SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS OF THE PANDEMIC ON ARCHITECTURE: NEW SPATIAL AND EDUCATIONAL GRAMMARS

ABSTRACT

We are all online. We rarely leave our homes - only when necessary, even though, at times, the prescribed measures allow us to do so. Our daily routines are embedded in video calls and performed online. Household members are forced to stay together now more than ever, but at the same time, all of them need space to study and work. A sudden transition from classrooms to Zoom rooms is forcing us to rethink the entire educational system: New educational grammar is needed!

The need for additional insulation inside apartments has become a reality. A wardrobe turns into a study, and nature becomes our balcony. How aware are we of the current changes in our living spaces? Can we use architecture to establish a dialogue with contemporary issues and events, and provide critical solutions that would make the spaces we live in better? New spatial grammar is needed!

The Covid-19 pandemic and rapid digitalisation have impacted architecture that has traditionally been a very slow discipline which uses specific tools with manual designing and thinking processes. Architectural education has seen demand-driven changes in the learning process through the years. Following the switch from the system inherited from the socialist period to the Bologna system, the impact of the pandemic has called for the need to conform to changes in teaching methods and understanding of space.

Case Study: Episode: Covid –19 and adaptable living space

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INTRODUCTION

Faced with the pandemic crisis in early 2020, our lives began to change profoundly. We began to adapt to this global scourge at all levels of our daily lives. On a private level, through various forms of restrictions of movement and indoor socialisation, we have found new ways to use outdoor space. Public spaces became limited to a large group of people. Protection measures used in public spaces include social distancing. Also, our enclosed private space became challenging to use, as entire families are forced to stay together 24/7 during lockdowns. Work has slowly shifted to the virtual realm. Kindergartens, schools, and colleges were transferred online, which has brought many new challenges for families and individuals alike. Private living spaces had to be adapted to carry out all the day-to-day functions within it. An extra corner was sought for isolation from family members, so that everybody could devote themselves in peace to work, lecture, homework, to rest.

For professors and associates at the Faculty of Architecture, University of Sarajevo, it become challenging to transfer design knowledge and experience in projects online, because of the specific nature of how architecture is taught. At the same time, students faced challenges at home with respect to adapting the spaces of coexistence, so that they can balance between work, rest, the satisfaction of all physiological needs, and all that in coordination with family members.

The actual role of architecture in newly established social, economic and environmental setting is huge and that is why a new grammar should be defined for both education and space: (1) the challenges architectural education faced during Covid-19 could set new conceptual pillars of architectural education, methodology and teaching today and in the future; (2) our curriculum could be reinvented for the better (for example, we could turn Covid-19 challenges into potentials in the procedural and substantive aspects of the (studio) work, and identify design challenges in the context of the pandemic in relation to sustainability and progressive design.

The first part of the paper will present the materials and methods applied in teaching and research. The second part of the paper will present the design results which reflect an effective learning environment in the field of architecture, with special emphasis on its implementation in the student projects of designing living spaces in order to set new spatial design grammar.
COVID 19 - WHAT HAPPENED IN REAL LIFE?

With the first lockdown on a global level, the use of indoor spaces became restricted to prevent people from being exposed to Covid-19. Most public spaces closed during these lockdowns, with only medical institutions, grocery shops, and pharmacies allowed to stay open in compliance with the prescribed protection measures. We want to show some examples from different cities around the world to illustrate how people faced the same challenges in organising their day during the pandemic.

The hospitality industry has been heavily impacted by the pandemic. Due to travel restrictions, local resorts became more popular. Contrary to large hotels and densely populated resorts, staying in isolated small units and offering the experience of nature became even more popular. The most logical reason for this is the isolation and distancing that this kind of accommodation offers.¹

An increasingly popular and accessible modern form of accommodation and experience – glamping - in a research published in February 2021 shows that active leisure travelers reported more post-Covid glamping trip plans (45.9%) than hotel/resort trip plans (24.7%), and active travelers reported plans for more than twice as many post-Covid glamping trips than they took in 2019 (21.4%).²

Also, outdoor spaces were set under restrictions to avoid mass gatherings, especially with children’s playgrounds, as it was impossible to discipline children and make them follow the rules prescribed during this pandemic.

