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'Turbulence' in practice: How Zoom technologies affected architecture making

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Abstract

This essay offers a glimpse into the ways the COVID-19 pandemic of 2020-21 affected the day-to-day reality of architectural practice. But what exactly happened in this 'world' during the pandemic? Did we just witness another digital 'turn'? If not, how exactly did the shift to online forms of working and their related technological changes redefine the creative apparatus of small-scale practices and modify their design culture? How did it alter the working space and epistemic habits, reshuffle expertise and redefine project priorities in these firms? This essay focuses on studies of the COVID experiences of a group of Italian practices, representative of what was happening all over the world in terms of architectural practice during the pandemic.

Keywords:

architectural practice, design culture, office culture, pandemic, COVID-19, Zoom, digital turn, Italian architecture

Ecologies of design practice

March 2020. A dining table turned into a drawing board; an office space in the bedroom; a team of architects talking at screens, on Zoom. Mundane objects spread over a large table: computers, tracing paper, oranges and potato peels. Empty streets, clinical silence, echoes of steps and voices. Deserted urban landscape. These scenes offer a glimpse on the ways the COVID-19 pandemic affected the day-to-day reality of architectural practice.

Yet, what *exactly* happened in the 'world' of architectural practices during the pandemic? Did we just witness another digital 'turn'? If not, how exactly did the shift to online forms of working and their related technological changes, redefine the creative apparatus of small-scale practices and modify their design culture? How did it alter the working space and epistemic habits, reshuffle expertise and redefine project priorities in these firms? To answer these questions, we need to first turn to the studies of architectural practice.

An overview of this literature shows that up to the 1980s architectural researchers have focused all their attention on the products of design rather than the process of design thinking and negotiations. The latter began receiving empirical attention in the pioneering studies of Donald Schön on architecture educational practice [1; 2] and Dana Cuff on professional architectural practice [3]. While Schön unpacked 'reflection-in-action' against the systematic, scientific, and linear way of knowing disseminated in professional schools by ethnographically observing architecture studio instruction, [1] Cuff's ethnography shifted the limelight from the design

studio to professional architectural settings. She argued famously: 'If we are to offer a sound advice about how architectural practice ought to function, we must know more about how it functions now' [3, p. 6]. Her ethnography of US practices dug deeply into the significance of the daily professional lives of architects and offered a better understanding of the socially constructed nature of architecture.

Up to that moment, to understand the social underpinning of design and architectural production, architectural scholars relied on a more traditional sociological perspective, based primarily on quantitative data [4]. It was assumed that social context has an impact on the characteristics of the work setting of architectural firms and the quality of the architectural work and creativity. Architectural practices were analysed as bureaucratic organisations each with their specific hierarchy, formalised rules and expected objectives, with studies largely exploring the specific correlations between firm ideology, office structure, internal organisational life and design quality [5]. Schön's and Cuff's work gradually shifted the methodological toolkit of architectural scholarship from quantitative to qualitative methods, moving focus from architecture as organisational structure towards architecture as a process. When explored from within, but with ethnographic tools, architectural practices appeared less as bureaucratic organisations, but more as 'islands' where a specific set of practices was performed [6; 7]. Here, the customary performance of design routines could be witnessed evolving, weaving webs of meaning among different participants in architecture making, and thus shaping specific design cultures.

In the last 15 years we witnessed a new wave of ethnographic studies that focused on practising architecture [8]. Inspired by pragmatism and Science and Technology Studies (STS), and also following in the steps of Dana Cuff's and Donald Schön's ethnographies, this body of research has aimed at grasping the socio-material dimension of architectural practice [9]. Scrutinising the unfamiliar cultures of architecture making in contemporary societies, these studies portrayed architecture as a collective process of negotiation, one that is also shared with a variety of non-humans such as materials, models, software, and renderings. Architecture appeared in these accounts not just as a social construction, as per Cuff's account, but rather as a composition of many heterogeneous elements, an assemblage. These 'assemblage ethnographies' followed the principles of 'no hierarchy', attention to the detail and symmetry: attending to what happens

between humans and non-humans, attending to words as much as the gestural, non-verbal language of the designers themselves. Scrutinising the texture of the ordinary life of designers, they generated 'thick descriptions' of the knowledge practices of different participants in design [10]. These studies commonly took the form of long ethnographic accounts that made sense of the world of architects, computation models, sounds labs, design knowledge, documentary exchange, professional beliefs and work rituals [11; 12; 13; 14; 15; 16; 17].

Termed the 'ethnographic turn in architecture' [18], this recent trend is the outcome of several related processes: the emergence of reflexivity among architectural professionals as a key epistemological feature of architectural studies; the growing realisation of architecture as a social practice; the social nature of the outcomes of architectural production; and the tendency to acknowledge the collective nature of design. Shifting focus from architecture as meaning to architecture as process, from the lives of those who inhabit the cities to the life of material entities such as buildings, streets, urban artefacts, images, scale models, and simulations, architectural scholars have engaged in path-breaking research on the practices of design, use, and inhabitation; their scalar and ontological specificities; and their public outreach. Dislodging the certainty of traditional architectural knowledge, these studies unravelled the 'ecology of practices' of architecture making, unfolding into the knowledge practices of the different participants in design [19]. As a politically sensitive concept, 'ecology of practices' captures contemporary design dynamics by paying attention to the texture of the ordinary life of different participants in architecture making without an *a priori* ontological distribution of entities that matter in design.

