Design for All

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Access Denied

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Other Regular features

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Mark held office as Vice President with the Victorian Chapter of the Design Institute of Australia, also as Director with Arts & Recreation TrainingVictoria advising on Design education into the Vocational Education sector under Chairs George Fairfax AO and Paul Clarkson AO, and also Artists & Industry under Chair the Hon. Evan Walker AO.
Mark has presented on Design in India since 2003 at Design Sutra Conference Mumbai, participated in the International Council of Societies of Industrial (ICSID) [now World Design Organisation] Interdesign Workshop "Humanising the Metropolis" Mumbai, also presented at IIT Delhi, IIT IDC, Mumbai, NID Ahmedabad and DYPDC Center for Automotive Research & Studies, Pune as well as keynote at NatCon InDesia in Kolhapur in 2014 for the IIID.

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Editorial

Access Denied: Inequality in Informal learning in Cultural Institutions

Adjunct Professor Mark Watson

This guest editorial, like most of my design-led interests, deviates from the norm of Universal / Inclusive Design along the lines of the field of practice of Ergonomists not only dealing with the physical or built environment but moving into the realm of psychology by including workplace health and safety and areas such as inequality, bullying and harassment.

I recently engaged in research by interviewing key industry experts in the cultural institution sector in India and was somewhat disturbed by what I was hearing. There was a reticence to include lower socio-economic groups as patrons due to, I assumed was their inability to behave in a manner to which the higher socio-economic group found acceptable. This led to discussions on paid entry to venues as a deterrent.

This attitude led me to thinking about what aspects of interaction were of most concern, with an aim to researching the most effective ways to allow inclusion as these institutions, such as museums, galleries and libraries are seen internationally as key centres in informal education.

I recall participating as a facilitator at the Industrial Design Society of America's 2015 Conference, The Future of the Future held in Seattle. Not wanting to pay exorbitant roaming fees for mobile-cell phone access I attended the Seattle City Library to use their facilities. Doors would open at 10 am and I was joined at the

communal desks by a fair few of Seattle's homeless whose hygiene (foot odour predominantly) left a lasting impression on my sensibilities.

So even amongst the leading nations of the free world, these problems abound, but of late with even more dire consequences due to COVID19.

Another example of changing attitudes within India was my experience in meeting Australian Government bureaucrats for breakfast in a Bangalore Hotel who being of Indian origin were amazed that the young woman serving us was deaf, as was indicated by a note she wore around her neck. Their amazement stems from their knowledge that employing people with disabilities is rare and even rarer in four-star hotels in India. My words to them were that I chose to stay at this particular chain of hotels because of their leadership in employing people with disabilities.

Discourse on these issues is opening up in India with academics like Melhotra[1] exploring the new perspectives on the lived experience of cultural institutions as India opens up to the world and invests in cultural tourism and education.

I have in this issue as guest editor asked my colleagues to write on the expanded field of Universal / Inclusive Design to discuss Tactility and Accessibility in the post COVID world of public cultural institutions not only in haptics of the physical handling but in an expanded regard to affordance.

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[1] *Mehrotra, N, (2020). Disability Studies in India: Interdisciplinary Perspectives [Online]. Available at: https://link.springer.com/book/10.1007/978-981-15-2616-9 (Accessed 16 May 2022)*

It is interesting how my post graduate research of late last century on Belonging[2] has come back in vogue *post covid* where I had worked with the indigenous community here in Australia to gauge a sustainable ethos within the physical environment through design. In an attempt to dig deeper on the substance of design practice I researched ideology, perception and affordance amongst other things in resolving designs work in the generation of effective biomes for human habitation.[3]

As the world looks to Sustainable Development through Design for All, Education and Intellectual Access are key areas to be addressed and I hope that this humble offering is a starting point to an inclusive approach to meeting the Sustainable Development Goals of Education and Inequality through a more inclusive scope.

[2] *Watson, Mark Andrew. "Belonging." Thesis (M Des)--Royal Melbourne Institute of Technology, 1999., 1999. Print.*
[3] *Watson M. 2014, Biomic Design to Design Ethology, International Society of BioUrbanism, viewed 8 May 2022 http://www.biourbanism.org/biomic-design-design-ethology/*

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Access Denied: Inequality in Informal learning in Cultural Institutions.

Mark Watson,

Managing Director

Design Providence

Abstract

The aim of this paper is to open up new ways of reducing inequality through increasing access to informal education for all while addressing blocking issues around tactility and hygiene. A desk top survey of current literature is used to provide insights into possible actions which may lead to improved access to cultural institutions. It is concluded that India may benefit from a rethink on the use of cultural institutions to meet other social objectives not usually recognised as part of that services provision. It is recommended that consideration be given to multi purposing cultural facilities to accommodate general hygiene in the design of infrastructure to cater for these needs.

Keywords: Design, Museums, Libraries, Galleries, Non-formal Education, Informal Learning, Civil Society, Access, Hygiene, Equality.

Introduction

With the World concentrating on the doomsday clock[4] and its 100 minutes to midnight timeline, though more focussed on the climate crisis than the initial fear of a nuclear holocaust, the push for achieving the Sustainable Development Goals (SDGs) by the year 2030 as framed by the United Nations Development Program[5] (UNDP) has formed the focus of research and endeavours across the arts and sciences.

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[4] *Doomsday Clock - Bulletin of the Atomic Scientists (2022). [Online]. Available at: https://thebulletin.org/doomsday-clock/ (Accessed 8 April 2022)*
[5] *Sustainable Development Goals | United Nations Development Programme [Online]. Available at: https://www.undp.org/sustainable-development-goals (Accessed 8 April 2022)*

With the 17 goals as set out by the UNDP, research is structuring its outcomes with reference to the Goals and Targets. So, the framing of this paper will look to opportunities surrounding the SDGs #4 Quality Education embedded within #10 Reduced inequality and #11 Sustainable Cities & Communities.

SDG #4[6] set targets for 4.1 through to 4.7 relate particularly to formal education settings such as primary, secondary, and tertiary education, the targets expand to 4.a which stipulates "Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all."

With this journal's focus on the principles of Universal and Inclusive Design, the opportunity here is to expand the discussion beyond the normal realm of disabled access towards design for all.

As the discipline of ergonomics has expanded its remit into workplace psychology so too universal / inclusive design could benefit from expanding into areas to better fulfil a commitment to the SDGs.

The opportunities we expand on here look to other institutions outside of the formal education sector of schools, colleges and universities and focusses on museums, galleries and libraries.

As these informal places of learning have struggled to meet community needs, especially in contemporary times beset with global pandemics, difficulties associated with access and handling of associated materials emerged, leading to disruption of this public service of knowledge and experience within these cultural centres of learning.

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[6] *Goal 4 | Department of Economic and Social Affairs (2022). [Online]. Available at: https://sdgs.un.org/goals/goal4 (Accessed 8 April 2022)*

Inequality, sanitation and hygiene

The current COVID19 pandemic that has swept the world since late 2019 is clearly the worst in living memory, with previous examples happening more than a century earlier in the form of the Spanish flu which rippled across the globe and here also in Australia[7] for at least 3 years.

This current disruption to the world's population has tested societal norms and raised research in post COVID scenarios, clearly the issues of hygiene are most prevalent in a return to a new normal.

The major revelation of the predominant spread of COVID19 through airborne particles led to strategies to limit contamination through the use of face masks and personal protective equipment or PPE and the instituting of hygiene or cleanliness standards to limit cross contamination from surfaces and environments.

This is not a new remedy as is evident from the Spanish Flu outbreak[8] coming on the back of the First World War and the development of new techniques in disease and infection control.

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[7] *Department of Health | History of pandemics (2008). [Online]. Available at: https://www1.health.gov.au/internet/main/publishing.nsf/Content/about-pandemic-history (Accessed 22 April 2022)*
[8] *The Mask Slackers of 1918 (Published 2020) New York Times (2020). [Online]. Available at: https://www.nytimes.com/2020/08/03/us/mask-protests-1918.html (Accessed 22 April 2022)*

1918 image of Californian Rail passengers showing compliance during Spanish Flu outbreak

And more than a century later society is being tested by issues of personal freedoms and the contestation of government mandates.[9]

Within the Indian context sanitation has taken a central role in sustainable development with the Indian Government platform *Swachh Bharat Abhiyan (or the Clean India Mission)*[10]

With a focus on clean drinking water and faecal waste treatment this societal need arose around female safety and open defecation.

As India makes progress on Citizen's empowerment[11] through its Department of Social Justice and Empowerment there seems to be

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[9] *Judge Strikes Down TSA Mask Mandate on Planes, Public Transportation [Online]. Available at: https://www.healthline.com/health-news/federal-judge-strikes-down-tsa-mask-mandate-on-planes-and-public-transit (Accessed 22 April 2022)*

[10]*Swachh Bharat Abhiyan (Clean India Mission) | Department of Economic and Social Affairs (2014). [Online]. Available at: https://sdgs.un.org/partnerships/swachh-bharat-abhiyan-clean-india-mission (Accessed 22 April 2022)*

more a focus on economic elevation of the target sectors. As with most Governments, the bureaucracies tend to silo their efforts and cross sectoral interactions i.e. education and sanitation face limited opportunities to access mainstream funding to creatively and innovatively respond to people's needs.

Civil Society, Education and hygiene

Civil Society[12] according to Jezard writing for the World Economic Forum in 2018 and citing the World Bank *"Civil society ... refers to a wide array of organizations: community groups, non-governmental organizations [NGOs], labour unions, indigenous groups, charitable organizations, faith-based organizations, professional associations, and foundations."*

While academia has identified the quadruple helix[13], that of the government – academia – industry – civil society silos, I include some Government organisations such as libraries and museums in this sector of civil society, some acting as trusts to remain independent from Government ideologies, to tell the facts rather than the "alternate facts" that have prevailed amongst some of the world's leading nations.

According to the National Education Policy of the Indian Government 2020, "Education is the single greatest tool for achieving social justice and equality. Inclusive and equitable education - while indeed an essential goal in its own right - is also critical to achieving an inclusive and equitable society in which

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[11]*Brief overview | Department of Social Justice and Empowerment - Government of India [Online]. Available at: https://socialjustice.gov.in/common/76661 (Accessed 22 April 2022)*
[12] *Jezard, A, (2018). Who and what is 'civil society?' [Online]. Available at: https://www.weforum.org/agenda/2018/04/what-is-civil-society/ (Accessed 25 April 2022)*
[13] *Roman M, Varga H, Cvijanovic V, Reid A. Quadruple Helix Models for Sustainable Regional Innovation: Engaging and Facilitating Civil Society Participation. Economies. 2020; 8(2):48. https://doi.org/10.3390/economies8020048*

every citizen has the opportunity to dream, thrive, and contribute to the nation. The education system must aim to benefit India 's children so that no child loses any opportunity to learn and excel because of circumstances of birth or background."[14]

The international COVID19 pandemic has only exacerbated the problem of formal education delivery as reported by Reuters[15] where regional villages closed down schools due to the pandemic, leaving disadvantaged groups isolated due to poor access to online digital platforms of formal learning. An interesting addition to the curriculum in this informal setting of an open air street school was hand washing.

Cultural institutions such as libraries and museums provide the public with a balanced view of the world, a window of sorts for all to gain informed yet informal educated glimpses of what could be, in terms of an inclusive society.

These institutions also have an educative role to play across all sectors and strata of society as non-formal or informal learning providers[16], and the placement of barriers to the lower socio-economic groups is detrimental to sustainable development.

As the World emerges from the privations caused through this global pandemic, authorities will look to mitigate risk through better protocols on hygiene across all venues be it marketplaces or learning spaces.

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[14] *MHRD India 2020. National Education Policy. Available at: https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf (Accessed 7 May 2022)*

[15] *Chowdhuri, R. D, (2021). In remote Indian village, teacher turns walls into blackboards to close school gap [Online]. Available at: https://www.reuters.com/world/india/remote-indian-village-teacher-turns-walls-into-blackboards-close-school-gap-2021-09-16/ (Accessed 16 May 2022)*

[16] *Erich, Agnes. (2018). Erich, A. (2018). The Role of Public Libraries in Non-Formal Learning. Revista Romaneasca pentru Educatie Multidimensionala, 10(3), 17-24*

Water and Air Quality

Leading research in formal educational spaces[17] in the Australian context, being mindful of the greater trends in pedagogy and architecture, place Inclusive Design principles to the fore, but post COVID19 as research points to airborne[18] and surface transmission or fomites of the virus much effort has been placed on dealing with issues of ventilation and hygiene[19].

Western societies have long been aware of disease transmission and sources since the Middle Ages and evolving hypotheses on spread and transmission narrowing down the environmental issues on realisation that crowded housing with poor diet and sanitation were a major contributor.

The advent of the middle classes drove the segregation of utilisation of space as workers became more prosperous and housing as well as education improved but only for some. Disadvantage today is still tinged with this segregation of lower socio-economic citizens and their take up and access to non-formal education institutions.

With chroniclers such as Charles Dickins writing of the period encompassing the Industrial Revolution especially in Europe (or England to be more precise), attention was drawn to sanitation and the spread of disease, instigating major civil works such as sewerage systems and fresh water to the home as a mandated feature.

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[17] *University of Melbourne, (2022). The next generation of Australian schools [Online]. Available at: https://pursuit.unimelb.edu.au/articles/the-next-generation-of-australian-schools (Accessed 7 May 2022)*
[18] *Victorian Government 2022, Ventilation and Air Purification. [Online]. Available at: http://www2.education.vic.gov.au/pal/ventilation-air-purification/policy (Accessed 7 May 2022)*
[19] *Victorian Government 2022, Covid19 – School Operations. [Online]. Available at: http://www2.education.vic.gov.au/pal/covid-19-school-operations/resources (Accessed 7 May 2022)*

To the advent of sanitoria at the turn of the 20th century and the remedial benefits of fresh air seeing hospitals equipped with openable windows and doorways opening onto external balconies.

Most developed countries have seen these amenities set as standards within building codes alleviating or offsetting the need to increase hospital facilities through prevention of illness. At the turn of last century in Victoria, Australia an article[20] from the Age newspaper illustrates a patronising bureaucracy barring access to a young man in 1856 asking him to "go home and wash your hands" with the author recounting that the young man most probably did not return to the library after such a request.

Inequality of Access

One tool that drives this wedge and entrenches this divide is the paid access to these institutions, especially the museum and gallery sector, on the one hand liberal economics would hold it as a 'user pays' approach to economic management but a more cynical view would hold it as a barrier to participation for the more needy in our communities.

Libraries typically do not use a user pays regime in meeting the needs of its citizens but limit access through the use of a membership or library card which uses a fixed address as a requirement. Museums too, discriminate through paid admission largely to fund programming costs to maintain visitation numbers.

Inequality here is of a temporal nature and the inequitable allowance of access discriminates against the very people who have most to benefit through these services of informal education.

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[20] *A VISIT TO THE PUBLIC LIBRARY. - The Age (Melbourne, Vic. : 1854 - 1954) – 23 Jul 1856 [Online]. Available at: http://nla.gov.au/nla.news-article154863720 (Accessed 14 May 2022)*

The sanitary habits of this particular group are exacerbated by their living condition and add to segregation in non-formal education.

Tactility, Haptics and Affordance

The field of perception once a leading area of research in Design in the late 20th century through work by the likes of Bloomer[21], Bloomer[22] and Gibson[23] has relatively recently made a come back.

With the printed word being transitioned to the Information Technology world and image and artefact reproduced digitally, the exposure to informal learning has expanded exponentially over such a short period of time.

Virtual and augmented reality also has had an impact and scholars as well as designers are trying to interpret its use and impact on its audiences.

The unequal access to these technologies has been an issue and therefore its ability to provide informal education as per the example from the streets of the tribal village of Joba Attpara in Paschim Bardhaman district of the eastern state of West Bengal. Access to information technology platforms through hardware, software and networks makes an equitable approach to education difficult for governments delivering services in formal education let alone the informal.

Museums, galleries and libraries face this dilemma with physical artefacts not at the publics disposal to be handled physically and the associated problems in libraries with physical books being

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[21] *Bloomer, Carolyn M. Principles of Visual Perception. 2nd rev.ed., Herbert, 1990.*
[22] *Bloomer, Kent C., and Charles Moore. Body, Memory, and Architecture. Yale University Press, 1977.*
[23] *Gibson, James J. (James Jerome). The Ecological Approach to Visual Perception. Classic edition., Psychology Press, 2015.*

handled by patrons with poor to no sanitary facilities at their disposal and little access to information technologies in accessing information at their respective levels of comprehension.

Affordance is discussed in Disability Studies in India[24] where Murugkar etal. have defined mobility, sensory and cognitive affordance as the "triad of affordances" (see fig. 17.3) in their research into disabled access to heritage sites.

316   K. Murugkar et al.

Fig. 17.3 Proposed theoretical model of 'Triad of Affordances'
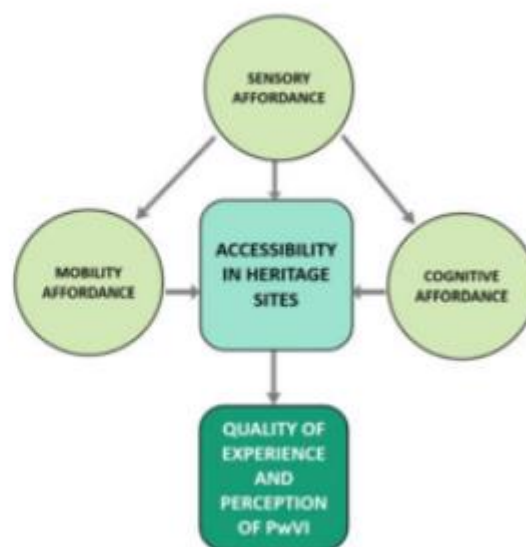
Too there is a movement towards making the formal education infrastructure more community accessible with outreach examples testing the bounds in making education more accessible. Government Schools in Australia are exploring the school infrastructures as community hubs[25] as well as United Kingdom

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[24] **Murugkar, K, (2020).** *Examining the Experience, Barriers and Enabling Measures for Visually Impaired Visitors in Heritage Sites—A Study in the Indian Context to Enhance Accessibility and Inclusion* [Online]. Available at: https://link.springer.com/chapter/10.1007/978-981-15-2616-9_17 (Accessed 16 May 2022)

[25] *University of Melbourne 2020 Dr Philippa Chandler, Dr Ben Cleveland, Sarah Backhouse, Professor Janet Clinton, Associate Professor Clare Newton and Dr Ruth Aston, University of Melbourne; Associate Professor Ian McShane, RMIT. "Building stronger connections between schools and communities." Pursuit, 11*

research[26] into Libraries filling the same community need for informal education and participation.

