USER EXPERIENCE JOURNEY WITH MULTIPLE DEVICES AND TELEPRESENCE DURING QUARANTINE

JORNADA DA EXPERIÊNCIA DO USUÁRIO COM MULTIPLOS APARATOS DIGITAIS E TELEPRESENÇA DURANTE QUARENTENA

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experiência do usuário, tele-presença, interação humano-computador, multicanais

Muitas cidades e países do mundo iniciaram quarentena e lockdowns na tentativa de diminuir o contágio do Covid-19, configurando assim, o fim do século 20: o século da tecnologia. O crescimento rápido das possibilidades tecnológicas e comunicação avança a interação humano-computador conectando usuários a diversos computadores em um ecossistema dinâmico criando experiências pervasivas. O novo desafio social, resultado da quarentena e autopreservação, levam isolamento, tecnologia, internet, família, educação, trabalho e comunicação a trazer novos significados para objetos e interações. Cada geração tem suas próprias perspectivas e modelos mentais sobre a pandemia e uso de tecnologia, criando para si as pontes necessárias entre canais a fim de facilitar suas próprias jornadas de experiências em alcançar objetivos. Essa pesquisa foca no entendimento de como a quarentena e isolamento social afetaram o senso de espaço e isolamento das pessoas, influenciando comunicação, entretenimento, trabalho e educação. A pesquisa foi conduzida durante o decreto de quarente oficial na cidade do Rio de Janeiro – de 16 de março à 1 de junho.

user experience, telepresence, human-computer interaction, multi-channel

Many cities and countries around the world started quarantine and city lockdowns to diminish the spread of Covid-19, configuring the end of the 20th century: the century of technology. The fast growing technology and communication possibilities upgrade human-computer interactions to connecting users to many computers in a dynamic ecosystem in pervasive experiences. The new social challenge, from quarantine and self-preservation, takes home isolation, technology, Internet, family, education, work and communication to surface new sense of things and interactions. Each generation has their own perspectives and mental models about the pandemic times and the use of technology, creating themselves the necessary bridges between channels to make their experience journeys easier and to reach objectives. This research focus on understanding how quarantine and social isolation in Rio de Janeiro affected the 4 generations' interaction with digital devices and he diversity of channels, how it affected their own sense of space and isolation, influencing communication, entertainment, work and learning. The research was conducted during the quarantine official decree in the city of Rio de Janeiro – from March 16th to June 1st.

1. Covid-19: an exponential pandemic

Lilia Schwarcz, doctor in social anthropology at Universidade de São Paulo, points, on her podcast, the Covid-19 pandemic event as the true end of the 20th century. Its beginning from the 1st World War, the 1900s is "the century of technology, with fast growing technology development, and the pandemic event comes to present technology's limitation" (Schwarcz 2020 e 2020).

In December 31st of 2019, the WHO office in China is informed of new pneumonia cases in Wuhan. Although an immediate quarantine isolation started, 44 patients were registered with similar symptoms and 9 days later the first death is registered (WHO 2020). On the 20th day, the WHO confirms the new virus can be transmitted among humans and the next day France confirms its first registered case (NY Times 2020). In January 30th, OMS declares covid-19 a global emergency. By that time, China registered 7,711 cases throughout its provinces. In just a few days, confirmed cases appeared in India, Australia, Philippines, Russia, Spain, United Kingdom, Canada, Germany, Japan, Singapore, Arab Emirates, USA, Sweden and Vietnam (CNBC 2020).
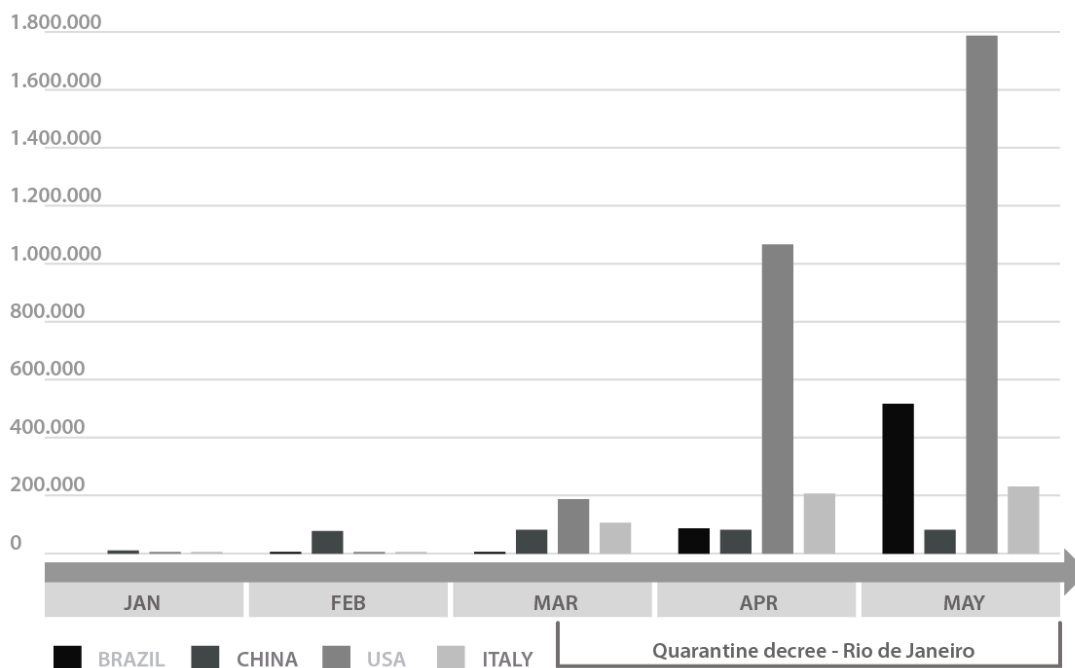

Figure 1: Global exponential spread of Covid-19, based on WHO official released data

On February 11th, WHO denominates the sickness as Covid-19 and its virus as SARS-CoV-2. Two weeks before, Italy registers their fourth death derived from it (Gan et al. 2020 and Li and Hui 2020). On March 21st Europe is the new epicenter of pandemic with 4,825 deaths and 53,578 registered cases in Italy. By March 31st, the number of dead in USA had surpassed the numbers in China (WHO 2020 and Aljazeera 2020).

