

# The Factors of Spatial Engagement of the Residents in the Context of Socio-Spatial Planning: On the Example of Settlements of Enlarged Communities of RA

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## Բնակչության տարածական ներգրավվածության գործոնները սոցիալ-տարածական պլանավորման համատեքստում. ՀՀ խոշորացված համայնքների բնակավայրերի օրինակով Ենգիդունյան Վահան Վ.

Սոցիոլոգիայի ֆակուլտետի Սոցիոլոգիայի տեսության և պատմության ամբիոնի ասպիրանտ,  
Երևանի պետական համալսարան (Երևան, ՀՀ)

**Անփոփոխ.** Արդի հասարակության փոխազդեցությունների բազմաբարդությամբ պայմանավորված վերափոխաստվածում է ենթարկվում բնակավայրերի տարածական պլանավորման տրամաբանությունը վերանելով սոցիալ-տարածական պլանավորման, որտեղ առանձնակիորեն շեշտադրվում է բնակիչների մասնակցայնության սկզբունքը: Կոնկրետ բնակավայրերում մասնակցային պլանավորման հնարավորությունները կապված են մի շարք գործոններից, որոնց թվում է, նաև տարածական ներգրավվածությունը: Տարածական ներգրավվածության մոտեցումը զարգացվում է Չերնյավսկայայի կողմից, ով առաջարկում է այն դիտարկել տարածության ֆիզիկական, տեղեկատվական և սոցիալական չափումներում: ՀՀ-ում իրականացված համայնքային խոշորացումը, փոփոխության ենթարկեց առանձին բնակավայրերի զարգացման տրամաբանությունը: Այս համատեքստում առավել քան կարևորվում է պլանավորման գործընթացներում բնակիչների մասնակցայնության հնարավորությունների և, հետևապես, տարածական ներգրավվածության դրսևորումների հետազոտությունը, որը թույլ կտա կանխորոշել իրականացվող փոփոխությունների հնարավոր արդյունքները: Սակայն մի կողմից առկա է սույն հետազոտական հիմնախնդրին առնչվող գիտելիքի սղությունը և մյուս կողմից՝ տարածական ներգրավվածության առկա հետազոտական ապարատի ուղղակի փոխառնման անհնարինություն: Սույն աշխատանքի համատեքստում իրականացվել է տարածական ներգրավվածության Չերնյավսկայայի առաջարկած մոտեցումների և ինդիկատորների համակարգի վերանայում, որի համատեքստում ձևավորվել և ներդրվել են նոր ինդիկատորներ: Փոփոխականների միջև կապվածությունների և խմբավորումների հնարավոր դրսևորումների բազմակողմանի ստուգումից հետո, հաստատվել է ինդիկատորների ներգործնային կայունությունը և իրականացվել է բացահայտող գործոնային վերլուծություն, որի արդյունքներով հաստատվել է նախապես առաջարկված այն վարկածն, ըստ որի, ՀՀ խոշորացված համայնքների բնակավայրերում սոցիալ-տարածական պլանավորմամբ իրականացվող փոփոխությունների համատեքստում բնակչության տարածական ներգրավվածությունը պայմանավորվում է այդ բնակավայրերում ֆիզիկական, տեղեկատվական և սոցիալական ներգրավվածությամբ: Ընդ որում, ըստ տվյալների դիսպերսիոն վերլուծության, բացատրական բարձր ցուցանիշ ունեցող գործոնային կառուցվածքում տեղեկատվական ներգրավվածությունը տարածական ներգրավվածության ընդհանրական ցուցանիշի ձևավորման վրա ունի ամենամեծ ազդեցությունը, որին հաջորդում են ներգրավվածության ֆիզիկական և սոցիալական ձևերը:

**Հանգուցաբառեր և բառակապակցություններ՝** Բնակավայր, տարածական ներգրավվածություն, ֆիզիկական ներգրավվածություն, տեղեկատվական ներգրավվածություն, սոցիալական ներգրավվածություն, սոցիալ-տարածական պլանավորում, գործոնային վերլուծություն

## Факторы пространственной вовлеченности населения в контексте социально-пространственного планирования: на примере поселений расширенных общин РА Енги́дунян Ваган В.

