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New economic poles in the periphery of European metropolitan areas

The dispersal of population, commerce and industry to the outer edges of cities is, in quantitative terms, the most important development in urban areas in western industrial societies in the last half century. The processes of peripheral growth have for a long time been observed and interpreted in the context of what might be called a discourse of 'dissolution of urban structures'. Key terms of the discourse are 'urban sprawl' or 'dispersal' and a rhetoric of a vanishing of the (traditional) 'European city'. In the last decade the discourse has been partly replaced by a perspective that focuses more on the newly emerging spatial structures on the urban fringe itself. The paper examines the question what types of new spatial clusters of economic activities can be identified in the periphery of European metropolitan areas using examples from a cross section of large metropolitan areas (Berlin, Budapest, Madrid, Moscow, Paris).

1. The 'urban reorganisation' discourse: a new debate about the development of the urban periphery

The physical expansion of urban areas in the post World War II decades and its causes were extensively documented in the 1960s and 1970s in countless studies of suburbanisation (e.g. ARL, 1975; BRUNN and WHEELER, 1980; BURDACK, 1985; CLAWSON and HALL, 1973; FRIEDRICHS, 1977; HEINRITZ and LICHTENBERGER, 1986; JOHNSON, 1974; MASOTTI and HADDEN, 1973; MULLER, 1976 and 1981). In the last decade there has been a marked shift in focus in research on the urban fringe. The development of the periphery is no longer primarily viewed from the perspective of the inner city and characterised by terms like 'flight' or 'dispersal'. The main focus of interest is now much more on the newly developing structures on the urban fringe itself. Less attention is being paid to the demise of the traditional compact 'European city', and more to the emergence of completely new urban structures in the periphery. There is an attempt to interpret the disappearance of the traditional city as a totally new phase in the urbanisation process (RONNEBERGER and KEIL, 1993, p. 230).

The shift in perspective that led to what might be called an 'urban reorganisation' discourse was partly caused by empirical studies of American metropolitan areas that revealed new trends. Commuting flows within the suburban rings are today more important in American urban areas than commuting between inner city and the suburban areas (PALEN, 1995, p. 185). There are now more office spaces in the periphery than in the downtown (HOLZNER, 1990). The recent stage of development is most obviously characterised by the emergence of new centres within

the suburban areas themselves (MÜLLER and ROHR-ZÄNKER, 1995). Since these new centres are not designated as separate administrative entities, they have been called by KNOX (1992) as 'stealth cities'. Wider public recognition was accorded to the concept of 'edge city', which was first used by GARREAU in 1991. Edge cities are defined by GARREAU as centres with more than 465 000 m² (5 million sq. ft) of office space, 56 000 m² of retail space and 24 000 employees. The emergence of edge cities usually depends on there having been an earlier phase of suburbanisation/deurbanisation of the population, retail and household orientated services, thus creating the necessary locational prerequisites (STANBACK, 1991).

The new urban reorganisation discourse is theoretically influenced by Regulation Theory and Postmodernism (HITZ, SCHMID and WOLFF, 1992). Suburban areas as an entity in their own right have a special importance for the discourse over the development of a 'post-Fordist' model of spatial development (MOULAERT and SWYNEGEDOUW 1990). The urban periphery is depicted in this debate as a dynamic place (RONNEBERGER and KEIL 1993). Regulation Theory in geography emphasises the link between the development of society and space. It assumes that specific regimes of accumulation and territorial forms of regulation are reflected in typical spatial structures (KRÄTKE, 1991; SCOTT 1988). The post-Fordist 'metropolis of flexible accumulation' no longer follows the classical spatial model typical of Fordism, typified by rings and sectors, but has rather been transformed into a polycentric form, made up by a network of various different kinds of location. The city is now 'broken down' into a series of specialised and fragmented locations. These new locations are linked by motorways, fibre-optic networks and rapid transit systems. The poorly connected intermediate areas become - in both a spatial and a social sense - the new periphery (RONNEBERGER 1997; HITZ, SCHMID and WOLFF, 1992). In these peripheral no-man's lands are now to be found housing estates for disadvantaged sections of the population, derelict industrial land and large scale infrastructure developments. According to SOJA (1993) the contemporary city has turned inside out. The development of city regions is no longer based on one single development pole, the city centre, where centripetal and centrifugal forces are both at work. Rather the new metropolis is increasingly decentrally organised and consists more and more of a mosaic of unevenly developed settlement zones which are creating a new geography. Although the discussion on post-Fordist and post-modern developments is very diversified there seems to be an agreement on the notion that the evolving patterns point towards an increasing level of differentiation within the periphery and the emergence of new nodes or clusters of activities in a dispersed settlement structure and that the cumulative effect of the new developments leads to a new model of growth of the metropolitan periphery (KUNZMANN, 1996).

