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A New Tool of Urban Stability and Development in Spatial Planning

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Abstract. The article represents a contribution to the theory of urban stability. We consider spatial planning and master plans as important tools for sustainable land development and stability. In the current spatial planning practice in Slovakia, in some cases, the imperfections of the present law are manifested. The ambiguities in the law cause a variety of interpretations in its application, which is negative in its use. This development of the area does not have to mean an improvement for the life of the population. The current spatial and land-use plans do not permit a sufficiently flexible response to current situations and oblige new projects to create such structures, forms, functions and public spaces that will improve the territory in several factors. The study points to the importance of complex analyses and assessments of the territory that are the starting point of urban design and planning. Knowledge of the area and its surroundings is a basic prerequisite for any successful new structure in urbanised areas. The establishment of urban stability is considered to be an important goal. Urban stability is not an unchangeable state but it is a condition expressing the ability not to disturb its condition. In the case studies of spatial plans application, we point out how the spatial plan can directly influence the stability or instability of the territory. The article presents an idea of a new analytical tool of urban stability, which evaluates the territory of several factors and looks for connections of these effects, which more specifically and more accurately assess the stabilization and destabilization processes of the territory. It defines the factors of urban stability and their interrelations in the form of a matrix of urban stability, which allows a more concrete and accurate estimation of the impacts of the new development on the given territory. On the basis of the theoretical model of stability, the article brings a proposal for a new analytical tool of urban stability in spatial planning, which also evaluates the precondition of new development areas.

1. Introduction

1.1. Sustainable development and stability

The concept of "sustainable *development*" resonates in the urban planning practice and also in international contexts. It appears in the preambles of laws and international conventions on the territory. This term means development that preserves the possibility of the present and future generations to satisfy their basic living needs while not reducing the variety of nature and preserving the natural functions of ecosystems. [1] Other definitions include "*improving the living standards and well-being of people within ecosystem capacity while preserving natural values and biodiversity for present and future generations.*" [2]

In other words – we aim to render the territory to the future generations not in a worse state than we were given it to manage. The term "*sustainable development*" already feels the territorial stability needs to be ensured to a certain degree.



1.2. Spatial planning and stability

Local governments use spatial plans generated by spatial planning processes to manage the territory of cities and municipalities. *"Spatial plan is a tool for spatial planning as part of the legal system; constitutes a social agreement and has the nature of a law. It sets its organizational principles, limits, and land use regulations."* [3] Through these legislative instruments, local governments try to manage the territories in various fields. From an economic point of view, it is an efficient use of the territory; on the social side it is the satisfaction of the needs of the population majority, and on the environmental side, it is the maintenance of the environment for the future generations. Since a city is a complex system, the factors influencing the cities are interdisciplinary and affect mutually.

The purpose of spatial planning and order tracking in the territory is: *to create the conditions for such territorial development, which includes the improvement of the qualitative parameters of the area and its individual components, even at the cost of quantitative limitation.* [4] Regulatory instruments should be set for development and stabilised territories. In democratic systems, they have a regulative integrity, on the contrary, in totalitarian systems, they have a directive character.

Moving the focus of spatial planning on the regulatory one in the last decades requires greater attention to the quality of regulatory instruments. The way of land use, both private and public, affects the quality of the environment and therefore becomes a public matter. *"The present situation points out the situation when space, once designed as public, is handled by private without any collective consensus to ensure shared ownership. Such spaces either become filled with new development, private parking lots of the opposite – totally unmaintained spaces, which frequently demonstrates shabby equipment and outdated paving."* [5] This use, codified by the spatial plan, can be seen as an agreement on land use. Therefore, there are important rules for the planning and direction of land use and organization, by which urban planning is an expression of certain idea, vision and has a conceptual character. Spatial planners and urbanists in cooperation with other professionals and the public try to create an optimal concept of the territory, as it is called, and try to express it with clear rules of fulfilment. Considering the contradiction of mainly ecological and economic, as well as aesthetic and ethical interests, the optimal property of the concept is the one supported by the widest professional and social consensus.