These ethnographic studies of practice also emphasised the collective nature of design. Even the greatest works of art [20; 21] or architecture are not marked by the loneliness of a single human but rather by the hectic activity of a studio [16; 22; 23]. The ways the work of the studio is organised, its atmosphere and social life all have an impact on the creative work undertaken, the collaborative processes and on the final content of the works. Architects never create in isolation. Instead, they are always surrounded by people, are always supported by a hybrid network of practitioners. Architecture is the mundane product of dense and versatile 'networks of cooperation' [24; 25] between different participants: partners, advisers, materials, external contractors, markets, local suppliers, organisations, etc. Moreover, this

dynamic environment showcases the many 'intermediaries' between the work of architecture and the broader context: collaborators, technologies, critics, clients, materials, precedents, local communities, and institutions. Scrutinising the participation of all actors involved in this process, both human and non-human, and highlighting how they work together, their role and impact on the creative process, will allow us to shed light on the functioning of architectural firms. Their networks extend, bifurcate, combine, and interlink creating continuously new initiatives. They often become a 'deposit of social relationships' [26], shaping and reflecting back the multiple social connections crafted in the studio, even more so in turbulent social and economic times such as the global pandemic.

Pandemic regimes of practice

A recent study with 130 practices during the pandemic shed light on the changing ecology of architectural practices [27]. As everyday office infrastructures such as face-to-face interaction, the immediacy of physical presence and availability of materials are central to design work, the changes to these material conditions affected the process and outcome of architectural practice. Small-scale practices in particular have been hugely affected by the pandemic, making numerous practical adjustments in the format and rhythm of design work during lockdown. They had to remodel the working 'habitat' of their practice; they had to invent new forms of teamwork, communication tactics, and channels of documentary exchange; and they had to rethink their attachment to models, software, materials, and physical sites. To address these changes and unpack the multiple ways the pandemic has affected and continues to affect the reality of architectural practices, we draw on an enquiry with small-scale firms from Northern Italy based in Milan and Turin, the cities most affected by the pandemic in April 2020. Moreover, Milan leads in terms of number of registered architects at the Architects' Council, with Turin ranked fourth in the country after Milan, Rome, and Naples.

The choice of Italian practices is due to a number of reasons. First, Italy was the first European 'epicentre' of the pandemic, hit shortly after the first cases of COVID-19 were identified in Wuhan. Second, Italy was one of the worst affected countries globally in terms of the overall number of infections, hospitalisations, and deaths per capita, and it was also one of the countries to adopt very strict lockdown

measures. Third, the northern regions of Italy – Lombardy (where Milan is located) and Piedmont (where Turin is located) – were two of the hardest hit regions in the country. By the end of 2020, the province of Turin (2.2 million inhabitants) had recorded 104,188 cases of coronavirus infection (a rate of 4,735.8 per 100,000 inhabitants), making it the second province most affected by the pandemic after Milan (3.25 million inhabitants, 174,013 cases, or a rate of 5,354.2 per 100,000 inhabitants). As one of the authors lived and practised there during the pandemic, this facilitated contacts with architectural firms and practitioners. Italy thus serves as an 'extreme laboratory' for testing the conditions of architectural practice and as the drama of the pandemic unfolded on all national media across the world, even practitioners from countries which resisted mandatory lockdowns are able to relate to these extreme circumstances.

Unable to visit the architectural firms in Italy in person, we initially distributed a questionnaire during the first lockdown in the Spring of 2020 (from 11th March to 4th May) to 23 selected practices in Milan and Turin chosen through professional and academic contacts (through the Politecnico di Torino). We asked them to respond to the questions and send us some images of their cities. Our main questions addressed the effects of COVID-19 on the practice and their current projects with the goal of capturing the interruptions triggered by the pandemic. We focused in particular on the technology of Zoom as all practices used exclusively this platform (often provided for free from universities during the pandemic). Other technologies for video conferencing were utilised by other firms around the world, such as Teams, Skype, WhatsApp, etc. Yet, discussing the small differences between these platforms goes beyond the scope of this article.

A total of 15 small-scale practices replied (the big firms did not show interest in the project). After this first enquiry, we followed up with longer Zoom interviews with three selected firms in June and August 2020 right after the lockdown. These firms stood out as they engaged thoroughly with our questions. They had many projects to discuss and showed willingness to continue to provide information. The interviews offered an opportunity to virtually visit the spaces of work and witness the material settings of practice. This allowed us to compare the 'during lockdown' and 'after lockdown' realities of practice. Finally, we followed-up with another set of interviews in March 2022 and in the summer of 2023 to capture the way the three firms were adapting to the 'new normal' in a post-COVID-19

climate. All interviews were semi-structured and typically lasted between 30 and 90 minutes in length. Most of the interviews were carried out in English, with the exception of 3 interviews, which were conducted in Italian and translated by one of the authors. They were all recorded via Zoom and contained a wealth of verbal and non-verbal information (gestures, mimics, shots from the office spaces, etc). They covered generic queries as well as questions specifically tailored to capture the particular nature of the projects developed in each of the three firms. The participants agreed for their identity to be disclosed in the article and approved the quotations. Their consent was recorded via signed consent forms. This epistemic format of enquiry relied on sequential interviews with the same firm over the duration of three years (2020–23) and offered an opportunity to capture the changing effects of the pandemic on the same firm. The longitudinal method allowed us to work backwards and forwards between the data provided by the participants and to construct sequential stories accounting for different phases of pandemic-related changes in one practice. It offered in-depth insights into the specific technical and cultural world of small-scale firms.

