspectives on design represented by Papanek and the art of Klein and Butt, aesthetics then presents a disparity of perspectives resulting from artistic experiences, as outlined above. For me, this isn't about choosing whose conception to adopt at the outset of research but rather allowing the process of producing the artistic experience itself to be decisive. It's also possible that other conceptions of understanding artistic research could emerge. However, this issue is genuinely challenging, especially the paradigms of creation in art and design, which place artworks or products in different places. In my opinion, art places the work within the artist, even though it receives feedback from the audience. In contrast, design places the product within the user, who then gets a response through user satisfaction. Given the location of the work, the arbitrary processes experienced by artists and designers differ in direction and specificity, so I suspect this will affect the resulting artistic experience and aesthetic understanding.

METHOD

My doctoral research utilized participant observation and ethnographic interviews (Spradley, 1980, 2016), combined with somaesthetic design (Hook, 2018; Mentis et al., 2014). However, to reflect on my research experience, I developed my own approach, implementing several steps, some of which became part of the research procedure and were also documented in journal or conference articles, as shown in Figure 1. The process of reflection and literature review validated the findings and analysis. This process resembles a discursive dialogue, considering several relevant possibilities for addressing the issue.

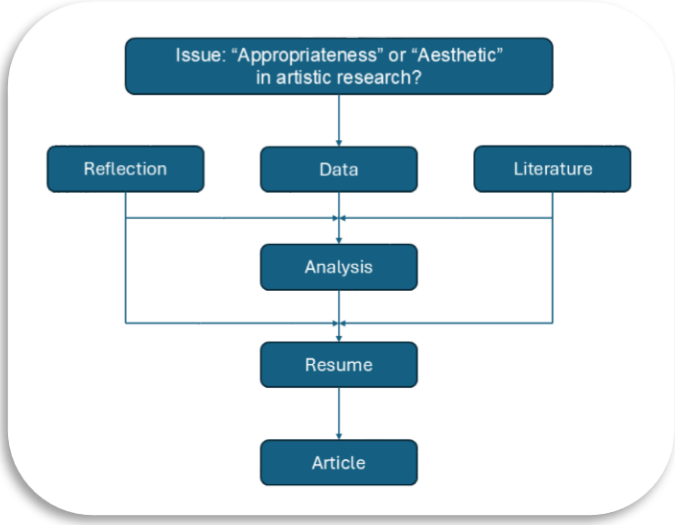

Figure 1. Flow of reflection.
Source: Winta Adhitia Guspara, 2023.

RESEACH RESULT

My research topic explores the bodily experiences of individuals who have suffered spinal cord injuries caused by work accidents, traffic incidents, or disasters, leading to paraplegia. The study involved five participants: two with paraplegia from work accidents, two from traffic accidents, and one disaster survivor. In their daily lives, the participants work as social workers, Quran recitation teachers, scavengers of plastic and cardboard, resellers, and Paralympic athletes. The range of experiences examined includes recognizing initial changes in body condition and abilities, as well as the use of mobility aids such as wheelchairs. The purpose of my research is to understand the adjustment and adaptation processes of individuals with extremities, to develop assumptions about bodily experiences grounded in the body's somatic functions, and to translate these into design elements. Based on these objectives, I will develop a design procedure for creating an assistive device that accounts for shifts in bodily experience and the resulting sensations. My research began by familiarizing myself with the participants' activities. This was done to elicit participants' thoughts, feelings, and sensations. Through friendship and shared activities, interviews and observations became more subtle, allowing participants' expressions and stories to be more natural. Some of the activities we engaged in together included visiting friends with disabilities at home, going to coffee shops, taking motorcycle tours, and discussing mobility aids via WhatsApp.

