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Remote Spatial Investigations: Constructing the Virtual Map of Belgrade

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As architecture is considered a projective discipline, its underlying intents are always geared towards acting in and on the world. In other words, even if its discursive actions (evaluations, assessments, critiques, theorizations) are mostly reflexive, architecture aims to transform 'reality' both spatially and materially. In order to understand these spatial and material conditions of reality, the 'field trip' is considered of vital importance for students of architecture as it allows them to gain insight into the specificities of local spatial conditions and the way these conditions are generated, formed, used, experienced and responded to by local populations. Students being immersed in these local conditions provide the necessary know-how when developing their architectural design intervention proposals.

In this paper, we will present our experiences from teaching remotely the Borders & Territories (B&T) MSc2 design studio at TU Delft Faculty of Architecture in the 2020 Spring semester. Particularly, we will emphasize the clear distinction between the primordial intent of a studio set in Belgrade before the COVID-19 pandemic, and the ultimate results achieved using innovative 'remote' research and pedagogical methods imposed by the circumstances. We will then conclude with some reflections on the current state of technology with respect to the virtual field trip, and furthermore sketch future scholarship in the relation to our DRIFT research project whose aim is to develop a digital learning environment in which the architectural field trip can be carried out remotely, while it is also aided by digital tools, allowing the user to access information data-bases and archives remotely and simultaneously.

PRE-PANDEMIC SET-UP

Architecture is a projective discipline, meaning it intends to act in and on the world. Though reflexive in its evaluations and assessments, architecture aims to transform 'reality' both spatially and materially. It could also be stated that architecture is a practice that deals with the ordering of space. This ordering occurs in most cases through the determination of boundaries, thus defining and demarcating territories as well as smaller-scale spaces as a decisive architectural act. As a more general result, the spatial experience(s) of conflict and tension in the city can be the instigator or generator of spatial practices around borders. This projective act can also be reversed, though. The emphasis on the analysis of spatial conditions emerging from, or determined by, these boundaries in the contemporary city is regarded, in this context, as one of the guiding thematic principles for an architectural intervention proposal. Rather than treating the emergence of an architectural gesture as something that is grounded in the historical autonomy of the discipline, or even the mastery of architectural knowledge per sé, here, the contextual embedding of the architectural object is regarded as the very starting point, or premises, for an intervention proposal. To understand these spatial and material conditions of reality, the 'field trip' is considered of vital importance to students of architecture as it allows for the gaining of insight into the specificities of locality.

Originally, the B&T studio was set up to investigate in situ a set of trajectories through the city of Belgrade where an array of spatial conditions can be encountered that are highly contested, and in which spatial practices of in- and exclusion take place. Our Border & Territories program has a two-decade tradition of instigating 'dérives' when going on field trips with students. When exploring the presence of contemporary border and territorial conditions, our program considers the physical and slow experience of the spatial context around these borders and territories important, but also appreciates the openness that is situated in the aimlessness of wandering through the city as a specific mode of inquiry. The particular raison-d'être for this way of exploring the city under investigation is therefore three-fold: (1) in our view, learning from reality is not limited to the more official, or high-end, side of architecture only. This would constitute a very limited take on the contemporary production of buildings, infrastructures and spaces in our contemporary cities and territories. Instead, we have long since decided to accept all of reality, with all its conflicts, imperfections, idiosyncrasies and inconsistencies, and investigate this reality with some rigor; (2) when accepting the vast expanse of production in contemporary urbanism, landscape architecture, architecture and infrastructural work,