Reflecting on the limitations of this method, the pandemic equally affected our use of research technologies. Like the architects in our study, we relied on the Zoom platform to conduct interviews and observations, to discuss findings between us as researchers and co-authors. This 'distant ethnographic enquiry' helped us trace the life of architectural practices from a distance using written records provided by the firms, distant interviews, as well as photographs supplied by the practitioners to document their experiences. As a distinctive, and somewhat paradoxical form of ethnography, this method takes us away from the traditional Malinowskian aesthetics of intensive participant observation in situ and invites us to rethink some fundamental epistemic assumptions of observation and in-person interviews. The drawback of this zoom-mediated enquiry is self-explanatory – the responses were limited in scope as opposed to close participant observation that can offer insights into many different simultaneously unfolding dynamics in architectural practices. Not being able to witness and participate in these situations, as researchers, we relied solely on the practitioners' accounts. Yet, this method enabled us to sustain a form of opacity as distant observers and facilitated a greater degree of objectivity. The resulting accounts provided a specific rendering of the pandemic reality of architecture making that, despite the zoom limitations, offered a rare peek into a world of practice that otherwise would remain opaque or invisible.

The mediating role of technologies

Architectural scholars have demonstrated that technologies have an impact on the structure and content of designing architects' worlds and their conceptual thinking. The technology of offset lithography in the 1970s, for instance, made possible Archigram's practices of printing and disseminating little magazines and brochures. Acting as 'construction sites' for debate and innovations, the little magazines had a major impact on the crafting of architectural concepts and names, such as Peter Cook [28]. The explosion of this technology in the 1960s and 1970s instigated a significant transformation in architectural culture. As a more recent example, the fax machine became an important 'design tool' as it entered architectural practices in the 1980s, forming the heart of hybrid recording, reporting and designing operations. OMA's domestication of the fax technology, for instance, greatly accelerated the production of documentation on the story of their projects [29]. Hundreds of faxes travelled to distant locations, connecting the firm to other practices and incubating projects such as the Casa da Música in Porto, Portugal. The working archive that emerged suggested that there are many possible variations and offered a diagrammatic interpretation of the evolution of the concept at each stage. If the technology of offset lithography enabled the proliferation of little magazines in the 1960s and 1970s and fax technology accelerated architectural production, recording and communication in the 1980s, the following question arises: To what extent did the new technologies of Zoom largely used by architectural firms during the pandemic for design interactions and communication with the clients influence the design process and impact the content of design work?

The 'script' [30] of this technology – its scenario of action and the roles it ascribes to participants – goes against the grain of day-to-day dynamics in design. The centralised, flat and linear modus operandi of Zoom technology challenges the 'craft of designers' [31]. Design work is commonly multidirectional and polyphonic, encompassing numerous layers of simultaneously occurring activities. And yet, Zoom technology ensures every meeting has a planned beginning and end; filtered access by invitation, link and password; and a unidirectional line of communication with only one person dominating the screen with the rest raising their hands to speak or relegated to the chat box. The linearity in term of time and

flow of communication is striking – there are no concurrent visual inputs and there are limited opportunities to share feedback through simultaneously occurring discussions, as in a physical meeting space. Moreover, bodily presence is diluted: corporeal gestures, movements and reactions are left outside the frame, reducing the body to a set of controlled facial expressions. With the dilution of the body on the screen, all social, status gender and hierarchical features get flattened as well, and a mischievous sense of sameness and equality is generated.

Our study advances the idea that the technologies introduced during the pandemic triggered a small 'turbulence', an unsteady movement of shuddering, confusion and turmoil at the level of design practice. This 'turbulence' reshuffled epistemic habits and cultural and technical routines, as witnessed previously in the case of fax technology at OMA. We coined this term to designate the numerous small changes related to technology in practice, and the quakes they trigger, and as such it differs from the idea of radical 'turns' which have as yet dominated understandings of technological change in the field.

The 'digital' has been recognised as a key moment in architecture, with architectural historians and theorists taking note of its representational, theoretical, and technological aspects [31; 32]. The architectural historian Mario Carpo, in particular, proposed that there were two discrete, theory-driven 'digital turns' in architecture occurring in 1992 formal curvilinearity and at the beginning of twenty-first century related to architectural responses to data-based 'digital science' and praised them as trending towards a rapprochement of architecture and construction [33]. He went as far as to suggest that this movement emerged as a successor to the previous theoretical movements of Postmodernism and Deconstructivism [34]. Yet, with the exception of Daniel Cardoso Llach's work on the history of computer assisted design, little effort is made in historicising the digital in architecture by paying attention to practice [35]. The concept of 'turn' prioritises digitisation and mathematisation as primary drivers of change in architectural practice. 'Turn' assumes that history runs, passes, turns and shifts.

'Turbulence' instead points to an understanding of historicity that transforms, spirals and bifurcates and acknowledges the importance of the event (a term borrowed here from the philosopher Alfred North Whitehead). It points to the historicity of all the ingredients of history, including non-humans, and better

explains novelty by replacing the notion of turn, revolution, and radical change. It is also inspired by pragmatist philosophers according to whom difference and tremor are at the core of all creative works, not unity and similarity [36]. It invites us to look at the numerous infinitesimal changes at the level of the daily routines of creative practice. Thus, the questions to unpack in this article are: How did the Zoom techno-culture that numerous small firms adopted during the pandemic, change and continue to change design practice? In what ways is architectural design today influenced – whether determined, constructed, restrained, or empowered – by the state of communication technology imposed by Zoom? If technology conditions not only the form and structure of communication but also the content, how has the spread of Zoom technology changed the nature of architectural projects generated during the pandemic? And how did it affect the way architects think about communication, space, and creativity?