When I began this research, I faced a particularly challenging situation — the primary issue arising from the disparity in perspectives and aesthetic understandings that resulted from creative practices in art and design, as described in the literature review. When collecting data, I took this disparity in aesthetic

perspectives into account and, for the time being, refrained from embracing any single aesthetic understanding. The research began with a combination of experimental design methods and rapid ethnography; however, it soon became clear that this approach was inadequate, particularly in exploring the characteristics of disability and the relationship between somatic and bodily functions. This happened because the combination of methods was more akin to a trial-and-error approach, using a design to determine its suitability for user needs, rather than gaining firsthand experience from participants. (Guspara et al., 2023) The research method then shifted to adopting the phenomenological approaches of Edmund Husserl and Don Ihde, which examine the phenomena of design and technology through users' interactions with their environments. This approach is appropriate because the broad umbrella of my research encompasses how the integration of micromobility and disability meets, which seeks to explore how participants' ways of thinking about design and technology (assistive mobility device) shape their understanding of the world. (Guspara, 2024) However, after a few times, this approach wasn't yet appropriate because there were fundamental unknowns about the nature of the extremity-involved entities that would be used in the design of an assistive mobility device. Subsequently, another change employed an ethnographic approach that combined participant observation and ethnographic interviews, drawing on ideas and procedures from James Spradley and Höök's thoughts on somaesthetic design. After implementing this approach for a while, I decided to continue it to explore how participants' abilities adapt and to examine the type of aesthetic that would emerge.

One advantage of the last approach is that analysis can be conducted simultaneously with data collection through participant confirmation. In my research, this process has been ongoing for approximately four years and continues to this day, despite my having already begun writing my thesis. The most challenging part is upgrading myself as a research instrument and constantly calibrating it using references and field findings. Data collection, analysis, and confirmation with participants were conducted several times until the data were consistent. Likewise, reflections on notes and memos during the research underwent repeated adjustments. Based on this research process, it is crucial to engage and participate in social interactions with participants. Upon reflecting on the appropriateness of the research methods and stages, the expected aesthetic characteristics were not yet apparent, despite having obtained the answer to the first research question regarding the characteristics of disability and the nature of the body from an extremity perspective. Reflecting on this lack led me to question what embodied experience is, why design requires it, and how it can serve as a foundation for supporting the design of an assistive mobility device. These questions inspired me to add a third research question to the two previously formulated ones.

The research continued with revisiting the background of the research topic and the problem to be solved. I attempted to reorganize the research map, but I remained skeptical about the presence of aesthetics at each step. I doubted that my findings regarding the understanding of paraplegia and its embodiment were aesthetic. My argument regarding paraplegia and embodiment was based on the finding that paraplegia is not simply about lower-body paralysis, but rather a syndrome with broad systemic consequences and a complex, multidimensional process involving adaptations of the body, feelings (emotions), thoughts, the physical environment, and the social environment in adjusting to mobility. Based on these findings, I modified my research map to focus more on the emerging complexity, referencing Papanek's ideas about complex functions. The tension of disparity from an aesthetic perspective became increasingly apparent. I realized that the aesthetics referred to in Papanek's complex function are quite different from those associated with the artistic experience of art. Therefore, I continued researching by suspending the issue of aesthetics as a function sought.

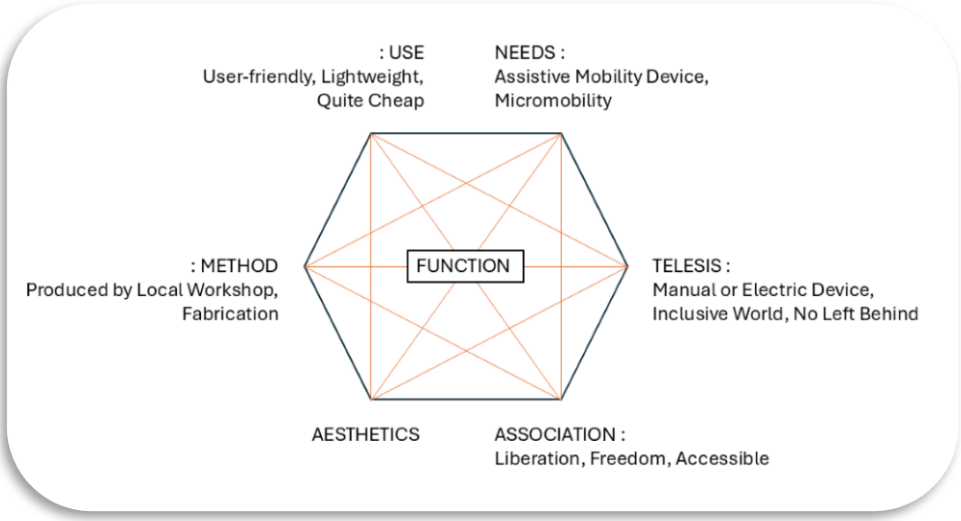

Figure 2. Framework based on complex function.
Source: Winta Adhitia Guspara, 2023.