Conclusion

It would appear efforts in habituation amongst the lower socio-economic groups in India into active participation within non-formal education via libraries and museums is an area of concern. Habituation would involve a scaffolded approach to access via innovative and relevant education programmes and projects to test new ways of engaging with physical artefact be they books or artefacts.

The leap to a technological solution is inevitable but needs to be tempered with an empathic understanding of economic and intellectual barriers in reaching the target audiences with accessible knowledge and context. To simply throw virtual reality goggles on citizens would be another imposition of barriers to their inclusive connection to material.

Museum curators and librarians need to scaffold structured lesson plans in designing programmes that engage all patrons at some level appropriate to their abilities, from basic literacy and numeracy to doctorate students researching aspects of the subject matter.

Similarly, there is a need to habituate hygiene within these sectors to fully develop haptic interaction with the materials be it books or artefacts to enhance engagement. Possibly the development of ritual processes in sanitation within the educative journey, similar to religious rituals of washing and cleanliness


May 2022, https://pursuit.unimelb.edu.au/articles/building-stronger-connections-between-schools-and-communities.
[26] *The role of libraries as community hubs - Renaisi (2021). [Online]. Available at: https://renaisi.com/2017/09/01/the-role-of-libraries-as-community-hubs/ (Accessed 16 May 2022)*

may be an opportunity to alleviate tensions across classes of participants.

Libraries and Museums as cultural hubs could engage with the Indian Governments aims at improving sanitation by opening up their remit to the public in providing services where these have not been engaged with before.

Designers would be well placed to rethink hygiene and sanitation into the offerings of non-formal education institutions. Lessons learnt from bathhouses in ancient Rome for example where public bathing was interconnected with informal learning through libraries and lecture halls may inform a multifunctional approach to the contemporary siloing of these institutions as a necessity rather than an extravagance.
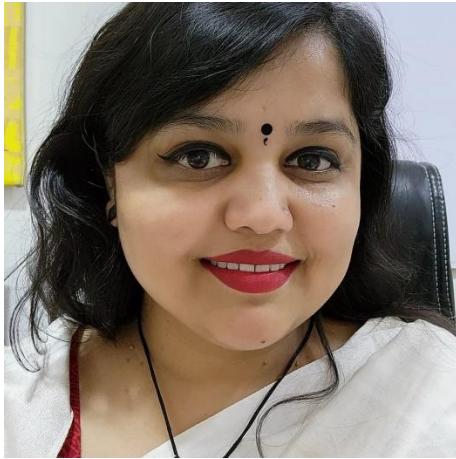
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Contemporalities of Indian Museums: a comparative study

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Contemporalities of Indian Museums: Current awakening in India

The current museums in India are contemporary & are working towards adding in different methods of reaching visitors to these museums. This study is about the reawakening of the audience to visit the museums that are newly made. India has museums that are related to the historical artifacts, paintings & installations. There have been museums that have been existing for a long period. There are museums like National Museum, New Delhi. There are new museums like IGNCA & Kiran Nadar Museum. The study works towards finding answers to a few questions. How do contemporary museums fare against the traditional museums? What are contemporary museums? What is the impact of these museums on the visitors? How do contemporary museums mitigate the consequences of the current pandemic? What are the national & international culture factors that impact the working of the Museums? Deciphering this via primary research and contextual interviews with the Museum visitors. This study works towards finding these differences and making a note of them for the museums in India. Understanding the learning that one gets from Museums is also an important learning that may make way in this study.

Literature Review

Learning from the museums by John H Falk & Lynn D. Dierking describes museums as the public institutions of learning and that of personal learning for all, hence playing an important role in building a democratic society along the way. Sharold McDonald in A companion to Museum studies refers to Museums as the place that helps in community building. A museum is a primary institutional locus where the value of art or art worth is proclaimed & the history of art if set for public view. Sharold also has added in the viewpoints of the rich cultural theorists like Bakhtin, Benjamin, Butler , Debord & Virilio which could be drawn upon for the near future. This book is a collection of essays edited by Sharold. Impact of the current situation or the recent pandemic situation on the Museums has been illustrative of the fact that the maintenance of the museums may actually take more than what may seem projective.

Methodology

This study has been conducted in person, literature review, contextual interviews & insitu research. Museum being a physical space to be studied, it was important to understand the user experience not only because of the space but also due to the human - space interaction therein. Understanding the perspective of the visitor is important versus understanding the reason for the museum's existence. Do the visitors tend to receive the same reason a museum was established or do they visit for some other reasons? While determining the User experience of the people visiting the museums it is important to understand their motivation to visit them physically. With the pandemic behavior in place, people also explore the possible ways of visiting museums

which may be beyond the actual impact that the museums may be wanting to create. All the above has been deciphered in this study.

Discussion

Museums in general are looked upon as a collection of artifacts, scientific discoveries etc which are well preserved so that the generations ahead benefit from them from understanding the content. The traditional museums are places where in such facts are stored and displayed for people to view. The content of the museums is of a given theme and it is followed throughout the museums. This results in a cult that may be visiting the museums. Museums are also placing wherein artifacts are stored and displayed from time to time.

Museums are more of a tool for culture building and are hence seen as important establishments in the history of any region at all. There is an anamorphic relationship between the museums and the academic rather than a transitive relationship according to Donald Preziosi.

Though today like a lot of other things and spaces, Museums are making a move into contemporisation. The actual artifacts that are stored & displayed are relatively lesser and the display is now turning into digital display with the help of technological tooling like the ICT's. There has been a quest for contextualization so that each recipient of the display is able to understand the museum artifact better without a lot of human intervention and direct human interaction. Despite that an understanding of the Museum phenomenon, discussion of heritage, globalization and commodification is important whether it is the traditional museum or a contemporary one. The delivery of the content may be different but the basic understanding and preparing the generations to come in these discussions is imperative. It

determines the existence of the museums versus it becoming merely an exhibition.

Studying the different museums around the capital of India & states around has given a few clues as to understanding their take and stake in development of museum phenomenon, discussion of heritage. It has also given insights in the globalization and commodification of the current museums. This study also looks into the necessity of this change or surface modification of the very strong foundation of the current Museums. In totality, whether the museums are looking at contemporisation they are still at the helm of combining modern User Experience principles to the age-old practices of preservation of artifacts. Museums do not thrive on their own and have their own economic model. Betterment of the User experience of the museums would help in building in a robust financial structure along with the government grant that the museums may receive.

Understanding what does the museum entail and does it really be a place only for the age old artifacts it may also have some new artifacts and work around them. When thinking about this is there a possibility that there may be an increase in the current footfall to the current museums possible ? Could there be some innovative programs or events that may be held in the current museums ? Avni Varia contemplates that in her quest for study of museums she suggests that there may be a cooking event at the Vishala museum so that the locals may turn around to this museum as the visitor and as the person who may build in the current sensitivities. She has contemporaries the understanding of the museums via her recent program, Museums of Ahmedabad. She holds Instagram live sessions in which there are walkthroughs into the museums which have existed since long and in a way reaching new audiences.

Museums may not be devoid of Art galleries when discussed in reference to artifacts & cultural heritage.

Culture is built via exposure to such museums which helps in understanding culture as is. Different kinds of museums like the National museums which have content related to the regions exist while there are museums that are related to religion. There are age-old museums like the Indian Museum Kolkata, National Museum New Delhi, Safdarjung Museum Hyderabad, Patna Museum, Albert Hall Museum, Jaipur which have the National treasures too. While there are new museums for Fine arts like the Kiran Nadar museum, Museum for religion like the Virasat - e Khalsa, Museum of Christian Art, Goa, Ajmer Museum. All the museums may work on the same premise of building in culture but they are focused on different structures.

Motivation to visit any museum:

Caldwell & Woodside (2003) & Rossl (2011) have discussed motivation to any museums through their research as the sociality, relaxation & emotion may play an important role in shaping the attitude towards cultural services. Respondents have discussed the primary motivation for going to the museums to of course understand the exhibits better. Although there are many other not so evident reasons to go to the museums. Visitors from other countries or cities may visit the museums for the necessary cultural interaction and learning. But the visitors who may be repetitive visitors may not actually be representative visitors. There were many different reasons discovered as insights while talking to the visitors / respondents.

'I go to park my car at the NGMA gallery, since it is a central place to park & my vehicle is safe. I also visit the museum when I go.'
'Museums generally have good washroom facilities; I go to avail

them instead of actually seeing the museum.' 'Museums feel great when I am out of the country since they are in the tourism package.' 'Owing to my walking problem I truly cannot visit museums as I cannot walk as much' 'It would be nice if I could know the artifacts & exhibits before I go.' 'Not all museums have good audio-visual understanding tools, let alone guides. The tools are not functioning half the time'. Verbatim as such are also a reality of the museum visit.

Museums have the novelty element lesser than other spaces and are more sanctimonious with relation to the place having historical artifacts etc. Museums are more a place to study, to understand the culture and find the understanding an important space in the knowledge as a constructivist. Addition of new media for visiting museums is great to visit, but the current opportunity to visit museums digitally also cannot be minimized looking at the pandemic digitalization. This may make an impact on the revenue stream and the upkeep of the museum. To add to the motivation of the local people to visit the museums is another challenge that museum enthusiasts are working at. They have organized various new media structures which may help in increasing the reach of the material in the museums but whether it will righteously add in to the motivation to visit the museums is still an imperative inquiry to be done.

Whether the traditional museums and the contemporary museums differ in the basic motivations, structure, then the answer is negatory as of now. Unless there will be virtual museums for multiverses that are planned. Will they be called as a museum is another inquiry that may be levied as and when that will happen? As of now, the traditional museums are the museums which are old and have stringent policies for display while the contemporary museums are open and accessible with regards to visitors &

artifacts. Security, motivation to visit, learning, cultural nuances and exchanges remain the same.

Scope for further study

Scope for further studies: there is a new concept that this study has deciphered. Understanding the museums for a more contemporary understanding. Thinking of new versions of museums. There are NFT's and multiverses coming to life. As a futuristic version there may be a possibility of a museum involving all the VR, NFT in an additive multiverse.

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Beginning his design career in 1995 starting his own automotive graphics and signage company, Dan has been a serial entrepreneur starting his own design companies 3 times and running a non-profit, Making Progress.

Dan has also served as an instructor and professor in K-12 education in the USA and South Korea. Teaching Industrial Design for Metropolitan State University and serving as the Director of Materials and Processes at DSK International Campus in Pune, India.

His design work has ranged from restaurant interiors, zoo environments, theme park attractions, experiential marketing, props for commercials, permanent art installations, product design, and medical devices. He has led design departments for LInk Product Development, was the Manager of Design for Otterbox, and was co-founder and Design Teams Leader for Make4Covid.

He was a keynote speaker on the theme of design in 2016-17 in India (Bangalore, Hyderabad, Ahmedabad, Pune, and Mumbai) He

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Currently Dan is leading a social impact design organization within the University of Colorado Denver, taking on a variety of needs across the community dealing with subjects like, homelessness, smart technology applications for accessibility, refugee aid, and disease risk assessment and mitigation strategies.

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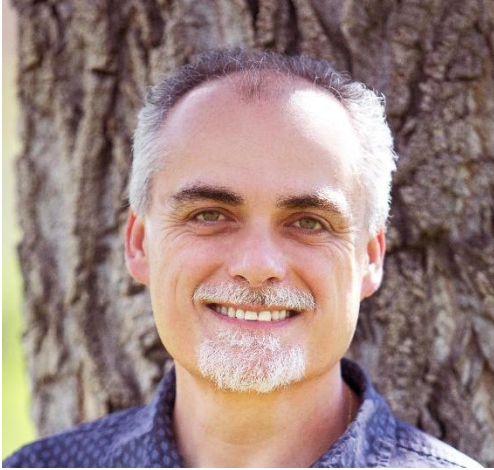
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Matt Gesualdi of Tact-Ed has been researching design for the blind and visually impaired community since 1998. He has made four tactile exhibits for the Denver Art Museum, many tactile scale models and two interactive, immersive exhibits including a pitch-black puzzle room, Mission to Nocterra, for Maker Faire Denver 2018's main exhibit.

The Mission to Nocterra exhibit garnered many accolades as well as articles in 303 Magazine and The Denverite. The Denver Art Museum has included the Rembrandt: Painter as Printmaker tactile exhibit made by Tact-Ed many times both in their blog and their printed magazine.

Matt taught for 15 years as a professor of Industrial Design at the Art Institute of Colorado and as Adjunct Professor at the Community College of Denver, and the University of Denver.

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Getting in touch: a practicum of solutions for tactile experiences in the built environment.

Matt Gesualdi, Dan Griner

Entertainment and educational experiences have long benefited from an engagement of multiple senses to properly connect with the audience and to provide long lasting impressions on the subjects they were covering. Museums and Cabinets of curiosities sprang from the private collections of the very wealthy and powerful[27]. With this expansion into public use, delicate artifacts, exhibits and experiences all needed to be carefully monitored and planned for longevity and ease of maintenance. This has evolved into audiences getting further away and becoming less connected with the items they are trying to witness. Roping off and creating a carefully monitored corridor around a space is a common situation in most museums. To reinvigorate interest and bring a new generation to appreciate some classical works, they are being transferred into completely new media with audio visual displays and sensor driven experiences that make the, originally 2-d art medium, come to life[28].

image courtesy of gagosian
Grimani Palazzo Museum(The Grimani Family's donations in 1523 helped establish one of the first public museums)

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[27] *Simmons, John. (2010). History of museums. Encyclopedia of Library and Information Sciences.*
[28] *https://vangoghexpo.com/*

Advances in experience

With audio/visual media able to be played for individual exhibits, an additional sense was added back to allow for engagement and sharing of additional information from static images or exhibits. Today augmented reality, staged actors and performers, robust visuals, and elemental effects all can be employed to bring about a more lifelike or exhilarating experience. Most of these are used in themed amusement parks where the entire experience is scripted to achieve a specific experience for the audience. Escape rooms and immersive theater also provide another level of interaction with the audience, often becoming a part of the show or needing to solve or manipulate the environment for a desired result.

Museums responsibility and opportunity in education

The gap between historical education and historical artifacts has always been a challenge undertaken through display of artifacts and examples of antiquity. The fossil record and archeological study have unearthed myriads of examples of historical artifacts to provide better learning for the sighted. This manifests into professionally photographed full color pictures inserted into articles and books. There is rarely a chance for physical manipulation of objects or experiencing them with other senses.

Even when physical examples exist to display, they are not often copied or used to create tactile displays. This limits the experience and understanding of the significance for sighted and visually impaired alike. Often the true scale of the example is lost in a photograph. For sighted students the real size of a building such as the Eiffel Tower is difficult to discern from a photograph, for a visually impaired student the scale is totally lost on them. Even alt text for a photograph won't always cover the important aspects of

scale   much   less   texture,   color   and   materials.

Cost, storage, and maintenance all prevent most schools from having physical artifacts or models for teaching aids. To fill this gap, field trips and visits to museums and exhibitions are encouraged and often a part of the curriculum. If these institutions have not accommodated the needs of the many types of visitors then they often provide an unintentional ableist approach to the user experience.

© Christian Bertrand | Dreamstime.com
Pictured above, the Mona Lisa at the Louvre, as it is displayed currently.

Accessibility vs Vandalism

With works of art and one of a kind antiquities on display, it is not uncommon for multi-million dollar pieces to be kept under extreme safety measures and with strict visitation guidelines. Some works have been attacked and used for political or social

protest and require extreme measures[29]. The Mona Lisa shown above, now is housed behind a glass enclosure with a railing and further cordoning of viewers an additional 3 meters away. This leaves even those with excellent visual acuity unable to enjoy the original works at a distance that showcases its details.

Tools of the trade

3D scanning and printing is less expensive and more accurate than ever. 3D scanners used to be large machines which required the object to be scanned to be moved to the scanner's location. The object would then be covered with registration dots for the camera to read. The process could take several hours for the camera to move and have the information uploaded to a computer.

Now handheld scanners with just as much accuracy can be brought to the object and moved around the object with no need to apply any foreign materials to the surface. This is a great relief for conservators who no doubt would hesitate to pack up a priceless object for scanning.

The Einscan HX handheld 3D scanner

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[29] *https://www.indiaherald.com/Viral/Read/994507188/The-Famous-Mona-Lisa-Smeared-With-Cake*

3D printers have also improved in quality and available materials while coming down in price. The most popular types of 3D printers are Fused Deposition Modeling (FDM), Stereolithography (SLA) and Selective Laser Sintering (SLS). There are many more, but for the sake of simplicity, these three are well known and will be referred to in this article.

In 1987 when Charles Hull invented the SLA printer, it would cost around USD $300K to buy one. In 2022 you can buy several models for less than USD $1000.

That availability and affordability can make a huge difference when it comes to making tactile reproductions for museums. These reproductions can take the need away from having to use originals on display. There are even 3D printers that use clay instead of plastic making it possible to recreate the shape of pottery which would later be painted and fired to mimic a museum piece for tactile display.

3D printing should not be considered the end-all of creating tactile interactions. One 3D printed object can have many different textures and patterns depending on the type of 3D printing used, the resolution of the machine and the type of material used. Many times, the textures left by the printing process are not the proper textures to accurately convey tactile information. Objects which are 3D printed must be coated with other materials to smooth or change the texture. Adding other materials can also improve tactile information.

Challenges in designing for differentiated users
The design of exhibits, museums and public spaces has evolved greatly over time with considerations of user flow, attraction spread, multi-generational users and timing of use to make the most of the space and the amount of users needing access.

Elements like lighting, sound, barriers, queuing, theming, have also been honed to maximum effect to allow for the experience to be immersive, informative and engaging. Designing for those with visual impairments focuses on other senses that often are not highlighted or designed for. Also, the range and "viewing area" is shrunken significantly to arms reach for tactile information, leaving scale, and items displayed overhead completely lost to those unable to see.

©*Szeke*

Pictured here is the Smithsonian Air and Space Museum. With the majority of the artifacts hung many feet in the air, how much of this space is accessible and able to be experienced by those with visual impairment?

Those with mobility issues are often faced with similar difficulties. Difficult to navigate spaces without accommodations for wheelchairs will frequently prevent these users from having a similar experience to those without mobility challenges. Sightlines, knee walls, railings and limited viewing angles are all challenges preventing good experiences for this type of user.

Planned depreciation and wear.

Recently one of the authors was asked to consider a permanent tactile display in a prominent establishment. The subject of a permanent display was discussed which brought up the following concepts.

Whether a tactile exhibit is for one week, one year, one decade or many decades, tactile objects on display will break in some way, this must be an acceptable and expected fact. Whether the damage is by mishandling, accidents or through cleaning, tactile objects will break down in some way. Short-term displays may not show damage before the exhibit is over, but long-term exhibits will need maintenance before they end.