In what follows we will draw on three detailed stories of specific 'turbulences' in three selected practices based in Turin: Archisbang (Marco Giai Via, Silvia Minutolo), Archicura (Paolo Dellapiana) and Negozio Blu (Gustavo Ambrosini, Paola Gatti, Carlo Grometto). The story of Silvia captures how technologies triggered transformations in office and home spaces during the pandemic, emphasising a specific reflexivity on the malleability of space. The story of Paolo recollects the impact of Zoom technologies on the modalities of communication with clients and the patterns of office communication, reflecting upon the importance of immediate presence for design communication. The story of Gustavo and Paola explores the role Zoom technologies played in project dynamics, particularly during competition and construction phases, advancing an argument about the reshuffled roles and hierarchies in practice.

A home turned into an office: the story of Silvia

April 2020. Northern Italy is the European region most affected by the pandemic. A lockdown has just been announced. Silvia from Archisbang Architects walks us virtually through the new firm office based in her house and presents its different spaces. At that moment they are all working from home. Marco is Silvia's partner in the firm and her partner in life. Living together eased the process of organising their space and adapting their house to the needs of the office. Before the

pandemic, the architects from Archisbang used to spend long hours at the office but now they had to move everything they needed from the office to the house of Silvia and Marco. Suddenly, everything changed in this domestic space hastily turned into an office.

The transition from office to home working happened at a convenient moment for their firm. In January 2020 they were planning to move into a bigger office, having just started a big new project with another firm. Their plan was to leave their studio on via Bogino in April 2020 and move to a new office. Yet, the COVID-19 pandemic broke out and the situation exploded. Even without the pandemic's intervention, they would have made this quick move into another office space anyway. Yet, given the circumstances, the need to keep distance and stay safe, the decision to leave their former office and to stay home had already been made. This was a temporary solution which allowed them time to reflect on the current projects and ponder the future of the practice. It was also a cheaper option as the pandemic brought new economic uncertainties for small firms. Silvia shared the anxiety of not knowing how long their house would be used as an office space.

During the lockdown they worked on two competitions for schools: the first for a school in Switzerland that was announced before the pandemic, and the other a school competition in Italy, very different in sprit. The two contrasting examples of Swiss schools with big spaces for small classes of ten children and Italian schools with small spaces for large classes of over 20 children, triggered different solutions and scenarios and allowed the firm to rethink the typology of school buildings through issues of flexibility and well-being. This followed from Archisbang's previous work on schools in the past, the most recently completed was in September 2019. During the pandemic they had the time and opportunity to work with pedagogy experts and school managers to imagine a more efficient use of school spaces in response to the need for social distancing. This included innovative solutions that relied on using all school premises, including service rooms, playgrounds and courtyards, for teaching activities and developing alternative architectures beyond the conventional format of classroom delivery with desks arranged horizontally in rows. Thus, existing issues in school design became even more relevant during the pandemic: considering the exteriors as a direct extension of school interiors; oversizing canteens and classrooms; thinking of courtyards and external spaces as places for school meetings and assemblies.

Though many of these ideas had already emerged, the pandemic provided an opportunity to develop them, rethinking educational spaces in depth rather than rely upon the temporary plexiglass screens and barriers. This furthered the architects' reflexivity upon the plasticity of space and its entangled nature with pedagogy.

June 2020. Silvia and Marco have three other collaborators who come to their house-office two or three times a week. They work remotely the rest of the time. Let us follow Silvia for a short virtual tour and contemplate the new spatial arrangements of the house. Here is the terrace with a big glass table they moved in from the office; it plays double duty as a surface sketching and entertaining friends for dinner. Here is the living room where they moved their dining table which has now become a workstation. The kitchen is still in the same place and its function has not changed; Marco usually works here. Their former living room is now the main working space in the office; we spot a few workstations and a couple of architects working. Here is a plotter, a printer, a shelf whose function has been changed to accommodate a small library of office books and materials. One of the bedrooms is now a meeting room for staff meetings during the day, the bed serves as a sofa. Here is Silvia's working space: 'I have a desk in my living room, and day-by-day I see it becoming a real office. It is a wide space, I have green plants, wooden floor, and the right natural light. It is comfortable, and I feel good here, I am really concentrating on work' [37].

The entire house has now been turned over to office activities. The space was not so full of furniture before, and this made it easier to rearrange it quickly for office use. Reflecting on these new spatial arrangements, Silvia elaborates, 'We experience our house in a different way now. Before the pandemic we were used to staying out of the house all the time (we lived in the office). Now we are always here, the place has become filled with things and people. Luckily, we have also a basement [laughs]' [38]. Ending the guided tour, we can draw a striking parallel between the elastic space of the home converted into an office suiting the needs of the architectural firm and the flexible school spaces that Archisbang Architects designed during lockdown. While planning alternative pliant architectures for schooling in courtyards and playgrounds, they also had to make drawings on kitchen tables and discuss projects on garden patios.