Changes in body adaptation also depend on the equipment participants use. For example, adjusting to a wheelchair requires considerable time for the body to acclimate, both through somatic functions and through the technical adjustments that need to be made. Using this logic, the use of different equipment or assistive devices will elicit different adaptation methods and produce shifts in sensation. Therefore, to determine the body's adaptability and shifts in sensation, a mobility aid other than those the participants have previously used is needed. Participants currently use wheelchairs for micro-distance travel, such as between rooms or around the house, and use sidecar motorcycles for longer-distance travel. In repeated discussions with participants, they expressed a desire for a mobility aid

that is small, easy to operate, and can be used to assist with short-distance travel, such as to the shop, the mosque, or a neighbor's house, within a radius of 1 to 5 or 6 kilometers. Based on these discussions, I developed the complex function framework shown in Figure 2 and attempted to create an assistive mobility device using the disability criteria I had obtained.

The assistive mobility device's design uses battery technology for power. Battery technology was chosen because it's easier to operate and apply. Charging the power supply doesn't require a visit to a gas station; it can be done at home or anywhere with an electrical outlet. It doesn't require additional machinery that takes up space and weight. The assistive mobility device is designed as a detachable electric drive for a wheelchair. In its construction, I worked with a local workshop to fabricate the chassis and assemble the electrical components. The work took approximately four months to complete, and after its completion, it was tested on participants. User testing was conducted twice, divided into an introductory phase and an adjustment phase. The testing method used a think-aloud protocol. During the test, participants were video recorded and asked to describe everything they were thinking and feeling at the time. In the final phase of user testing, participants were asked to confirm their experience using the detachable electric drive for wheelchairs and compare it to their previous mobility device. One participant commented on the comparison between their experience using the electric wheelchair and the detachable electric wheelchair. He confirmed a change in feeling when using different mobility aids, as seen in Figure 3.

Figure 2. The shift in sensation results from comparing different devices.
Source: Winta Adhitia Guspara, 2023.

This statement prompted me to consider the issue of aesthetics in creative practice, particularly in the context of artistic experience. Does what is implied in Figure 2 represent an aesthetic form of artistic experience? Meanwhile, the principle of my research, which involves complex functions, is to determine the appropriateness of use in various situations, conditions, and underlying problems. Is appropriateness central to design practice, just as aesthetics is central to artistic practice? What about the location of the resulting aesthetics? In this study, the phenomenon is not located in the designer or researcher, but instead emerges in the participants through a shift in sensation. If this is acceptable, is it possible to state that "true and meaningful" design will give rise to aesthetic conditions? Honestly, I haven't found a definitive answer, but it is an interesting hypothesis for my future research.

DISCUSSION

This article presents an in-depth reflection on the journey of my research for the doctoral program, an attempt to shift the focus in artistic research from mere aesthetic issues to the search for "appropriateness." This research is rooted in the exploration of the bodily experiences of individuals with paraplegia due to accidents or disasters, particularly in their adaptation process to mobility aids. Appropriateness, achieved through complex functions in this context, encompasses not only function and utility but also aesthetic, ethical, social responsibility, and moral considerations. The question is how to deliver artistic research into the design field when there are disparities in aesthetic approaches between art and design.