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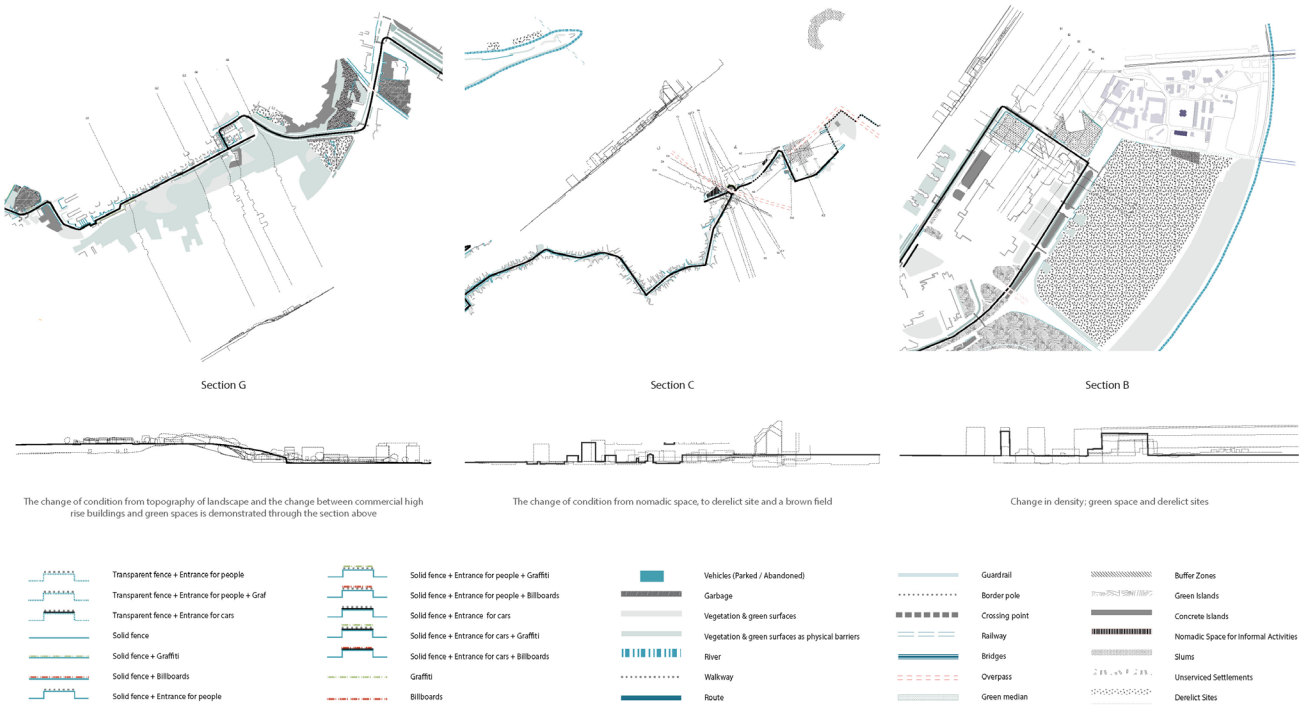

Figure 1. The “Uncertain Spaces” map. Sonja Drašković, David Fang, Julia Linde and Daniel Sobieraj. Borders & Territories (B&T) MSc2 design studio, TU Delft Faculty of Architecture, 2020 Spring semester.

one also needs to accept a no longer pre-determined, singular viewpoint with which to investigate these spatial conditions. A certain distant gaze and postponement of judgement are needed, in order to be able to properly assess the aforementioned spatial conditions; and (3) both the preparation of the field trip and the object under investigation (be it a ‘city or a ‘territory’) can never be truly anticipated nor known to the fullest. The bodily engagement during the field trip is not only considered vital to be able to draw any insights from the trip and the different localities encountered, but the dérive also introduces a moment of surprise and improvisation in the research. This opening up towards the possibility of the unforeseen is cultivated as the moment in which the true nature of research emerges, namely to be confronted with conditions that are not-anticipated and are therefore in need of being re-assessed.

The focus of attention in these scheduled ‘walks’ is supposed to be the spatial manifestation of ongoing urban transformations, in this case of Belgrade, where spatial practices of in- and exclusion take place, often combined with aggressive infrastructural insertions into the urban and territorial fabric. The built result of the processes of densification related to post-socialist societies is an array of spatial and territorial conditions in the city that are highly contested, as well as the overall radicality of the border zones in the city’s fabric. The intended purpose of these ‘walks’, then, was to investigate and map all these hidden forces with the immediacy as well as the precision, factuality and tangibility of being ‘on-the-ground’. The imagined trajectories through the city were based on our initial intent to allow the studio participants to be confronted with a great variety of spatial conditions in Belgrade. Via that walk, participants would have been traversing locations in the urban fabric where tensions have mounted, conflictuous juxtapositions have emerged, and a variety of spatial regimes in the contemporary city were superimposed. These conditions were supposed to be scanned, charted and mapped, thus investigating the spatial practices that have been woven into the fabric of the city. The intention of B&T Belgrade studio, therefore, was not to explore singularities (infrastructure, post-conflict conditions, pollution, etc.), but to investigate the overlapping or the superimposition of such different spatial regimes.