To be able to work from this home, Marco and Silvia had to enhance their digital tools and digital archives to share files with other members of the firm. These small technological changes in practice triggered changes in the technical culture of the firm. They hold daily meetings at 2:00pm to check the work of their collaborators and set targets; they discuss projects and brainstorm on-line. Almost everything is done digitally although paper is still used and paper sketches circulate on a regular basis around the domestic space turned office. As Silvia explains, 'we tested if it was possible to work at distance for a longer time, improving the tools for interaction in remote ways' [38]. This also led to new working routines. This is Silvia reflecting on these routines in the heyday of the pandemic:

> *Normally we worked at the office, but we used to talk about work all the time even at home: this hasn't changed so much. We used to be at the office at 8:00, but now we wake up later and we start at 9:00-9:30. When the lockdown started it was a more relaxed situation and something changed. I feel better about this style of life now. We are at home, and we start work more quickly and then we keep working until dinner. The collaborators come at around 9:00 and they come here twice a week usually. Every day we meet on Zoom after lunch at 14:30. Normally we try to keep the weekend free.* [38]

Listening to Silvia and visiting the office twice, we witness how through the rethinking of the domestic space and its re-shaping into an office, a new work-life balance was crafted. This was particularly challenging to achieve for architects who tend to spend more hours at work. Thus, the pandemic brought a level of reflexivity upon the way architects' lives connect to the professional 'lives' of projects and buildings. At the beginning of lockdown, as building sites were closed and clients were unavailable, architects felt like 'being on a vacation'. Gradually, they became used to this 'new normal' that brought a more relaxed and balanced working rhythm. Many small-scale practices in the world can identify with this change in their working lives. Silvia and Marco even began contemplating some ideas for organising their lives differently, imagining themselves living in the countryside or in the mountain and having their office there, for instance, while still running various architectural projects remotely. All these plans and dreams looked impossible before, but suddenly became realistic, plausible. None of this reflexivity, none of these dreams would have been possible without the enhanced technical capacities of the practice.

March 2022. The methods of remote communication and the use of digital platforms for data storage and exchange have an enduring effect on the daily management of the practice now. Reflecting on the effects of the pandemic, Silvia shares:

> *We have been waiting to better understand what was happening around us and what would be the most congenial space for us. We have set up our workspace at home, working almost 100% remotely with our collaborators. This situation lasted two years. Yet, since February 2022 we have a real office again and we have been missing this so much!* [39]

However, the firm is still actively reflecting on the organisation of their office spaces and began renting a large 3,000-square metre co-working facility at the Talent Garden Fondazione Agnelli. They are now itching to get out of the house, 'get some air' and connect with different practices with similar professional activities. Although they had considered co-working options before the pandemic, they have been sceptical as to how well the small Archisbang team could transition from their small, intimate workspaces to work in a large, shared workspace. Moreover, they were suspicious of the standard workstations typically provided in co-working spaces and their suitability for architectural work. Yet, the pandemic challenged this scepticism and convinced them that they can work anywhere, and that 'lighter configurations of the office space' might be possible. Thus, they began working on an island of six desks in the open space of the Talent Garden Fondazione Agnelli where they meet every morning and leave the afternoon flexible.

September 2023. Looking back, the 'shared desks' was a successful experiment. The company has grown from six people in 2020 to ten people in 2023 with eight workstations rented. Today, Silvia and Marco would 'not want to go back to working in a "normal", autonomous studio' [40]. In addition, being in a co-working space does not require long-term commitment although rent is expensive, and the space has many limitations. Since the practice moved to co-working, most of

the work is done physically in the workplace while Zoom meetings are mainly used for technical communication and less for clients. Thinking about the future, the firm will be looking for a large office to share with a few other practices but finding one has been less than easy.

Sylvia's story, told through sequential interviews and virtual visits in the practice, sheds light on the many different ways new technologies for remote work had an impact on the spatial dynamics in the office space while triggering reflexivity upon the impact of office spatiality on the culture of designing architects. The technologies adopted by the firm during the pandemic made them appreciate flexibility and independence, extending the designers' reflection upon the pliant nature of space just as it compelled them to rethink traditional spatial solutions in such rigidly defined typologies as schools. They pushed the margins of space to its extremity, despite the linearity of Zoom imposed on many technological levels.

The face of the client: the story of Paolo

April 2020. Since 15th March 2020, Italy is officially in lockdown and no one is allowed to go around to take pictures. All squares and streets in proximity to Paolo's office, Archicura, are empty and he misses seeing people. 'An empty city is a dead city' for Paolo:

> This is a very meaningful warning that architects are supposed to encourage social proximity and not to place plexiglass barriers or the like. We all sense a cosmic fear of the unknown, but I strongly believe we have to retain our awareness of the necessity for human proximity. I refuse every cultural speculation upon it. [41]

Thus, Paolo's story is about proximity and communication.

Lockdown affected his practice. As his firm's office is large, all architects tried to stay in the office at the start of the pandemic, keeping a safe distance from each other until the very last moment (Figure 1). When lockdown started Paolo could still come into the office, since it is adjacent to his house, while his collaborators stayed home and worked remotely. He found it easy to plan and organise everything,

Figure 1:
Archicura Architects at work during the pandemic (courtesy of Archicura).

share data, and transfer digital materials, through the sophisticated technologies implemented at the office. He is now spending endless days alone in the office, coordinating the remote work of his team. Arranging the work on projects was not that difficult for Paolo as he knows his collaborators well and they know him too; they trust each other and have established routines. They Zoom twice a day, and this works well. However, the lack of personal contact is hard for them as they miss the office workplace: the spontaneous communication around the coffee machine, the team spirit and working atmosphere.

Paolo meets his clients over Zoom too. Both team and client meetings follow the same structure, but the communication patterns vary. Document exchange has not changed much from the routines established before the pandemic. Physical models, however, are less useful and the firm now uses digital models more extensively. Even this was already ingrained in their habits: they have been working with virtual models, digital drawings, and 3D modelling since the early 1990s. Although 'smart' working is convenient and has been promoted across various different sectors, Paolo remains sceptical that this form of communication can be durably implemented in architecture. Before the pandemic Archicura was involved in the design of a large residential building in Alba, a small town in Southern

Piedmont, full of green flexible sunny indoor/outdoor spaces, equipped with a modern and efficient air conditioning and filtering system. Then, the construction site closed and communication with clients was paused.