Currently, spatial plans in Slovakia are defined by a building law. With its general terminology, it tries to set a general framework to ensure the establishment of a spatial plan beneficial for all. On practical examples, we can observe that the current regulation tools of spatial planning are inadequate, unclear and static. On the one hand, they cannot sufficiently protect the territories with the built structure, and on the contrary, they are sometimes strictly and not elastically accessing the territories that need to adapt to the new conditions with the time and the change of the social relations in the city. The methodological ambiguity of the plans is characteristic, there is the possibility of their different interpretation by the public, authorities or even courts. The consequence of such a situation is that the achieved agreement is interpreted differently from all individuals. This leads to a loss of authority of rules and also stability of consensual concepts of the use of territory.

That is why legislative unification and clearer definition of terms are necessary, as it is also the case in other disciplines, which helps them to be understood by the lay public as well. The *"same speech"* of the actors is the basis for the success of the agreement process and its fulfilment.

2. Comparison

2.1. Stability and development in spatial-planning practice

In some spatial plans the territory is divided into *"stabilised"* and *"developing"*. It is the result of an effort to divide the territory into one where the objective is to maintain the parameters of the current state from those where dynamic development or a change in the current state and mode of land use are expected. Those territories are stabilised that are to remain undeveloped as well as the built-up areas and whose function and structure serve their purpose in a satisfactory manner.

Stabilised territory is therefore perceived by planning practice as a territory, in which small and not too significant changes are expected, territories with distinct character that is to continue to survive. The

theoretical problem of urban stability is that it is often perceived statically. Urban structures continuously develop, change. While there will be significant changes of quantitative nature in the developing territory, changes in the stabilised territory are also expected, but rather of a qualitative nature. Stability in the territory cannot be perceived as its *status quo*, because that could mean its regress. This thesis is confirmed by, for example, monumental areas which, despite the strict monumental protection of the physical structure, must demonstrate their viability with new functions of the buildings and the public space.

Roman Koucký also argues that *"in a stabilised territory it is not excluded to add structures, provided they promote the character of public spaces."* [6] The term stabilised territories became part of the methodology of the spatial plan of Bratislava, the capital of the Slovak Republic. This term also characterises the territories of the city in which the land use plan retains the current functional use; it assumes the degree of construction interventions mainly in the form of additions, annexes, superstructures, reconstructions and new constructions, without fundamentally changing the character of the stabilised territory [7].

On the other hand, **developing areas** are those that are inadequately used for urban functions at the time of approval of the plan and are considered potentially suitable for construction. Or, there are the territories where a fundamental change of function and development is envisaged. Ivo Oberstein perceives as a developing territory the one with planned new construction or redevelopment. [8]

Spatial plan of Bratislava city regards as developing such *"a territory which is designed for new construction, a fundamental change in functional use or a change in the way of building a large scale"*. [7] The question of spatial transformation is thus related to its development. Paradoxically, the Metropolitan Plan of Prague connects the transformation with stability, defining the transformation as *"adequate change or development of territory to achieve stabilization of the urban structure"*. [6]

2.2. Spatial plan of Bratislava city

On the example of Bratislava plan, which systematically works with two types of territories - stabilised and developing, we can point to the problematic sites of application of urban planning stability. This question lies above all in the static perception of stability. As a result, these *"stabilised structures"* are not, excluding the general definition that is interpretable in many ways, assigned to any regulatory - rules. However, the praxis shows that a non-addressed territory is a virtually unstable territory. The general characteristic is not a binding regulation, and allows for a voluntaristic interpretation. This is how the permission of new construction in the stabilised areas, which people perceive negatively as density increase, is granted. On the other hand, developing territories have a clear vision expressed in agreed parameters of binding rules. This gives stability to this development. Praxis shows that **the existence of clear rules, and especially their stability, is important for the urban stability of territories**. Their frequent and purpose-built changes also have a destabilising effect.

It is clear from these findings that a spatial plan and current tools can be used to create a land-use plan that will help the area and improve people's lives. On the other hand, especially due to the possibility of different interpretations, spatial plans can be created to aggravate the current situation. If we look for a concept that could include the complexity and interdependence of individual factors and impacts on the territory, we can help with other disciplines. There we can observe which context the word stability is used in. The explanation for the term "stability" lies in the fields of mathematics, physics, economics, etc. When we talk about the term "stability" in an urbanised field, we mean the equilibrium of functions and the stability of urban structures.