In Brazil, the first registered case was on February 26th (Abade et al. 2020), a man who arrived from Italy. The next day, according to local news, 132 suspicious cases (Globo News 2020) appear on 16 states and on the fourth day: 200 confirmed cases and 1913 suspect cases. The president in charge announces officially there is no motive for panic (Globo News 2020). On March 16th, the governor of Rio de Janeiro decrees

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Ergodesign & HCI

número 1, volume 8, jan-jun (2020)

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official quarantine (Witzel 2020), acknowledging the emergence situation of public health and divergence from the president. Schools, collective activities and events are suspended and social isolation begins in an attempt to flat the contagion curve. On April 101h, Brazil surpassed 1,000 deaths (G1 Globo News 2020) and 8 days later, the mayor decrees the obligation of facial mask usage within Rio de Janeiro (G1 Globo News 2020). Despite the decrees, Rio registers people's actions opposing WHO suggestions of safety and 1 month later, over 10,000 deaths are registered. The official quarantine decree (Crivella 2020) ends in June 1st and by the end of June: 30,046 confirmed deaths (Ministério da Saúde 2020).

Throughout the pandemic event, new information regarding the unprecedented virus has surfaced from various sources around the world and quickly spread, through social network, to everyone connected – as well as misinformation. The symptoms can vary from total asymptomatic and common flu to severe pneumonia, with cough, constant fever, sore throat, catarrh and extreme fatigue, getting to the point of respiratory support necessity and possibility of death. A group of high risk was mapped by WHO: people with diabetes, hypertension, cardiovascular disease, respiratory disease, chronic kidney disease and the elderly – late Gen X and Baby Boomers.

New strict hygiene protocols were issued to slow the contamination rate (sanitize hands constantly, keep 2 meters minimal social distance, avoid crowded and indoor ambience, not share personal objects with others, use facial mask and start social isolation). Many cities and countries around the world started quarantine and city lockdowns to diminish the spread. School and work were obliged to adapt to remote interactions from home. The decision of lockdown varied from country to country and the acceptant of home isolation became individual decision in many places, which directly influenced the exponential contamination curve of each area. Within home isolation, technology, Internet, family, education, work and communication would surface new sense of things (Sande et al 2017) and interactions to each generation. Apart from political turmoil around quarantine, pandemic and economy, this research focus on analyzing technology interaction and sense making during the official quarantine in Rio de Janeiro, from the point of view of each generation.
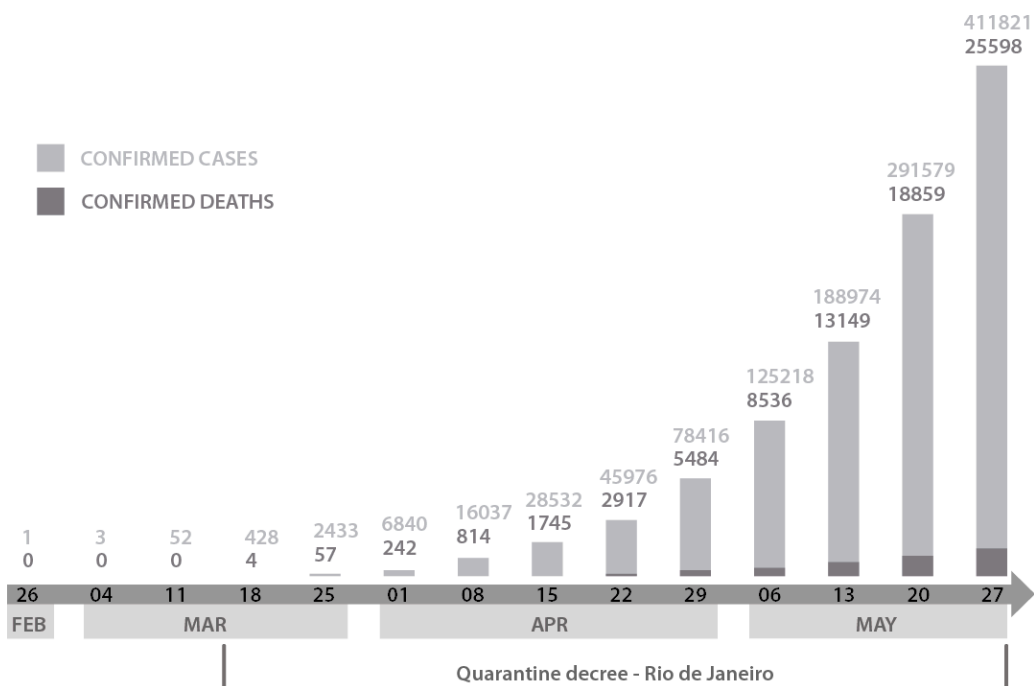

Figure 2: Exponential spread of Covid-19 in Brazil, based on WHO official released data

2. Generations and relation to technology

The generations of history change is a regular cycle, just like the seasons of the year, in which Strauss and Howe (1997) separate in four turnings, with four generations archetypes: Prophet, Nomad, Hero and Artist. Each generation encompassing people born within a 20-year period, where dynamically each one moves up the ladder of age and takes a different place in society, bringing significant changes in the mood of global culture. The four general archetypes repeat throughout the four historical turnings: High (First Turning), Awakening (Second Turning), Unraveling (Third Turning), and Crisis (Fourth Turning).

- **High**: upbeat era of strengthening institutions and weakening individualism, when a civic order implants and the old values regime decays. The post war boom (Baby Boomers) between 1948 and 1963 is pointed as America's most recent High turning. The emphasis is on planning and building, as society is confident about where it wants to go collectively.
- **Awakening**: a passionate era of spiritual upheaval, when civic order comes under attack from a new values regime. The Consciousness Revolution of the 1960s, is considered to represent the most recent awakening, The focus shifts from building institutions to developing an individual's inner life, during which old Nomads disappear, Heroes enter elderhood, Artists enter midlife, Prophets enter young adulthood — and a new generation of Nomads is born (Generation X).
- **Unraveling**: a downcast era of strengthening individualism and weakening institutions, when the old civic order decays and the new values regime implants. In the Unraveling turning, society embraces the liberating forces set loose by the Awakening and individualism and personal satisfaction are at their highest. Old Heroes disappear, Artists enter elderhood, Prophets enter midlife, Nomads enter young adulthood — and a new generation of Heroes is born (Millenials).
- **Crisis**: a decisive era of secular upheaval, when the values regime propels the replacement of the old civic order with a new one. The Crisis turning brings destruction of institutional life and rebuilt in response to a perceived threat. The Crisis can be caused by one large threat, or by many little things not dealt with during the Unraveling turning. Old Artists disappear, Prophets enter elderhood, Nomads enter midlife, Heroes enter young adulthood and a new generation of Artists (Generation Z) is born.