If this fact is considered, then manufacturing techniques will reflect that decision. Molds can be used to recast items, 3D computer models can be reused to 3D print or Computerized Numerical Control (CNC) an object or mold i.e., additive or subtractive manufacturing. These can be time- and money-consuming, simply put, you have to make something to make something else, but it's well worth the effort. The point is the objects first created can be recreated making replacement objects possible.

The choice of manufacturing materials is a very important decision and a possible point of irritation with a client. If we just consider 3D printing with Fused Deposition Modeling (FDM) the materials greatly vary in strength and durability. Polylactic acid (PLA) is popular with makers because it is low in cost, has a low melting point and can be biodegradable. What it gains in ease-of-use it loses in durability. If we compare PLA to acrylonitrile-butadiene-styrene (ABS), PLA does not perform as well for long-

lasting applications[30]. Although the cost of the materials is comparable, the difference is the up-front cost of the printers. A low-cost printer that can only use PLA can be as low as USD $200 as compared to a high-quality printer that can use ABS and other materials may cost more than 100 times more.

Other materials in just the 3D printing category can include wood, resins, ceramic and many kinds of metal. Most of these are very durable and can accurately reproduce the original object's materials.

When to make these replacement items is another consideration. Making them as part of the initial project is logical but convincing the client to pay for extra parts before they need them can be a difficult sale. How many they need and what the costs would be are difficult to calculate because they depend on an estimate of future use and abuse.

© Matt Gesualdi

This tactile embossed paper was created to show how a copper plate print is created. There were 12 embossed pieces of paper made for the client knowing that paper would be uncleanable and could rip.

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[30] https://www.hubs.com/knowledge-base/pla-vs-abs-whats-difference/

Real vs replica

Just because an item can be touched doesn't mean that it should be used as a tactile piece for the visually impaired. When considering a tactile exhibit, it's important to recognize the difference between an object that can be touched and an object that can teach. For instance, if the femur of an animal is the object to be taught, then the actual femur would be the first choice as the teaching object. There's no need for translation of information, the femur is the object and has the correct texture, weight and material temperature. If the actual femur needs to be conserved, then making a mold and using a resin to match the temperature and weight should be easy.

If the intended object is less convenient to obtain or is of the wrong scale to display, then a translation of the object is necessary. Let's use a building for this example. When you shrink down a building in a scale model all the details are shrunken with it. Some of those details are very important and others less important to identify or educate about the building. It may be necessary to enhance the important details by enlarging them in a way that the viewer can feel those details over others. It's a bit like making a word in a sentence stand out by making it bold or if necessary, by making it in ALL CAPS. It's not deceitful or misleading, it's just emphasizing details that may get lost with scale.

© Matt Gesualdi

A tactile architectural model of a clocktower in Denver, Colorado USA. It shows some exaggerated details of a building's features. The enlarged details can be apparent if you compare them to the people near the building.

Translating for effect

Translation can also be used when representing a 2D object in 3D. Here there are many choices, but they come down to the same point as above; what are the important details that would help a person be able to identify and remember the features. In this case let's use a painting of one of Frida Kahlo's many self-portraits. Besides her skin there are often fabrics, objects and nature represented. But, in truth they are just painted on a canvas or board, so what textures do you use? The paint texture or the imagined textures of the materials shown? Back to translation. The texture of the paint and brush strokes could arguably be represented to show the artist's techniques, but what would a blind person see from that? If we were to use smooth materials

for her skin, rougher textures for fabric and other textures for the different objects, natural and manufactured we would get much closer to making an image in someone's brain. But temperature when used can offer a much more enriching tactile experience. If real fabric is used instead of a fabric texture on a 3D print or casting, the viewer will understand that what they are feeling is fabric. Fabric is softer and warmer than resin and will make the translation much easier. When speaking about this subject of using different materials Dr. Lynette Jones of MIT stated that " On the basis of these changes in temperature, people can identify the material composition of objects, for example, whether the object is made from copper or wood"[31]. The consideration of temperature when designing a tactile exhibit is crucial to being successful.

Sometimes to represent something that is too large or too small to be directly translated to an easily shown size, we must use scale. As mentioned earlier, scale can offer choices of what to emphasize and what to deemphasize. If something is very small like a mosquito then enlarging it to the size of a small bird can be useful. But in an effort to not make people believe the frightening thought that there are mosquitos the size of birds, it's important to show relative scale. A mosquito can be 10mm in length. If you enlarge that mosquito ten times to 100mm, then have a common object enlarged to the same scale. A one euro coin, around 23mm in diameter, could be easily recreated to 230mm and give the viewer a relative scale in which to compare the true size of a mosquito therefore guaranteeing the viewer a good night's sleep. The same concept can and should be used when representing very large objects like buildings. It is easy to purchase or make scale human figures so the viewer can relate more easily to the scale.

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[31] *Jones, L (2009) Thermal Touch, Scholarpedia 4(5): 7955, Thermal touch - Scholarpedia*

Choosing your materials

When interviewing a top virologist for the state of Florida in the United States the subject of cleaning tactile objects was discussed. He began to describe the types of disinfecting and sterilizing chemicals he uses to clean test equipment. When asked what materials could withstand such chemicals his answer was metal and glass. The kind of severe and complete sterilization done in testing and health care environments is difficult to match in the museum environment, but we have to consider cleaning tactile objects as one of the challenges (D. Brewer, personal communication, September 22, 2020).

When possible, non-porous materials work best for cleaning but may not always be the appropriate match for the temperature and texture for tactile accuracy. Powder coating is a very hard, durable and chemical resistant coating. It is mostly made for metals but a variation can be applied to plastics. "Powder coating is based on polymer resin combined with pigments, curative, flow modifiers, leveling agents, and several other additives. All ingredients are melt mixed together, then cooled and ground into a powder[32]".

Automotive paint can withstand much more chemical cleaning than brushed-on house paint. Even weaker would be spray paint from a spray can; the thinness of the paint layer makes it easy to rub through. So, when considering material colors, it would be more durable to find materials which are already the color, or close to it, that is needed. An example would be finding red acrylic

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[32]*https://www.ametals.com/post/everything-you-should-know-about-powder-coating-finishes#:~:text=Powder%20coating%20is%20a%20dry,both%20functionality%20and%20overall%20look.*

sheet material rather than painting acrylic red. The red acrylic may wear during cleaning, but the color will remain.

Hygienic Approaches

There are many ways to "clean" an object. The quotes were used because the Florida virologist made it clear that what the general public think are clean is vastly different from what the testing and health care industry think are clean. We must settle for something more than the general public's view and substantially less than the testing industry. There are many chemicals that we can apply to rid surfaces of germs to use a simple term for viruses, bacteria, bugs and anything else that causes irritation. We can spray or wipe surfaces with antibacterial/antiviral chemicals. These are very likely to disturb any easily dissolved surfaces like paints, porous materials, and delicate details in weaker materials. Just the act of getting some materials wet can change the shape and integrity of them. Often the chemicals we use to clean items are themselves dangerous and must be cleaned away with water. As the virologist made it clear and is important to remember, a cleansed item is not truly clean until it has been cleaned and thoroughly dried.

We can expose surfaces to ultraviolet (UV) rays using portable or non-portable UV emitters. These can be effective if used for hours at a time, something that may be difficult during the day at a museum. UV cleaning can be less effective for items with many contours. UV cleans by line-of-sight meaning that the surface not facing the UV emitter may not get as clean as the surface facing the emitter. The effort and time needed to make UV cleaning effective may be prohibitive to museums. Without careful use,

large UV units may also spill harmful UV rays onto nearby artifacts and could create permanent damage[33].

In 2018, before most of the world had heard of the coronavirus, the authors created a tactile immersive event where people were asked to use antibacterial wipes on their hands before entering. The premise was that the germs and oils on human hands would deteriorate the "alien" artifacts that had landed on Earth[34]. The real reason was that there would not be time during the 3-5-minute reset period to clean all the interactions, besides the fact that not everything could stand up to cleaning agents. Every person who entered and touched the objects inside came in with clean hands. This was a simple solution which the authors believe could save museums and other institutions many hours of cleaning time as well as preventing the deterioration of tactile objects.

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[33] *https://www.davincimedicalusa.com/purify-one-uv-wand*
[34] *https://303magazine.com/2018/10/maker-faire-denver-october-2018/*

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8. https://303magazine.com/2018/10/maker-faire-denver-october-2018/

Tokushu Inamura

Tokushu Inamura is a Designer/Engineer, appointed as Assistant Professor of Design Strategy at the Faculty of Design and Center for Designed Futures of Kyushu University. Current research focuses on Post Human Centered Design and Circular Design. He is currently teaching in Strategic Design at post graduate level, and Design Futures at undergraduate level, as well as engaged at the Robert Huang Entrepreneurship Center. He engages in praxis to educate internationally minded transdisciplinary teams to become strategic and holistic innovators. Born in Aotearoa New Zealand, he has lived in the US, Switzerland and the UK, he currently resides in Fukuoka City Japan.

Design Praxis with the Kingfisher and Bacteria; The River as Place for Post Human-Centered Design learning

Abstract

The aim of this paper is to unpack and question the anthropocentricity of our interactions with public place and how we might be able to foster learning to overcome dominant modes of praxis. The article focuses on rivers as an example of opportune places for Post Human-Centered Design of informal education and decentralized co-design of culture. The surrounding literature are presented, leading to pathways to radical inclusion of more-than-human concerns and discusses the interactions that can emerge through case study on the Naka river in Fukuoka, Japan.

Keywords: More-than-human, Non-human, Inclusion, Learning, Anthropocene, Post Human-Centered Design, River, Personhood.

Radical inclusion of the self

Approaches to more-than-human (MTH) concerns can be explained started from questioning that notion of the "user" in design. Given that the human body, or human biome contains bacterial cell counts that are approximately match or exceed the number of human cells, estimated at a ratio of 1.3:1(Sender & Milo, 2016), the non-human is a fundamental aspect of our existence. Our anthropocentric notions that underpin Design therefore are a simplification at best, and even when considering one "user", radical inclusion starts from an understanding that the human is a minority within the body of MTH concerns.

The body and biosphere

Taking the body and it's health as a starting point, the multispecies self can be expanded. Sariola & Butcher highlight that Antimicrobial resistance for example has been framed in a multispecies context through the concept of One health, an expansion that looks to beyond human health to pets and nature; in practice so far, such attempts have come up short in terms of taking a MTH approach seriously (2022). So, it can be said that we are at a nascent stage of MTH research.

The shortfalls are evident elsewhere, the wedding cake model in fig. 1, developed by Folke et al. (2016), arranges the SDG's so that they are layered and concentric, according to economy, society and biosphere. The visual strength of this model is to highlight that economy and society sit atop the biosphere that supports it. However, when seen this way, non-human goals take 13 out of 17 goals. Clearly our current anthropocentric biases persist.
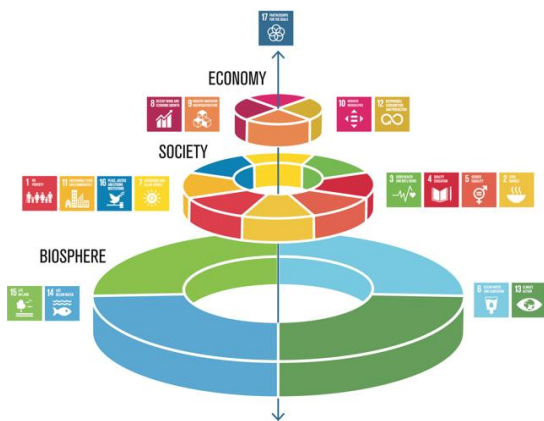
Figure 1: The wedding cake model. Credit: Azote for Stockholm Resilience Centre, Stockholm University (CC BY 4.0)

In the 2014 Manifesto, Horton et al. present a Manifesto based on the concept of planetary health. With an even broader scope than One health, planetary health extends out to consider the biosphere, but still with human health as the central concern. An important factor highlighted by the planetary health report a key point, that anthropocentric dominance has allowed for a lack

of empathy, (and imagination of the other) to use simplified economic metrics over the actual health of the planet (Whitmee et.al., 2015). Wendt has argued that empathy employed by the design fields does not include the ecological thought necessary for sustainability (2017), however in the case of the planetary health framework, such empathy extends beyond that of homo sapiens and is a matter of defining empathy as inclusive of non-human beings. Haraway and Begelke have thoroughly discussed the notion of companion species (2003), where mutual empathic responses between human and non-human are co-dependent. {For a concise review on related concepts of posthumanism and design that exceed the focus on this article see Forlano (2017)}

Take me to the river

The limits of human-centered design and it's need to expand beyond it's anthropocentric roots have been raised by Thomas et al., and highlighted the example of personhood granted to the Whanganui river in the Te Awa Tupua (Whanganui River Claims Settlement) Act 2017 as one of pertinence. (2017)

Whanganui follows after the Te Urewera Act 2014, as groundbreaking examples of rights of nature, where personhood was granted to the national park (O'Donnell, 2018). These cases impacted the granting personhood in of Uttarakhand India to the Ganges, Yakuma rivers and the Himalayas Glaciers and bodies of water that flow into the respective rivers. (Gellers, 2021). The Ganges and Yakuma were overturned by the Supreme Court, however the Himalayan Glaciers have been not (Talbot-Jones & O'Donnell, 2021). These can be said to be the emerging grounds for conflict and innovation in going beyond human-centered design. The waters have cultural importance beyond the utility for power generation or fresh water use. The Ganges, or Ganga is "widely acclaimed for its great cultural, spiritual, economic and ecological significance, which far transcends the national borders

and boundaries" (Kumar, 2017), therefore the rivers are cultural institution of extensive scope. In the case of the Whanganui, the local saying is *I am the river, and the river is me* (Ko au te awa, Ko te awa ko au in Te Reo Maori language). Such worldviews clearly differ to the frameworks of Human-nonhuman in the conventional design space as discussed by Thomas et al. (2017). Empathy for the river, is in this case a tangible conception, as it captures the river as a living entity, including the animals, plants, water itself and the land. As Gellers puts it "the tenets of Earth system law could advance a radically inclusive interpretation of communities of justice (2021)". We can say that radical inclusion in design is wickedly intertwined with MTH concerns. Though there are early examples of praxis being shared such as the agricultural work of Loh(2020), there is much to be explored. In the stages of transition, still nascent, cycles of unlearning the anthropocentric and learning of post human-centered praxis are needed. But, with the integral and embodied nature of post anthropocentric designing, places and spaces of learning equally require critical inquiry.

River as more than human places of learning

In relation to MTH learning, conventional institutions such as museums and zoos have their place. However, the river and associated commons have characteristics for post human-centered design pedagogy. As Adams & Branco discuss, Parks and similar places of lived experiences, not afforded by brick and morter institutions, and can "facilitate experiences with nature that are unparalleled in the classroom" (2017). Such connection to nature itself has shown to be intrinsically valuable (Mayer, 2004). In addition, the rivers connect the mountain to the sea. Travelling through biodiverse ecologies, mountainous terrain to rural and urban human settlements they integrate with human settlements of rural and urban terrain. From the lens of

environmental science, Tanaka has led such research connecting the head waters to the sea through the Headwater to Ocean or H20 studies (2013), as well as Forest- Sato- Sea (Sato refers to Japanese rural settlements). The research assesses biodiversity and water quality but also connects to bottom-up environmental movements, a representative case being the initiative lead by coastal fishermen named 'The Sea is Longing for the Forest'. The praxis overlaps scientific research and vernacular culture educating participants in ecological learnings as well as delivering societal mobilization (2016). The rivers allow a place for learning that transcend institutional boundaries, and foster communities of learning beyond the formal/informal border. Such open praxis is rich for exploration. In following section I will outline relevant praxis that I have facilitated as a design researcher.

Designing for and with the Kingfisher

The Naka river flows through Fukuoka city to the Hakata Bay, and is the closes river to the School of Design at Kyushu University where I am based. The river has been one field where I developed my design praxis. I have undertanken multiple design explorations as part of undergraduate and post graduate education teaching, as well as post human-centered design research. One such case is the Global Goals Jam, a two day design jam to tackle the SDGs started in 2016 beginning when the United Nations Development Program (Global Goals Jam, n.d.). The Fukuoka instance has inclusive design and universal design running through its veins. With roots in the Challenge Workshops pioneered by Julia Cassim at the Helen Hamlyn Centre (Dong, 2013), it was originally in connection with Universal Fukuoka City initiative that promotes Universal Design in the city. In 2016 the Global Goals Jam was combined as a joint event.

The 2018 Global Goals Jam in Fukuoka took place over the period of November 29th (Thu) -30th (Fri) . I was co-director,

alongside Yanfang Zhang and included Mark Watson as workshop adviser visiting from Australia as regular Jam organizer. The theme for the year was decided as Water and the City, focusing on Goals 11 and 14, partially in reaction to the torrential rains experienced in the region (KIDNEXT, 2018). Guest speakers included members from the local chapter of Mizbering (a nationwide social design initiative started by the Ministry of Land, Infrastructure, and Tourism to develop riverside activities in partial collaboration with Prominent Ad-agency Hakuhodo among others). The Project received a Good Design Award in 2018 (Good Design, 2018). A Local government official from the city also shared issue to do with the sewer system.

There were four teams that formed with diverse members including local students, exchange students, professional from the public. Of the four one team looked to find stakeholders along the Nakagawa river.