Urban stability cannot be confused with unchanged state, because it would be stagnation. *"City is an artificial creation that is continually developing. Continuous development is characteristic of Western civilizations based on Jewry and Christianity. From the outset, they are heading towards a certain goal."* [9] This process also includes an adequate density increase in the urban structure.

2.3. Houston city without a functional zoning plan

An interesting example of urban development management "without a plan" is the city of Houston in the US, cited as a successful example of a functioning city development according to the free market

principle. If we look in more detail, Houston does not really have a spatial distribution plan for functional zones, but it has most of the classic regulations used in the USA. The individual regulations are divided into categories and there is many more of them than they are commonly used in Slovakia. Furthermore, this example is also a confirmation of the need for stability rules, no matter what tool they are carried by.

The second tool for Houston's development is the *participatory* decision making, as it is called. It is based on the regulations with a certain "*freedom*" left to the decision of the citizens living in the area. Yet, the decision of laymen reflects in the low and unbalanced density of the building. Moreover, it is an example of a direct tool for making decisions about the future of their neighbourhood. [9]

3. Case studies

3.1. Nové Mesto and Váhom, Slovakia

The spatial plan of the city has been in place for 20 years. It is nonetheless fully functional and it defies the methodology of land use planning documentation in Slovakia. Part of the urban concept was to move the industry from the city centre's range. The spatial plan expressed it in such a way that it placed areas of civic amenities instead of the industrial area. This was an expression of not a directive to remove industry, but as a rule allowing industry to continue to exist. In addition, it was simultaneously preparing the territory for the future change. After 15 years of manufacturing transformation, industrial areas were vacated and the city was conceptually prepared for this change. This example confirms the need for such analyses and concepts that lead to the long-term maintenance and stabilization of the city's future. (Figure 1)

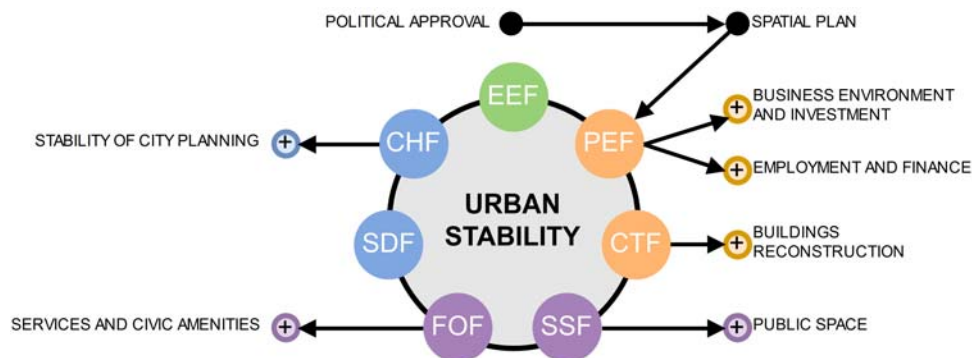


Figure 1. Urban stability matrix of spatial plan in Nové Mesto nad Váhom

3.2. Lučenec, Slovakia

In the city, with approximately 30,000 inhabitants in the south of central Slovakia at the turn of the millennium, the construction was pressed on the boundary of the preserved historical structure of the original centre and the disrupted territory in its peripheral position. The construction has greatly changed not only the city's panorama but also the spatial structure. The reconstruction of the only palatial building in the city - *Reduta*, was followed by the construction of a 12-storey hotel. This was later completed by the construction of a 22-storey administrative building and a 15-storey apartment building. The parterre was to be completed with the space for shops and services. The underestimation of the cultural-historical factor, the scale of the spatial structure and the economic potential of the city itself, was eventually manifested in the failure of this *business plan*. Objects are now partially unused, spaces between buildings have never become a natural part of the movement of the population and have gradually acquired an asocial and dangerous character. Paradoxically, this investment, aimed at raising the city, has lost its stability. It is clear that the funds invested in the reconstruction of the buildings and the traditional public spaces of the city centre have resulted in a better appreciation of the investment, which would be aimed at supporting the stability of the city's organism. (Figure 2)