The shift in the use of places and spaces [...] needed to occur.³ After some weeks of isolation, people either tried to reinvent their open spaces in houses and apartments/homes or to redesign open public spaces to use them in the best way possible in the new reality. Here are some examples of how students, through studio projects at College of Architecture, University of Nebraska, proposed for a park to be redesigned and used.

(ONLINE) ARCHITECTURAL DESIGN EDUCATION AND DIGITAL TECHNOLOGY

The beginning of the summer semester 2019/20 started very cheerfully and with a great sense of curiosity at Faculty of Architecture, University of Sarajevo. The first- and second-year students were looking forward to acquiring new knowledge in our design studio. Our basic design studio is actually their first encounter with a creative thought process related to designing a living space. They start with
UP: Fig. 1. Empty Public Places in the US: Restaurant and Hair Salon.
CENTER: Fig. 2. Glamping After the Coronavirus Pandemic.
DOWN LEFT: Fig. 3. Empty Children’s Playgrounds in the US.
DOWN RIGHT: Fig. 4. Proposed Design of Public Open Spaces in the US.
individual units and then, after two years, they move on to designing a residential villa. However, the unexpected global spread of the virus forced us to transfer our classes, which were normally organised in classrooms in groups, to an online platform. The groups remained the same, but getting used to online teaching was something entirely new and unexpected.

We did not expect the situation we faced, so we did not really have time to prepare for the challenges and threats in the educational process, but we did our best. The whole University of Sarajevo had to deal with the transfer to online system of education. According to the information about teaching methods applied at the university, dated December 2020, the majority of faculties used Microsoft Teams (63%), followed by Zoom (40.7%), then BigBlueButton, Google classroom and Moodle-based platforms (22.2%), Skype (18.5%), Jitsi Meets (7.4%) and other (11.1%).

Our faculty/school decided to use Microsoft Teams. Already in the first week online, we organised internal education on how to use a new tool and our IT engineer managed to get the academic license for the Faculty of Architecture. The whole process of adapting to the new tool in teaching and communicating with students and colleagues lasted between one and two months. However, during this process we were not late with the programme set up in our semester schedule at the beginning of the academic year. A new way of working with online platforms forced us to think of how to be more efficient and productive in teaching processes. We combined ex cathedra lectures for all groups of students in order to concentrate on individual work once they developed design projects. The fact is that architecture education is very much hands-on and the outcome largely depends on the mode of personal interactions between teachers and students. But still, teaching innovations and great efforts of teachers to adopt the change were commendable in this very short time.

Though there were a number of challenges, such as working remotely, low bandwidth, IT infrastructure for students who could not afford it, all of which are serious concerns, students coped better than expected. Perhaps that means that this way of teaching is going to be the new normal in the years to come or we will just have to reinvent the pedagogy of design teaching.

Now after more than one and half years of online teaching, our Faculty of Architecture has opted for a hybrid model in 2021/22, so each group of students would combine in-person and online classes. The results of this model of teaching will be seen at the end of semester, but so far, it has required more effort to organise education processes in terms of equipment and people to do the job.
STUDENT’S CREATIVITY AS A RESULT OF PANDEMIC CHALLENGE

The task in our first-year design studio during the first pandemic semester was to design a living space with learning and research rooms, work spaces, dining rooms, etc. Most students did their designs in line with the rules for design and the use of space that we normally teach students. However, some students were open for more challenges to channel their observation of the new life, how their social interactions changed, their experience with new circumstances that had been shaped by the physical environment in which they spent most of their time. Some students’ initial responses to designing only their basic living space expanded to more creative ideas! That’s why we added an additional design proposal to our normal syllabus that dealt with students’ day-to-day reality struck by a rapid change brought by the pandemic.

As their mentors in design processes, we encouraged them to transform their living spaces into a multifunctional space to meet new needs. Their research and creative ideas were also supported and developed through very constructive debates and exchanges that took place online, where students showed maturity in thinking and rethinking space in their presentations. This was a very surprising and positive motivational aspect of the whole process of working and designing with them.