The team looked lost about how to approach this topic during the jam. As a facilitator, I encouraged the team to go to the river, despite the lack of time being a tangible factor, and the team and I walked to the closest point of access to the Nakagawa. The team talked with people along the river, but one person stood out. There was a photographer taking pictures near the river. Through interviewing the photographer (A), it was revealed that A was a birdwatcher. He possessed knowledge of the habitat of birds, and was particularly interested in the kingfisher (Kawasemi in Japanese). He identified that the kingfisher needed trees overhanging the river, and that such trees were a nuisance from the perspective of routine maintenance, since they catch river trash, and drop vegetation into the water. Based on this interaction, the team looked to opportunities to design around for the kingfisher. The final outputs of the team were an overall conceptual vision for a kingfisher-inspired river design as seen in

Fig 2. This included ideas and prototypes of river cleaning (Fig 3.), shelter for people and sharing kingfisher habitat while improving the rivers health overall.
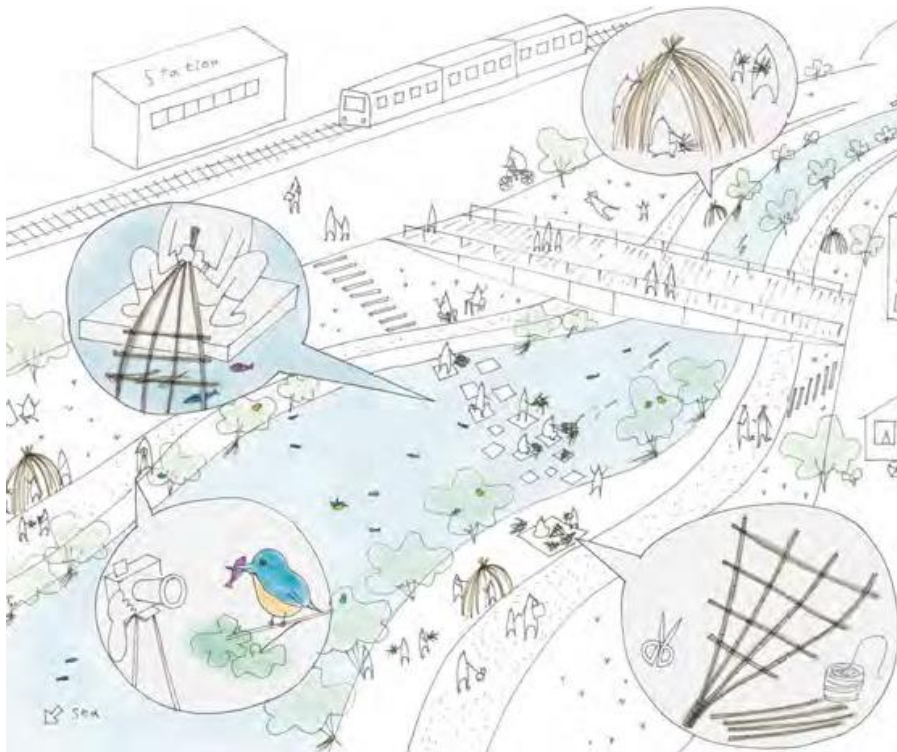
Figure 2: Kingfisher (Kawasemi) Project vision produced during GGJ 2018

Figure 3: Physical prototype of woven river waste catcher

The team members were from various backgrounds but none of them from a zoological or ecological specialization. By exploring the river they were able to come across a member of riverside society, in this case a photographer and bird lover. His passion and empathy for the kingfisher sparked the team to conceptualize and stretch beyond anthropocentricity within the short jam session.

The Kingfisher inspires the future of the river

I have shared the documented outputs from this project, as well as example from the Whanganui river with participatory networks of praxis. Directly inspired from such results I have continued to engage with the river and joined to form the Nakagawa Future Conference (Nakagawa mirai kaigi), a bottom up organization to imagine and develop the future of the Nakagawa river front officially established in 2021. Currently the organization is gathering companies, local government and citizens to imagine the future of the river, and develop practical projects. The organization has applied and gained funding from the Ministry of Land, Infrastructure and Tourism to conduct place making in the river area and form a vibrant community. Such praxis has led to planning stages of new collaborations with a local primary school to teach MTH approaches to co-design on the Nakagawa river, with an eye to observing with a nonhuman perspective, such as fish and bird point of view, to understand nature and have a tangible understanding of risks in relation to bodies of water. In parallel, I have collaborated in a post human-centered design education project in Kyoto, where students designed for MTH concerns in the Kamo river, these results have been documented by Ito (2021).

Implications

The transition to anthropocentricity from the individual to planetary scale was explored through the lens of one health and planetary health frameworks. I have argued that radical inclusion of the MTH can be rethought from the individual, considering the human body is a multispecies vessel. In discussing the inadequacies of current nascent efforts, and limits of human centered approaches, the granting of rights of nature, in the form of personhood is a powerful idea. The river described by indigenous Maori as inseparable from the self, links with the idea of the multispecies reconceptualization of the individual in design, where micro and macro are interconnected and intertwined. Similarly, I have argued that such conceptions of the river are themselves cultural institutions that provide opportunities for learning that is needed to transition from anthropocentric thinking, and that such learning cannot occur in the confines of traditional institutional bounds. The nature of rivers as connectors from the Mountains to the sea make them places for learning that transcend dogmatic anthropocentric structures. Through the case study of the Nakagawa and the Kingfisher, I have demonstrated early clinical results, highlighting the potential of rivers as places of learning and praxis that are wonderfully inseparable from the community of learners.

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Msc. ir. **Gaspard Bos** – **M Des.**

Digital Society School – Amsterdam University of Applied Sciences

Gaspard holds a Msc degree in Industrial Design Engineering from TU Delft with a specialisation in Sustainable Development. He has worked on a very wide degree of technical and societal projects in many different capacities, but since 2010 all of them have been with a sustainability transitions theme; portable weather stations for arctic explorers, human powered high speed transport, electrical mobility, plastics recycling and product upcycling with 3d-printers and more. Lately his work has focused more on the digital aspect of sustainability transitions.

Digital Society School is part of the faculty of Digital Media and Creative Industries at the Amsterdam University of Applied Sciences. Gaspard works there in the capacity of Digital Transformation Designer. In this role, he coaches teams of trainees from all around the world in solving challenges of commercial or academic partners related to the UN Sustainable Development Goals, as well as developing prototypes for new types of education using extended reality technologies.

In 2017, he was also selected as part of the Talent Development cohort of 20 Dutch designer talents of the Creative Industries Fund NL. In this program he was able to dive into questions around the use of data as a material in the design profession. In

the projects he developed he addressed the concerns around privacy, ethics and dispositions of power in the creation of digital systems. As a result he also published and presented about the philosophical branch of 'new materialism' as an approach to understanding these developments.

He is also a fellow at Blue City, an incubator in Rotterdam for startups in the Blue Economy, where he regularly coaches teams on developing new product propositions together with local governments to eradicate waste, drawing on his own experiences setting up ventures, acquiring funding, testing propositions in the market and reflecting on the desired societal impacts of these ventures. His own startup Good Fashion Friend was supported by the Rotterdam municipal funds program Citylab 010 .

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Extended Reality (XR) in Education, Between Promise and Practicalities

Reflecting on prototyping augmented reality video filters from a transition framework perspective

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Keywords:

Education, practical, soft skills, extended reality (XR), virtual reality (VR), augmented reality (AR), video meetings, digital divide, accessibility, inclusivity, embodiedness, experience, learning, transition, transformation, society, equal opportunities, sustainable development goals, prototyping, tools, implementation, application, paradigm change, socio-technical regime, remote, hybrid

Abstract

A digital transition in education is underway and the recent pandemic and lack of embodied experience in video meetings is creating the need for innovations. Three experiments were conducted at the Amsterdam University of Applied Sciences (AUAS) - Digital Society School with the use of augmented reality (AR) filters for video meetings. We've found through these experiments that the element of fun is something that was sorely missing in video meetings and is even crucial in creating better bonded and therefore better performing teams. We look at these experiments as niche innovations and as points of departure for analyzing how the current socio-technical regime might be changed using the Dutch Research Institute for Transitions (DRIFT) framework. We question how much this transition is

inclusive by considering the accessibility and usability of these innovations and speculating on further developments by unpacking recent market events. The AR filters require some installation which limits accessibility and AUAS work culture seems to be resistant to adopting remote work practices. We describe the promises that extended reality (XR) technology brings to education while questioning which of these promises find practical fits and for which groups of people. The young and techy for example are already used to AR filters on smartphones. This helps us glimpse how the transition might unfold.

Introduction
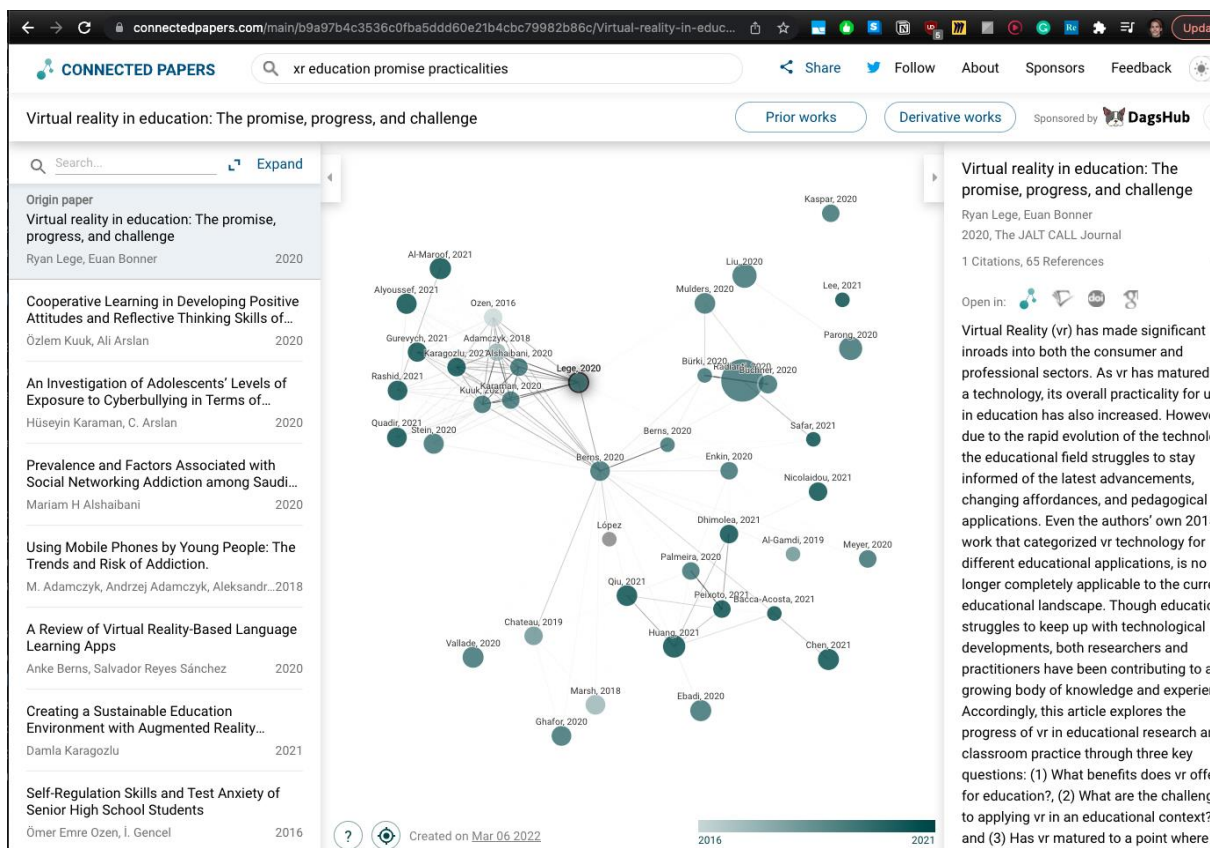
Figure 1: A mapping of research on XR in education with the connected papers tool.

This paper presents three experiments in which extended reality (XR) technologies have been applied in an educational context to reflect and speculate on the way that a socio-technical transition

might be taking place in education. These experiments have taken place at the Amsterdam University of Applied Sciences (AUAS), in the Netherlands where XR technologies are both being researched and tentatively applied in education. More specifically, the Digital Society School researched questions around the inclusivity, accessibility, and new affordances of XR technology in various projects.

We examine these experiments as niche innovations within the transition framework of DRIFT[35] to say something about their influence on the current socio-technical regime. At the same time, we attempt to distinguish between innovation versus hype in the way the Gartner Hype cycle shows us how new technologies find a lasting market fit.[36] We contrast our experiments with other projects or experiments within similar educational contexts to analyze which applications are adopted and thus seem to find a practical fit so that they might change the socio-technical regime.

Some trends and developments that influence a transition can be considered part of the global landscape. The recent rebranding of Facebook to Meta[37] is a market development. In addition, the COVID pandemic has impacted in-person teaching[38] thereby opening up the space for remote or virtual innovations. (XR ERA and Rui) The first development might mean broader accessibility to the technology, but with what kind of data will users pay for it?[39] Oculus users must login via the Facebook platform and studies have shown that VR use data can fingerprint users[40]. The

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[35] https://drift.eur.nl/publications/sustainability-transitions-research/
[36] *https://www.gartner.com/en/research/methodologies/gartner-hype-cycle*
[37] *https://www.theguardian.com/technology/2021/oct/28/facebook-name-change-rebrand-meta*
[38] *https://sdgs.un.org/goals/goal4*
[39] *https://thenyledger.com/tech/facebook-patents-reveal-how-it-intends-to-cash-in-on-metaverse/*
[40] *https://www.nature.com/articles/s41598-020-74486-y*

latter development, COVID, has spurred very concrete needs in (remote) education. Furthermore, it has revealed the lack of certain affordances, like more embodied forms of communication, or inclusivity of prevalent technologies, like teachers and students aptitude for using digital tools. This apparent lack is what has inspired our experiments.
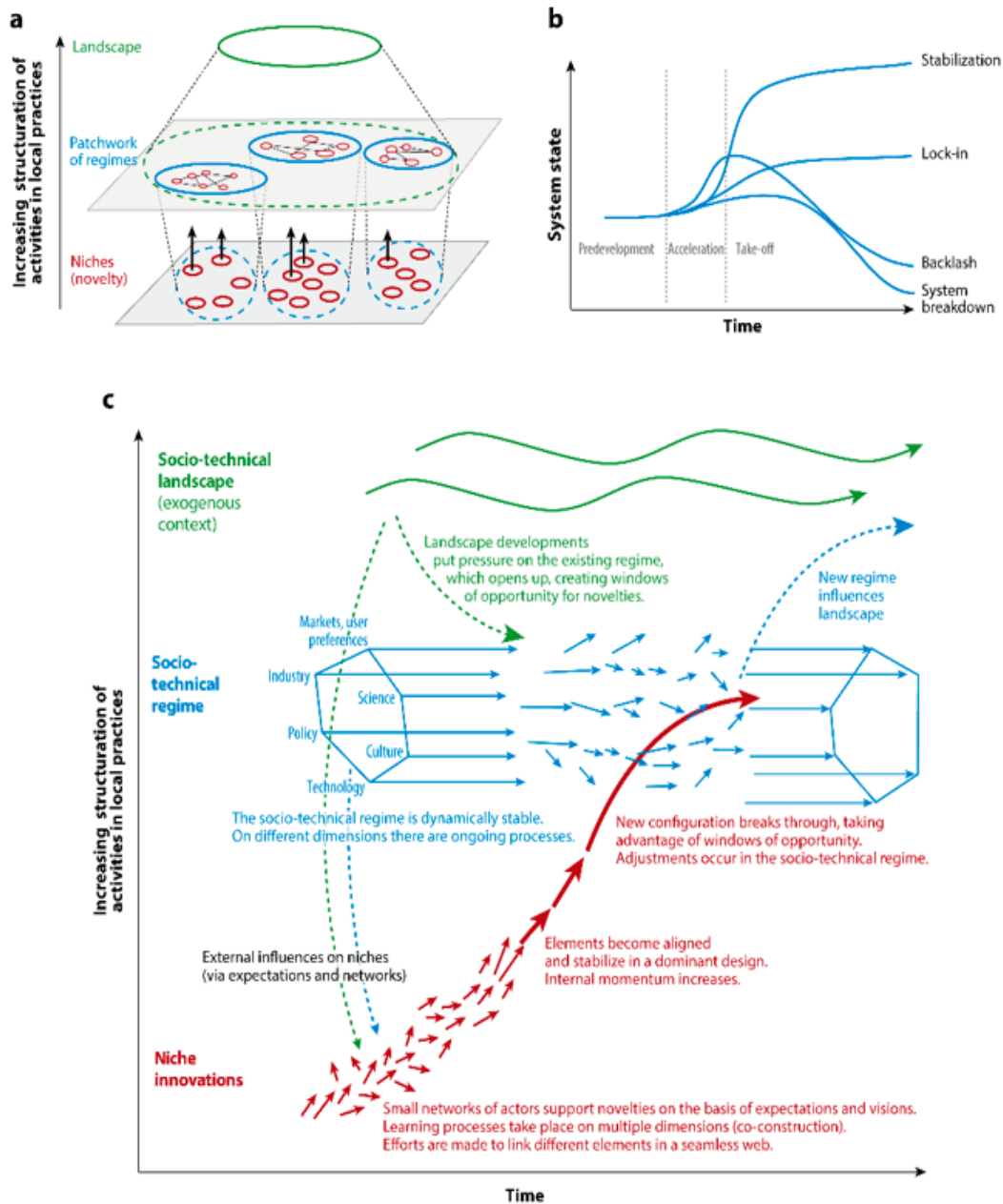
Figure 2: A schematic of the transition framework of DRIFT by Loorbach et al.

Situating our work

The AUAS is a university that places more emphasis on education and preparing students for the workforce with practical skills than on academic research as opposed to, for example, the University of Amsterdam (UVA) a sister university based in the same city. The COVID pandemic presented a challenge to AUAS. Digital channels of education delivery were shown to be insufficient to transfer hard, technical skills, as well as soft skills needed.

Practical skills in virtual or hybrid education

Theoretical or text-based research and education uses modes of learning that are more easily facilitated with today's prevalent personal computers and software than learning that happens in physical settings connected to craftsmanship. For example, learning how to work with a knitting machine at the Amsterdam Fashion Institute (AMFI) requires the development of motor skills and engages a student's creativity in more embodied ways than working on a computer, even if they are designing clothing items in 3D software.

Extended reality (XR) technologies, including virtual reality, augmented reality and combinations or extrapolations of those, create affordances beyond more conventional human-computer interfaces such as (touch)screens, keyboards and (scrollwheel) mouses. For example, XR can support learning to use machinery such as knitting machines, surgical equipment, or arduinos. AUAS has already created filmed instructions of how to use a knitting machine, as part of a growing video library[41], which saves teachers some time doing introductions but is of course no replacement for actually learning by using the machine. The

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[41] *https://hva.nl/webcolleges-met-vr-brillen-wint-3e-prijswint-3e-prijs.html*

company Osso VR[42] gives users elaborate haptic feedback through controllers that can take (part of) the form of actual surgical equipment or in the form of gloves, showing that VR can support learning in more embodied ways.

Practical training in "soft" skills

Not only are technical or "hard" skills a challenge to teach across digital mediums, but it is also challenging to teach "soft" skills learned through interaction with others. Indeed, soft skills were the focus of our experiments. A fashion designer must learn to pitch his, her or their designs by practicing public speaking and learning to deal with the fear of standing in front of live audiences. A surgeon must learn to have difficult conversations with patients and their families. Training these interpersonal and emotional skills is best facilitated by immersion in the real context, such as internships.