Let's first briefly discuss the disparity between aesthetics in art and design. The issue is more about where aesthetics reside, how they develop, and where they originate. In my opinion, the existence of aesthetics in art lies with the artist; they serve as a channel for creative expression, and once it becomes a work of art, it is then exposed to the spectator. In design, the aesthetics exist outside of the designer first. Designers must first understand what consumers or users envision, requiring systematic feedback to determine the desired aesthetic category. Afterward, designers translate these elements into design elements, considering numerous and complex factors during the synthesis process. Aesthetics is the core of artistic work in art, so that creativity in art sometimes tears the boundaries of logic and is unimaginable, while design focuses more on how the elements that make up the design are congruent, precise, and appropriate. Then, the design will be assessed by consumers or users to determine whether it is useful or not, whether it is helpful or not, which ultimately leads to the satisfaction and meaningfulness of the product's existence.

According to Figure 2, I temporarily set aside the issue of aesthetics and focused on integrating artistic research into a design thinking framework. I created a research framework using complex functions. Several factors must be compiled

to obtain a complete picture in answering the research questions, as shown in the diagram. My research involved five friends as participants who had spinal cord injuries and experienced paraplegia due to work accidents, traffic accidents, and disaster survivors. Through data, analysis, and repeated confirmation with participants, blessing, two of the three research questions could be answered: 1) features of disability and bodily experience (body structure and function based on the body's somatic), and 2) adjustment of the body's ability to use an assistive mobility device. The answer is: firstly, paraplegia is not simply about lower-body paralysis, but rather a syndrome with broad systemic consequences and a complex, multidimensional process involving adaptations of the body, feelings (emotions), thoughts, the physical environment, and the social environment in adjusting to mobility. The first answer was presented at APARN (Asia Pacific Artistic Research Network) 2024 at Multimedia University, Malaysia. Secondly, is that the design and technology embodied in wheelchairs are agents that help people with paraplegia navigate their world. The second answer was presented at APARN 2025, at Chulalongkorn University in Bangkok. So, to validate whether I'm still within the framework of artistic practice, I'll submit my research findings to APARN as a trustworthy artistic research network.

After receiving the initial research findings, I remained sceptical about how to translate artistic research into design thinking, despite having already found the answer. I then continued developing a mobility aid, adapting it to the research findings. I then tested the device, which I refer to as a detachable electric drive for wheelchairs, on participants. This user test employed a think-aloud protocol, in which participants shared their thoughts and feelings. After completion, I conducted a follow-up and received unexpected confirmation. The framework I had previously created proved consistent with the confirmation from one of the participants. This not only indicated that the different mobility aid variants caused the shift in bodily experience and sensation but also led to self-actualization and liberation regarding mobility issues.

This shift in sensation raises an important question: Is this subjective experience—the feeling of "riding" and "speeding" rather than simply "riding" a wheelchair—the aesthetic form of artistic experience sought? And, more fundamentally, is appropriateness central to design practice, just as aesthetics is central to artistic practice? While a definitive answer remains unanswered, I have at least formulated an interesting hypothesis that will serve as a foundation for further research: that appropriateness is a more fundamental and principled framework for creating "true and meaningful" designs.

CONCLUSION

This artistic research journey marks each intersection, creating interesting insights for further discussion. This includes not only the background of the ideas but also the mix of methods, findings, and analysis.

1. The complex function formulated by Victor Papanek guides design for people with vulnerabilities using the "appropriateness" framework as a foundation for thinking.
2. Papanek's thinking through complex functions is not merely a method, but provides a paradigm and even a kind of ideology for design activity and knowledge. Papanek's thinking can encourage and guide this research, revealing a shift in aesthetics toward appropriateness that inherently produces a user experience with a change in sensation. More importantly, Papanek's thinking enables design to be applied in the real world, presenting inclusive design as one approach to creating a world where everyone can live and no one is left behind.
3. Somaesthetic design offers a method and vocabulary for observing and analyzing the appropriateness framework, enabling the perception of shifts in sensation and bodily experience resulting from changes in mobility devices.
4. The hypothesis that "true and meaningful" design goals emerge from within the user, based on shifts in sensation and bodily experience.
5. The artistic research process, which does not confine aesthetics to a single object and allows all interactions to undergo adjustments, will continue to evolve until they are unified and perfected as an artistic experience that produces "true and meaningful" results.

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