June 2020. The team is now back to the office, armed with social distancing protocols. Everyone is back to interacting and talking with each other. They realised more than ever how much they missed the spontaneous interpersonal live contact. Communicating with the client in person is particularly vital for Paolo:

> If the client is closer, I really prefer to meet them in person, going by car, bus, or train. I will just bring my drawings and put them on the client's table with the pencil in my hand, and looking at them, the expression of their face... this is what makes a real difference. [42]

After lockdown, there has been a slight tendency to abuse video conferencing: last Friday he had a call with a client who lives only 30 minutes away from the office. Paolo wanted to drive to meet him, but the client refused and preferred a remote call instead. This is an important consequence of lockdown as they have all 'gotten in the habit of online meetings and embraced a mental attitude to stay apart' even though Zoom has the tendency to flatten communication and erase spontaneity [42]. For Paolo, close contact with the client where feedback is shared honestly and without the limitations imposed by Zoom technology – its imposition of linearity, predictability and erasure of body language – is crucial for the development of the projects.

The work on the construction site had to resume as well. The technology was available to ensure the work could safely continue, but anxiety about the virus prevailed. That is the reason why Paolo had to prepare the ground in advance for resuming the work. Fifteen days before the end of the lockdown he started persuading the client and the contractor to get everything ready, to prepare security protocols and permissions, so they could reopen the site immediately. Paolo remembers, 'On 4th May, the same day the lockdown was over, I remember immediately jumping in the car and going to the construction site.' [42] As everyone was already prepared, they could resume construction again and the project could continue as planned. No major changes were necessary.

In-person contact with the client is the best mode of communication especially as far as residential projects are concerned. This allows Paolo to get more results in client meetings even if he has to spend time and money travelling to their offices. Recently he had quite a long remote meeting about the design of a bathroom, usually an easy topic to discuss with clients. Yet, a Zoom discussion on the bathroom design made it difficult to get a shared understanding of the design concept and to agree on colours, materials and sensations. Paolo elaborates:

> When I'm closer to the client, in person, I am more capable of transmitting ideas. I don't know, probably it is just my attitude and the learnt skill. I know how to do it in person, and I am less capable of communicating on Zoom, it is probably a limitation I have. When you are in front of a laptop there are a lot of distractions, your attention is weaker. When I must communicate something important, I need a live meeting. The technology helped us to stay in touch, but it's not a complete solution. When I have a personal meeting, I usually bring drawings with me and I also draw during the discussion in front of the client, and it is really helpful because you are showing details, you are really into the discussion, and you think on the spot. Sharing drawings on the screen is easy and it is also very useful, but making live drawings is different. [42]

Paolo had previously never done a live drawing on a shared screen on a remote platform, and the pandemic allowed this new experience in using new technologies. Yet, drawing on the screen is 'emotionally dead' to him, and he still finds it difficult to express himself. Being physically present with clients, explaining ideas on the spot, drawing on the spot and refining the drawing live is the best way to convince them. Paolo rarely sends documents and images to his clients before a presentation as there are a lot of unknowns: their mood, their prior knowledge of the project, their pre-disposition to discuss ideas and so on. Yet, attending a live meeting provides the opportunity to feel immediately if the client is having a bad or a good day and Paolo can adjust the communication accordingly. Time remains foldable, design moves can be reversed and rethought.

March 2022. After the pandemic Paolo's practice is finally back to normal. The numerous meetings on screen during the pandemic period certainly improved their communication skills and now they feel more prepared to talk about their projects in any circumstance. As Paolo explains, 'We learned how precious live contact is, and the importance of looking at the client's face and their eyes movements, the physical empathy. We realised that communication needs more empathy than technology' [43]. Sophisticated communication technology alone does not guarantee efficient communication, nor does it provide readymade the focus and involvement necessary for the success of architectural projects. Thus, while the pandemic enhanced the architects' knowledge of new media and technologies of communication, the immediacy of office interaction and direct contact with clients of residential buildings remained crucial while the linearity of Zoom made their absence visible and sensed.

The current tendency related to residential projects in Italy has been toward bigger and more flexible spaces. Yet, even before the pandemic this was increasingly a requirement that Paolo's firm already paid special attention to: green spaces, flexibility and living quality. Their residential block project captured media attention before the pandemic, but 'now, after the virus storm, the attention from clients and city management is much bigger', explains Paolo, 'I guess passing through a devastating pandemic to understand the relevance of high living quality is very paradoxical' [43]. Even so, reflexivity on residential typology is part of this pandemic 'turbulence' in practice.

The project for the residential complex in the city of Alba received executive urban planning approval in October 2022 and the firm is now developing the final design with some minor modifications [44]. The proposal was interrupted but has not undergone any substantial changes during the pandemic, only technical adjustments were made. In general, the pandemic did not interfere radically in its realisation. Even the architect-client relationship changed little. The pandemic only slowed down the process, leading to an increase in costs due to the rising prices of construction materials in the wake of such global crises as the War in Ukraine.

Following the story of Paolo, told through sequential interviews, sheds light on

the way new technologies for remote work impacted the spatial choreography of interaction with clients and the persuasive techniques used by architects. The Zoom technologies adopted by the firm during the pandemic made them savvy communicators and extended the designers' reflexivity on the strategies for crafting domesticity in residential typologies. The guided interactions 'scripted' by Zoom, the linearity, predictability and flatness of communication imposed by this technology proved to contrast sharply with the lively in-person communication with clients, where colours, flavours, sensations and atmosphere are easily transmitted and staged.