2. Edge cities in Europe ?

The suburbanisation of population and industry which reached massive proportions in America after World War II, surfaced with some delay in West European countries, when the necessary social, economic and technical developments that are prerequisites for suburbanisation reached a significant level. These include: the emergence of a broadly-based middle class with independent purchasing power and with aspirations for bigger and better housing, the development of the infrastructure of the urban hinterland, a higher degree of car ownership amongst the population, and new location requirements of firms due to new technologies and economic changes. It would seem plausible to posit a similar connection between American and European developments with respect also to the formation of new centres in the suburban areas. The economic conditions that have led to the formation of edge cities in the USA, also exist in parts of Western Europe. One would, therefore, also expect that polycentric structures might develop in European urban regions as well. Some first reviews of European developments, however, find that this does not seem to be the case. ROHR-ZENKER (1996) for instance considers it unlikely that real edge cities will emerge in Western Europe. Radical changes in the settlement structure in Europe will be held back by the different cultural values associated with cities, the differences in the planning systems, and the contrasts in the form of political regulation. The higher population densities and denser urban network mean that medium-sized towns in Western Europe often act as the focus around which new functional centres in the outer hinterland of the metropolises crystallise.

Studies of German cities show, that, for the most part, the new suburban economic centres consist of single function complexes with large-scale outlets for retailing, leisure, services, transport and manufacturing (BRAKE et al., 1997; ROHR-ZÄNKER 1996). In general, therefore, they comprise facilities that require a lot of space and good access for private motorists (HATZFELD and TEMMEN, 1993). Even though RONNEBURGER (1997) points to some similarities between West European and North American metropolises, he argues that terms such as *outer city* or *edge city* should not be applied in the European context. Using Frankfurt as an example, he claims that the new suburban centres are not proper towns and are not located on the outskirts of the metropolises, but rather emerge inside the existing built-up area. Many US-American cities are located in otherwise thinly settled regions, while in Western Europe the various major conurbations almost merge into one another (RONNEBERGER, 1997). In many cases, the new suburban nodes are almost entirely mono-functional complexes (BRAKE *et al.*, 1997). In a few of the larger and higher order metropolises there is also evidence of a trend towards more complex structural forms in the new suburban centres (KEIL and RONNEBERGER, 1994; CLOUT, 1994; ROBERT, 1994). A well researched example is the city of Zürich, where in Zürich-Nord an outer urban ring has grown up, characterised by a complex patchwork of the most varied types of different land uses. Not only branch offices

are found here, but also the head offices of firms and the national headquarters of multi-national companies (HITZ, SCHMID and WOLFF, 1992).

3. A comparative analysis of new economic poles in the periphery of metropolitan areas

3.1 Some methodological problems

The attempt to identify new spatial and economic clusters in the fringes of metropolitan areas on a European scale in a comparative framework faces numerous methodological problems. What does ,for instance, the term 'new' economic pole mean in the spatial context of the densely populated European peninsula where older small and medium sized towns exist around most major metropolis? Many of the new economic complexes are attached to existing settlements and are often extensions of existing structures. Another question that becomes relevant in an empirical analysis is what the minimum size is that a spatial activity clusters should have in order to be of identified. What spatial configurations can be said to form one pole as opposed to separate poles? Should individual projects like for instance a particular office park or a large shopping centre with additional service functions be counted as separate economic poles, even if they are adjacent to each other? What about spatially not contiguous office, retail or production concentrations in mixed settings?