Their work will be shown later in the paper, along with the explanation of the case study itself. We can say with certainty that this way of motivating students to respond to this challenging situation we all found ourselves in, globally, had a healing effect on us in this very depressing period of lockdowns, social isolation and distancing. Reading some surveys and papers from other parts of the world, we can see that students had different reactions. In this year’s Architectural Journal (from the UK), a student survey highlights the devastating impact of the pandemic on architecture students, with a record number seeking help for their mental health.5

The crisis has seen an unparalleled upheaval on university life. All public events were cancelled, students were holed up in pokey accommodation without the usual access to campus facilities in cities far from home, and the learning was almost entirely virtual. In July 2021, infuriated students tired of watching lectures from their bedrooms, were angered by universities including Kent, Sheffield and Manchester after they announced plans to keep delivering some online lectures – despite Prime Minister Boris Johnson lifting the final restrictions. The data from the research reveals the full extent of the effects on the (mainly) young people caught up in the crisis over the last 15 months.6
Fig. 5. Students Survey on Online Education During the Pandemic in the UK.
NEW EDUCATIONAL GRAMMAR IN ARCHITECTURE IS A MUST

Considering the experiences in online teaching described above, with some more ambitious students making progress, we have to conclude some facts. Many academicians in architecture education across the globe believe that a multitude of changes to the curriculum should be made, as we must incorporate ‘new norms’ in designs but, before all, in education. The issue is the same on a global level. Director of School of Architecture, Noida International University in India, says:

I absolutely agree with the need for new reform in architecture education and change of curriculum. Perhaps this reform of online mode of teaching will accept newer ways of teaching and lectures by Industry experts and professionals across the world to be virtually available in class for students, who are unable to be in universities campus for many practical and logistic reasons.

Truth be told, this combined way of teaching (both online and face-to-face) can improve the curriculum by offering more interesting lectures online from all over the world, while other important design processes can continue to be held in studios at faculties/schools.

In the case of Sarajevo’s Faculty of Architecture, the work phase of the first Case Study led to a sudden change whereby students started to use new tools and employed new methods of working. However, one semester was not enough to have clear assessments. Having applied the combined system for three semesters, we can draw some conclusions - complete isolation in the online system leads to inertia due to the lack of socialising. The majority of students are more motivated when we meet once a month at faculty, so they can relate differently to their design projects and instructions from mentors. So now, we face the fundamental challenge for education in architecture – how to relate the current hybrid educational process/model to the current curriculum and architectural practice in the future? Forming a combined studio (online and live) was one of the first solutions we wanted to implement. Starting studios would initiate discussions about studio-based design learning as well as about the development of curricula based on integral design studios aiming at significant innovative frameworks.

In this context, combined design studios may be the newest approach to architectural education at our faculty. The reality of this education system is that every studio has its own integral course. Integral courses give support to design
studios. This support can be either theoretical or practical. The grounds that integral courses lay for studios must be evaluated carefully in order to simplify the existing curriculum to reflect new teaching and learning conditions, and to reduce the number of subjects by offering different studios and combine online and in-person teaching. The other fact is that the combined way of working and teaching compensates in part for limited socialisation, but also facilitates and speeds up the work through intensive live workshops/exercises and discussions. Online learning was made available in many educational institutes in the form or virtual lectures as extracurricular activities. But the online mode of industry-academia connects and improves our curricula. Virtual lectures by global experts should be a part of the core curriculum and accepted as class hours in the future, too. In order for this to happen, competent institutions need to introduce a policy level reform and we can help with our suggestions and experiences!

RE-IMAGINE THE NEW NORMAL IN ARCHITECTURE_MULTICTIONAL LIVING SPACES

In the last two years architectural practices and education have faced numerous challenges, not only because of Covid-19, but also because of social transformation, globalisation, urbanisation, consequent depletion of natural resources, and growing pressure on public services, infrastructure, and housing. The new architectural and urban paradigms require students in higher education to be adequately prepared, informed, and trained to respond to these challenges. After all, the role of architecture is to reflect, design, and manage the built environment in a way that will satisfy the needs of future humanity. The connection between architecture and sustainability is unequivocally important. On this basis, several perspectives on the interrelation between architecture and sustainability have been challenged, including integration of social factors, culture, and technology with architecture, and providing flexibility to adapt to local habits and needs through sustainable design which can be replicated by the needs of local communities and organisations. Several concepts have already been developed to link design and social and environmental changes, hence, strengthen the sustainable dimension of architecture through design of socially responsible spaces, and design for social change, environmentally conscious design, and currently the most important from the pandemic perspective, emergency design and humanitarian architecture.
As a response to the above-mentioned challenges, the horizons of research and experimentation in architecture and urbanism are expanding rapidly while destabilising our understanding of the expected impact and consequences on a global scale. When the world is facing a global crisis like Covid-19, it is more important than ever to re-examine existing approaches, not only as mentioned in the first part of the paper, in relation to the architectural education, the content of existing curricula, and learning environments, but professors and students have to be more creative in order to present innovative results for designing living spaces during a pandemic. As we all experienced challenges with living spaces during several lockdowns, we assigned an additional, optional task to our students, encouraging them to unleash their creativity. The results are presented in the following Case Study description.