Competitions during the pandemic: the story of Paola and Gustavo

May 2020. Gustavo and Paola, partners from Negozio Blu Architetti Associati, reflect on the pandemic state of their practice (Figure 2). It is a small firm with three partners and various collaborators who are younger and savvy with digital tools. Thus, during lockdown the firm nimbly moved to remote modes of communication
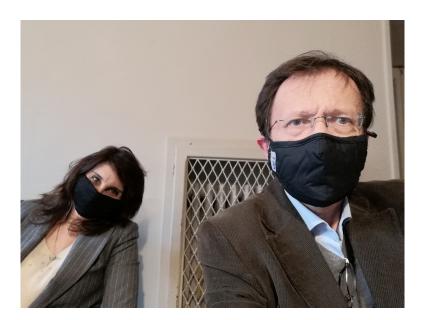

Figure 2: Paola and Gustavo of Negozio Blu Architetti Associati at work during the pandemic (courtesy of Negozio Blu Architetti Associati)..

and they all immediately began working from home without any difficulties. Paola and Gustavo already had limited presence in the office and frequently used remote communication technologies such as Skype, Teams, and Meet. These technologies had an impact on the projects' dynamics – both projects under construction and competitions.

Just before the pandemic, Negozio Blu, collaborating with ACC Naturale Architettura, had a project under construction, Green Pea – a multi-purpose commercial centre for household products and clothing, a new form of retail space oriented toward issues of ecological sustainability of about 10,000 square metres near the Eataly and Lingotto buildings in Turin. The site stayed open when the pandemic started. The situation got complicated as Lombardy and Bergamo specifically were epicentres of the pandemic in Italy. This caused problems on site as the construction workers were from Lombardy, and at least ten of them directly from Bergamo. The building had to be completed by August 2020 since its opening was scheduled. Everyone was in a hurry. Yet, the lockdown was announced and the Green Pea construction site was shut down for six weeks. Everyone had to stay home. With construction suspended, there was less pressure from the clients but also more uncertainties concerning the reopening:

> *On the one hand, we are not sure that there will be safety conditions on construction sites, beyond formal declarations and procedures; on the other, care-taking responsibilities for staff implicate the prolongation over time of our collaborators' remote work, thus making the daily management of the office more difficult.* [45]

Although construction was paused, all other interactions with the client continued and kept Paola and Gustavo busy; they had to find new ways to deal with the project.

In addition, Negozio Blu were one of a small number of firms invited to participate in a design competition for a church in Catanzaro, Sicily which had started shortly before the pandemic and finished during the lockdown. This is the work that Negozio Blu architects enjoy most because it is very different from their usual commissions. What makes it so appealing is the level of freedom and flexibility gained by not having to deal with clients. Responding to the competition leaves them unconstrained by demanding clients and specific briefs, allowing them to think creatively and develop their best possible design. The lockdown provided an opportunity for them to focus on the competition. Paola explains:

> *It was a good opportunity to relax and to dedicate our time to thinking about design, making hand sketches and drawings, which is not our usual way of working, because we (as main partners) typically spend most of our time in management and public relations.* [46]

Thus, the pandemic offered more time and space for the partners in the office to engage in creative work, considered luxury under normal circumstances.

Moreover, receiving regular feedback from the partners during the design development remained important. During the competition, eight architects had to work as a team, partners, and collaborators all working from home, remotely connected to the computers in the office. Through this, the partners became more economical in their interactions with their collaborators and became adept at providing concise, precise instructions to them. Yet, their empathic approach to interactions was lost, and spontaneous exchange and feedback was impossible. This was particularly difficult for Negozio Blu due to the flatness and constant evolution of their organisational hierarchy. In addition, Gustavo and Paolo have worked together for 25 years and are used to spontaneous exchange. Gustavo explains:

> *Paola, for example, has a very strong personality, sometimes she even grabs the pencil from my hand during a discussion... So, by working at distance we have lost the lively mood of the interaction which was somehow successful.* [46]

This became a bigger problem during the competition work as it was impossible to share proposals immediately with collaborators working at distance. For instance, work on the church façade proceeded in different places at the same time, with each collaborator developing different ideas. Collaborators will commonly spend a day designing a complete version of their proposal before being able to share it with the partners Paola and Gustavo (Figure 3). If they were able to work in the same office, sharing drafts as they worked on the church façade, they would

Figure 3:
**Architects at
work during the
pandemic in the
office of Negozio
Blu Architetti
Associati** (courtesy of
Negozio Blu Architetti
Associati)..

have received immediate feedback. The partners would have stopped to helped them adjust or redirect the development of the design long before their drawings were completed. The delayed feedback became a problem as Zoom does not facilitate this kind of parallel design work. Moreover, Zoom allows participants to disappear temporary from the discussion, turning off the video stream during the meeting. Paola is not happy with this: 'I am used to getting the feeling of the room, but it was impossible in that [remote] situation' [46]. Thus, not being able to get immediate feedback from the partners, to read the room and to see reactions made the collaborators waste time and energy on less successful proposals. The Zoom technology led to reshuffling roles and responsibilities: it temporarily gave more independence to the younger designers and offered creative involvement for the partners – a luxury in busy times.