The authors point the possibility of the 4th turning beginning in 2005, bringing difficult times that could persist for years, in their book "The fourth turning: An American prophecy—what the cycles of history tell us about America's next rendezvous with destiny".

The Global Web index (globalwebindex.com), a well known research company, has been providing data and reference to marketing companies with intentions of directing new products to specific generations. It encompasses over 40 countries in comparative global markets, influencing 4,000+ brands decisions with detailed reports on each generation. The descriptions used here are based on recent reports from 2019 (Global Web Index 2109).

Baby Boomers (fig. 3), born between 1954 and 1964, are commonly considered to have most difficulties with digital media and Internet, as they were getting in their 40s, when the Internet started to become a reality. Before, entertainment and information were provided through traditional media – TV, Newspapers, radio and books. Although less resourceful, they are participative in social network and follow the smartphone usage tendency and try to keep up with new channels. Nevertheless, TV is still an important entertainment source, as streaming and online services are not a common place among them.
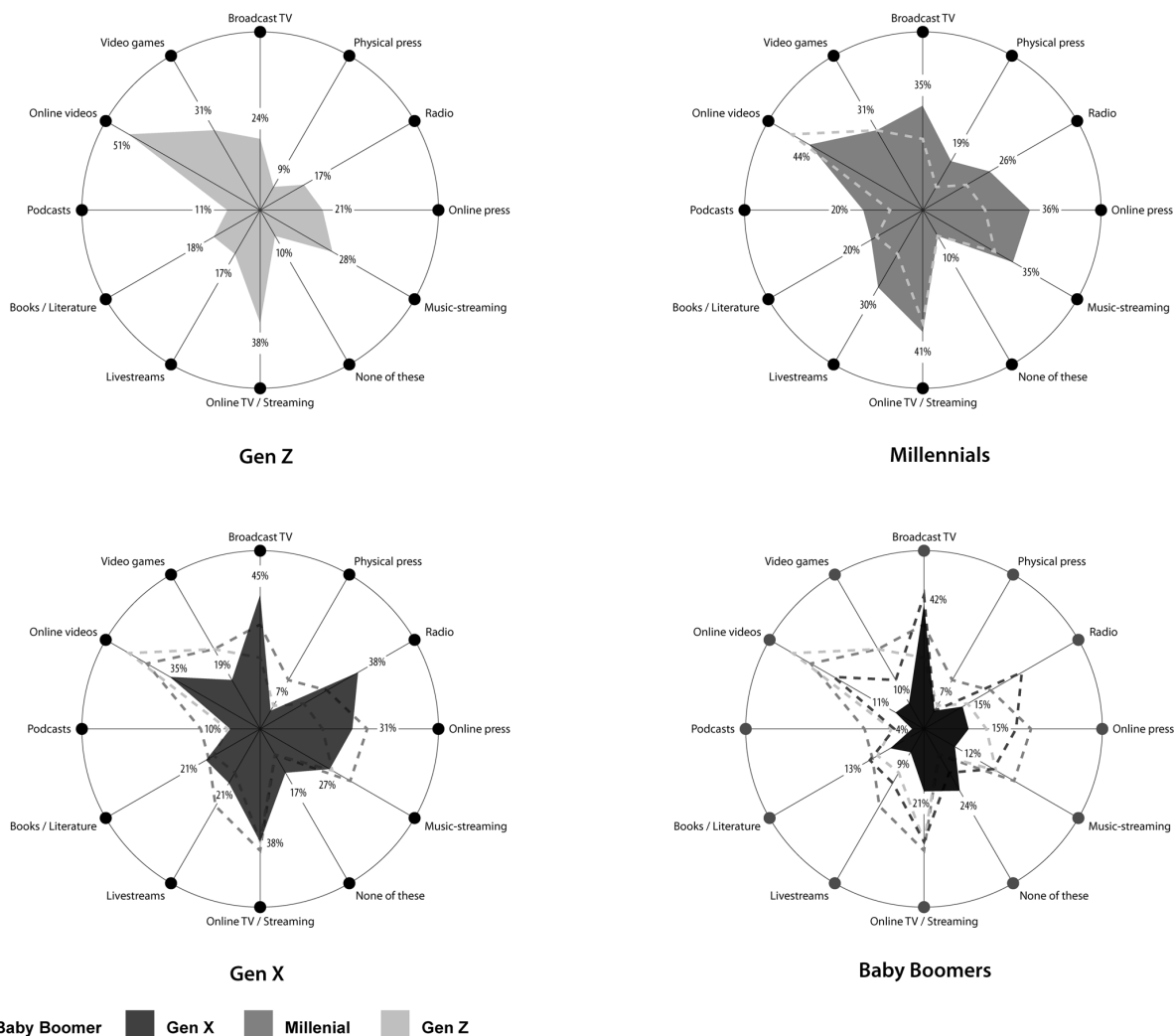
Figure 3: Comparative graphics of the 4 generations, regarding the usage of devices and communication, based on reports from Global Index.

Generation X (fig. 3), born between 1964 and 1982, are considered, globally speaking, the active work force with entrepreneur characteristics. Although the last generation with non-digital experience, they do not avert technology, as they were at the epicenter of experimentation with digital interaction in the second wave of computing (Renzi 2016), influencing the next steps of the Internet evolution. In Latin America, 30% of Internet users are from this generation, mostly through desktop, laptop and tablet (a reverberation from the 2nd wave of computing). Nevertheless, since 2017, smartphones have surpassed the other devices and assuming primary use, as predicted by Renzi and Freitas (2015) regarding the future of technology. New interaction channels have been growing with them and 1/3 of TV consumption are through streaming and online cast. News and reading are being rapidly transferred to digital consume, leaving physical experiences behind. Their relation to social network has intention to be up to date with news, to contact friends, to get entertainment, to fill free time gaps and to make networking.