After a preliminary round of empirical investigations in the five case study cities, the following criteria were established as guidelines for the analysis of new economic poles in the periphery of the metropolitan areas: The term 'new' economic pole was interpreted in a more qualitative fashion for recent developments of an essentially post-Fordist or post-industrial character. In the context of the cities in transformation countries Berlin, Budapest and Moscow the demise of the socialist planning economy provided a clear cut and the focus was on post-socialist developments of the 1990ies. Such a narrow time span would have been counterproductive in the case of the western European examples Madrid and Paris, since the early 90ies coincided with a slump in the real estate market. Most developments of a post-Fordist character took already place in the 1980ies and in the case of Paris the construction cycle extended into the 1970ies.

A solution to some problems of definition and scale is the distinction between micro-level and meso-level clusters (new economic poles). Micro-level clusters are individual sites or several contiguous sites that surpass a minimum threshold of an employment size of 1 000. Meso-level clusters - which are the specific focus of this paper - might stretch over a larger area, for instance several communities. They can best be thought of as areas of concentrations have the appearance of mixed use areas. This means that the different economic elements that form the meso-level cluster (new economic pole) need not be adjacent to each other. New economic

poles are considered to be secondary employment centres in the metropolitan area and should therefore have a net commuting surplus. It seemed plausible to set the minimum employment base of the new economic poles at 5 000 new jobs (10 000 for Paris). Problems of the availability of data and the specific development patterns of job growth in the transition countries, with a strong employment decrease in the early 1990ies and a subsequent new job growth, made it necessary to use the above mentioned thresholds only as an orientation and not as exact criterion. Expert talks and field investigations were used to supplement the data analyses.

3.2 New economic poles in western European metroplitan ares: Paris and Madrid

In most French metropolises there are few high-ranking service functions to be found in the urban fringe. The suburban centres are still relatively monofunctional. Quantitatively, large-scale retail complexes (*centres commercials*) and industrial estates (*zones d'activité)* are the most significant uses (FRANÇOIS, 1995). Some of the much vaunted and promoted *technopoles* (science parks) are however also located in suburban settings, good examples being Toulouse-Labège and Sophia Antipolis near Nice (BENKO, 1991). Also, the Paris periphery does have more complex centres with a wider range of high-level functions (BASTIÉ, 1984; DAMETTE and SCHEIBLING, 1992; LAKOTA and MILELLI, 1989, SOULIGNAC, 1993; ROBERT, 1994). The Paris agglomeration shows the strongest proliferation of peripheral growth poles of all the analysed metropolitan areas. It is not surprising that many of the growth poles are associated with the villas nouvelles in the Paris region that were for the most part constructed in the 1970ies and 80ies and became significant economic centres in the 1980ies and 90ies. The job increase in the economic pole that emerges around St. Quentin totalled over 83 000 jobs between 1975 and 1999 which meant a relative growth of 4.6% per year. The *Renault Technocentre* which concentrates the R&D activities of the car manufacturer and the headquarters of the major construction and telecommunications company Bouyges are two important nodes in the economic pole. Similar poles emerged around the new towns of Evry, Cergy-Pontoise and Val Maubuée (Marne la Valée). There are, however, other noteworthy developments not connected to villes nouvelles. The southern part of the agglomeration witnessed the formation of a Technopole of international importance around Massy and the Plaine de Saclay. Though the growth dynamics in terms of increased job figures slowed down in Massy-Saclay in the 1990ies, there is an still a qualitative growth of increasing concentration of pure research an R&D activities in the area. The slow down in quantitative growth reflects not only macro economic developments in the Paris Region but also strong anti-growth sentiments of part of the local population. The most dynamic pole in the Paris Region in recent years is the *aeroville* around Roissy and the CDG-airport in the north eastern section of the region. This includes developments around the airport and along the traffic axis of the autoroute to Paris with the large scale industrial park *Paris Nord II*. A unique development in Europe is the emergence of the

Val d'Europe economic pole around the *Disneyland Paris* themepark. Around the nucleus of the original themepark shopping centre office developments and a second theme park are already realised or under construction.