Another issue was the compulsory seriality of virtual meetings. Under normal office conditions, ideas can be shared freely with your partners and collaborators with interruptions, overlaps and disjunctions as inherent to the normal flow of interactions. The Zoom platform does not allow that level of flexibility, but rather

serialises the discussion. In the Zoom room, only one person can speak at a time, while others listen and follow; spontaneous and overlapping interactions are not possible. This unidirectional linear type of communication goes against the grain of the design discussions, which can be messy, overlapping and loud, especially during the competition stage. Even so, the firm became more efficient as they learned how to work via videoconference calls and began rethinking the relation between time and output. Productivity began to be measured on the basis of what had been produced, not on the basis of the time spent on design. Comparing this to their previous competitions, Paola notes: 'I remember in a previous competition we had this older professor in the group, and we wasted so much time in talking, talking, talking... This time instead it [the competition] was extremely quick' [46]. Thus, working on the Sicily church competition during lockdown had advantages: although design feedback was slower, most of the other decisions were made in a much quicker and more efficient way and saved a lot of time and energy.

March 21st, 2022. A significant reduction in the workforce and decelerated production of materials and furniture led to considerable delays in the completion of Green Pea. Yet, the spatial concept of multipurpose, flexible space and the commercial layout did not change despite the pandemic-triggered interruption. The number of endless meetings with multiple stakeholders that usually occur during these kinds of projects was reduced (to the joy of the partners), but overall working methods remained similar. The construction of the Green Pea complex was completed in December 2020 and opened that same month. After the inauguration, which took place under severe restrictions, operation of the shopping centre has been interrupted by a series of closures since January 2021. According to the architects, 'in addition to the management decisions, the Green Pea had a problematic start, with negative commercial consequences that are still being felt today' [47].

The design competition for the church in Catanzaro ended in May 2020, but Negozio Blu did not win. Gustavo believes that they made mistakes in their proposal in terms of orientation and assessment of the urban context noting, 'our project might have been good in Norway, but it was not considered "Mediterranean" enough for Catanzaro' [48]. They would certainly have done a different project if they were able to visit the site as they would have before the pandemic. Overall, the efficiency of the practice decreased with the pandemic, while the return to

'normal' allowed them to recover their usual quality of work with a return to the methods used by the firm before the pandemic. The only change that remained after COVID-19 was the occasional use of Zoom for service meetings [48].

Reflecting upon the impact of the pandemic on their practice, Negozio Blu Architetti Associati have learnt to better work at a distance despite the flatness and unidirectionality imposed by Zoom. Two years ago, a Skype call was exceptional but now using Zoom is a routine. 'This allows saving time and gasoline' they conclude. The efficiency and speed of interactions have increased, their flexibility to change the media and modalities of interacting with collaborators and clients have multiplied. This story highlights the changes that Zoom technology brought to project dynamics during competition and construction phases by temporary flattening hierarchies and reshuffling roles in small scale practices, while increasing the reflexivity on commercial typologies and the competition regime of design.

Conclusion: 'Turbulence' in the Design World

The three stories presented here are, to a great extent, exemplars for many small-scale firms around the world for they reveal to what extent the Zoom techno-culture adopted during the pandemic changed and continues to change the shape of architecture and to trigger 'turbulence'. The technologies of Zoom affected not just the dynamics of design practice but also the way architects think of space and creative communication. As the pandemic led to the interruption of many projects, it also triggered new reflexivity on residential, school and office typologies, and more broadly on issues of flexibility and well-being, health, green space, social connectivity, and distancing.

The 'script' of the Zoom technology consists in introducing a guided set of interactions between humans that rely on centrality, flatness, and linearity, fundamentally contradicting the multidirectional, versatile, and polyphonic nature of architecture making. These stories made visible two important contradictions: first, Zoom inflicts linearity over the versatile foldable time so inherent to the production of architecture: the back-and-forth decisions, the reversibility of design moves, the importance of immediate feedback and the need to react to the client's non-verbal communication. Any imposed linearity of time and forced straight

flow of communication might result in inefficient or counterproductive design activities. Second, Zoom makes it impossible to translate the expressive bodies of designers and their corporeal gestures through the technology. Since movements and reactions remain an inherent part of design interactions and communication with the clients and fellow architects, any imposed flatness might result in diluting the three-dimensionality of bodies and office hierarchies, flattening architectural contents.

Yet, we cannot go as far as to argue that this technology triggered a new 'turn' and that it determined how all architects worked during the pandemic, constructed a specific type of design content. In these stories, we saw practitioners sometimes restrained and frustrated by this technology, and sometimes empowered and emboldened. Yet, all of them actively engaged in negotiating its modalities of action by sharing competences between the Zoom platform and architects as users, as well as the various social and technical elements that constituted the complex environment of architecture making in pandemic times. This led to the crafting of new modes of social and ethical organisation in practice. Unravelling the concrete effects that Zoom had on the working routines of small-scale firms, we argue that this technology did not determine but rather mediated specific patterns of communication, that despite their paradoxical flatness and linearity managed to facilitate a specific way of doing architecture.

The COVID-19 pandemic was a major event that confuses the idea that architectural history follows a continuous line with turns and revolutions. Questioning that linearity of the arrow of time, it prompted a different understanding of historicity and a critical rethinking of the 'digital turns' in architecture that has so dominated the discourse on technological change in the field. Unravelling the concrete effects of Zoom technology at the level of small-scale firms allowed us to witness that the pandemic has suggested a bifurcated history of small technological changes, a history that transformed, spiralled and triggered 'turbulences' in the world of architectural practitioners. In an intriguing and paradoxical way, these recent developments in practice have revealed new ways for architects to negotiate flexibility and freedom in spite of those dependencies doomed to support the profession and made irrelevant the concept of 'turn'.

Competing interests

Acknowledgements

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