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**Аннотация.** В связи со сложностью взаимодействий современного общества логика пространственного планирования поселений переосмысливается, превращаясь в социально-пространственное планирование, где

особо подчеркивается принцип участия жителей. Возможности совместного планирования в конкретных поселениях связаны с рядом факторов, включая пространственную вовлеченность. Подход пространственной вовлеченности развивает Чернявская, которая предлагает рассматривать её в физическом, информационном и социальном измерениях пространства. Осуществленное в РА расширение общин изменило логику развития отдельных поселений. В этом контексте более чем важным является исследование возможностей участия жителей в процессах планирования и, следовательно, проявления пространственной вовлеченности, что позволит предопределить возможные результаты реализуемых изменений. Однако, с одной стороны, наблюдается недостаток знаний по данной исследовательской проблеме, а с другой – невозможность прямого переноса существующего исследовательского аппарата пространственной вовлеченности. В рамках данной работы был проведен обзор подходов и системы индикаторов, предложенных Чернявской для пространственной вовлеченности, в рамках которого были сформированы и внедрены новые индикаторы. После многофакторного исследования ассоциаций между переменными и возможными проявлениями группировок и подтверждения внутрифакторной стабильности показателей, был проведен выявляющий факторный анализ, результаты которого подтвердили выдвинутую ранее гипотезу, согласно которой пространственная вовлеченность населения в контексте изменений, реализуемых социально-пространственным планированием в населенных пунктах расширенных общин РА определяется физической, информационной и социальной вовлеченностью в эти поселения. Кроме того, по данным дисперсионного анализа, в факторной структуре с высокой объяснительной силой наибольшее влияние на формирование общего индекса пространственной вовлеченности оказывает информационная вовлеченность, за ней следуют физические и социальные формы вовлеченности.

**Ключевые слова и словосочетания:** Поселение, пространственная вовлеченность, физическая вовлеченность, информационная вовлеченность, социальная вовлеченность, социально-пространственное планирование, факторный анализ

### Introduction

Settlements, as meaningful spaces, undergo continuous planning due to interactions with the local residents. Due to the complex relationships of the modern society, the current approaches to the change of settlements come to the idea of socio-spatial planning. Socio-spatial planning according to Erdiaw-Kwasie and Basson is “...the branch of planning focused on understanding why different groups of people embrace, contest or reject spatial changes, how they take a lead in shaping their own space, and ways to make them active in spatial transformations” [3, p. 3]. The socio-spatial planning approach establishes the vital importance of a mutually agreed and equal relationship between the professional community and the residents in spatial planning processes, as well as ensuring public participation in the planned changes. Therefore, socio-spatial planning has a development trend and it is directly related to the growth of participation of residents operating in local spaces. With the continued growth of participation, socio-spatial planning is being redefined as participatory planning [7]. Although, different authors refer to the principle of participation of different interest groups in spatial planning processes, researches aimed at identifying the factors contributing to it remains open. In this context, the three-dimensional model of local identity proposed by Chernyavskaya deserves attention. According to Chernyavskaya, meaningful spaces are endowed with physical, informational and social subspaces, which reproduce the residents operating in the aforementioned spaces. Those sub-spaces, interacting with each other, form local identities, the further existence of which is conditioned by continuous engagement in the physical, informa-

tional and social dimensions of meaningful spaces. Indicators of engagement in physical space mostly refer to appropriation of space, perceived variety, comfort, and formal or personal boundaries. Engagement in the informational space is characterized by the definition of the current and desired characters of the space, the activity of searching for circulating information flows. Finally, engagement in the social space is built through membership in community organizations, interest in current events and issues, and participation in those events [16, pp. 97-99].

Although this model is built for local identity research, looking at the interpretation of the forms of engagement in the physical, informational and social fields of space and the indicators that measure them, the possibilities of borrowing and adapting the spatial engagement as a separate as a tripartite conceptual unit of spatial planning become clear. In particular, if we pay attention to the discussed definition of socio-spatial planning, spatial engagement is seen as a means to improve life in settlements. The analysis of the connections between spatial engagement and socio-spatial planning shows that if an interaction between engagement in physical space and socio-spatial planning is evident at the level of indicator analysis, the relationship between engagement in informational and social spaces and socio-spatial planning is multi-layered. Engagement in informational space is related to the tokenistic type of Arnstein's gradation of participation of individuals or groups in spatial planning decisions, where participation is interpreted as awareness of spatial planning and participation of representatives of different social groups in advisory meetings [1, pp. 219-221]. At the same time, engagement in the social space is related to the highest level of the

abovementioned hierarchy, the power of the group. Thus, the engagement of individuals in planned spaces, and particularly in settlements, can be represented in the physical, informational and social dimensions of space, where the affective, cognitive and conative layers of engagement are reproduced.