In the outer Madrid metropolitan region there has been evidence of a new set of location preferences along the major trunk roads. This has created ribbon developments, rather than a third ring, or new nodes (LLES LASZO, 1993). Characteristics of this new phase are the growing commuting distances between the suburban cores of the first and second rings, and the new ribbon-like forms of development (SALOM CARRASCO *et al*., 1995). Associated with the above changes there has been a marked growth in clean industries locating in zones and sectors with high proportions of residential building (HEITKAMP, 1991 and 1993).The dynamic development of the economy of Madrid in general and of the service sector in particular also led to the emergence of new economic poles in the metropolitan periphery. These new poles are all located in the northern and western parts of the periphery and form a clear contrast to the southern and eastern parts of the periphery that are dominated by industrial premises warehouses and high rise housing estates erected for the most parts in the 60ies and 70ies. The Tres Cantos area is a planned development north of Madrid with a total employment base of 12 600 jobs which has the strongest concentration of high tech activities the Madrid region outside the central city. The industrial parks in Tres Cantos include the *Parque Technologico de Madrid* and the *Zona Oeste* with *Lucent Technologies*. The growth pole Pozuelo de Alcorcon (19 200 jobs) in the western part of the metropolitan region has a sectoral specialisation in the media sector and includes the media city *Ciudad de la Imagen*. It is adjacent to an economic cluster of similar size around Las Rozas-Majadahonda. According to WEHRHAHN (2000) the office park project *Parque Empressarial de Las Rozas* can be considered as one of the few examples of a European edge city. This claim may be a bit premature since the project is far from being finished and its future development depends on the evolution of the real state market.

3.3 New economic poles in Central and Eastern European metropolitan areas: Berlin, Budapest and Moscow

The process of transformation after 1989 has also unleashed new development trends on the periphery of the metropolises in Central and Eastern Europe. There is evidence that the political changes of 1989 moved the former socialist countries from an urbanisation to the suburbanisation phase, in other words from compact cities to those more dispersed in the wider urban region (cf. HÄUSSERMANN, 1996; SAHNER, 1996). According to FASSMANN (1997) the potential for suburbanisation is particularly marked in the primate cities, which are affected by the impact of higher location rents in the central locations and the associated enforced movement of housing out of the inner city in the face of competition from more economically attractive land uses. After unification a dynamic suburbanisation process set in East Germany (DANGSCHAT and HERFERT, 1997). This also led to a sig-

nificant increase in population in the outer Berlin metropolitan region (*engerer Verflechtungsraum*). The outer metropolitan region had been an area of demographic stagnation for decades due to the political situation. The increase in economic activities that set in after the general job decline in the early 1990ies was less pronounced than the population increase. In the periphery of the Berlin metropolitan area there are only two spatial clusters that show a high growth dynamic in 1990ies: Teltow-Stahnsdorf 9.0% per year and an absolute increase of 5 400 in the period 1994-98 and Schönefeld-Waltersdorf 10.6%. The Schönefeld economic pole is an airport related development it has, however, not yet reached a scale that would justify the term *aeroville*. It is planned to build the new international airport for the Berlin region in Schönefeld. This would certainly boost the emerging growth pole. Financial problems and political quarrels have, however, slowed down the realisation of the project. The nucleus of the Teltow-Stansdorf growth pole of formed by the expanding high-tech park *TechnoTerrain Teltow* with over 6 000 jobs. Both of these dynamic economic poles are located in the southern part of the metropolitan region, which is the most dynamic geographical sector in the periphery. In addition to the two dynamic economic poles there are five other poles with a certain - though much lower - growth dynamic can be identified in outer zone of the Berlin metropolitan area.

In contrast to the other former Communist countries, there was already some evidence of 'classical' single family house residential suburbanisation in Hungary even before 1989 (TÍMÁR, 1994). After 1989 residential suburbanisation became a feature of all the major city regions in Hungary. Residential suburbanisation is already well advanced in the Budapest Region, but the equivalent relocation of retailing and manufacturing has only recently begun (DÖVÉNYI, KOVÁCS and KOK 1997). For the most part it involves new developments, rather than the relocation of existing firms. They are concentrated on the main arterial roads, at the junction of the M1/M7 motorway, and on the bits of the proposed M0 motorway ring road that have so far been built. The main area of investment and economic dynamic in the Budapest Region in the period of the post-socialist transformation has certainly been the city centre. New polarised economic developments in the periphery have been limited to the spread of large scale supermarkets and commercial centres operated by international retail chains like *Auchan* or *Cora* which occupy strategic locations along the main traffic arteries. A larger economic cluster with characteristics of a growth pole emerged near the intersection of the motorways M7, M1 an M0 in the south-western part of the metropolitan area around Budaörs and Törökbalint. Hotels, office complexes, new production sites and retail outlets concentrate in this area. A conference centre is planned. A second peripheral pole with a high tech orientation may develop around the small town of Gödöllö.