Millennials (Gen Y), born between 1981 and 1998 (fig. 3), is a generation marked by the turn of the millennium and important technological evolutions. An elusive and heterogeneous generation influenced by the relation between their age range and internet usage, they grew up with the Internet as a mass medium and the launch of the smartphone with the "Angler" prototype in 1992. Self-image conscious people and avid social networkers, they spend an average of 2 hours and 50 minutes per day on social media. According to

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the Global Web Index report (2019), they love to keep up with the latest fashions and eager to find entertainment content. They can be great influencers on social media and up to date on latest technology and products. Smartphones are universally owned by millennials and are central to their digital lives, but 27% lead over PCs and laptops. They are multi-device users and get online with an average of 3 devices.

Compared to the global average, millennials spend more time on all forms of media, except for broadcast TV and radio. Social media is a popular form of entertainment in its own right. Music streaming is also an above-average entertainment source, taking up more than an hour and a half of their day.

Generation Z (fig. 3), born from 1999+, are nearly 7 hours a day connected, with an average 2:52 hours in social networking and still watch broadcast TV, but bellow 1.5 hours of per day. The digital native generation identify themselves as digital activists, hyper connected multi-task people accessing many sources of information at the same time. They are 1.5x more likely than average to follow vloggers on social media, 1.4x more likely to say they use social media to follow celebrities. They use social media to find funny and entertaining content and have driven a general shift from written to visual content. YouTube is a favorite among them and smartphones have a considerable lead over laptops/desktops. Tendency of preferring indoor than outdoor activities, but not necessarily online.

3. Cross-channel interaction and Tele-presence

The latest years of the 20th century (from historian Lilia Schwarcz's perspective) brings a rapid evolution in technology and human-computer interaction, evolving from the 2nd to the 3rd wave of computing (Renzi 2016). Generations Y and Z are natural multi-task people from the everyday experience with multi-channel interaction, solidifying multi-media, multi-device and one-user-many-computers concept. Since then, interaction with devices are not isolated islands anymore and journey experiences are built pervasively, crossing different devices in cross-channel experiences (Benyon and Resmini 2017), merging digital and physical spaces, encompassing actors and editors to be part of a pervasive user experience.

Cross-channel interaction links various devices and system within an ecology of systems with planned interoperability. Although planning a pervasive information architecture for its natural dynamic semantic expansion (Levy 1993) and applying directives of UX heuristics (Renzi 2016 and 2017) to guide the connected devices can help create a smooth journey experience to users, the building of the journey is uncontrollable (Krippendorff 2006), as external factors, context of use, culture and psyche directly influence decisions of interaction. If perception is based on the intrinsic coherence of 'representations', it ought to be forever hesitant and wrapped up in people's conjectures on probabilities (Merleau-Ponty 1962). The world is not an object of possession and is naturally setting new contexts of use, which interconnects with every personal factor and references, built in every person, to create sense making and new perceptions through experience journeys.

Within the pandemic event and emergent isolation, new contexts of use, ambience and speed of connection are external factors that may influence tasks and sense making to the same owned devices, leading to new sense of presence.

The term 'telepresence' is first introduced by Marvin Minsky, a computer science professor at MIT and early explorer of artificial intelligence, in his article published on OMNI magazine in 1980 (Misky 1980). The author, inspired by the idea of remote-controlled economy from Robert A. Heinlein's prophetic 1948 novel, "Waldo" (Heinlein 1942), presents it towards human remote control of physical mechanical actions. As one of his predictions for the future of telepresence, "one can as easily work from a thousand miles away as from a few feet. Manual labor could easily be done without leaving your home. People could form work clubs". And acknowledge that the biggest challenge to developing telepresence is achieving that sense of "being there."

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Studies in Synthetic Environments (SE) for Virtual Reality (VR) integrates the term as a self-representation of the user in a virtual form interacting with abstract or realistic virtual objects found in outdoor and indoor realities. Although focused on virtual reality interactions, it properly refers to an experience that involves displacement of the user's self-perception into a computer-mediated environment (Draper et al.1998) but Furness and Barfield (1995) correlate advantages of immersive interfaces to graphic information and visual/spatial displays. The interface may be developed context-independent and focus on the immersive and natural display/control format. Accepting this idea, the purpose of human-machine interface research becomes discovery of the proper format for that ideal interface, as instigated by Draper et al in their user-centered vs. telepresence comparative table (table1):

	User-centered	Immersive telepresence
Information	Efficient displays promoting situation awareness; information may be summarized or pre-processed before presentation	Displays which reproduce the sensory milieu at the remote or simulated site and eliminate simulation from user's physical environment
Responses	Ergonomically sound controls accepting inputs from modalities appropriate to stimulus-response paring with displays and to tasks	Devices which digitize human actions or the results of human actions is a natural way
Attention	Controls and display are designed to focus attention on critical parts of a task	Controls and displays are designed to recreate the environment, usually with no attempt to shape attention processes
Fatigue-ease of use	Interfaces designed to be minimally fatiguing and for ease of use; workload is an important concern and the task may be modified to maintain acceptable levels throughout the mission	Interfaces designed to be no more fatiguing than if the user was physically present in the SE; ease of use is assumed to be optimal because of naturalness and transparency; workload is not raised as an issue
Training	Some training is usually assumed to be necessary to efficiently operate interfaces	Interfaces are assumed to be so natural as to make training unnecessary; naturalness is also assumed to promote skill transfer from SE to real-world if SE is being used as training tool

Table1: Table with comparative user-centered and immersive telepresence concepts. Intrinsically connected but from different points of view. Based on Draper et al. – 1999.

According to Biocca and Delaney (1997), "When we experience our everyday sense of presence in the physical world, we automatically generate a mental model of an external space from patterns of energy on the sensory organs. In virtual environments, patterns of energy that stimulate the structure to those experienced in the physical environment are used to activate the same automatic perceptual processes that generate our stable perception of the physical world".