PANDEMIC STUDIO

However, with the current travel restrictions related to the COVID-19 virus in place, new educational circumstances had emerged in the early Spring of 2020, bringing remote research methods to the fore. As a result, in situ investigations and related field trips had to be made from a distance, online and a little more haphazardly. The students were therefore invited to conduct ‘virtual’ walks using digital means (such as Google Earth and Google Street View) to traverse locations in the urban fabric where tensions have mounted and conflictuous juxtapositions have emerged. The idea was that the Google Street View camera can replace the human eye and help students immerse completely into the urban reality of city they

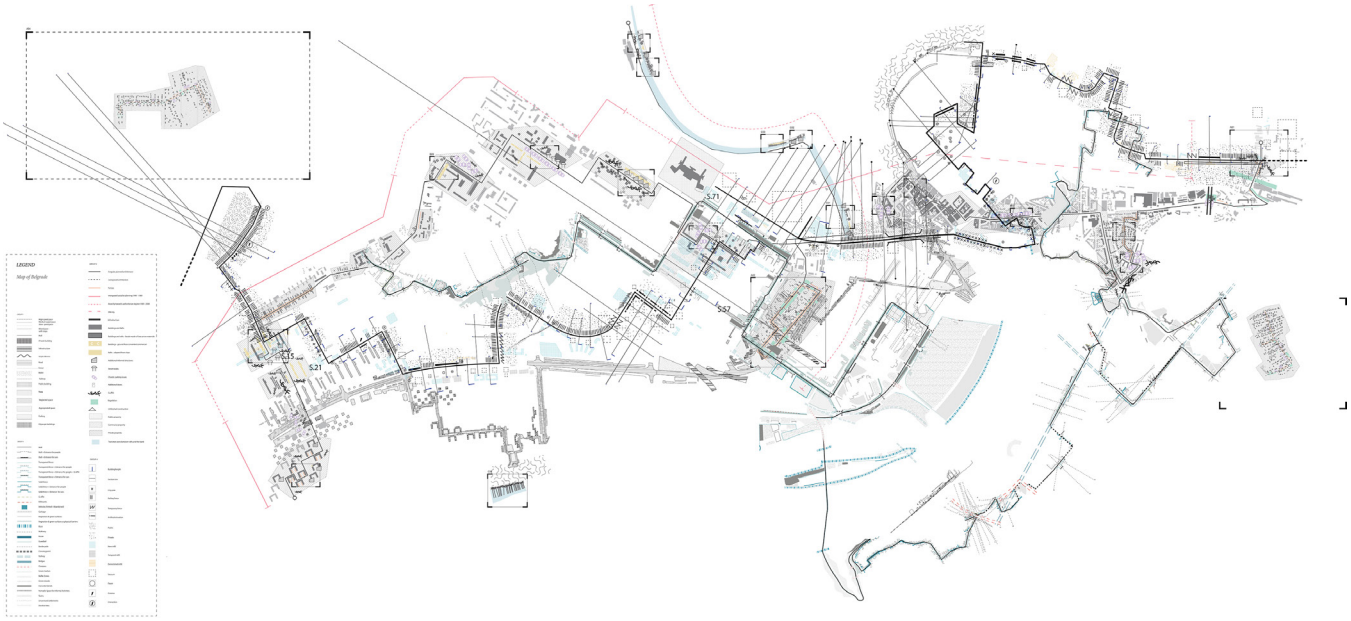

Figure 2. The Collective Map, B&T MSc2 design studio.

do not know and are not familiar with, making choices where to go and where to turn also intuitively, by reading figurative 'road signs' and the surrounding space and its architecture. (This has proven to be harder than it sounds, by the way, as students were unable to resist the urge to 'zoom out' to assess the surrounding from above before deciding where to go. In other words, they had difficulties in getting truly lost).