There are a number of forces which make it unlikely that a suburbanisation process along western lines will evolve in Russia the near future. Among these are (NEFJODOWA, 1997): a lack of capital for buying or building these houses, the absence of a viable system of credit for the private sector, the lack of infrastructure and

services in the communes in the hinterland and in the case of Moscow also the lack of enthusiasm amongst the Moscow population for moving to the outer suburbs and thereby giving up their official right to reside in Moscow itself. At present there is no evidence of urban-rural migration in the Russian urban agglomerations. There is only a construction boom around Moscow, fuelled by rich Muscovites who own cottages as second homes. The only larger group that has moved into locations in the urban fringe round Moscow are *nouveau riche* Russians from other regions, or rich families from the former Soviet Republics (LOBSHANIDSE 1995). For the most part they are migrants who want to use the Moscow periphery as a springboard into the city. The concentration of investment and building activities in the city centre and the inner city is even more pronounced in Moscow than in Budapest. Economic developments in the metropolitan periphery are for the most part restricted to locations near the MKAD beltway that surrounds that city. The typical developments might be characterised as informal or 'low level', they include large scale open markets, used car trade and repair facilities an other mixed use developments. In contrast to Budapest there are few 'high-level' developments of international investors in the periphery of Moscow. There is only one area in the periphery that shows signs of a possible growth pole. It is developing along the axis that leads to the international airport at Scheremetjewo.

3.4 A typology of new economic poles in the metropolitan periphery

New economic poles have been characterised as secondary economic centres in the periphery of metropolitan areas. These large concentrations of jobs and office, manufacturing and retail spaces consist of a mix of activities and land uses of various forms. What are the constitutive factors that lead to the emergence of the different growth poles? A useful starting point for a typology is to distinguish between spatial clusters of activities that are also clusters of functionally related firms (functional clusters) and spatial clusters that are not made up of functionally related activities (unrelated clusters). Functional clusters are of prime interest in the theoretical context of the so called 'Californian School' of regional economy that refers to them as 'flexible production complexes'. In this perspective, a spatial cluster of activities is only of interest as the spatial representation a functional cluster or simply as an indicator for the existence of local or regional links. The argument behind this is that geographic proximity reduces transaction costs (SCOTT, 1988) and facilitates the formation and exchange of non-codified and tacit knowledge (STORPER, 1997). Case studies of the Californian School concentrate on the spatial clustering of high-tech and design intensive activities.

Another line of research concentrates explicitly on concentrations spatial clusters without reference to functional links (unrelated clustering). Following this approach, empirical studies such as HARTSHORN and MULLER (1986) or CERVERO (1989) have identified a range of new spatial configurations on the periphery of U.S. metropolitan areas: office parks and office concentrations, mixed-use developments, sub-cities and suburban corridors. Sub cities and suburban corridors are compara-

ble in size to the meso-level economic poles that are discussed here. The emergence of economic poles as functionally unrelated clusters is often due to more general agglomeration economies, like accessibility and transportation links, or the proximity to the residential areas of a specialised labour force.

Looking at the new economic poles identified in the case study cities, it is obvious that the functional cluster-type is rather an exception. There are two economic poles that clearly fall into this category: The technology districts of Massy-Saclay in the Paris metropolitan region and Tres Cantos in the Madrid region. Functional clustering might also be of a certain relevance the Val Maubuée in Paris with the *Technopole Cité Descartes* and Évry with the biotechnology centre *Genopole* and - to a lesser extend - Teltow-Stahnsdorf in the Berlin metropolitan region with the high-tech park *TechnoTerrain Teltow*. The large majority of the new economic poles is not based on the logic of inter firm linkages but is the result of unrelated clustering. Different typical combinations of factors seem to lead to the formation of new economic poles in the sample cities:

- The concentration of economic activities due to more 'conventional' factors like accessibility and good location in the transport network seems to be relevant for the proliferation of Budaörs/Törökbalint in Budapest, Ludwigsfelde in Berlin and Pozuelo de Alcorcon in Madrid.
- The use of locally based resources like the proximity to a local labour force seem to have been important factors for the formation of economic clusters like Henningsdorf in Berlin or Cergy-Pontoise and St. Quentin-Versailles in Paris.
- The economic poles in Roissy in the Paris metropolitan region and Schönefeld in the Berlin metropolitan region are airport related clusters that are often referred to as *aerovilles* or airport cities. The airport related poles also include developments that are not specifically linked to the air services itself but make use of the well developed transportation and communication networks around airports and especially those between the airport and the inner city. This seems to be the case for the growth along the axis between the airport of Scheremetjewo and the inner city of Moscow.
- There is also a number of poles whose development is characterised by a high level project planning by either state or private initiatives of and an emphasis in the economic poles that developed around the *villes nouvelles* in Paris, notably Evry, St. Quentin-Versailles and Cergy-Pontoise reflect state involvement in planning and financing. An integrated project with the private sector as leading participant is the *Disneyland Paris* development (Val d'Europe). Las Rozas in the Madrid metropolitan Region was conceived by a publicly owned development agency. It should of course be kept in mind that in the European tradition of mixed economies and regional regulation all of the developments listed above are in one way or another also influenced by spatial planning schemes and public actors at the local and regional and sometimes also national level. This is of course especially relevant in the case of the economic poles that emerges in connection to the villes nouvelles in France. For instance, the practice of state

approval for large scale location decisions (*agrément*) was used in favour of the *villes nouvelles*. In Madrid the publicly owned regional development organisation *ARPEGIO* is a key actor in shaping the economic Geography of the metropolitan areas and implements several business park projects. Local administrations and their organisational capacities are important location factors in the Budapest area.

Summing up the above arguments, a preliminary typology of new might thus consist of the following elements:

a. new economic poles as spatial clusters of functionally related firms (functional clusters)
- 'industrial district' made up principally of small and medium sized firms
- agglomeration of firms around a large leading firm ('solar firm')

b. new economic poles as result of unrelated clustering
- communicative locations nodes in transportation and communication networks including the communication of place images
- proximity to locally based resources like amenities and specialised labour
- *aerovilles* around airports or other large scale infrastructure projects
- economic poles based on planned and integrated projects.

4. Conclusions

The Paris metropolitan region shows the most dynamic peripheral growth of all the cities studied. This may be due to the high land use densities and high location rents in the inner city and to the dynamic growth of the Paris economy in the 1980ies that created a demand for additional office and industrial spaces. Part of the dynamic is also the result of a regional policy that supported the construction of the *villes nouvelles* and other large scale projects in the outer city and by doing so also effectively modernised an improved the image of the outer city which had until the 1970ies been perceived as the *banlieue*, as a kind of back yard to the 'city of lights'. The proliferation of new economic poles in the northern parts of the Madrid metropolitan area is to a large degree the result of the construction boom in the 1980ies and early 1990ies, that is the period following the admission of Spain to the EU.

It is not particularly surprising that peripheral growth in the form of new spatial clusters or economic poles is much more pronounced in the Western European metropolitan areas studies than in those in Central and Eastern Europe. The transportation network and the infrastructure development in the periphery of Eastern European Cities is often still insufficient, limiting the possible locations for new developments essentially to sites along the motorways. Post-socialists cities also often have vacant or under-utilised lots in the inner city that can absorb most of the de-

mand for new office or commercial spaces. These factors clearly play a role in the more centralised post-soviet development of Moscow. The significantly higher growth dynamics of the Budapest periphery also reflect the more advanced transformation process of Hungarian economy in general and that of Budapest in particular. In fact, in many respects does the Budapest periphery bare more resemblance to the periphery of Berlin that to that of Moscow. This is also true because the peripheral development of Berlin has not risen to the level that many experts and planners expected or feared in the wake of German reunification. Again much of the growth dynamic in the Berlin metropolitan area – which was in fact much lower than forecasted – was absorbed by development projects filling in gaps in the inner city.

Although the case studies show a wide array of developments in the periphery of European metropolitan areas, they clearly depart from the development pattern of U.S.-metropolitan areas in general and metropolitan peripheries in particular. The CBDs of all European cities studies (including extensions like *La Défense* in Paris, *Asca* in Madrid and the *Potsdamer Platz* in Berlin) remain the dominant centres of the agglomeration. The American development of a declining city centre and a prospering periphery ('doughnut'- model) cannot be observed in the European cities studied.

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