The Republic of Armenia is also not exempt from continuous processes of social-spatial planning, where the process of community enlargement has recently been completed. It deviated several times from the initial implementation methodology, and was conceptually revised in 2018 after the velvet revolution. Currently, multiple deviations and changes from the prescribed approaches have created a situation where a number of settlements have been enlarged with the pre-2018 methodology and the rest with the post-2018 methodology. As a result, it was no coincidence that the complaints arose, especially among the residents of small rural settlements, related not only to the possible deterioration of the socio-economic condition of the settlements, but also to the reduction of opportunities to participate in the changes taking place in their settlements and in the decision-making processes regarding them. In this context, of course, among other factors, it is important to carry out research aimed at identifying the features of spatial engagement of the residents, which will allow to reveal the real picture of the perceptions, goals and operations of the society in the context of the changes implemented in the settlement. However, the lack of knowledge generated by the researches conducted in this field, as well as the lack of a developed toolkit (questionnaire), create the need to focus first of all on the formation of the methodological basis for the implementation of the mentioned research.

Guided by the theoretically discussed approaches related to spatial changes and residents' spatial engagement in that context, an exploratory factor analysis is carried out to find out the main components determining spatial engagement, their characteristics and the interactions between these components. Based on the three-dimensional model of engagement proposed by Chernyavskaya, an attempt is made to rework and supplement the system of indicators outlined by the author, adapting it to our research case. In the framework of the research, the following hypothesis is also tested: *In the context of the changes implemented due to socio-spatial planning in the settlements of the enlarged communities of RA, the spatial engagement of the residents is determined by the physical, informational and social engagement in those settlements.*

#### **Research methods, sample and tool**

In order to carry out the research, a multidimensional random sample was constructed, covering all regions of the Republic of Armenia. At the first

stage, a stratified proportional sample was constructed according to the permanent residents of the regions of the Republic of Armenia, then a cluster sample was formed based on it, setting the size of each cluster to 14. Taking into account the non-simple random nature of the sample, as well as the lack of information on the variations of the researched variables due to the lack of similar studies in the past, the coefficient of the design effect 1.55 was chosen for the calculation of the sample size, which is in the widely used range (1.5-2) for the construction of similar samples [13, p. 4]. As a result, the sample size calculated by multiplying the size of the simple random sample obtained by accepting the 95% confidence level, 5% margin of error and 50% prevalence with the design effect 1.55 was 600. As a result, the survey method was used to gather the required data. The research instrument questionnaire consisted of 16 questions, which were four-point ordinal Likert scales.

#### **Possibilities of performing exploratory factor analysis, applied methods and accuracy of the model**

In order to test the proposed hypothesis, an exploratory factor analysis was carried out using the FACTOR analytical program [4]. Before carrying out the factor analysis, the possibility of analysis was checked by comparing two equal parts of the existing database [11]. The value of the calculated index (0.98) allows to claim that it is possible to carry out exploratory factor analysis with the collected data. Taking into account the ordinal scaling of the research variables, as well as their non-normal distribution, the dispersion matrix was constructed with polychoric correlation. A parallel analysis using the diagonal weighted least squares (RDWLS) method was performed to extract the factors, and a Promax transformation of the data was used to ensure the simplicity of the factors, which allows taking into account also the possible correlations between the factors [14]. According to the obtained data, the correlation matrix formed for the exploratory factor analysis accurately revealed the correlations between the variables. This is evidenced by the Kaiser-Meyer-Olkin test index (0.84) [8], as well as the statistically significant Bartlett index (Bartlett's statistic=3099.9, df=91, p<0.001), which documents the existence of real groupings of variables. Possible high correlations between variables were also checked. The registered indicator of the determinant of the matrix (0.005) exceeds the minimum acceptable limit of 0.00001, which allows us to reject the abovementioned hypothesis [5]. In addition to the correlation matrix, the accuracy of the inclusion of individual variables in the factor analysis was checked with the sampling accuracy index [12]. According to the sampling accuracy index, those

variables whose index is lower than 0.5 are removed from the general group of variables, because they do not measure the same phenomenon as the rest of the variables. Thus, as a result of the analysis, the following statement-variables were removed “*I don't have time to search for information about changes that take place in my place of residence*” and “*I am a member of various active groups/organizations operating in my place of residence (e.g. youth associations, NGOs)*”.