Starting from the 'eye in the sky' satellite view, our studio participants (divided in four groups) first intuitively selected the starting point of their walk. Interestingly, they were either drawn by some oddly-looking structures or they made a strategic decision to identify the entry route into the city and simply follow it. While navigating the Google Earth, each group was mapping the space using their own sets of criteria, guided by their own professional interests, while negotiating the things they spotted and considered relevant. For example, one of the groups mapped so called 'Uncertain Spaces' by identifying unserviced settlements, slums, nomadic spaces for informal activities, derelict sites, buffer zones, green islands and concrete islands (Fig. 1). Each of these spaces was categorized and described using various set of spatial and social qualifiers (abandoned spaces, ruins, edges of highways, infrastructure, illegally occupied, fenced areas, etc). Furthermore, a series of decisions had to be made on how to graphically represent not only the various spatial regimes, but the contact zones, thresholds and elusive voids between them as well. This particular group differentiated between punctual spatial elements—landmarks, linear elements—borders, obstacles or thresholds, and zones—the highest spatial entities with distinct regimes of use. After a three-week period, during which four 'group maps' were created, students got the task to create a collective map by overlapping their group work. They immediately faced the challenge of negotiating not only the different sets of criteria they used, but also deal with the inconsistencies that became evident.

In this exercise titled 'Walking of Virtual Dérive Trajectories', students engaged into distant investigations of complex spatial relationships, by scanning and charting the conditions and spatial practices where a variety of spatial regimes in the contemporary city are superimposed. They investigated the cultural, spatial and environmental contradictions of globalization within the city of Belgrade, and addressed—or even cultivated—the complexity of these previously described thematics in the city considered as a territory. With this form of architectural experimentation, the B&T studio tried to answer whether these encountered spatial conditions, that, unfortunately, can now no longer literally be considered 'as found' through the physical engagement of the walk, still be the starting point of an architectural design intervention proposal. Can one attempt to consider some kind of concreteness in this current period of distant locality, where space and proximity have been redefined? Can the absence of any physical encounter during the field trip still be overcome, especially when realizing that the physical inhabitation of space is so fundamental for architecture and architectural construct?

At present, everyone is more than ever 'a mouse-click away', making the painfulness of this non-related relatedness even more evident than before. The places where the described developments converge in Belgrade, places that probably should be termed 'urban incubators', remained the main point of interest in this B&T studio. As it turns out, these sites usually constitute the more anomalous areas of the city, places where there is a low density of urban fabrics and which converge