Research from the Stanford Virtual Human Interaction Lab[43] has surfaced that the conventional computer interfaces limit or skew the interactions that this kind of emotional learning requires. For example, the arrangement of cameras and screens in video calls forces users to focus intently on faces, thereby overestimating social cues and increasing stress, while in physical meetings attendants more often let their gaze drift and are not seeing an image of themselves.[44]

Research at the AUAS in the past years has focused on the use of VR to stimulate reflection on emotional competencies of staff. A

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[42] https://www.ossovr.com/post/virtual-reality-for-surgical-training-101-the-ultimate-guide-to-vr-in-healthcare
[43] https://www.stanfordvr.com/pubs/
[44] https://www.stanfordvr.com/pubs/2021/12254-2/

project on the need for staff to be trained in having conversations with parents from diverse socio-economic backgrounds exemplifies how immersion in a certain storyline with unknown characters can develop better empathic and communicative skills and how such an application could contribute to equalizing opportunities in education. [45] [46] In this case VR allows staff to experiment with conversations without having to worry about saying something that they cannot take back. Another project is premised on the immersiveness of replaying class recordings in 360 view to facilitate coaching and self-improvement of staff.[47] Much like the promise of the company AION sports to simulate certain soccer match scenarios from multiple perspectives in the field[48], a teacher could take the position of their student in a class they gave.

Theory, hypotheses and experiment design

In this section we will explain how we came to our hypotheses and how we framed our experiments around them. We created our experiments by reflecting on the possibilities of XR technologies to provide missing interactions/affordances from current screen based technology, offer experiences beyond what is possible in real life[49] as well as by reflecting on how it could relieve the impossibility of meeting physically due to the pandemic.

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[45]   https://www.hva.nl/urban-education/gedeelde-content/projecten/urban-education/het-opleiden-van-docenten-met-virtual-reality.html

[46]   https://www.hva.nl/kc-onderwijs-opvoeding/gedeelde-content/nieuws/nieuwsberichten/2022/02/onderzoek-oudergesprekken-trainen-met-vr-brillen-wint-3e-prijswint-3e-prijs.html

[47]   https://www.hva.nl/etalage/gedeelde-content/grassroots/blogs/beeldcoaching-docenten-vr/2018/beeldcoaching-docenten-met-behulp-van-vr.html

[48]https://aionsports.com/#Immersive-Training

[49]

https://researchwiki.solo.universiteitleiden.nl/xwiki/wiki/researchwiki.solo.universiteitleiden.nl/view/VR%20in%20Unity3D/1%20VR%20and%20XR%20basics/

Using AR filters to enhance layers of context in video calls

With learning going increasingly online during the pandemic, being teachers ourselves, we reflected on how both the increase in the amount of video meetings versus the lack of physical classes were making social interactions more strenuous. Bailenson et al (Stanford Virtual Interaction Lab) explain this has to do with the increased focus on people's faces that video calls create. In addition, video interactions can be too easily stripped to the purely transactional. We miss contextual cues, e.g. provided by body language.[50]

This decreased amount of time together in real life and the increased transactionality of the video meetings may also cause staff or students to feel less connected to their colleagues or peers. This feeling of connection or belonging is important in order to foster things like trust and support that makes teams perform better. There is an urgent need to reflect on these less tangible aspects of the work in education, what value they bring and how we can recreate informal social interactions.

The first experiment was premised around adding layers of context to video meetings, by making practical use of AR filters. What inspired this experiment was to add additional layers of context into video calls and to make video calls more lightweight and fun. Students of the millennial and gen z generations are already familiar with AR technology experienced through their smartphones, therefore bringing this into the classroom could be relatively easy.

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[50]*https://medium.com/included-vc/reimagining-worlds-for-w%CC%B6o%CC%B6r%CC%B6k%CC%B6-life-7177e51b9c72*

To ideate on and create a useful AR filter, a collaboration was made with Sander Veenhof[51]; an artist who is pushing the limits of this technology in a creative and playful way.

The Bono's Hats AR filter

Using our reflections on the way social interactions were changed through video meetings, we thought of a method that is applied in classrooms to stimulate group interaction called: Bono's Six Thinking Hats. This method requires participants to put on a hat that represents six different dimensions of thinking or attitudes from which someone can be approaching a meeting; emotionally relating, managerially controlling, positively reinforcing, negatively critiquing, creatively associating or analytically observing. Wearing a specific hat makes both the wearer conscious of their attitude as well as making that explicit to other participants.

Our hypothesis was that wearing hats can relieve some of the strenuous focus that video meetings create by helping the wearer to communicate to others more visually and implicitly aspects around their current state of mind. At the same time, wearing different hats could break the monotony of meetings, perhaps making them more enjoyable, while having a purpose. Continuing from the reflection on the challenge for teachers to include all students in a class, we hypothesized that it could be useful to get real-time feedback on how much a student has been participating in a video meeting. This is where the possibilities of the digital medium can add something beyond what physical hats in a classroom could; time wearing a digital hat is more easily quantified.

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[51] https://sndrv.nl

Prototyping with Lens Studio

The company Snapchat has a software that can be freely used for people to make their own video filters called Lens Studio. Combined with the Snap Camera software this allows people to create virtual cameras on their computers, that includes any filter created with Lens Studio, which can then be chosen as the default camera for video calls in software such as Microsoft Teams, Zoom or Google Meet. These filters cannot be used on Instagram because Meta (Facebook) has created a different software eco-system to create, host and apply filters.

At AUAS and many other educational institutes, Microsoft has become the preferred supplier of company communications software. Therefore, the choice to develop something on this platform should have a broad reach.

Experimental process and results

Bono's Hats filter meeting

After creating the hats filter we instructed a project team at AUAS to use the filter during a one hour meeting. In this meeting the team was discussing a design and how to choose from different concepts. We explained the use of the hats briefly before starting the meeting; Bono's method as well as how to change hats and see the statistics; how long any hat has been worn. In this experiment we had participants originating from Brazil, Italy, Czech Republic, Russia and the Netherlands aged between 21 and 35.

Figure 3: A screenshot of the meeting recording in which a design team used the hats.

It surprised us that the hats were also being used while people were not talking, more akin to the way that emoticons or reactions can be used in meetings to visually signal for example their appreciation. We could say that Bono's method has not been applied how it was originally intended. However, there was still a positive effect to be observed which we concluded when we interviewed the participants. One participant mentioned that the meeting became a lot more fun while remaining productive. Another participant mentioned that it was nice to be able to be more clear about their emotions or intentions with the hats.[52]

Training the trainers

Over the course of two two hour workshops, we also introduced the hats to other educators. This was a completely remote organized event in which we introduced these hats and other virtual meeting platforms as potential tools for education. In this

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[52] *Video presentation of the hats filter development process and meeting evaluation* **https://youtu.be/xOWAdPM2B64**

experiment, we had educators from Lithuania, Italy, Finland, Brazil, and the Netherlands aged between 31 and 45.

The most noticeable thing was how difficult it was for our participants to install the software compared to the participants of our filter-making workshop (see next experiment) in which only two or three out of twenty faced difficulties. Besides the hats filter we also explored different meeting platforms such as Gather.town and Mibo (figure 4). Since these platforms were browser-based, no installations were required, which made it easier to get started. While the participants appreciated being introduced to these different technologies, they remained critical of their application because of differences in educational approaches. (appendix B)

Since these workshops were held at sometimes inconvenient times because of difference in timezones, being part of a larger program, there was little previous interaction between participants and hosts. Therefore, especially during these workshops, we noticed that the element of fun that the hats and platforms brought, helped to break the ice and engage the participants.
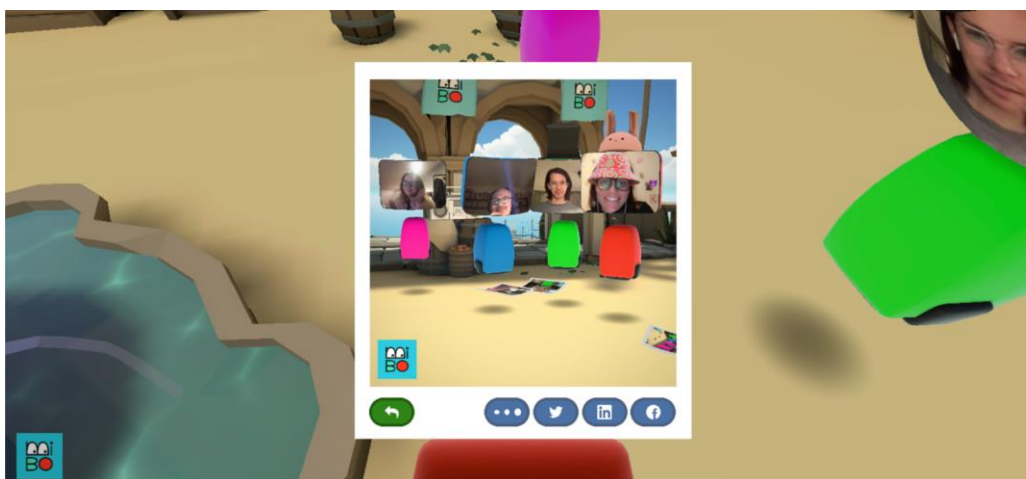
Figure 4: A screenshot of the workshop in which the hats as well as the platform MIBO was introduced to other educators.

Filter making workshop

During a three hour workshop at Digital Society School we introduced the Lens Studio software to our trainees to see what they would make. In this experiment, we had participants from the Netherlands, Brazil, Italy, Turkey, Nigeria, Japan, United Arab Emirates, Thailand, Pakistan, Zimbabwe, Canada, India, Iran, Bosnia, Romania and Kenya aged between 21 and 36. The trainees came up with filters that had different functions like weather forecasts but also the displaying of emotions using backgrounds. The installation process as well as the available tutorials and templates made it easy to get started on the design and development process. We presented about our development of the hats filter to inspire their design process.

Figure 5: The filter making workshop we organized for our spring '22 trainee group.

Discussion

With the creation of our hats filter for video meetings we wanted to see if we could alleviate the 'zoom fatigue' that was plaguing many during the time that the pandemic was restricting in-person teaching. We found in our experiments that, more so than the intended interactive functionality that our filter provided, having something to break the ice or monotony of video calls was most appreciated. This helped participants of meetings relate to each other rather than falling into merely productive "getting-things-done" behaviors. We believe that creating this interactive functionality helped to make the use of the hats attractive because of its novelty. It is too early to say something about the educational merit of this filter and if it helps applying De Bono's method. The use of functional or fun filters in video meetings is not yet commonplace and that is why we should look at it as a niche innovation in the context of a possible transition in education.

Now that the effects and severity of the pandemic has been waning for the past half year, so have the value of the shares of Zoom.[53] Allegedly, this is due to a reflex of departments and managers that are bringing their colleagues back to the office, as is also the case at the HvA and Digital Society School. Nevertheless, overall the videoconferencing market is still growing with education being one of the fastest growers due to the pandemic.[54] It was especially disconcerting to hear stories about children's learning capacities being set back because of lack

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[53] *https://www.msn.com/en-us/news/technology/zoom-is-worth-less-than-it-was-before-the-pandemic/ar-AAXlQqV*
[54] *https://www.grandviewresearch.com/industry-analysis/video-conferencing-market*

of laptops or separate rooms at home.[55] While too many video calls causes fatigue, not having any contact causes a learning deficit. And students at the HvA mentioned in a survey that they wanted to keep some of the benefits of online learning after restrictions have been lifted, such as the flexibility to save on travel time for short meetings.[56]

The nearness of people creates community and support. This poses interesting questions and challenges for educational organizations that are having to contend with students and staff getting used to remote work. How can community be maintained remotely? How does this change the quality of work? Are there ways to foster kinship regardless of our place in the world? These questions seem even more pertinent as we are to solve the world's global challenges; the sustainable development goals. These cannot be solved by only relating to the people that live, work, and learn close by us. Nevertheless, the physical lived experiences that we have in our everyday environment shape the way we think and learn through for example haptic affordances. The possibility for XR technologies to create a sense of place, closeness and foster empathy therefore seems to still be high on the research agenda.

Who is to advocate for equal opportunities and access to the latest educational technological innovations? We tried to disseminate the knowledge that we developed in Digital Society School on the basis of our AR filter in the InnoTec program[57] and in the

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[55] *Klassen 4 jan 2021 21:35 - Seizoen 2020 Afl. 6 - Quarantaine time*
https://www.npostart.nl/klassen/04-01-2021/VPWON_1304707
[56] *https://www.hva.nl/faculteit/fdmci/nieuwsbrief/onderwijs-na-corona-wat-willen-studenten-behouden*
[57] *https://www.facebook.com/InnoTecLab*

Traineeship program[58], one being remote and the other physical-based in Amsterdam. While new startups are entering the space of video meetings that are helped us to facilitate better online teaching, such as Butter[59], there is no one solution to all remote problems and in-person time remains valuable while also more exclusive. In another experiment, we asked ourselves the question if we could bring more context into online learning by simulating the physical space of HvA[60]. Although even more tiring than a Zoom meeting, the VR environment did immerse our participants more and helped them to connect in different ways such as by having a dance contest. Might we recognize that XR brings a new mode of education rather than replacing the existing mode?

Conclusion

By using our experiments as data for the analysis of niche innovations, as well as considering market, technology and societal developments we have created an avenue to describe the transition in education and make strategic planning possible. We have described how the exogenous force of the pandemic has functioned as a shock to the current regime and further enabled the development of technical solutions that were already existing as a latent regime. That is because the transition in the educational regime does not stand alone from the larger socio-technical transition of knowledge-work from being office-based to more remote and distributed, and that is also a change in work culture and attitudes. It is furthermore important to note that we've analyzed our own context in the Netherlands and that our

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[58] *https://digitalsocietyschool.org/traineeship/*
[59] *https://techcrunch.com/2021/04/08/butter/*
[60] *https://www.hva.nl/faculteit/fdmci/gedeelde-content/nieuws/nieuwsberichten/2021/06/onderzoekers-ontwikkelen-hva-campus-in-virtual-reality.html*

current political climate is liberal and our government to a large degree technocratic. This is exactly why we have looked at the space between the promise and practicalities of extended reality technologies as a driving force in the transition.

XR technologies bring the promise of making education more inclusive by training staff and student's soft skills and empathy, and more accessible in an embodied way in cases where physical access to the educational facilities is constrained such as, but not exclusively, in a pandemic.

However, XR technologies require technical and operational capacities from the educational service providers or institutions as well as from the learners/students. In cases where the government does not subsidize access to education or the use of XR technologies, people without the financial means will be left behind. From an ability standpoint, not only students but also teaching staff face a divide of people that have different learning abilities or personal aptitudes for the use of digital learning and educational technologies.

It might even be that the quality of education will not necessarily be improved through XR technologies and that rather XR and remote education will become a new educational mode and regime, something for the underprivileged who pay with their data, while the privileged will have access to real teachers in real-time in real life.

The practical implementation of XR technologies seems to still face institutional and cultural barriers even though the techy ideologies of those same institutions and cultures might advocate for these innovations. The HvA is an applied sciences university

and puts a large emphasis on practical education and skills, something that also translates to more hands-on, physical, and embodied skills. This makes XR technologies in their eyes something that mitigates the troubles of not being able to meet in real life rather than being something new or an add-on to meeting in real life. We expect that this disposition will change after the reflex of being restricted by the pandemic wains, and as the fatigue problems of XR are addressed and the embodied experience and context layers are improved.

Links

The hats filter

https://lens.snapchat.com/88bb35197208471f89d8082d3bffecb2

Snap Camera

https://snapcamera.snapchat.com/

Video presentation of the hats filter development process and meeting evaluation

https://youtu.be/xOWAdPM2B64

References

Virtual human interaction lab Stanford (Bailenson et al)

Appendix

A. Excerpt from XR Era newsletter by Rebecca Rui.

The Impact of the Pandemic on Education

Upon the advent of schools opening up again, many dire consequences and challenges emerged with students and teachers returning to classroom settings. After a long period of remote participation, students have suffered "learning loss" and show "worsening mental health," writes Kristal Kuykendall. Likewise, "teachers are burned out and fed up, with more educators saying they're considering leaving their careers early than ever before." On the other hand, there is "evidence that many students are thriving with the introduction of remote learning," writes David Thompson. Online learning — free from the distractions of a traditional classroom — allows students to stay more focused, and "virtual or distance learning" enables students to "learn at their own pace, thus reducing pressure which facilitates better learning." Thompson provides several examples, such as how students with autism are offered a better classroom experience through VR "by rendering a nonthreatening environment" and how touchscreen devices are "helpful to students with motor function difficulties as they assist in improving hand-eye coordination in the classroom." The impact of the pandemic on education has been transformative, and the situation elucidates that we are at a moment of "reimagining education" and what that actually means.

B. Feedback on the train the trainers workshops

What was the best catch from the course for you? What did you learn? What influenced your learning?

3 responses

The best capture of the course was the possibility of reflecting as a group on the set of measures to improve teaching using new technologies, their possibilities and limits. I think that they are not being applied well, because technologies are inserted in contexts (environment, processes, methodologies ...) that do not contemplate them or that speak a different language. The system as a whole must be considered and, therefore, the relationships between objectives, technologies and methodologies

Knowledge of different tools/platforms; some good website links; accessibility lecture (UNIT 1)

New methods to try in the class, the importance of having a framework

Letter from the Chairman's Desk
By Sunil Bhatia PhD

I was invited by a faculty member of the Design department for their Design Show for the final year's first batch of passing students of the Bachelor program. I was curious about knowing the level of knowledge of students after Covid-19 and there were no classes offline for nearly two years. Online is a stop-gap arrangement means where the growth factor is missing it makes the students aware of the subject at the superficial level. I interacted with students who were showcasing their projects and realized students seem curious and learned from the source Google or youtube. A new program has its ups and downs but careful insight helps in running a smooth parting of knowledge. It was compromise years for students and authority was blind toward students. I can say students paid the heavy fees and the university simply awarded a degree. Students with low voices express these problems fearing it should not be known to authority otherwise it will reflect their anger on mark sheets. Most of the student's work was not reflecting a professional approach because of a lack of proper understanding of subjects but authorities who initiated this program were in high spirit and praised for their achievements in reality it was not and celebrated their successes parties. I found a common denominator factor in every student's showcase work was Artificial intelligence and

mostly inspired by mobile phone technology where Apps are inbuilt AI.

I spent a few hours and realized it was not worth but my mind was disturbed by AI's role in design. It reminded me of the role of AI as typed for the searching data from Google it start suggesting the words based on my history of search data. Sometimes it is helpful and mostly it is irritating and keeps suggesting by interfering in typing before you typed the next character. It is all work of AI introduced in search Engines that keep guiding for the next steps. A small mistake of clicking by users ruined all efforts of locating the data.

Decades back there was a new word of fuzzy logic in appliances and microwaves to the washing machine for support not commit mistakes in the present state. It was not future-oriented. It was helping for lowering the manual mistakes while operating. The present decade is with AI and it is nothing but an extension of fuzzy logic. A washing machine refused to start in absence of proper loading or water supply is not with proper pressure all these features with AI help the users for proper handling in which it is designed. Some machine has features of the pre-loaded program that are frequent use by users, as part of artificial intelligence to eliminate the manual role as far it is possible.