CASE STUDY: ADAPTABLE LIVING SPACES Episode 1: COVID-19

This project was developed by the first- and second-year students of the Faculty of Architecture in Sarajevo, as a part of an optional exercise in classes Design 1, Theory and Methodology of Design and Fundamentals of Design 2, exclusively through online teaching. The task was assigned to around 20 students, not the entire class of around 110 students.

Students were tasked to map the current usage of spaces in their homes, and to explore the possibilities of their own housing in the context of adapting to the global pandemic, which, like many other global events, can potentially affect major changes in everyday life, including living and working. In completely real scenarios on the one hand, but also completely imaginary ones on the other hand, students questioned the themes of flexibility and transformability of the spaces they live in. With modern tools and methods for graphic communication of projects, students added humor that not only made the design process more interesting, but also proved Einstein’s assertion that ‘imagination is more important than knowledge’.

The first project by our student Ana Sužnjević, titled ‘From Socialist Dream to a Dream of Socialisation’, is case in point. The apartment she lives in is 52 square metres, with a layout organised as most apartments for a normal family with an entrance hall, one storage room, a bathroom, one bedroom, a kitchen, a dining room and a living room. The apartment does not have a balcony, only windows in all rooms. The orientation is on two sides. Her idea was to transform the bedroom into a home office and a space for ‘night life’ called Trezor Silent.
UP: Fig. 6. Ana Sužnjević: 'From Socialist Dream to a Dream of Socialisation'.

CENTER: Fig. 7. Alem Hasanović: 'Choose Your Champion!'.

DOWN: Fig. 8. Erna Hodžić: 'Isolation within isolation'.

Od socijalističkog sna do sna o socijalizaciji u 52m²

Choose Your Champion! 80m²

Izolacija u izolaciji, 3 u 1, 49m²
Disco. She added a quarantine cookbook to be creative with daily meals, and a treadmill to help her lose calories later. She also redesigned the living room and added a walking area she named Corso.

Transforming housing during pandemics, from tiny apartments in collective buildings to spacious floors of individual houses, from a room of 9.78 square metres with ‘countless possibilities’ to a 150-square-metre apartment is real challenge Student Alem Hasanović transformed his apartment of 80 square metres under the name ‘Choose Your Champion’. The building is located in the new neighborhood built after the 90s. His family’s apartment consists of an entrance hall, a kitchen with a dining room, a living room, a bathroom and two bedrooms. There is also a balcony. The space his family regularly used before the pandemic changed the purpose. For example, a bedroom was used for working, not sleeping, and now, during the pandemic it was used to sleep all day and all night. The living room, used for watching the TV and relaxing, now became a schooling and working area. But the most transformative space is the balcony that was used as a storage room, and now it became an open space – a garden, the space used for gathering with neighbours.

From Lukavac and Srebrenik to Konjic and Travnik, and from Sarajevo to Zenica, we can see a range of residential area floor plans that do not differ much from the average in Bosnia-Herzegovina. Therefore, we hope that the examples given here can give ideas to many non-professionals on how to transform their spaces into better used ones during isolation. Interesting project in that sense “Isolation within isolation!” was made by our student Erna Hodžić. She lives with her parents in a two-bedroom apartment, at 49 square metres, with a kitchen, a living room and a dining room. The transformation she suggested was to open walls between the bedrooms and the hall, and to make separate isolation spaces with curtains, so that space can be easily transformed again.

Benjamin Bojanic gave a very creative proposal on how to use the 61-square-metre apartment as a space for having physical activity by suggesting a daily walking distance of 400 metres within the apartment. He also recommended additional activities in order to keep the body and mind healthy during lockdown.