In normal daily conditions we are constantly being influenced by external factors and contexts of use to make decisions toward the use of digital devices (Sande et al. 2017). Even when there are no planned blended spaces (Renzi and Almeida 2018) in an ecosystem, users create themselves the necessary bridges between channels to make their experience journeys easier and to reach objectives. This research focus on understanding how quarantine and social isolation could affect the 4 generations' interaction with digital devices, their own space and the isolation, regarding communication, entertainment, work and learning.

4. Interviews with quarantined people in Rio de Janeiro

The enforcement of quarantine in the city was the principal factor to strategically plan a proper research without meeting in person. Being attentive to discussions in UX communities, UX meetups and workshops since the beginning of the pandemic, it has been noticeable the need to adapt research methods to the new social distancing restrictions. Even though interviews suffer less adaptation, still a few changes had to be

made. Most of chosen adaptation made the interviews easier to accomplish. For instance, due to quarantine, people were more available to participate, with more open schedule and eagerness to do something new. The possibility to interview without leaving home has increased the reach to interview people from far distant places, which could have been very difficult to connect if conducted in person. But to interview without being physically near makes it more difficult to observe corporal signs and facial emotions during the session.

In order to minimize the corporal observation challenge, we planned all interviews to be executed with the help of video conferencing systems. The choice of which system to use, relied on users' preferences and easiness of use. The used video conferences systems were Google Meetings and WhatsApp. Zoom was disregarded, as its free version limited the conversation to 40 minutes at the time of the interviews. Later on, the ZOOM system had been open for infinite minutes, but the interviews were already finished. Only when there was no better option, the interview was done by phone call.

Although the quarantine opened further possibilities of reach, it also had created an unpredicted difficulty: due to increase rate of Internet usage during the quarantine, sometimes the connection was so poor that affected interviews. There was one full week of Internet overload on May that took a while to get back to normality.

The interview encompassed 10 questions, strategically scripted (Mucchielli 2004) to start from general quarantine scenario, users' routine and environment information to slowly advance into understanding the relation of users with digital apparatuses, interactions, passing times and perspectives.

The research team was prepared to conduct the interviews and a total of 84 people were interviewed: 14 baby boomers, 19 Generation X, 34 Millenials and 17 Generation Z. The selection of participants had to represent all 4 generations (baby boomer, X, Y and Z) as well as, reach the most diverse neighborhoods possible within the city. Since Rio de Janeiro presents economic and social inequality, it was important to have interviewee from all social castes. All selected participants needed to have Internet access and could not live in the same house as the interviewers.

5. Mental model patterns

It was interesting to observe patterns of behavior distinguished by generation, but also actions common to all four of them. For instance, factors that influenced decisions to go into quarantine for real and preparations to go out show points of similarity as well as actions, specific to each generation.

Interviewed baby boomers, among whom considered with vulnerable health, going into quarantine were almost equally divided in 3 different moments: 4 started quarantine before the official government announcement (march 16th) for previous health issues or pandemic information from a close relatives, 5 started staying at home from the official announcement and 5 began quarantine only a week later – both related to jobs statements towards quarantine. Half of interviewees do not work, either by retirement or unemployment. For the other half, 3 had their jobs adapted, 3 had their jobs completely paused and 1 keeps going to work, in person.

Generation X, a more active working class, started their official quarantine influenced by their jobs' position regarding the quarantine: 5 started 3 days (Friday) before the state decree, 13 began on the official day (Monday) and 1 stayed home only 1 week later. The majority (14) had their work adapted to remote, 2 had their job paused, 1 was fired and 2 were unemployed already (both from poorer neighborhoods). For the ones whom had their jobs adapted, the majority says they keep the same pace, but 2 declares they are working a lot more (teachers) and 2 diminished the daily work amount.

Ergodesign & HCI

número 1, volume 8, jan-jun (2020)

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Millenials are building their careers or finishing studies. The major part of them had their quarantine started directly related to the state decree and all of their decisions were related to their job or university: 11 (1/3) started on the official day, 12 (1/3) started only one week later, 5 began 2 days before and 4 did not started quarantine, for working with essential services. The only 5 millenials who quarantined in advance were influenced by particular reasons: 2 works on Europeans multinational companies, which adapted to remote work long before and 1 was already isolated for psychological reasons. The other 2 interviewees who had anticipated their quarantine declared afraid of news from Europe and could start before as they had no employment attachments. Besides the 4 interviewees who work with essential services and could not stop working, 13 had their jobs adapted to home office. But the rest of Millenials had, their projects, internships and jobs interrupted or discontinued. Five were not working previous to the pandemic.

Generation Z are the youngest ones interviewed and studying to take the first steps towards their future profession. Their decision to enter isolation are result of the official decree and postponing of classes: 13 started quarantine from the official day, 2 started on Saturday prior to the decree and 2 quarantined only 1 week later (related to job and return from sports competition). All of them understand that their quarantine decision came from external factors, but 2 of the interviewee add living with elderly relatives and 1 had a family member infected right in the beginning.

Although officially decreed quarantine, how tight people follow it seems very flexible among interviewees. Baby boomers are the generation to be considered group of risk, but only 2 of them never leave their house (due to health issues). The majority (10) go out frequently to resolve a variety of chores and 2 declare to go out only for grocery shop. The ones that leave their homes always use facial mask and 9 take also alcohol with them. When coming back home, the shoes stay outside and are sanitized. Just a few have gloves. Their daily routine has been affected and while the ones who had their job adapted divide the day between work, online courses and more reading, the ones which had their jobs interrupted feel bored all day focused on digital entertainment.