I recalled that every mechanical equipment sets its language with frequent use. The wear and tear of the machine develop a kind of minor help to the users and sets in its own for lowering the manual mistakes. The machine develops the tune of operation by users. Users do the operation habitual and the machine responds accordingly without trouble for performing the task. I called machine has its own AI. I witnessed the combination of the numbering lock system where it sets quickly that is in frequent use by users. A thief was caught and I asked how you have opened the numbering lock with millions of options so fast. His

answer was users set the particular number for locking and unlocking where slots develop smooths and sound also changes. We develop a fine ear for listening to that sound produced by lock combination and succeed. Wear and tear guide us.

I thought a play in machine surfaces that is in frequent use and later it does not fit according to the required size and develops a new sound. That needs proper training for understanding which parts develop what type of sound after defects and mechanics uses for locating the problem.

I experienced the same with the knob of ceiling fan sets to that particular slots what most of the time I set for speed of the fan and takes longer time for what I use less. I call machine recognizes the user's habit and works accordingly. Is it not AI?

The same phenomenon is visible in humans also. One day my mother was talking to her close friend and she said. What you have spoken I was in my mind and about to speak. This habit of what others are about to say you act before other speaks come after long associations and develops a kind of AI where it responds to what other is expecting. My father's close friend was sitting with a long face and it was reflected in his behavior. He did not discuss that problem with my father but he understood the reason for his sadness and solved it on his own and informed. His friend asked how do you understand I was facing such a problem, Every friend should be like you. Is it not AI?

Our ancestors have their way of solving problems. Crossing the river of high currents was highly risky and for judging its intensity and depth before venturing into it they throw a pebble into the river and the sound of it makes them understand the depth of the water. If it was manageable they crossed by wading into otherwise designed different options. Sometimes they swim, use floating logs for crossing, or try to make stone bridges by throwing heavy stones or using logs or ropes for bridges. Every

animal or human develops an instinct with the experience of locating possible hideouts of the prey for food. They attack those specific areas where high possibilities are. Is it not AI that guides foods?

When a blind person walks with the help of a walking stick his movements of locating the trouble for avoiding falling or hurt have so much transferred in the stick that it guides the blind in such places where the trouble is. It is the stick that develops the inbuilt mechanism that helps in locating the guide for avoiding trouble. It is the harmony of sticks and blinds that help in walking. If you hand over a new stick to the blind getting tuned with the stick takes a longer time and he may be trapped in trouble. I experience sitting at a specific table and chair in the library and quickly setting my attention to study and in a new place with a new table and chair feel some kind of uneasiness and do not enjoy that attention that I enjoyed in a specific chair. Is this not a kind of AI?

 Inertia is one kind of AI that develop in its way and wish to remain in that state. I was buying a shoe and thought it is a little tight in grip. An experienced salesman advised by saying ' It is lather shoe and has a character of setting with the size of the users after two-three days of wearing. His words came true. I was thinking shoe has some kind of AI.

It is human nature to forgetfulness or the chances of committing an error are high. Designers of refrigerators were aware of the nature of the domestic users and introduced artificial intelligence by design for the closing of doors on its own for energy saving as well the content in it. They introduced the sound if the door is open unusual long time for reminding the user. Second, they introduced the level screws at the base so that the user can raise a minor front level of the refrigerator that tilted force used for closing the door on its own by moving slowly. There is magnetic

touch introduced for using attraction power in case level force fails for proper closing. In an industrial refrigerator, these features are missing and have mechanical manual locking for proper closing.

As theory is established needs practical support from the laboratory for verifications of the result. The real issue surfaces as we move for large-scale use as we witnessed in the turbine case for the generation of electricity. The idea of designing a dam for creating such force of fall water on fans for rotating turbine blades was the reason for the birth of hydroelectricity. This idea might have come from the watermill-powered flour mill were using water force for rotating grinding stone was AI in small form. Al-Jazari pioneered advances in robotics and is credited with inventing the camshaft, the crankshaft, and segmental gearing - which are present in almost every the machine. Archimedes 'screw pumping water uphill was another example of AI.

With the introduction of the Industrial revolution role of artificial intelligence played a great role in making a success story. I look at the introduction of a mechanical locking system of plates pressed over the head of the nut to not allow rotation with vibration. It is playing a significant role in the operation of machines they used thread locking or head locking to the prevention of unbolting.

Our ancestor's wisdom was great and thought the design of various knots for performing specific knots was nothing but artificial intelligence for holding the two ends for joining or eliminating human effort for holding both ends. The Discovery of fire and the introduction of dry tinder or dry straw for catching fire or ignition by rubbing two objects either stones or even stems for spark was the earliest example of AI. Ancient people wished the fire to catch fast and stay longer for heat or light, they designed the idea of a heap with wood by laying the bottom with

straw or items that can catch fire with a small spark and kept thick dry logs above to hold the fire for a long time by burning it slowly from one end.

All of a sudden I noticed that the main door of my office is the best example where they attach hydraulic closer that one end is fixed with door and another with the door frame and its arm pulls for closing. Earlier there was a human welcoming the guest by opening the door and a simple device of mechanical by using spring power for closing the door eliminated the human intervention. The journey from mechanical spring to the next level of use of liquid or gases as hydraulic to use of infrared sensor or photovoltaic for closing by an electric motor is amazing and optimum use of AI.

I visited a very old house where my friend's mother was living and as she noticed that I am standing out of the house she called from the first floor and informed me that door is open. She pulled the rope attached to the latch and the door latch was released. Out of curiosity I observed and found it was an ordinary latch where mechanical manual force was applied for raising the latch for fixing a hole in the door frame. She uses the ring for guiding the rope for proper pulling force for opening the door was amazing and the best use of AI.

When the idea of establishing a symbol for aiding the intelligence in humans was the first step of AI and later designing characters was next and making it standardized design of the alphabet was the last step for enhancing intelligence. This tool of AI eliminates possible confusion in human life because of the lack of proper standard communications and we are presently is because of the design of AI tools of text and visual graphics.

In my point of view where ever controls are introduced for achieving objectives and do not lose on the way with action is to

perform by machine is called AI. In modern times sensors are sensing for acting within the desired controls is AI.

Catapult was the device that helps in throwing pebbles for killing prey before it comes into action in defense Here human senses act as a sensor for the device and the action of releasing the pebble is controlled by humans. This earliest device was designed for overcoming the limitation of human capability. Human eyes can see at a limited distance but vision is improved by designing binoculars or telescopes. Similar humans have limited strength for carrying and transporting but the design of the cart by using animal power for carrying and control is done by humans with their senses. Earlier devices were designed with human senses for control and action for performing specific jobs. As knowledge is improved humans use the wheel fixed on the tripod for lifting the heavyweight with rope. Later on, designers designed cranes for lifting a weight that was impossible for an individual to lift.

 The earliest devices helping the humans were designed of using human senses and for action for performing a task but the role of domestic animals was limited to aiding nothing more. Animal control was needed not to deviate but keep track for achieving the objective they use the most sensitive parts by using nose pins attach to rope for controlling. Till that time no AI was introduced.

As they thought of the elimination of the human idea of AI surfaced. Wherever elimination of the role of human intervention for senses and actions is done we need to perform with AI. It is visible in mechanical, electrical, and other areas. The floating value in the water tank is fixed with the inlet of the water pipe and a tank-filled water ball touches the surface of the water and goes upward and design of the valve is such that it lifts upward it closes the inlet from the water. The pressure cooker has a whistle valve system and safety valve, if something goes wrong in lifting the valve and pressure is at a dangerous level an accident may

occur at that time the safety valve is released, and for taking out the pressure of the cooker. Airbags come into action for the safety of the life of passengers as automobile hits with such force that might harm. In electrical connection we use earth leakage breaking control where it senses the ampere of the incoming as well outgoing and as some fraction differences occur either earth leakage in wiring or accidentally human is trapped with electric wire current or some other faults and releases the safety switch for breaking the circuit.

 I am thankful to Prof Mark Watson for accepting our invitation of Guest Editor and made this issue tryly international.

 Lambert Academic publication for celebration of 150th special issue by publishing a book by compiling editorials "Design For All, Drivers of Design" translated in eight different languages from ENGLISH into French, German, Italian, Russian, Dutch and Portuguese. Kindly click the following link for book. "Morebooks", one of the largest online bookstores. Here's the link to it:

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With Regards

Enjoy reading, be happy, and work for the betterment of society.

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Forthcoming Issues

July 2022 Vol-17 No-7

Lourdes Arreola Prado

Built Enviorment Program Manager

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G3ict : The global Initiative for Inclusive ICT's , USA

María de Lourdes Arreola Prado is an international consultant in accessibility, inclusion and diversity and is CPACC and CPABE (Level 1) certified. She is also a member of the International Association of Accessibility Professionals (IAAP). Lourdes is the creator and founder of Linkenium, a consulting firm through which she accompanies institutions and companies in the construction of

inclusive environments. She is also a member of the Latin America Advisory Group for CBM.

Lourdes has participated as speaker, consultant and lecturer of accessibility, inclusion and diversity topics in various national and international forums. She was part of the Mexican committee to develop the accessible ICTs Standard. She has led the efforts to develop the first accessible tourist guide for Mexico City and, to enhance accessibility around all the nine buildings of ASUR's airports based in Mexico, among other projects.

In 2013 she was a finalist at Cartier Women's Initiative Awards. In 2015, she received the State Award against Discrimination, granted by the CODHEM, for promoting equality and non-discrimination in the workplace. She is an Engineer in electronics from the Universidad Iberoamericana and received a diploma as "Expert in Information Technology and Disability" by Creática Fundación FREE (Spain) and CETYS University (Ensenada, B.C.). She is multilingual in English, French and Portuguese, with solid knowledge of Italian.

August 2022 Vol-17 No-8

Prof. Dr. Jurgen Faust, PhD

Professional Experience

2021 – current Professor SRH Mobile University, Germany

2013 – 2020   President Macromedia University Munich, Germany

2010 – 2013   VP for Academic Affairs and Research, MHMK Munich, Germany

2008 – 2013   Dean, MHMK, Munich, Germany

2007 – 2021 Full Professor Media Design and Communication, Macromedia University Munich, Germany

2009 - 2012 International Strategic Advisor, Istituto Europeo di Design (IED) Group, Milan, Italy

2007 - 2009 Chief Academic Officer, IED group, Milan, Italy

2007 – 2009 Professor Monterrey Tecnologico, Monterrey, Design and Theory, Mexico

PhD, University of Plymouth, Planetary Collegium, England

Thesis title: Discursive Designing Theory, Towards a Comprehensive Theory of Design

Supervisors: Prof. Dr. Derrick De Kerkhoeve, Prof. Roy Ascott, Prof. Antonio Caronia, Prof. Mike Phillips

1982 - 1984

Postgraduate Studies, Free Academy in Nuertingen, Germany (painting/graphic and sculpture), Fine Arts degree

1979 - 1982

Undergraduate Studies, University of Applied Sciences, Reutlingen in Cooperation with

University of Bremen, Germany, Diploma in Chemistry (Dipl. Ing.)

Jurgen Faust (born 1955 in Germany) is a design professor, researcher who has worked in four different countries, US, Mexico, Italy and Germany as a Professor for Design, Theory and Media as well as an administrative Dean in four countries. He is a co-founder of a private university in Germany, as well as a developer of many undergraduate and graduate programs in a variety of fields in design. His PhD research was about designing design

through discourse within the design community. His research work let him to create a comprehensive theory describing design processes and models.

Over the past decades he has specialized in managing through designing and published about the idea of transferring design methods and processes into the management field.

He was as well teaching design and design theory. He contributed to a variety of books and publications. In addition, he is a practicing researcher, designer, and artist, who showed in many places, including museums and galleries in Europe, Germany, France, England, Italy, Poland and Slovakia as well as the United States.

Jurgen Faust was the President Macromedia University of Applied Sciences in Munich for 8 years and since March 2021 he is a professor at SRH Mobile University Germany where he currently develops a new Design School Design focused on distance education with the master programs in Design Management and UX & Service Design.

September 2022 Vol-17 No-9

Dr. George Vikiru

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October 2022 Vol-17 No-10

Lilián González-González is an Industrial designer, Academic coordinator at Anahuac University of México and a Board member in the World design organization. Is a PHD candidate in Critical Theory about "Social design experience", currently is studying Disability Theory Certificate and has a Master degree in Contemporary art and a Specialist certificate in sculpture, drawing and art in Florence, Italy where she won different prizes as an artist and made individual and group exhibitions.

She had the opportunity to work as a designer in the industry and as a professor in several Universities and cities around Mexico.

She had experience in the Mexican design industry, government and manufacturing. She also worked in General Electric Energy for 5 years, obtaining different certifications in the meantime about quality and design.

Also, was a Co-founder and organizer for various conferences, talks and symposiums about art & design. Also was invited as a speaker in different Universities and congresses nationally and internationally.

Her Design research and development expertise is in esthetics, symbolic meanings, manufacturing process, healthcare, disability, inclusion and sustainability.

Until today is an philosophy, art and design writer since 2009 in www.designforsociety.org

November 2022 Vol-17 No-11

Prof Dr. Cigdem Kaya *is chair of department and professor of design at Istanbul Technical University (ITU), Department of Industrial Design. She has been the vice director of Science and Society Research Center (2014-2017) and Industrial Design Graduate Programs Coordinator at ITU (2014-2017). She has been part of I-D team of Learning Lab by Relais Culture Europe, Paris; where she co-develops content and methodology in the field of cultural innovation since 2019.*

Cigdem Kaya received Bachelor of Industrial Design from Istanbul Technical University (ITU) in 2003, Masters of Fine Arts in New Genres from San Francisco Art Institute (SFAI) in 2006 and Ph.D. in Industrial Design from ITU in 2011 with co-supervision at Art and Design Center at Sheffield Hallam University (SHU) where she closely studied with Chris Rust. Kaya's research has been funded by Fulbright and Marie Curie programs. She has published many peer-reviewed articles in best design research journals. She supervised 3 PhD thesis about craft, critical making, use-share systems, all of which aim at social innovation and sustainability.

In 2020, she has been awarded with one of the most prestigious national research awards: scientific encouragement award by Middle Eastern Technical University Prof.Dr. Mustafa N.Parlar Education and Research Foundation in 2020 for her research on social innovation and sustainability.

December 2022 Vol-17 No-12

Ivor Ambrose

Managing Director, ENAT asbl.

Ivor Ambrose has worked in the areas of accessibility and disability inclusion for over 40 years as a researcher, university lecturer, project manager, policy advisor and independent consultant. Born in England, he has lived and worked in the UK, Denmark, Belgium and Greece. He holds a Master's degree in Environmental Psychology from the University of Surrey, UK and a university lecturer/Ph.D. qualification from the Danish Building Research Institute, where he specialised in User Evaluation of Environments and new Information and Communication Technologies.

In 2001 he turned his attention to accessibility in the tourism sector, which generally lacked awareness of the needs and specific access requirements of people with disabilities, resulting in inadequate provisions for these travellers. As a researcher and advocate of 'Design for All, which germinated in Europe in the late 1990s, and 'Universal Design' which took hold in the same period in USA, he was part of a movement which challenged policy makers and practitioners in many fields to re-think the way environments, products and services were conceived and designed. Through his research and observations of life, behaviour and cultures, Ivor has developed a driving ambition to make tourism accessible for everyone, everywhere.

In 2008 he co-founded the European Network for Accessible Tourism (ENAT) non-profit organisation (www.accessibletourism.org), with a group of European organisations active in the tourism industry and disability advocacy. He was elected as its Managing Director and has continued in that position since then. ENAT has become the premier membership association for about 300 organisations, business and individuals who support and want to learn more about this area of tourism development. As its director, Ivor manages ENAT's activities and projects including curriculum development and vocational training courses for hospitality management and staff, European and international standards work on accessibility and tourism, destination management consultancy, certification and provision of accessibility information through online platforms including Pantou, the Accessible Tourism Directory (www.pantou.org). The ENAT Board also maintains links with the UN World Tourism Organisation, the EU Tourism Manifesto Group, the International Social Tourism Organisation, Blue Flag International, Zero Project and many national and regional tourist bodies.