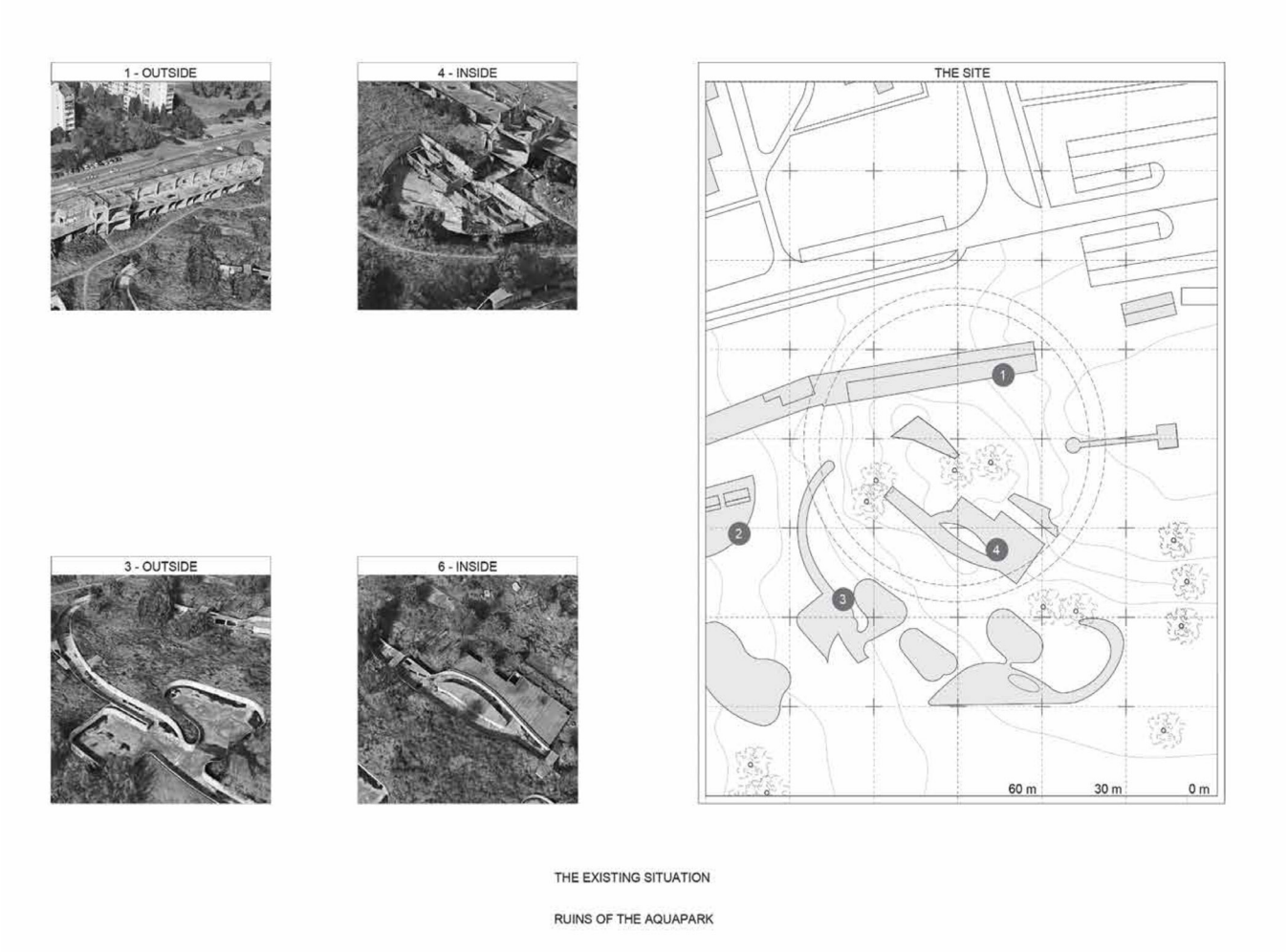

Figure 3. Olga Gumienna, B&T MSc2 design project.

to create the places that are teeming with suggestive meanings and unexpected potential but which have hardly been analyzed and discussed within contemporary architectural discourse. But of course, these are also the areas where spatial practices and exclusivity of location are under constant pressure from both developers and politicians seeking easy profit or glory respectively. Extreme tense urban conditions and contested territories in other words, which should be probed and analyzed for their potential to directly instruct architectural design.

RESULTS

The investigation has shown that the post-socialist era in Belgrade has resulted in a rather radical rewriting of the urban fabric (Fig. 2—The Collective Map). The current influx of hyper-capitalist real estate developments seems to be in direct conflict with the more general and rather generous spatial qualities of the city, most evidently in the larger green space(s) of New-Belgrade, in-between the socialist housing estates on the left bank of the Sava river. The spatial and non-spatial boundaries that can be found in the urban fabric of the contemporary Belgrade are complex and complicated entities and partly the direct result of deliberate strategies of power and planning. While it is true that our globalized world has insisted on the emergence of a borderless world, the insight has grown that borders are not as obsolete as anticipated, quite the contrary. As has become apparent, border regimes have only increased in the era of globalization, and this process has seemingly not ended, also in this case quite the contrary. The B&T program is eager to investigate and proclaim these super-imposed spatial ordering systems, which are more than ever geared towards control, division, efficiency and exclusion (or at least managed, and therefore constitute privileged inclusion).