That architectural design does not only mean drawing, but incorporates the text that the students formulated during the work process: ‘How to place the infinity of the outside world in about 60 square metres of our apartments? Sometimes it is enough just to move a house plant to another place, and for the brave ones - maybe in our projects you will find inspiration for “erasing” the boundaries between your inner and infinite outer space!’
Student Maja Mrnjavac lives alone in the Ciglane settlement in a 44-square-metre apartment. She did not make any radical changes to her space, but only reorganised the furniture. She started using a huge balcony that these apartments in Ciglane have for practising yoga and daily sun salutations. As the orientation of the apartment is towards the south-east, towards Trebevic mountain – the name she gave to the project is dedicated to this main transformation in use.

The fact of not knowing how long this pandemic will last motivated Elma Sabić to suggest some construction changes to transform spaces for longer periods of time. She isolated the entrance hall to make it a safe place for disinfection, added a space for isolation – if a family member is infected, they can isolate in a separate room. She also created a space for isolated daily activities for those who need to meditate or just do nothing.

In contemplating the redesigning of space, Emina Tsiligkros considered her student life to be important as well as privacy from parents during Covid-19 isolation. The original apartment has 80 square meters and a possibility to be transformed into two smaller apartments with separate entrances. The intervention was not so complex to implement construction-wise, and the result is rewarding. Emina and her parents have their spaces with all functions for living, are isolated from each other, but also close if they need to be together.

**NEW SPATIAL GRAMMAR IS NEEDED**

The need for altering space arose as a result of the methodological process during the design studio. Initially, students identified elements of everyday life, needs, and equivalent activities that were difficult to carry out due to the pandemic in their apartments. They then defined spaces in which these activities could take place with the changed conditions. As spatial and programmatic constraints during the pandemic can be potential causes of stress, anti-social behaviour, and endanger psycho-physical health, the aim of the research within this thematic framework was to find alternative solutions to achieve adequate living comfort.

In addition, the changed course of everyday activities required the adaptation of the space to new functions and priorities, examining the potentials of its transformability. The projects explored spatial constellations that enable expected quality of life and the conduct of everyday activities, offering new options for the sustainable use of available spaces and trying to give specific meaning to each project.
The research of living/housing spaces was the most inspiring and intriguing topic for both students and mentors, as it started rapidly changing in just a couple of months after the Covid-19 pandemic started. The students were inspired by everyday change of their lives and the need to adapt their living spaces to the new conditions. Their apartments needed to replace classrooms and design studios, and they had to rethink how to maintain their peace and privacy among their housemates. The need for additional insulation inside the apartment became a reality. A wardrobe becomes a study, and a balcony goes to nature... Through the entire process of working with students and experiencing life in the past three semesters of schooling, teaching, living, it has become obvious that in the future we will have to think differently when designing our living spaces. The classic categories of housing and work are mixed more than ever and we are aware that we have to use architecture to establish a dialogue with contemporary challenges, events, and provide critical solutions that would make the spaces we live in better.

The designs resulted in a variety of outcomes, perceived as learning potentials and limitations during the pandemic. Following the steps of new online learning methodology, students’ creativity goes beyond the existing state of the art by transposing experiences from the online design classes held in the time of the pandemic and experiences of spending entire days in a closed space. We create new spatial grammar together with our students, who are directly involved in the whole process of the research and design.

These results will become a part of our future teachings and they will no doubt shape our students as future architects. The shift in thinking and living has already happened, so it has to be followed by designing the space too.

CONCLUDING REMARKS: NEW LESSONS LEARNED

This paper stresses the importance of building capacities of future professionals in the field of architecture and urbanism to face global challenges. With the aim of illustrating the dual direction of learning in the state of emergency two research questions arise: (1) How can we create a learning environment and teaching methodology in a new pandemic reality? (2) How can we transfer challenges from the Covid-19 context towards creating design solutions for learning and applying the concept of architecture? In order to find answers to the research questions, this paper outlines the potential of the combined, online and live studio as an extra curriculum.
Leading the team in the field of architecture education studio Basic design 1 and 2, we were looking for solutions and designs to overcome the impact of the pandemic through two parallel perspectives: (1) preparing to respond to challenges and threats in educational process, and (2) generating adaptive spatial solutions for life and work during the pandemic. The design research developed during the Covid-19 pandemic indicates that teaching as a profession required to engage its creative skills and critical thinking to reimagine how inspiring students’ living spaces should transform and adapt when emergencies arise.