Email: enat@accessibletourism.org

Athens, April 2022

New Books

it is available on **www.morebooks.de** one of the largest online bookstores. Here's the link to it:
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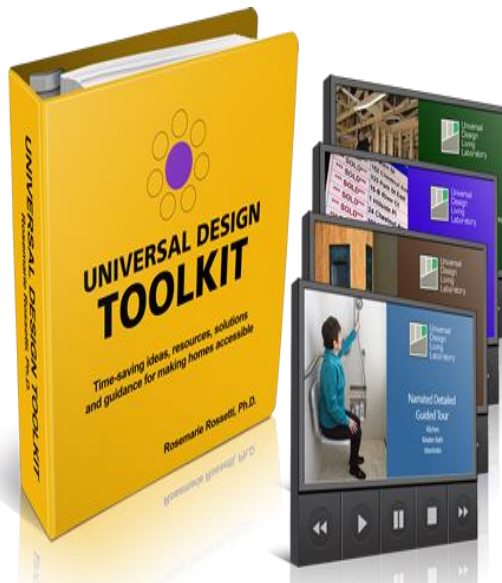
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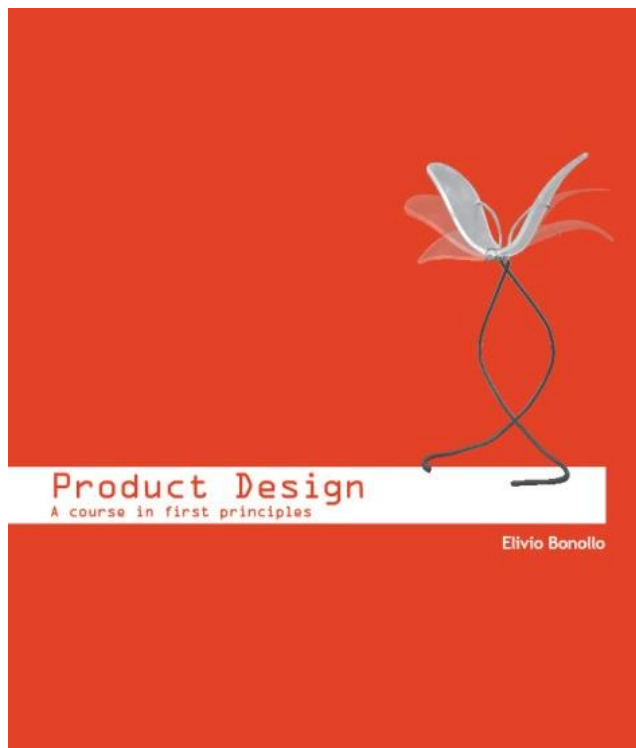
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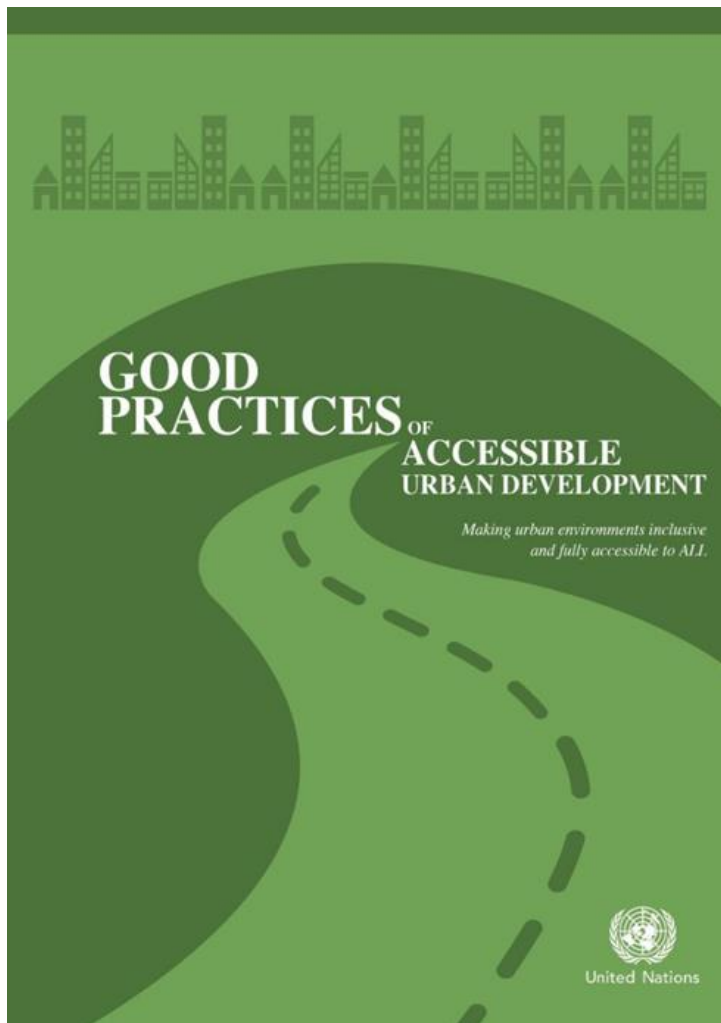
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INCLUSION

BRANDING

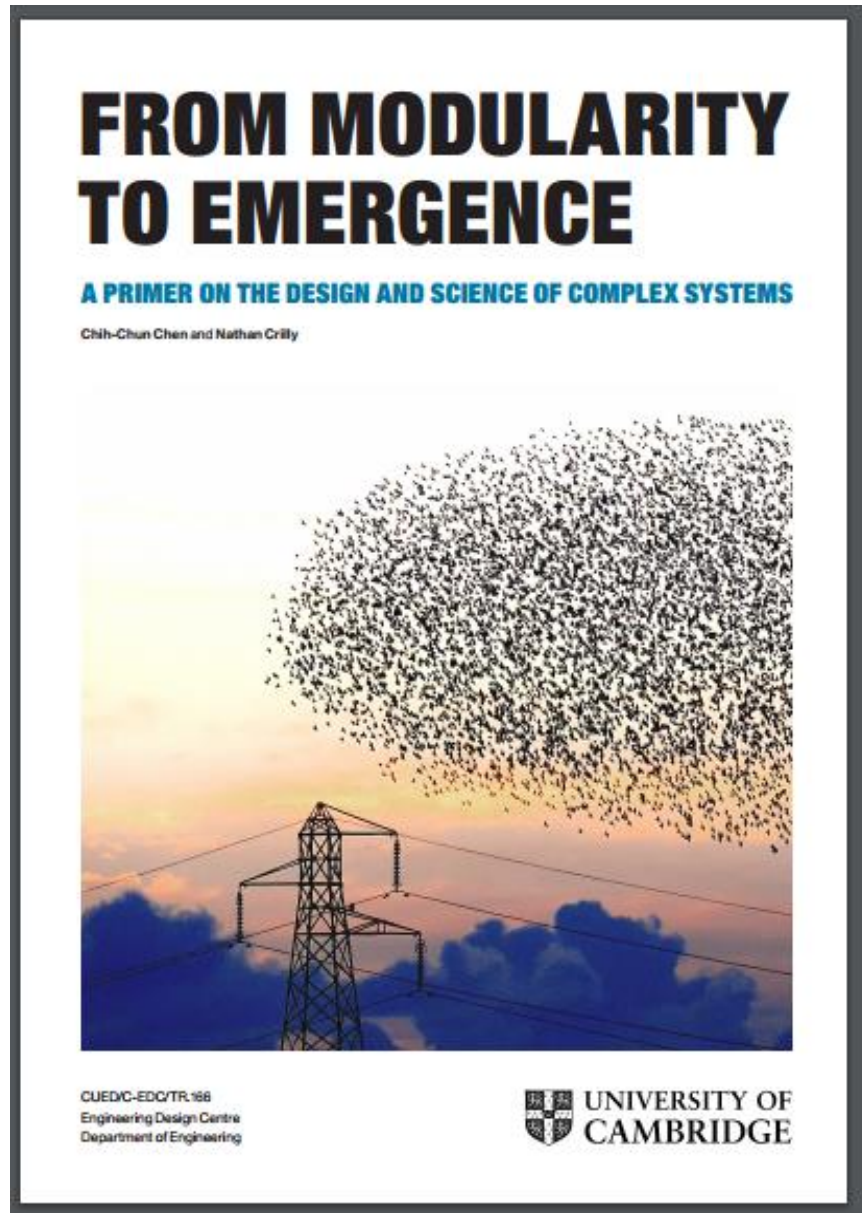Revealing Secrets to
Maximize ROI

In light of the forthcoming United Nations Conference on Housing and Sustainable Urban Development (HABITAT III) and the imminent launch of the New Urban Agenda, DESA in collaboration with the Essl Foundation (Zero Project) and others have prepared a new publication entitled: "Good practices of accessible urban development".

The publication provides case studies of innovative practices and policies in housing and built environments, as well as transportation, public spaces and public services, including information and communication technology (ICT) based services. The publication concludes with strategies and innovations for promoting accessible urban development.

The advance unedited text is available at:http://www.un.org/disabilities/documents/desa/good_practic es_urban_dev.pdf

FROM MODULARITY TO EMERGENCE

A PRIMER ON THE DESIGN AND SCIENCE OF COMPLEX SYSTEMS

Chih-Chun Chen and Nathan Crilly

CUED/C-EDC/TR.166
Engineering Design Centre
Department of Engineering

UNIVERSITY OF CAMBRIDGE

Dr Chih-Chun Chen and Dr Nathan Crilly of the Cambridge University Engineering Design Centre Design Practice Group have released a free, downloadable book, _A Primer on the Design and Science of Complex Systems_.
This project is funded by the UK Engineering and Physical Sciences Research Council (EP/K008196/1).
The book is available at URL: http://complexityprimer.eng.cam.ac.uk

Changing Paradigms: Designing for a Sustainable Future

Editors:
Peter Stebbing
Ursula Tischner

CUMULUS THINK TANK
Publication No 1 of the Think
Tank Series from the Cumulus
International Association of
Universities and Colleges of
Art, Design and Media

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Changing Paradigms: Designing for a Sustainable Future

New iBook / ebook:
HOW TO DO ECODESIGN

ECODESIGN HANDBOOK

HOW TO DO ECODESIGN

PRACTICAL GUIDE FOR ECODESIGN – INCLUDING TOOLBOX

ISSUED BY THE GERMAN FEDERAL ENVIRONMENT AGENCY

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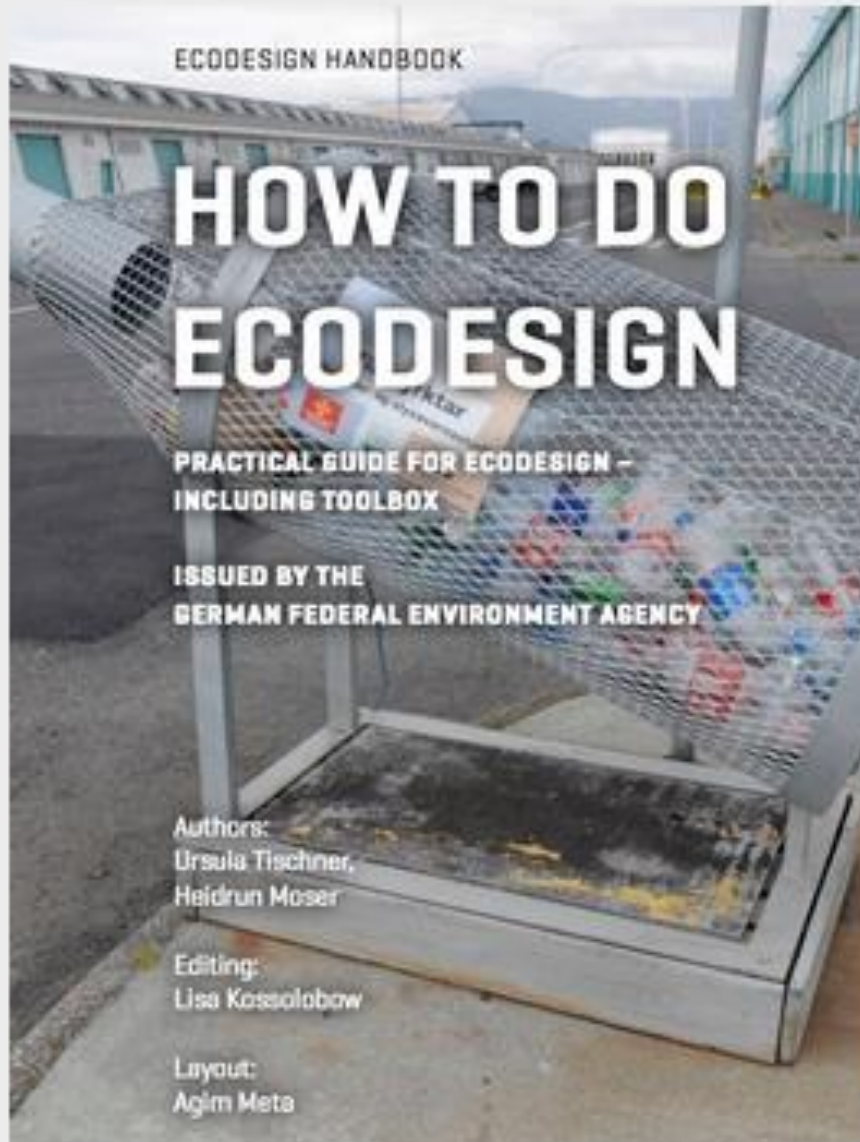
Practical Guide for Ecodesign – Including a Toolbox
Author: Ursula Tischner
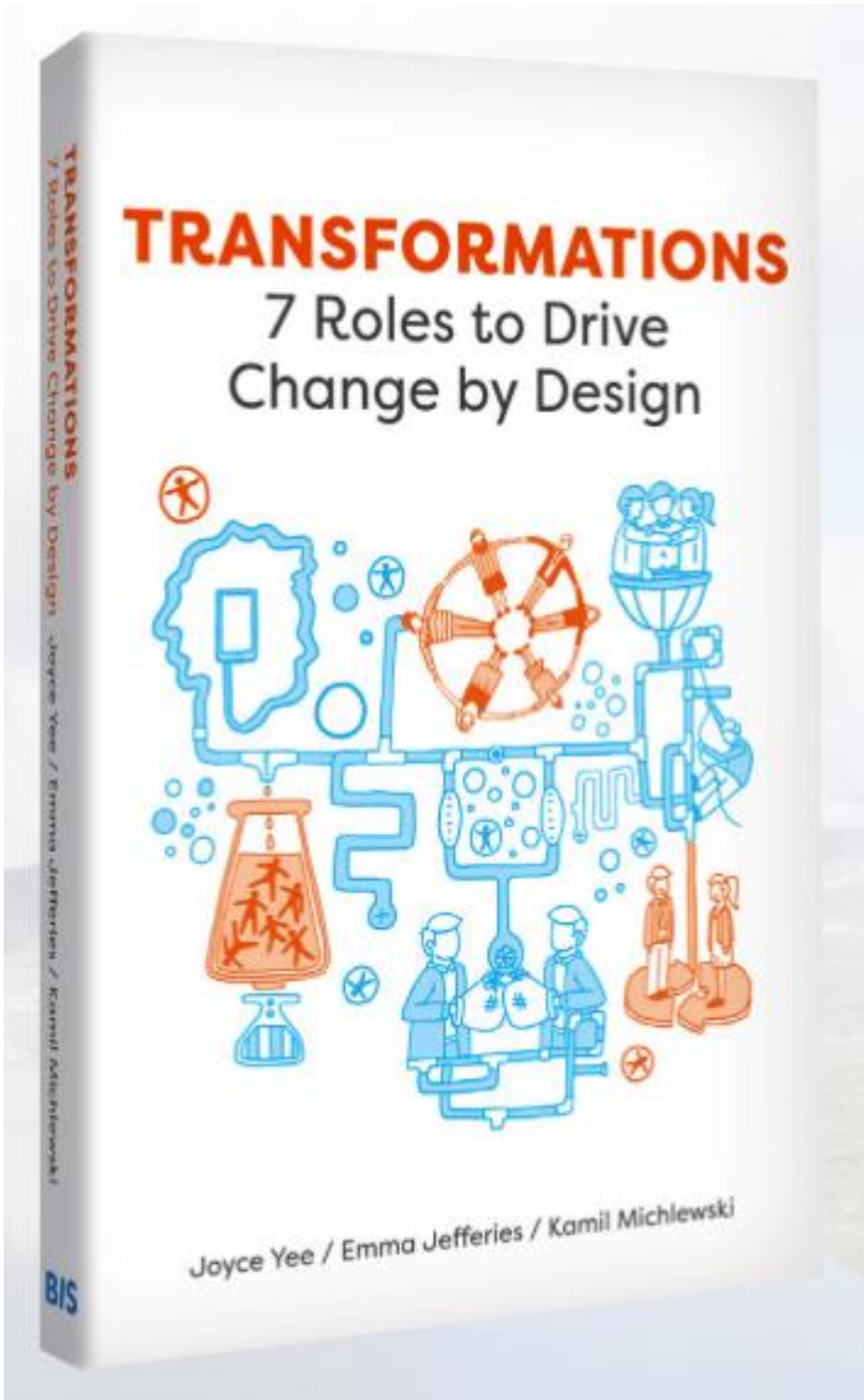
Arnar Árnason and Sigurjón Baldur Hafsteinsson

DEATH AND GOVERNMENTALITY

Neo-liberalism, grief and the nation form

Universal Design: The HUMBLES Method for User-Centred Business
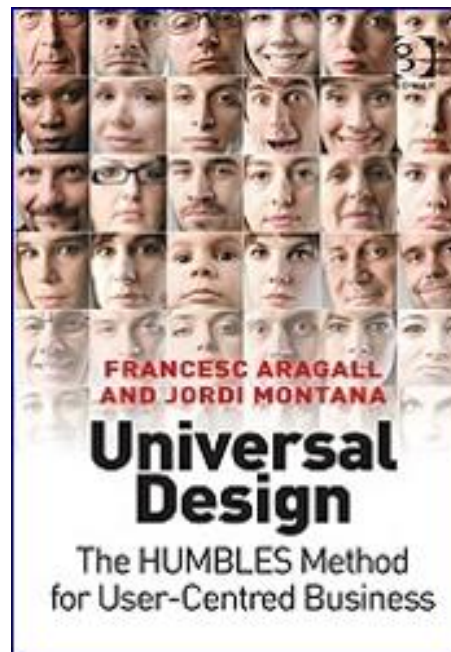
"Universal Design: The HUMBLES Method for User-Centred Business", writtenbyFrancescAragall and JordiMontañaandpublishedbyGower, providesaninnovativemethod to supportbusinesseswishing to increase the number of satisfiedusersand clients andenhancetheirreputationbyadaptingtheirproductsandservices to the diversity of their actual andpotentialcustomers, takingintoaccounttheirneeds, wishesandexpectations.

The HUMBLES method (© Aragall) consists of a progressive, seven-phaseapproach for implementing Design for All within a business. Byincorporating the user'spoint of view, itenablescompanies to evaluatetheirbusinessstrategies in order to improveprovideanimproved, morecustomer-orientedexperience, andtherebygain a competitiveadvantage in the marketplace. As well as a comprehensiveguide to the method, the bookprovidescasestudies of multinationalbusinesswhichhavesuccessfullyincorporated Design for All intotheirworkingpractices.

According to SandroRossell, President of FC Barcelona, who in company withotherleadingbusiness professionals endorsed the publication, it is "requiredreading for thosewhowish to understandhow universal design is the onlyway to connect a brand to the widest possible public, increasing client loyaltyandenhancing company prestige". To purchase the book, visiteither the **Design for All Foundation website**

Appeal

News

1.

State Development, Construction and Housing – Universal Housing Design Principles

Cassy O'Connor MP

Ms O'CONNOR - Minister, as of April 2022 the Housing Dashboard states a total of 334 new long-term homes were built in the past year under the Government's Affordable Housing Strategy. Are you able to tell the committee how many of those homes adhere to the universal housing design principles as outlined in the strategy?

Mr BARNETT - Thanks for the question and the reference to the dashboard, which is very handy. It confirms the openness and transparency of our housing data and performance. In terms of the specifics, I will ask the deputy secretary to see if he can respond to the member's question.

Mr WHITE - I am trying to see if I can provide something specific for that. All new social housing dwellings are required to be constructed in accordance with our design policy for social housing. The exception to that can be where there may be some issues with the site itself, perhaps because of slope or something like that. I can say that 28.7 per cent of all new social houses have either met the gold level or above of the Liveable Housing Design Guidelines, or the Australian Standard including AS1428 and AS4299 as at 31 March. This is the data I have in front of me

for 2022. A further 38.8 per cent did not have specific design detail recorded beyond that it met design requirements so certainly that would suggest they would meet that minimum standard, which essentially is the silver standard under Liveable Housing. The total of those would be 67.5 per cent of those homes.

Ms O'CONNOR - That's interesting because I thought the plan was originally to build all the new homes to universal design standards, but that may have changed. So of that total that have been built, according to the Affordable Housing Strategy, that haven't been built to universal design standards or the standards that you talked about subsequent to that, how many allow for easy and cost-effective adaptation to meet specific future needs, including accessibility for aged people and people with disability?

Mr BARNETT - Having spoken to the deputy secretary, it may be easier if you put that on notice. There is a fair bit of detail in that question and I would be more than happy to respond accordingly.