Generation X has not been considered a group of risk, unless with medical conditions. Nevertheless, only 1 never leaves the house (medical condition) and only 1 goes for grocery. All the rest (17) admit to go out often to resolve diverse things, such as go to the bank, do exercise and visit family. All of them follow the safety protocol of using mask and alcohol. Shoes and clothes are sanitized and groceries are cleaned when arriving at home. Most of them had the jobs adapted to remote.
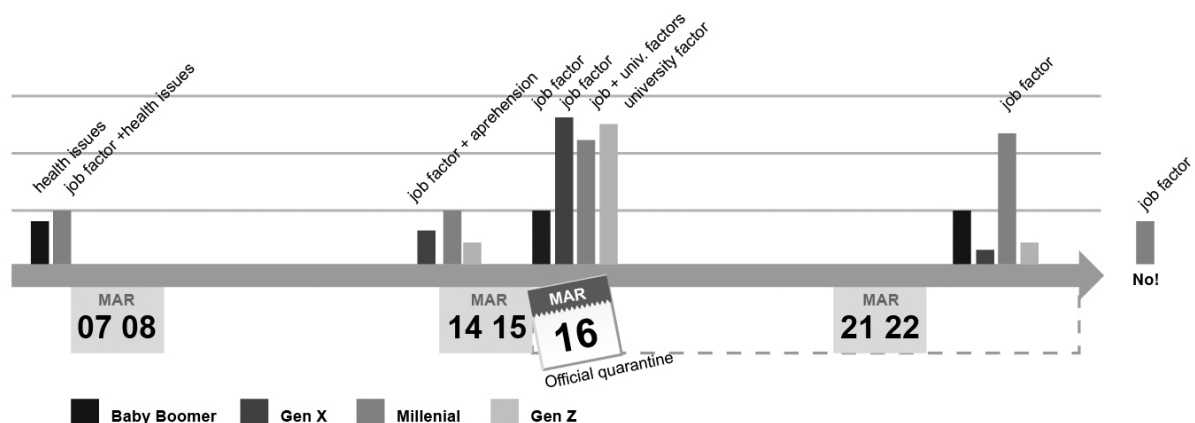

Figure. 5. Declared quarantine entrance of each generation, in relation to government official decree

Although proportionally millennials go out less, still, almost half of them (16) leave home to solve a variety of things, while 12 go out for grocery only and 3 never leave home. All of them indicate to use facial mask to go out, although 3 admitted to have had forgotten the mask or have taken it off at least once. This generation shows no use of alcohol for sanitation, but 14 have separate clothes just to go out. All of them point out to their big change of routine, as the majority had an intense outside life between university, work and entertainment with friends. Both Millenials and generation Z are the ones with most psychological disturbance during quarantine (and sometimes before) and 5 of the interviewee demonstrated insomnia and lack of energy to do things. Among reasons mentioned to go outside: visit therapist and get air for psychological distress. The few ones working remotely complain of working longer hours than before.

Among generation Z, only one never leaves home – for medical reasons – and 1 kept going to work all the time. All 12 go out to solve things at the bank, get material for projects, pharmacy and visit girlfriend. Just 3 go to grocery shopping. All use facial mask and alcohol when going out. They separate clothes for cleaning and take showers as soon as they arrive back. Mention of flip-flops to make shoe isolation easier. Only one sanitizes groceries. As in Millenials, 5 demonstrate psychological disarray from the new routine and 9 exemplify their major changes related to their pause from university and work. Only one maintains normal activity from before.

For those of Baby boomers that had their job adapted, the use of Internet for communication increased through ZOOM and Google meeting. The increase of Whatsapp usage has been for everyone, from all generations, to contact family and friends. There is an increase of social media interactions for those bored, usually related to interviewees whom are not working. The Baby boomers who kept working, also kept themselves very active using the Internet to start new courses for new knowledge acquisition and self-improvement. The self-declared bored, fulfilled their time with exaggerated entertainment (social media, movies and TV series). This general scenario was observed in all generations, but with different proportions and types of entertainment. Smartphones has been the most common used device to reach Internet, computers mostly used for job related activities and TV for movies, series etc.

Similarity occurs with Generation X: the ones with adapted work use computer and Internet for conference calls, work and research, but just a few of the work force had enrolled in courses for self-improvement (2). All have increased their movies, series and TV entertainments, watched with smartphones and smartTV. Computer is mostly related to work and conference calls. Communication with family and friends (also increased) is whastapp through smartphones. It is interesting how the use of social media has developed in this generation: 7 have increased its use, 7 declare the same amount of use but in a significant different way (less personal posts, more relation to work and specific topics) and 5 maintained the same amount of use.

Millenials who kept their jobs, complain of overwork, but following the pattern: the ones with more activities are the ones most inclined to diminish social media activities for their lack of time. Nevertheless, 16 (almost half) say they increased social media use due to their idleness and lack of routine. The final 9 indicated to already have a frequent use of social media and just kept the same flow. All mention smartphones as primary use, but also computer for movies, games and news, not associated with work. No TV.

Generation Z has mostly focused their use of Internet for entertainment, specially movies and series (also Big Brother Brasil), all through smartphones, a few through laptops/desktops. Some did have used the time for personal studies through smartphones (12) and computer (5). Communication with family and friends are mentioned, as in all generations, and the use of social media has increased by 2/3 of the interviewees, while 3 declared diminished the use for psychological self-preservation.

All generations see the lack of liberty to go out to meet people and enjoy the outside as the major negative outcome from quarantine. Baby boomers add the increase fear of virus, while Generation X adds worries about their finance. Millenials include worries about the world scenario of people dying and the lack of