In this sense, (a) the new curricula should be designed to build the capacity of future students and broaden their professional competences and responsibilities, as well as improve their technical, technological, socio-humanistic, and artistic skills to design a built environment sensitive to social and environmental contexts; (b) the new methods of education and training for architects should bring flexibility in the curriculum development to respond to given demands and requirements; and (c) research by online and live design approach should be encouraged to generate critical inquiry through educational process.

The conclusion reviews the online learning potentials and limitations based on an experiential-based learning model. The conclusion summarises the importance of creating new curricula and methodologies that follow the challenges posed by a global crisis.

On the other hand, the speed of a digital society, its shifting economy, and powerful unrestrained media are constantly speeding up the expansion of ideas, thoughts, and omissions. In this deeply divided situation in which architecture has found itself, it is placed right amidst the quick and elusive reality, and the slow and uncertain future. We have to work on changes in certain methods of teaching, learning and implementing architectural design that can be done easily and in the near future.
NOTES


2. Ibid.


6. Ibid.


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STUDENTI BOTOVI? STUDENTI ARHITEKTURE SUOČAVAJU SE SA DISRUPTIVNIM TEHNOLOGIJAMA U ERI PANDEMIJE

Manuel Collado Arpia

Kontekst pandemije i obaveza da budemo zatvoreni u malim prostorima za većinu stanovništva doveli su nas do pitanja kako da predajemo o novim pravilima projektovanja i komuniciranja prostora bez fizičkog prisustva. Student 21. veka već je krenuo ka bioničkoj ličnosti zahvaljujući novim dostupnim tehnologijama. Istovremeno, rezultati klasičnog projekta, poput papirnih prezentacija, sticali su visok nivo apstrakcije zbog velikog preklapanja podataka i zahtevali su nove formate za bolju interakciju sa javnošću. U takvom kontekstu ograničenih projektanata i edukatora, videli smo jasnu priliku da unapredimo sve nove digitalne formate koji omogućavaju odlučivanje o projektu, nove platforme interakcije i disruptivne vizuelne tehnologije kao što su VR i AR. Primenom novih nastavnih alata koristeći VR/AR u različitim kontekstima i projektima koncept "studenta bota" će biti sužen. Kroz različita nastavna iskustva i primere projekata, procenićemo uspehe, neuspehe, polja ekspanzije i kontroverze ove nove tipologije učenika.

ključne reči: Student bot, digitalna arhitektura, vizuelne tehnologije, disruptivno, proširena stvarnost, virtuelna stvarnost, tehnologije posmatranja, arhitektonsko obrazovanje, pandemija

DRUŠTVENI, EKONOMSKI I EKOLOŠKI UTICAJ PANDEMIJE NA ARHITEKTURU: NOVE PROSTORNE I OBRAZOVNE GRAMATIKE

Senka Ibrišimbegović, Nedim Mutevelić


Potreba za dodatnom izolacijom unutar stanova postala je realnost. Orman se pretvara u radnu sobu, a priroda postaje naš balkon. Koliko smo svesni trenutnih promena u našim životnim prostorima? Možemo li pomoću arhitekture uspostaviti dijalog sa savremenim pitanjima i događajima i pružiti kritička rešenja koja bi prostor u kojem živimo učinila boljim? Potrebna je nova gramatika prostora!

Pandemija i brza digitalizacija uticali su na arhitekturu, koja je već bila tradicionalno veoma spora disciplina koja koristi specifične alate manuelnog projektovanja i načina razmišljanja. Obrazovanje arhitekata je tokom godina imalo neprekidan zahtev za promenama u procesu učenja; nakon prelaska sa sistema nasleđenog iz socijalističkog perioda na bolonjski sistem, uticaj koji je izazvao Covid-19 u poslednje vreme podstakao je potrebu da se prilagodi promenama u metodama nastave i razumevanju prostora.

ključne reči: Uticaj pandemije, kontekst, svest, nova gramatika obrazovanja, nova gramatika prostora