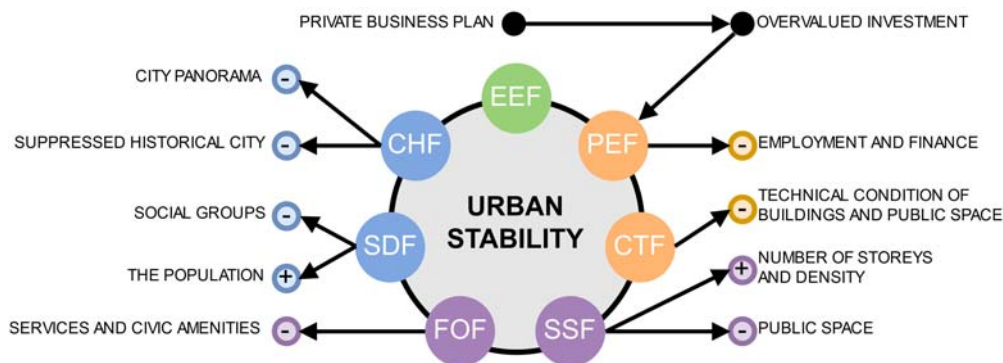


Figure 2. Urban stability matrix of business plan in Lučenec

3.3. Myjava, Slovakia

Javorinska Industrial Park in Myjava, which was built in the new millennium of structural funds, was supposed to help the whole region economically. The Trenčín Region, on the basis of the spatial study, decided on its location on the western slopes of the city in a direct contact of family houses. Myjava city is located in the valley and is surrounded by slopes that partially restrict its development, and especially the location of residential structures. This directive political location of the new industrial park placement on the western slopes has prevented the further development of residential areas on suitable sunny western slopes. Part of the population did not improve living standards, but worsened. In particular, the traffic load causes the deterioration of circumstances of the existing family houses. Moreover, the stability of the entire residential area was disrupted. The direct negative impact can also be seen on the street that is closest to the park. Several houses are for sale, and there are also massive full concrete walls created that are clearly spaced from the newly built industrial park. The industrial park and its new firms employ the citizens of the region, thus creating value in the region, which we can evaluate as economic stabilization of the region. However, its location adversely affects the stability of part of the city's population. It is therefore questionable whether the industrial park could not be in another location that would allow not only the development of the economy but also the development of housing in the region. (Figure 3)

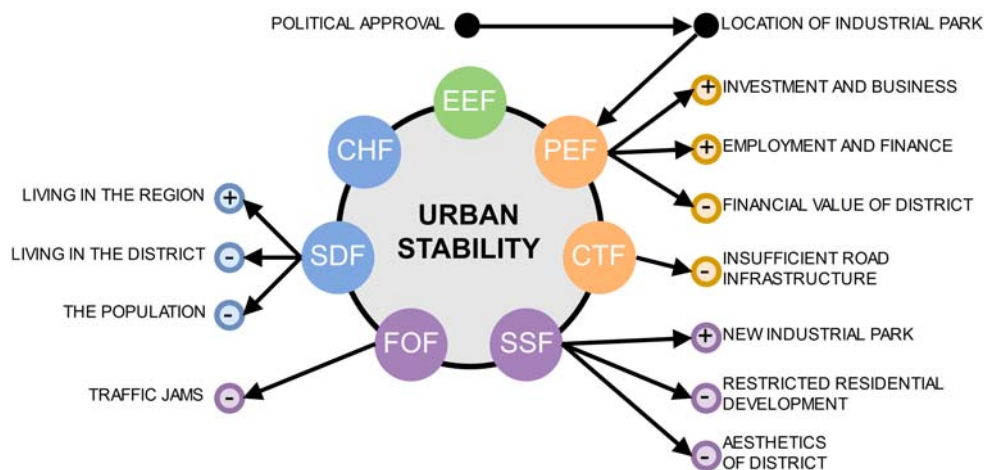


Figure 3. Urban stability matrix of industrial park location in Myjava

3.4. Topoľčany, Slovakia

The hospital complex was originally built on the outskirts of the town at the end of the 19th century and the entrance into the complex became one of the city's symbols. The entire complex has a clear

composition of the treatment pavilions, and the building of a park was also part of the area. In the 1970s, the hospital was complemented by new large modern buildings with medical offices and beds. Only some specific workplaces were moved to the old hospital. After 1989 there was gradually transformation associated with the reduction of beds. Later, the new economic rules led to the emptying of the old part of the hospital, which began to turn into an asocial space. This is an example where the maladjustment to the change of socio-economic conditions disrupts the stability of the urban structure until it is destroyed. The mission of the KEGA project at FA STU is to find a comprehensive new functional content to stabilize the whole area, including the park. (Figure 4)