From the point of view of explaining the variations of individual variables by means of the extracted factors, it becomes clear that after the removal of the “*I raise the issues/suggestions that concern me regarding my residence both in contacts with residents and state representatives*” variable, the minimum recorded explanatory power becomes 0.26, which implies that at least 51% of each variable is explained by the separate factors. From the point of view of the results of the explorative factor analysis, a number of statistical indicators are also worthy of attention, which allow to find out whether the conclusions made by the proposed factor model really derive from the features of the data used or not. In particular, the root mean square error of approximation (RMSEA=0.045), the non-normalized fit index (NNFI=0.977), as well as the comparative fit index (CFI=0.988) and the root mean square of the residuals (RMSR=0.0428) were calculated, based on which it can be concluded that the proposed model corresponded to the features of the data used [6].

#### **Results of exploratory factor analysis**

As a result of testing the accuracy and fit of the exploratory factor model, the number of initial 16 variables was reduced by 3. Thus, as a result of the analysis carried out with the 13 available variables, it became clear that the indicators selected for the measurement of spatial engagement are grouped into 3 main factor groups. This is evidenced especially by the recorded results of the explained variation. Specifically, the constructed model explains 61.4% of the total variation, with the first factor accounting for 38.1%, the second factor for 14.9%, and the third factor for 8.5%. The following variables are part of the first factor with their respective loadings: “*It is important for me to be informed about the changes happening in my place of residence*” (0.755), “*I try to get information about changes which take place in my place of residence through different sources*” (0.832), “*If I receive new information about the processes taking place in my place of residence, I am ready to share them with other people*” (0.785), “*I feel satisfied when I am informed about the changes taking place in my residence*” (0.622) and “*I am interested in the problems in my my place of residence*” (0.717). In addition, the variables show intra-factor stability, as the omega index is 0.793.

Looking at the variables collected in the abovementioned factor, it becomes clear that they characterize the residents's engagement in the information flows about the changes taking place in the settlement. The second factor is characterized by the following variables: “*I try to use my opportunities and connections to involve other people in the processes taking place in my place of residence*” (0.458), “*If possible, I am ready to make a financial investment for the development of my place of residence*” (0.772) and “*I can present some of the needs/problems of my place of residence*” (0.791). In this case, the omega index of intra-factor stability is 0.656. The obtained results document that we are dealing with the characteristics of socially active engagement in the changes of the settlement. Finally, the third factor that most characterizes the physical engagement of the residents in settlements includes the following variables: “*I know all the places in my place of residence*” (0.615), “*I feel comfortable in my place of residence*” (0.601), “*I know the names of almost every street in place of residence*” (0.668), “*There are places in my residence (except the apartment) that I can consider private places*” (0.729) and “*There are places in my residence where I spend pleasant time with my acquaintances/friends*” (0.626) [15, pp. 166-168]. As in the case of the second factor, in this case, the omega indicator of intra-factor stability determined by variables (0.679) does not exceed the indicator of 0.7. However, taking into account the small number of variables included in the factor groups, as well as the measurability features of the scales (ordinal scales with 4 degrees), it can be argued that the recorded results are sufficient to accept the hypothesis of the desired stability of the variables in the factors [9]. Considering the high loading of variables in individual factors, an attempt was made to find out the significant loading of specific variables in more than one factor group and possible high correlation between factors. Both Bentler's index (0.99) [2] and the index of loading simplicity (0.74) [10] show that the grouped variables mostly belong to one factor, and the loadings in other factors are not significant. At the same time, according to the correlation analysis between factors, although there are significant correlations between the first and second (0.616), first and third (0.511) and second and third (0.267) factors, these interactions are not strong enough to question the relative independence of the factors. Thus, the results of the conducted exploratory factor analysis allow to confirm the proposed hypothesis that *in the context of the changes implemented due to socio-spatial planning in the settlements of the enlarged communities of RA, the spatial engagement of the residents is determined by*

*the physical, informational and social engagement in those settlements.*

### Conclusion

As a result of the exploratory factor analysis carried out for the identification of the components determining the spatial engagement of residents in the settlements subjected to community enlargement in the Republic of Armenia, 3 main factor groups were distinguished which are distinguished by the high reliability of explaining the total variation, as well as the factor model built with them. Looking at the indicators collected in separate factor groups, it becomes clear that these groups rightly characterize the physical, informational and social dimensions of spatial engagement of residents. Thus, it is possible to confirm the previously proposed hypothesis that in the context of the changes implemented due to socio-spatial planning in the settlements of the enlarged communities of RA, the spatial engagement of the residents is determined by the physical, informational and social engagement in those settlements.

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