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routine affecting hard their psychological status. Generation Z also has significant numbers with psychological disturbance and add uncertainties about the future and the worrisome about other people during the pandemic.
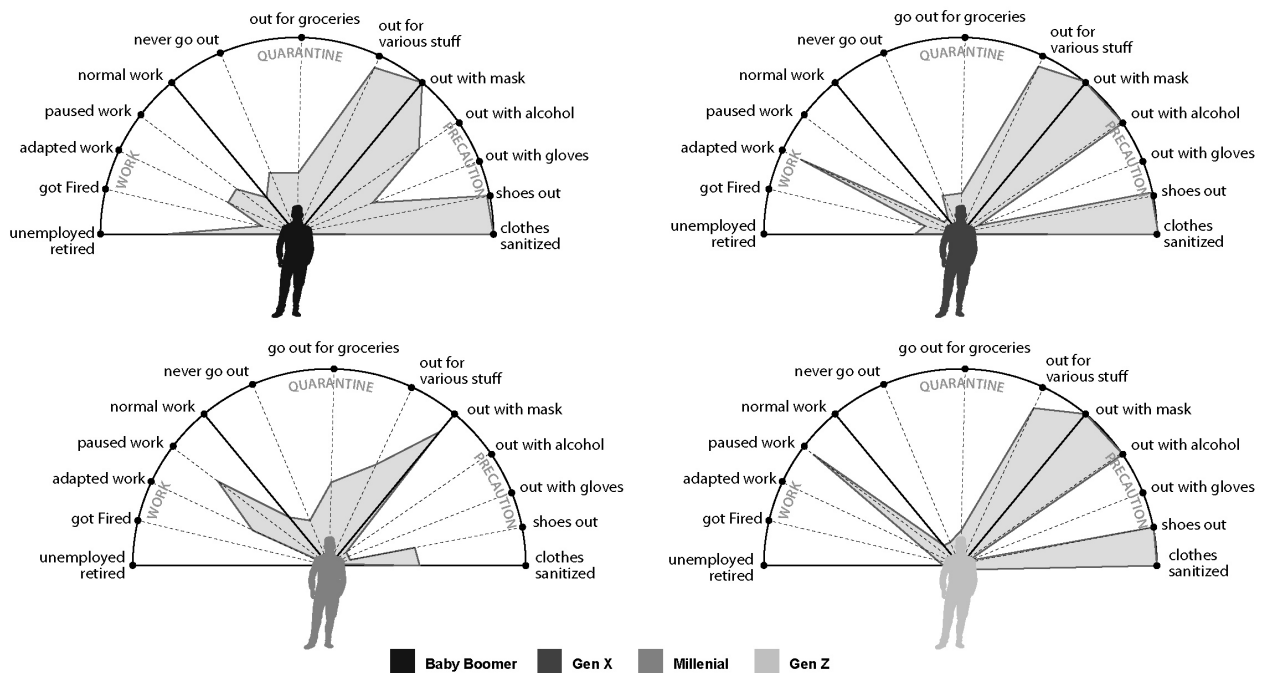

Figure. 6. Changes in routine, quarantine attitude and prevention among generations

The 3 younger generations show a small proportion of people saying there is nothing positive about quarantine (genX-10%, Millenials-15%, genZ-11%), often the ones who mentioned psychological disturbance during quarantine or before it. The possibility to spend more time with family and union between people seems the most mentioned positive aspect of the quarantine. Baby boomers add the natural depollution of earth as a good result from less people out and less cars on the street. Generation X points that the slower rhythm of life had proportionate creative idleness to learn new things and have creative ideas. Things that in a fast paced life are difficult to achieve. Some Millenials mention also the isolation scenario as an opportunity of self-awareness. Generation Z presented a variety of new things learned while in quarantine, such as video editing, painting and even one new affair relation through internet.

Ergodesign & HCI

número 1, volume 8, jan-jun (2020)

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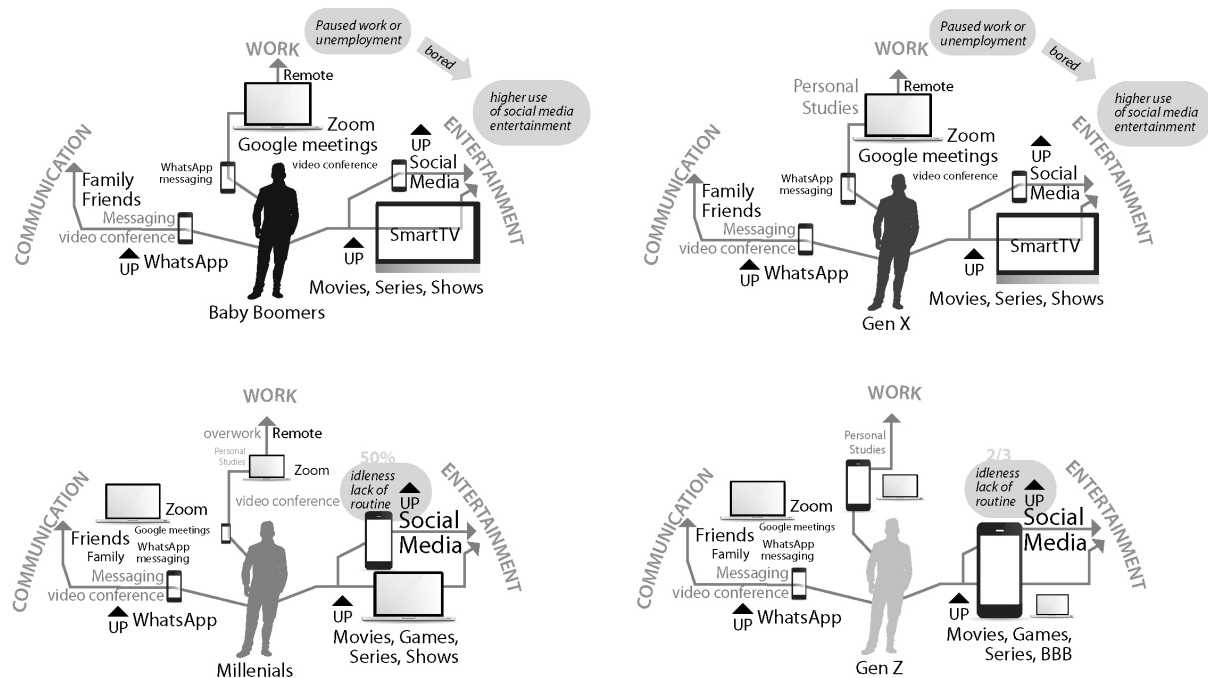LEUI I Laboratório de Ergodesign e Usabilidade de Interfaces

Figure. 7. Comparison of Internet and digital device usages of each generation during the official lockdown.

6. Conclusion

The decision of starting quarantine and self-isolation has shown a variety of outcomes in different countries. Rio de Janeiro presents an exponential rise of contagion and although the decision of self-isolate can be considered individual, this brief research showed that external factors also directly impacted the decision of self-quarantine. The official quarantine started on March 16th (Monday) and the majority of the interviewee had their decision around this official date, but indirectly – as the factor of influence has been more related to employers accede the decision and possibility of adapting to remote work. Some have anticipated the isolation to Saturday, including their weekend as part of quarantine decree. The ones who entered quarantine more than 2 weeks before are people who were either in isolation for health (and mental health) issues, or were considered risk of death and retired, or worked for international companies which started quarantine previously, following Europe's quarantine. The ones who declared to start quarantine over a week later were either related to their jobs or their disbelief of the contagion (mostly gen Z). The use of facemask has grown as the quarantine advanced, with some interviewees admitting to forget it in the beginning. The use of sanitizer, outside shoes and cloth decontamination has show to be distinct to each generation, each one showing distinct patterns of behavior. But the urge to do other than grocery tasks has been stronger in generation X and baby boomers.