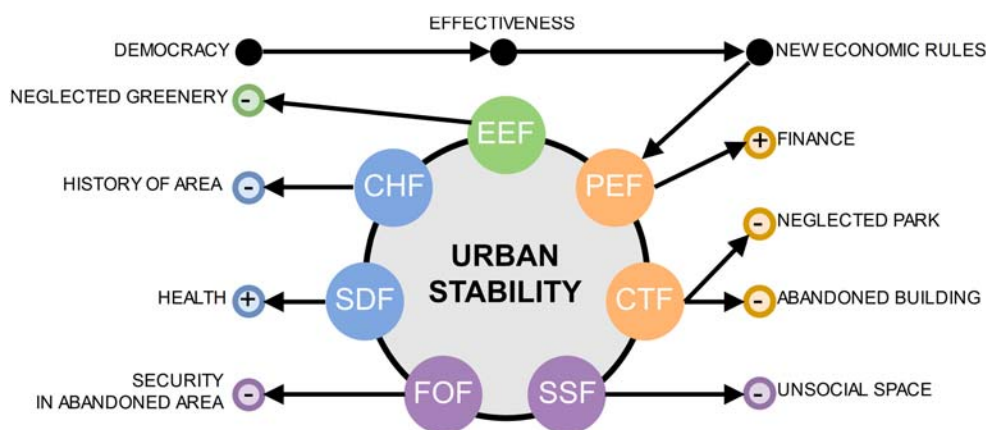


Figure 4. Urban stability matrix of new economic rules in Topolčany

4. The theory of urban stability

The term "*urban stability*" is, for the needs of urban theory and practice, derivable from general lexis. Jan Komrska formulated a definition of "*urban stability*" based on the inspiration from landscape ecology: "*The Urban Stability is the state of the urban structure (part of the territory) characterized by the balance between the various influences and factors in which partial changes in functional use and development do not interfere with the proper arrangement of the territory.*" [4]

If we define the concept of urban stability as an interdisciplinary concept, which is an analytical tool for assessing current areas and evaluating planned projects, the definition would be formulated as follows: ***Urban stability is a complex state between the processes and relationships of the various factors acting and forming the territory, expressing the ability not to disturb its state.***

Urban stability is differently applied in various hierarchical degrees of territory (Figure 5). We perceive it differently in region, settlement and zone. A disruption of the stability of a structure at a lower hierarchical level occurs at the level of a higher aggregate only when a certain critical limit is exceeded by a large range of an unstable part or a plurality of unstable parts in the whole. On the other hand, the violation of stability at the higher level is gradually transferred to the lower dimensions of urban structures. Urban structure of the urban district can be considered stabilised even if some of its elements – e.g. estates or urban blocks disrupted. However, if most of the urban district is disrupted, it can hardly be considered a stable district. Other urban factors may occur in a similar way: an urban structure with demographic regression can create stabilization in the area of parking and real estate prices, but this demographic disruption of the territory may eventually cause lability of the economic and social stratum of the territory.

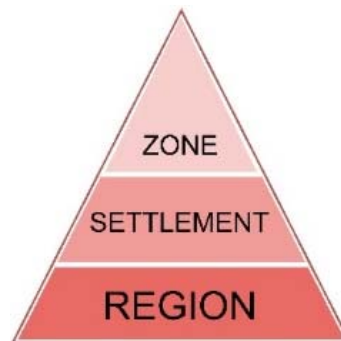


Figure 5. Dimensions of urban stability: region, settlement, zone

The individual factors influencing the urban stability of the territory can be divided into groups:

- topographic similar - topographic unique
- short-term - long-term
- subjectively perceived - objectively perceived
- interests for the individual - interests for the group

We identify the impact of several factors on assessing urban stability. Jan Komrska identifies 5 determinants of urban stability: [4]

- **political-economic factor**
- **socio-demographic factor**
- **functional-operating factor**
- **construction-technical factor**
- **environmental-ecological factor**