Ms O'CONNOR - Thank you, I will do that. You may not have this information; I might need to put it on notice too. I think the answer is close to zero, but how many homes in the current social housing stock adhere to the universal housing design principles, and each year for the last five years, how many social housing residents and tenants have requested home modifications or adaptations to be carried out to meet their changed accessibility needs?

Mr BARNETT - We are happy to take that on notice.

(courstsey:Tasmanian GeensMps)

2.

Smart Tech for Seniors

Technology can make the residential environment safer and more functional for individuals preparing for their golden years.

 Dianne M. Pogoda

Appliances placed at convenient heights are more accessible to all members of the family, such as the microwave drawer in this kitchen design from Toni Sabatino Style. — Photo: Elyse Sabatino

Keeping older or physically challenged adults safe and independent in their own homes has become a top priority, and an array of new technologies on the market is helping to achieve this goal. With the bathroom and the kitchen being two places where a great number of accidents happen, it's no surprise that many of these innovations are focused on these two rooms.

Most kitchen and bath designers are already familiar with basic principles of universal design, also sometimes referred to as aging or living in place: ample widths of doorways, halls and passageways; plenty of room for wheelchairs or walkers to turn around; space under work surfaces or vanities to roll under; zero-threshold entries; drawers and sinks that aren't too deep for easier reach; roll-out shelves and non-slip flooring. These elements help promote safety and ease of mobility and access throughout the home.

Additional elements are becoming important in universal design, and many are technology based. For example, smart-home technology offers ease of operation and connectivity for homeowners' devices, and also keeps them connected to loved ones who live elsewhere.

"Smart tech allows families to stay connected to those they care about. It empowers active seniors to stay in their own homes for years to come, giving them freedom and smarter, independent living," says Felicia Ratka, president of TBI Smart Home Solutions in Fort Washington, PA. "This technology also gives their loved

ones peace of mind, knowing that their elderly parents are safe and comfortable."

Author and wellness expert Jamie Gold, CKD, CAPS, points out that seniors should have technology that facilitates remote caregiving, such as sensors that detect falls, nonfunctioning appliances and plumbing leaks. "That way, loved ones can look after them without invading their privacy."

Ratka adds that systems don't have to be extensive or complicated. For instance, a handful of sensors can monitor daily activity patterns. A loved one can receive an alert if the front door opens in the middle of the night or, for someone who takes medicine regularly, caregivers may be alerted if the medicine cabinet has or hasn't been opened.

And, seniors are more open to using technology than many might think. "We tell our senior clients that technology is freedom," remarks Toni Sabatino, AKBD, principal of Toni Sabatino Style in New York. For example, during COVID, a lot of people needed telehealth, and it became a godsend for people isolated in their homes, she explains.

When incorporating technology, especially for seniors, ease of use is key. If the technology is frustrating for the homeowner, it won't be used.

Ebony Stephenson's design features an oven with a swing-out door and telescoping racks, which provide greater access to the cavity. Items stored in drawers are easier to reach than those deep in cabinets. — Photo: Ebony Stephenson

SENIORS AND BEYOND

Of note, the U.S. population is aging at a rapid rate. From now through 2036, 10,000 people will be celebrating their 65th birthday *every day*. There are currently about 73 million baby boomers (age 58 to 75) in the U.S.
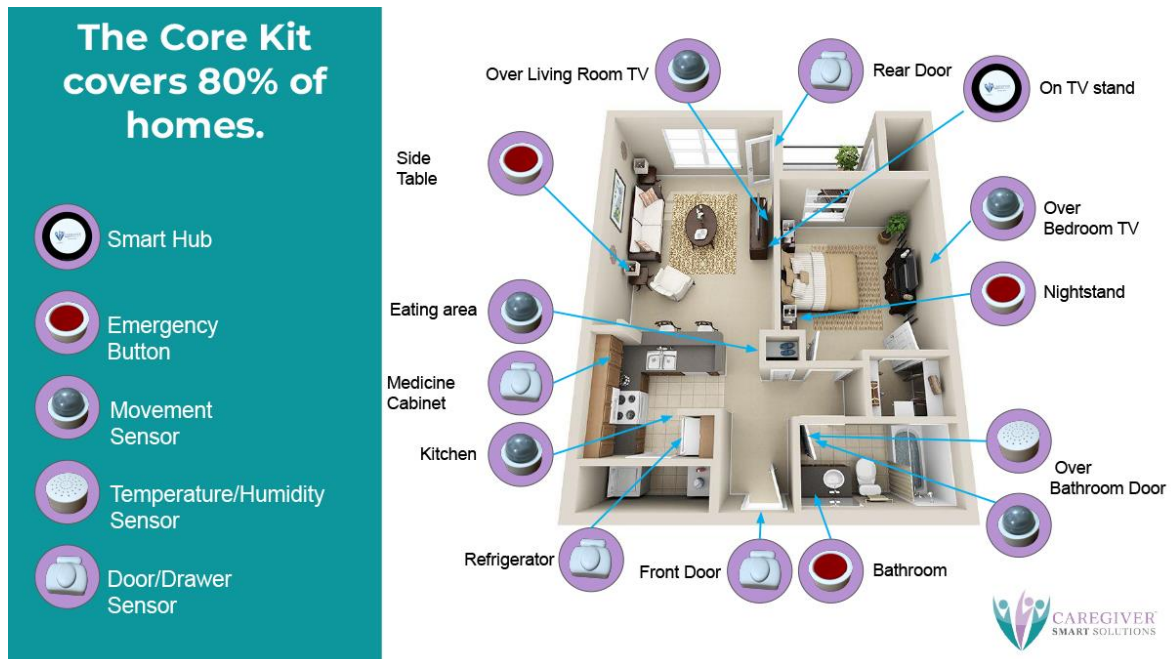
Louie Delaware, CLIPP, president and founder of The Living In Place Institute (LIPI), which confers Certified Living In Place Professional designation, notes that 85% of baby boomers have no plans to sell their homes, and 78% of boomers own their own homes, which amounts to about 33 million properties. That's a lot of homes with the potential to be upgraded with smart tech to benefit older Americans.

What's more, the next generations of homeowners – Gen X, age 42 to 57, and Millennials, age 26 to 41 – not only want smart-home technology in their remodels, they expect it, and they expect designers to know the latest innovations. So, it behooves today's designers to raise their tech game.

"Universal design is not just design for seniors – it's good design," remarks Ryan Herd, CLIPP, founder of Caregiver Smart Solutions in Pompton Plains, NJ. These elements can be important to people of all ages, as a 35-year-old person has a 50 percent chance of becoming disabled for 90 days or longer before the age of 65, and about 30 percent of Americans aged 35 to 65 will suffer a disability of at least 90 days during their working careers. Smart technology assists in creating beautiful, connected environments that improve lives and promote independence and dignity for all ages and abilities, he adds.

"We all know people who have or have had a temporary or permanent challenge, by injury, illness or disease," states Delaware. "When these issues occur, their homes can become a challenge. We need to maximize their ability to function with these conditions…It's better to plan ahead instead of scrambling when there's a sudden emergency or change."

"Tech that makes your house more secure, more safe, more comfortable and easier to use is not just for those who are aging in place. It can benefit anyone – someone who is convalescing, for instance – and it also helps preserve dignity for compromised individuals who visit us," remarks Sabatino.

The Core Kit covers 80% of homes.

- Smart Hub
- Emergency Button
- Movement Sensor
- Temperature/Humidity Sensor
- Door/Drawer Sensor

Caregiver Smart Solutions recommends that motion sensors, monitors and emergency buttons be strategically placed throughout the home. — Photo: Illustration by Caregiver Smart Solutions

APPS AND HOME ASSISTANTS

One of the first things to consider when incorporating technology into a design is the home's overall capacity, or network bandwidth, to handle the number of WiFi-enabled devices and appliances. This is just one of the reasons it's important to get a technology integrator involved at the start of a renovation. Designers can find integrators with whom to collaborate through CEDIA and the Home Technology Association.

An integrator will ensure that the WiFi is powerful enough to accommodate everything from cell phones and televisions to smart lighting, a security system, sensors and smart appliances.

"It's important for seniors to have a level of broadband service that facilitates an uninterrupted visual telehealth meeting," stresses Gold. "It's often helpful when the physician can see patients, as well as hear their voices."

Integrators also make sure that the systems are installed properly and that devices can communicate with each other. The difference between a smart home and a connected home is that a smart home may have a lot of individual systems or devices operated by an app on a phone, while a connected home allows those systems to work with each other.

"Having 15 apps on your smartphone is the equivalent of having a slew of remote controls on your living room table that each control one device," Ratka explains. "But the connected home truly becomes smart when all those devices can speak to each other and trigger various events."

For example, a homeowner can come home and remotely open the garage door; the truly smart home automatically disarms the alarm system and turns on interior lights.

Home assistants like Google Home or Amazon Alexa can function as hubs to control various systems with voice commands.

"I think voice control has been tremendous, especially when it helps someone with mobility, dexterity, balance or vision issues," says Gold, who penned *Wellness by Design: A Room-by-Room Guide to Optimizing Your Home for Health, Fitness and Happiness* (Simon & Schuster/Tiller Press, 2020). "Window coverings, light and temperature controls, doorbell and entertainment access can all be operated with voice commands."

Voice control systems, such as this one from Josh.ai, helps individuals with dexterity or mobility issues function more easily around the home. — Photo: Courtesy of Josh.ai LLC; Photo by Nicholas Freeman // Wellness by Design (Tiller Press, 2020) © J. Gold

KITCHEN & BATH TECH
Among the benefits of kitchen-specific technology are remote operation of appliances via app or voice command, monitoring whether the range has been left on or if the refrigerator door is open, being notified if there's a power failure or leak, having

appliances do self-diagnostics, and even monitoring supply levels of dishwasher soap.

"With connected appliances, you can register with the manufacturer and, if something goes wrong, you can log in with the app and a diagnostic technician can often walk you through the fix," reports designer Sheri Proffitt Gold, CKD, CLIPP, LIPI Ambassador and Advisory Board member. "If a repair person needs to come to fix the appliance, they will already have **the part with them. This saves time and multiple trips." Connected smart appliances have the added benefit of getting automatic updates over the internet, she adds.**

Remote operation allows the homeowner to preheat and set a timer for oven operation, she continues, citing a new Kitchen Hub feature from GE Appliances that allows connectivity, recipe call up, modification of recipes for dietary needs, and sending instructions to appliances for temperature and timing. This assists individuals who might have trouble reading fine print or operating knobs on a range, for example.

Induction cooking, which is electric cooking using magnetic coils, heats the pot, not the cooking surface, so there's no chance of burning skin, Proffitt Gold observes. "If you forget to turn the cooktop off, it will turn itself off when the pot is removed. From a sustainability standpoint, with induction cooking, 93% of the energy used to heat that pot stays in the pot, so there's only a 7% energy loss. With gas, only about 38% of the energy used to heat the pot stays with the pot. The rest dissipates into the air. This is a benefit, especially for people with asthma."

A smart microwave can be programmed via scan-to-cook using the package barcode, explains Herd. "This is easier for vision-challenged individuals, or those with dexterity issues." He adds that, with appliance technology, "you can even adjust the oven with voice control when you're in the middle of cleaning a chicken."

For universal design, knobs on ranges and cooktops should be easy to reach, and it's helpful if the knobs have a lighted feature that indicates when the burner is on. Some of today's smart ovens have motion-sensor technology that allows the cook to open the door with just the wave of an arm.

Ebony Stephenson, principal of Designs By Ebony in Virginia, notes that ergonomics is also important when considering oven placement and configuration. She frequently specifies a multifunction electric Bosch oven with a swing-out door, installed below a cooktop.

"The advantage to using this version of the oven, where the door swings out to the left, is that the clients could swing the door out of the way and have much easier access to the oven," she explains. "Not having to lean over a dangerous hot oven door that flips down was beneficial for a client with back issues, and this will be beneficial for years to come as she and her family age in place. The side-opening door paired with the telescoping racks offer better ergonomic access to the oven cavity. We also like the autoprobe and the colored control panel with easy-to-use buttons and digital display."

Wall ovens can also be installed a few inches lower on the wall than traditional placement, to give better access to someone who might be in a wheelchair, use a walker or have height issues. A microwave or speed-cooking oven drawer can be mounted in a lower cabinet for greater accessibility, as well.

A wall-hung toilet with bidet, such as this one from Duravit, can be set at optimal height for accessibility, allows for easier cleaning, and provides automatic amenities for cleansing and hygiene. — Photo: Courtesy of Duravit/ Product Designer Phoenix Design // Wellness by Design (Tiller Press, 2020) © J. Gold

Beyond the appliances, many faucets can now be turned on and off via voice activation, and commands can also dictate the amount of water dispensed as well as the temperature. Some faucets also have LED lights that indicate the temperature of the water so users don't get burned. And, of course, touch technology allows the user to nudge the faucet with an elbow or wrist if hands are contaminated with raw meat, for example, helping to keep the handle bacteria-free.

In the bathroom, personal hygiene and ease of cleaning the space are the top considerations.

For Maria Stapperfenne, CMKBD, CLIPP, of Whitehouse Station, NJ-based Tewksberry Kitchens & Baths and a LIPI Ambassador, a wall-mounted toilet is a go-to. "It gives more space in the bathroom, and it also makes it easier to clean under and around the toilet."

She also recommends installing an outlet behind every toilet. "You can easily suggest it's for their Bluetooth speaker, a night light or a phone charger, but down the road, it's there for a luxurious bidet toilet seat. For someone with mobility challenges, having their personal hygiene taken care of means they don't need assistance in the bathroom, which preserves their dignity and their ability to remain independent."

CONVINCING CLIENTS
While designers concur that discussing aging in place is never an easy conversation to have, there are gentle ways to get around a client's discomfort.

"When your client objects to your inclusion of these items, which will make their lives – and everyone else's lives who use this space – better for years to come, I find the best approach is to tell stories that are relatable to you, and hopefully to the client," advises Stapperfenne. "For instance, don't call them 'grab bars,' call them accessories. Today, many accessories – like beautiful towel bars and toilet roll holders – function as grab bars with the proper fasteners and blocking. Yet they don't have an institutional look; they are a beautiful part of the design."

Gold notes that, if someone has a serious, ongoing health condition, it's helpful to involve healthcare providers (including a

physician, geriatrician, occupational therapist, physical therapist, etc.) to find out what may – or may not – make sense for the project.

Security is also very important, stresses Sabatino. "When clients express concerns about in-home security, privacy issues, in-home cameras or being 'spied on,' I remind them that they constantly have their cell phones on them, which provide a pretty good snapshot of what they're doing and searching. As a society, we have accepted the convenience of a cellphone as a tradeoff for getting targeted ads, or for the WiFi-enabled dishwasher knowing that you're low on detergent pods and automatically ordering more. People today are realizing that the cameras at home are enhancing security."

As many kitchen and bath designers know, and Herd agrees, clients want to live in a place as long as possible. "The key [for designers] is to understand how the clients use and move in their environment and what's important to them," he observes. "We are all about layering smart technology on top of beautiful design to make the best of both worlds."

(Courtsey: Kitchen & Bath Design News)

Programme and Events

Victorian Premier's Design Awards Open for Entry

berkeley prize

BERKELEY PRIZE 2022 LAUNCHES IN ONE MONTH

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DESIGN GUIDED BY CLIENTS' NEEDS:

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ICPDPD 2022: 16. International Conference on Product Development and Product Design

March 03-04, 2022 in Rio de Janeiro, Brazil

INTERNATIONAL ACCESSIBILITY SYMBOL DESIGN COMPETITION

The International Union of Architects (UIA) and Rehabilitation International (RI) are jointly inviting submissions for a **twenty-first century symbol of accessibility** to represent their core values of rights and inclusion, independence, physical and virtual accessibility for all, including people with disabilities.

The challenge is therefore to develop a new symbol of accessibility that better represents the variety of people who use buildings and other types of built environments. The competition invites **professional architects** and **graphic designers** as well as **architectural and graphic design students** to design a new graphic symbol of accessibility, to be proposed to the **International Organization for Standardization (ISO)** for adoption as the new international symbol of accessibility.

GOOD DESIGN NEWS

Rewarding Design Excellence
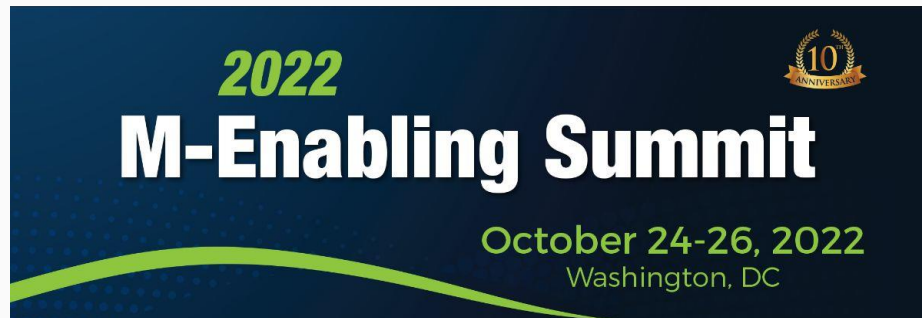
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2022
M-Enabling Summit
October 24-26, 2022
Washington, DC

ICCHP AAATE Joint International Conference on Digital Inclusion, Assistive Technology & Accessibility - ICCHP-AAATE 2022, Lecco, Italy

Welcome to ICCHP-AAATE 2022

In 2022, ICCHP and AAATE join forces and co-host the

Joint International Conference on Digital Inclusion, Assistive Technology & Accessibility

taking place
July 11 - 15, 2022

Hyderabad Regional Chapter of IIID (Institute of Indian Interior Designers), is hosting the fourth edition of its flagship event "IIID Showcase Insider X 2022

Hot News For Students and Educators!
We're on the Final Approach for this year's Spring Semester Student submissions. We only have a few days before the final entry deadline, so if you're interested in joining the competition, please complete the submission process immediately. You know where to find us: www.sparkawards.com

The last and final deadline is Midnight, California time, June 17. The jurors begin their judging on June 18.
We're delighted with the high caliber of entries we've seen this year. Recently schools like MIT, SVA, Art Center College, Tdelft, Pratt, Harvard, Tsinghua, RAC, Honglk, SADI, Savanna, RIT and companies such as Hitachi, Samsung, HP, Midea, Philips, Dell, Google, Fuseproject, Whipsaw & Pepsi have joined the participants. It will be fun 😜
All Best--Stay Well!
--Spark

TypoDay 2022
28th & 29th October 2022

www.typoday.in

Typography Day will be held online for the fourteenth time on the 28th and 29th of October 2022 hosted by IDC School of Design (IDC), Indian Institute of Technology Bombay (IIT Bombay) with support from the India Design Association (InDeAs) and Aksharaya.

The theme for this year's event is 'Typography for Children'

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