This distanced gaze revealed other aspects of Belgrade as well though, insights that particularly emerged because of our more distant, observant interpretation of the city. We discovered, for example, that there are innovative responses to this implementation of borders as well, through the very daily activities of the city's inhabitants, its collective groups and/or institutions. Even as not-informed, or rather, remotely informed readers of Belgrade, who had almost no instruments

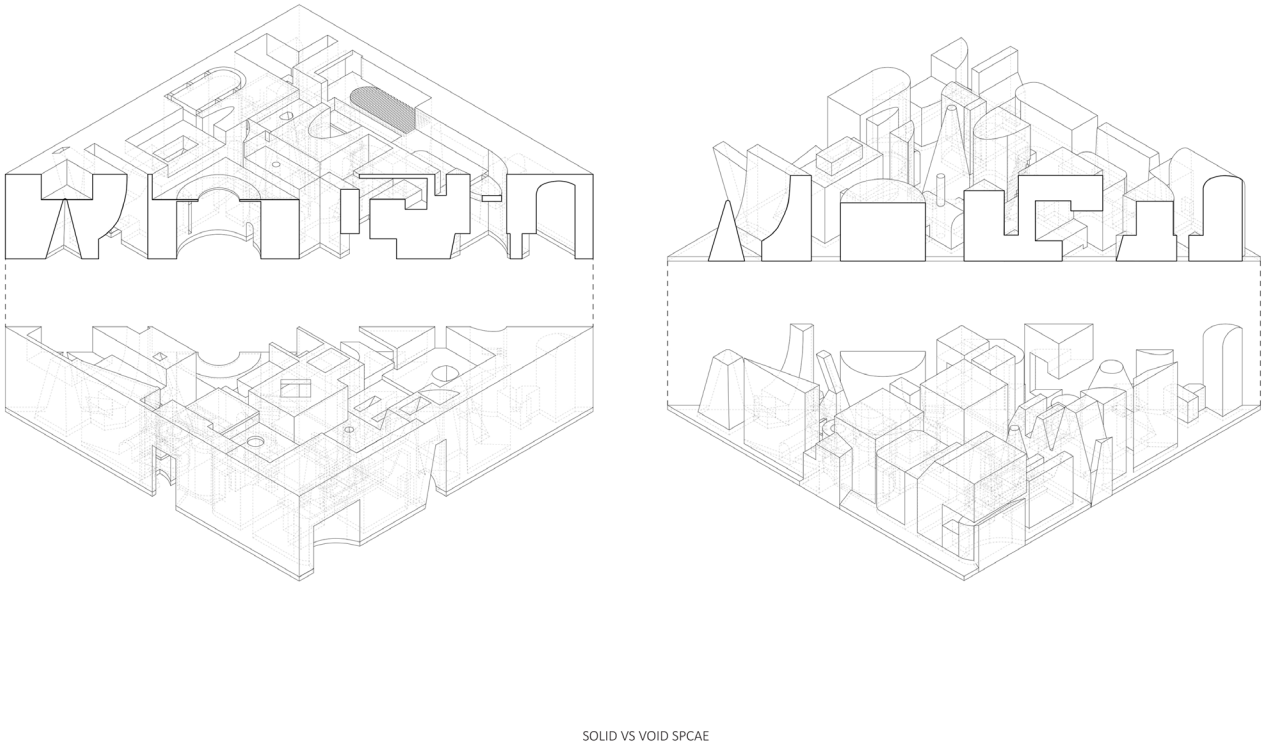

Figure 4. Sofia Pavlova, B&T MSc2 design project.

or tools to confirm, resist, challenge, critique, or verify our readings, we had the opportunity to introduce the engaged look of an outsider to reflect on the current state of affairs in Belgrade. When investigating these afore-mentioned urban conditions, the most apparent decision in this process of spatial analysis is geared towards the determinations of the 'what' will be explored, in 'which' way and 'how' this exploration will be represented or depicted. Overall, students managed to investigate and proclaim these superimposed spatial ordering systems, which are more than ever geared towards control, division, efficiency and exclusion. This trailblazing pedagogical approach employed by the B&T program therefore offers valuable insights and can serve as a template for similar situations in the future.