German expression *Stadtforchung* (city research) is defined as a division dedicated to the research and description of the city in terms of its social, geographic, historical, spatial, political, economic, cultural and ecological aspect. Human, technical and social sciences are combined. [10] Since we also consider the beauty of the environment to be one of the important attributes of stability, it is also necessary to involve artistic sciences. Based on this definition, we will also examine the impact of factors:

- **cultural-historical factor**
- **spatial-structural factor**

The significance of the cultural-historical factor is underlined by Jan Komrska when he characterises the structure that *"persists for a longer time period is a heritage bearer, it has a potential to have a stabilising effect on the area as well as on broader territorial context. Assuming its values are accepted and used by the company."* [4]

These stability factors can be classified into subgroups of **environmental, social, economic and spatial factors**. Their relations can be displayed in the form of a matrix (Figure 6). The basis for stability is the equilibrium state of their relations.

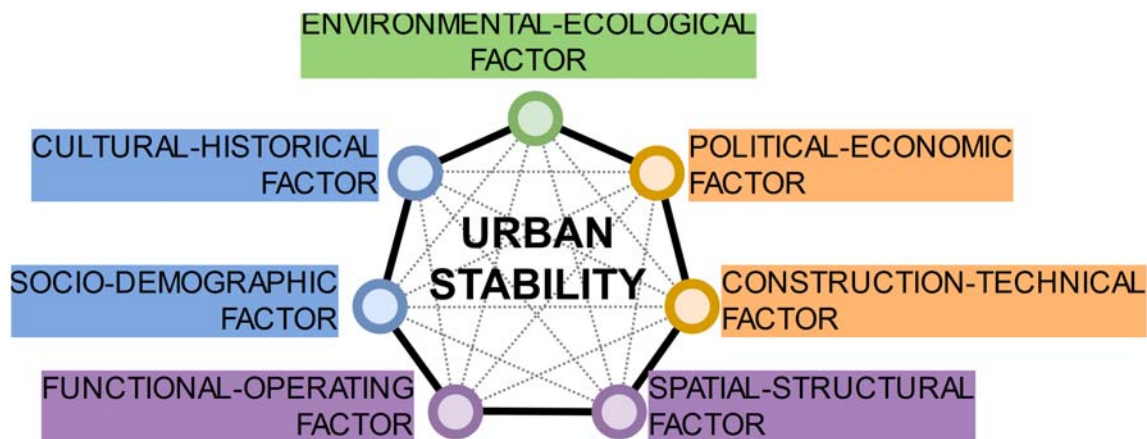


Figure 6. Urban stability matrix with factors

5. Discussion

Even in Slovakia, more and more people move to cities. In addition to basic living needs, the city should also meet the requirements of improving life. Individual inhabitants, however, have other ideas of improving their lives. We live in the urban environment every day and it is therefore important to focus on improving the urban structures of the area. It is important to look for collective objectives of improving the territory and especially for the instruments to achieve it.

A common goal planning to improve the lives of citizens must be based on understanding the complex issues of the city. *"A city is not a machine."* [11] It cannot be reproduced, and if we took it apart and put it together again, it would work differently. The city is a complex system that consists of multiple subsystems and innumerable links between different parts of the city's system. The theory of urban stability aims to better understand the processes affecting cities and their inhabitants.

6. Conclusion

The territory is stabilised if the summary of the stability values in terms of individual factors does not exceed the determined critical threshold. The classification into a stabilised and unstabilised state corresponds to a too polarised situation that is theoretical. In fact, each segment of the territory gradually passes through a process of **stabilization** or **destabilization**. It is therefore appropriate to divide the processes and changes in the territory over time and to determine their impact on other factors of urban stability. We recognize stabilising processes and destabilising processes. In complex processes, their impact on one part of the factors is positive - stabilising, but it is destabilising the other factors. We investigate whether the destabilisation is not so intensive to destabilise the remaining factors. In the analytical part we further evaluate the number of stabilised layers to the number of destabilised layers in the territory.

A suitable combination of evaluation of procedures explores the processes that most influence the factors of urban stability. At the same time, we look for the relations among the different factors as well as for assessing their relevance. Some processes can be simple - one input influences directly the change of one factor. On the contrary, some of them may be complex and affect several factors, even disproportionately.

An important part of assessing the urban stability of the area is the timeline. Alteration in the values of each factor reveals a trend of stabilisation or destabilisation.

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