Internet has been an important asset during isolation for communication, purchase, entertainment, news, work and education. The velocity of connection has affected possibilities of families living together, where different people in the same house had to share the same internet connection at the same time for different purposes: parents would have online work meetings, children would have school, young adults would watch live talks/interviews and courses on streaming and everybody would communicate and look for

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entertainment at some point. Many upgraded their connection as the Internet and use of devices started to have new meanings and importance to users (Sande et al. 2017).

Generation Z and Millenials have always been very active on social network and some consider to have kept the same amount of connection during quarantine. Nevertheless, a few declared to have diminished their presence for self-preservation due to constant negative news and toxic digital environments. On the other hand, Generation X and Baby boomers upraised their use of social networking in search for news and connection with the "outside" world. The use of WhatsApp increased for communicating with loved ones as Meets and zoom increased as a communication tool for work or gatherings with more than 3 people (such as online birthdays).

The upscale use of social networks and boredom seems related to the amount of work (and lack of it) to many: the ones who had their work adapted to remote complained about overwhelming amount of time dedicated to working, leaving little time for entertainment and mental tiredness; and the ones who had lost their jobs or had their job/project/study on pause declared longer use of online entertainment. But among the people on pause, the ones with higher education have often directed their time to online learning and the ones with lower education have often complained of too much entertainment and tired of it all. It is understood that the use of Internet and devices has been affected by external factors and each person's inner possibilities, culture and psychological state throughout each day creates directions of usage, multi-channel connection relations and sense making of technology, objects and social ambience, as in quarantine the environment do not change much.

Among interviewees, the experience journey had been more frequently multi-channel than cross-channel, as it has been perceived journey scenarios that would more often encompass diverse devices for multi-task actions than a continuous experience journey traversing devices, ambiences and actors. Possible cross-channel experience would rely mostly on purchase actions that could integrate search, comparison, purchase, pickup/deliver through different devices and actors – merging digital and physical interactions (Barfield and Furness 1995). Generation Z and Millenials are the most familiar to multi-channel interaction at the same time, Generation X uses multiple artifacts, but are more inclined to one-at-a-time sequential use, and Baby Boomers were the ones who needed more help from younger generations to adapt to digital solutions for daily tasks – like banking apps.

Most scientific papers relate the idea of telepresence to virtual reality environments and include augmented reality integrating virtual objects to physical spaces. During the rapid growth of e-commerce, the concept was also related to 3D representation of objects in e-commerce (Miranda 2005, Renzi 2010) and the real product feeling while comparing features in an e-store.

While people have been isolated, their environment of physical interaction diminished to the size of their home. Smartphones, TVs, Ipads and laptops/desktops started having new meanings to isolated users, as gradually the digital devices became windows to the outside world from their confinement – channels to connect them to news, places, worlds, music, art, stories and people. Each generation associated different devices to their own preferences, their mental models, making sense processes and context of use (the options and interactions shown during the interviews connect with previous studies regarding the 4 generations and preferences of devices).

Many museums created virtual tours since the start of pandemic (fig. 8) in an attempt to bring the feeling of being there without leaving the confinement – telepresence. But this research shows the telepresence concept closer to our sense of things and broader than the scope of Virtual environments, of 3D representation and of augmented reality within physical spaces.
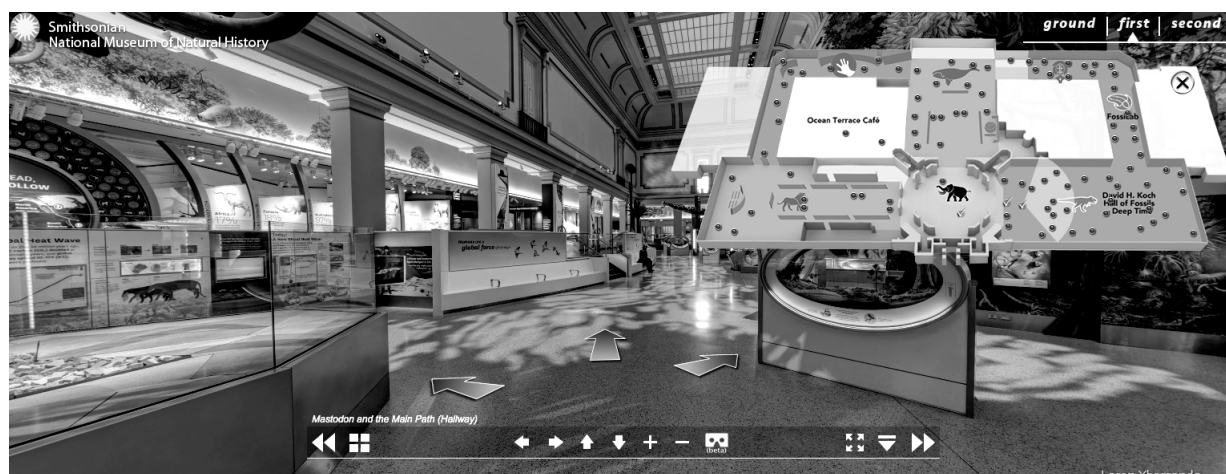
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Figure. 8. Screenshot of the Smithsonian National Museum of Natural Sciences virtual experience – dinosaurs' room. Washington, DC.

When people use digital devices to reach out for experiences of the outer world, video calls, static images, sounds of human voice (and nature) and environments with a sense of deepness, there is sense of getting closer to the other side. Many birthdays were celebrated through Zoom, with family and friends singing happy birthday in disconnected harmony (just like the real thing), many singles had wine together through whatsapp in an attempt to start new possibilities, many friends celebrated far apart with beer and laughs through Google Meets, many students watched professors present classes and slides as if just across the room, with time to ask questions and see friends, many mothers would watch the sunset in another part of the world through the camera of a son, and many families increased interactions to be near and keep hope alive. The sense of being there, right next to a brother, a grandma, a friend through a small digital screen is real telepresence.

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