The overall results of the studio were quite telling, as some examples can attest. We will showcase three projects here, two of which were located in New-Belgrade, while the third was located in the city center. Given the set-up of the studio, combined with the specific aims of the B&T program as mentioned previously, the relationship between the site investigation and the proposed architectural intervention proposal is to be considered crucial here. For the project developed by Olga Gumienna (Fig. 3), a collective strategy towards the establishment of Permanent Autonomous Zones of Non-Activity in Belgrade was developed and argued for, which ultimately resulted in the project that combines an Art Center with a Demolition Park. In this project, the careful mapping of the ruins of the former Aquapark has resulted in an architectural project in which the violation of space is proactively transformed into a creative act. The proposed project frames, quite literally, a set of ruins and traces in the area, and re-activates these within the setting of the newly established Art Center. The demolished, excavated and processed materials are supposedly the premises for the art works and the way these are exhibited.

Sofia Pavlova (Fig. 4) proposed a similar Autonomous Zone, and developed a project for a Non-Community Center. Through an experimental design process with sections, an architecture of the wall has emerged, in which a delicate play of excavations, voids, pochés and solids is constituting a space both intimate and uncanny. Located in post-socialist Belgrade, the Center is intended to offer a space of inclusion to any kind of 'otherness'. Julia Linde (Fig. 5), to conclude, traced a sequence of boundary conditions in Belgrade, which, in her proposal, start to weave a network of public spaces. Both the nodes in this network as well as the paths are designed with a specific programmatic intent, namely as Vendors Bridge, Resting Hub, Kiosk, and Playful Park. The spatiality of these architectural structures,

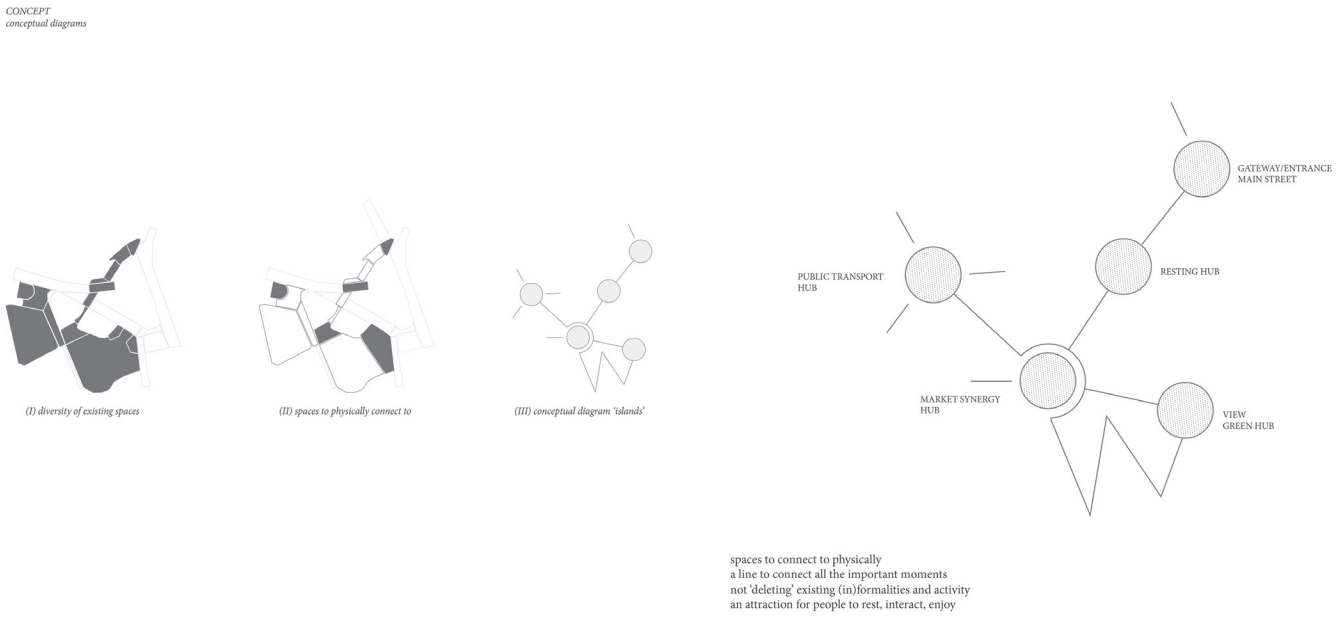

Figure 5. Julia Linde, B&T MSc2 design project.

combined with their specific materialities, is intended to not only frame the boundary conditions in this part of Belgrade, but to simultaneously ground them in their specific contexts.

REFLECTION

Naturally, it must be acknowledged that new technologies alter our perception and conceptualization of reality, as well as our knowledge and our social interactions. The more conventional type of field trip has a particular set-up with respect to the underlying sets of information regarding explored spatial conditions (for instance with respect to historical urban developments, demographics, political decision-making processes, rules and laws and even urban narratives and myths). They will either be studied a-priori, or will only be present remotely during the field trip. There is, therefore, an indirect and not ideal relationship between primary and secondary sources of information during the field trip.

Though photogrammetric documentation of sites is nowadays easily accessible, the problem with these 'distanced gazes' remains the difficulty of making such remotely detected spatial and material conditions tangible and insightful for architectural interventions. In general, contemporary VR tools are already allowing for immersed spatial explorations (e.g. Google's Earth VR application), but they have hardly been implemented in creating Smart Learning Environments. Recognizing these new developments, but also acknowledging the limitations of available tools, the B&T group is currently developing the 'Digitally Rendered, Immersed Field Trip'-project (DRIFT), which intends to implement these VR-based 'remote sensing operations', but also to expand upon these VR-immersed possibilities by enhancing the visualization of geo-spatial data as well as to incorporate other, relevant data sets in creating 'digitally assembled landscapes' for smart learning. Its innovative character will be situated in bringing several (digital) tools together in one research framework as well as rendering these operational for design thinking in a smart learning environment.

After the two historical phases of digital devices being used and implemented in education (i.e. 'networked, collaborative learning' and 'online digital learning'), recently 'virtual reality technologies' are actively being tested and employed in education in general, and in architectural education in particular. Similar initiatives can be detected in other fields, though the particularities of architectural research offer the proposed DRIFT-project the opportunity to relate digital exploratory tools to digital information in a rather precise (smart) learning environment. A short literature review also shows that the combination of VR with several databases is a reasonably new, and not yet fully explored field in pedagogy overall. Most common applications of VR are commercially customer-oriented ones, and rarely used for analytical purposes in education (to enrich design processes itself).

As it currently stands, and as we have seen and proven in our Belgrade studio, in situ investigations in educational settings can nowadays easily be made from a distance and online: especially Google's Earth VR enables spatial investigations from a distance through an immersed moving through Google Street View with VR goggles. These more recent developments in VR technologies have opened quite a number of intriguing options for the scientific and design disciplines in general (e.g. environmental and health sciences, geography, cartography) and in architecture and (architectural) education in specific. With the proposed DRIFT-project, our intention is to extend upon existing technologies and scholarship, by contributing to current VR-based learning, but then not only to use existing

tools and techniques to improve 'remote sensing operations' by making such remotely detected spatial and material conditions tangible and insightful for architectural interventions, but to expand these into Smart Learning Environments by adding access to relevant information in virtual situ, thus making the primary and secondary sources of information, as mentioned earlier, directly available.

This combining of the Virtual Field Trip with a Smart Learning Environment is to allow for a better, or more full experience of any spatial condition under investigation, by creating an environment in which more information is rendered present. By connecting different data sets to the VR-portal, students will be allowed to access and critically assess carefully curated sets of information. This VR-immersed learning environment will thus allow students to fabricate a 'deep mapping' by simultaneously navigating images, texts, objects, video and video stills, sounds, maps, satellite images, QGIS geographies, 3D simulations, 3D environments, city-scapes and architectures, virtual reality GIS and augmented reality GIS (VRGIS and ARGIS respectively). The DRIFT project will thus be set-up as a Smart Learning Environment (SLE) that allows students to navigate the data-sets based on their own preferences, interests, skill sets and knowledge levels, thus contributing to the emergence of a variety of knowledge sets coming out of the SLE. Such a more personalized learning process will be open to specific learner needs, open to a wider set of different learning abilities and capabilities of students (i.e. to their learning profiles). The interaction between teachers and students additionally consists of the combination of primary curation (namely through the chosen data-base set-up) and secondary curatorship (navigating the different databases).

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