



Technium.

44/2023

2023
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Technium

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Measurement and analysis of municipal fields of the Region of Hodna, (M'sila province, Algeria)

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Abstract. The administrative meshes constitutes an architecture put in place by a State to exercise its powers on the national territory, If the administrative mesh is characterized by limits and an extent, its geographical study requires to be interested as much in the container as in the content, The administrative network is a simple mesh placed on a space, the administrative network can become a geographical object in itself, when it is recognized and appropriated by the population, The engineering of divisions is a first approach to understanding the formation of administrative meshes, the size and design of the stitches are one aspect of this, This study attempts to shed light on the principles of administrative division of Algeria in general and the municipal network in the province of M'sila in particular, and to characterize the main consecutive imbalances, The degree of spatial efficiency is assessed using the measurement and analysis of the shapes of the municipalities by the application of three indexes, the shape index, the polygons of Thiessen and Reilly's Law of retail gravitation, In the last We suggest some orientations for an administrative reorganization in order to achieve a better balance.

Keywords. Administrative meshes, measurement, Hodna, division, municipalities, spatial efficiency, imbalances.

1. Introduction

The Administrative divisions are an important part of state governance and a basis for redistributing state power and formulating policies, and their rationality has a major impact on regional development (Ma et al, 2009), Division of the space which allows its appropriation, its management or its knowledge, The mesh depends on the figure of the area the space which it cuts out and of the network, formed by the limits of this mesh, It is very diverse in its shape as well as its size: from plots to supra-state buildings, including employment zones, for example, its functions are varied: cadastral, politico-administrative, economic or even statistical.

The network can evolve over time but not necessarily at the same rate as spatial changes, The administrative network constitutes an architecture put in place by a state to exercise its powers on the national territory, Cut to manage, such could be the motto of state order, This preliminary definition insists on the functional principle which presides over any division of the territory, The administrative network resulting from this partition nevertheless covers a certain polysemy.

The administrative mesh is a simple net placed on a space, the administrative mesh can become a geographical object in itself, when it is recognized and appropriated by the population, If the administrative mesh is characterized by limits and an extent, its geographical study requires taking an interest in both the container and the content, so the engineering of divisions is a first approach to understanding the formation of administrative networks, the size and design of the meshes being one aspect of this. often very active in cutting (Geography review of Lyon, 1997, INSEE first, 1998), should not, however, obscure the internal functioning of the mesh. It can be studied through the analysis of the skills and articulations between the meshes, of similar or different level. It reveals power games between the different actors involved in territorial management. In this way, the black box of an omnipotent state is broken by studying power relations within the territorial structure.

The political territoriality of the State resonates here with the identity territoriality of society, in this the administrative division is not neutral on the territory, When the holders of power modify the administrative network, they disturb the territorial landmarks of the populations (Raffestin, 1980), The appropriation of the administrative network as a territorial landmark by the population is part of the process of territorialization, It is a matter of a long temporality, that of the duration necessary for the registration of the administrative network on the territory, In turn, the administration "invents the territory": the administrative system is not the pure product of a hierarchical submission to the to the urban agglomeration, it installs duration at the heart of the territory (Alliès, 1980). The diachronic study of the succession of meshes proves to be necessary.

Administrative divisions are a system of regional divisions for a state to implement hierarchical administrative management, It is a form of division of administrative regions and top-level design of an administrative management system, Administrative division adjustments can effectively stimulate the development potential of administrative regions, their development, and enhance their competitive position in a region and the country by optimizing allocations of administrative resources, thereby creating suitable administrative levels, affiliations and administrative authority, In other words, it is believed that administrative division adjustments change the potential of administrative regions, The different levels of administrative units in the administrative division system are called administrative regions or administrative districts.

As any space to be developed is perceived in a negative, "poorly balanced" way, the objective of development is to correct the spatial effects of human activities (Baud et al., 1997), Algeria has undergone, and is in the process of undergoing, very accelerated territorial transformations following historical, economic or political imperatives (Raham, 2001), Before independence, the various territorial reorganizations, which Algeria had known, obeyed various requirements; whether they are colonial in nature or respond to expansionist imperatives, they have often aimed at the disproportionate exploitation of the country in all areas, In the aftermath of independence, the public authorities multiplied their efforts in order to put an end to the multiple disparities emanating from the previous political and economic systems. It is a task that seems difficult if one knows "the topographic fragmentation of the country", "the heterogeneity of the population in this segmented space", "the topographic fragmentation of the country and the segmentary character of Algerian society" (Cote, 1993), It therefore seems imperative to relate the different territorial reorganizations of the Algerian space to better understand the current network "Referring to this completely disrupted history means trying to better understand the present in order to better guide future planning and territorial division actions" (Amari, 1982), Since 1963, to meet the needs of economic and social development,

Algeria has carried out frequent administrative division adjustment, These include two major adjustments of provincial administrative divisions, namely, the reform administrative in 1974 and in 1984, Because of its complexity, the province of M'sila constitutes for the regional analysis a privileged field of observation, without corresponding to the uniform Christallerian space, this region constitutes an interesting field of investigation for the research on the principles of Spatial organization.

2. Trends of Administrative division in some territories.

Administrative divisions are an important part of state governance and a basis for redistributing state power and formulating policies, and their rationality has a major impact on regional development (Ma et al., 2009), The different levels of administrative units in the administrative division system are called administrative regions or administrative districts.

The reasons of territory division or reform changes from one country to another, reflecting their economical and social development, The international experience show that the administrative territory reforms are made for three reasons, In France is a consequence of dramatic changes of responsibilities or regimes, In Italy to preserve the balances of historical heritage in different governing regions, In Nigeria to weaken the cohesion of ethnic groups and to enforce the cohesion of state.

Existing interpretative research on the impact of setting or adjusting administrative divisions on urbanization is relatively fragmented: The first is the change in geographical space of an administrative region, Research shows that administrative division adjustment guides local development by effectively integrating regional resources (Yu et al., 2006), expanding new urban growth spaces, increasing the population and size of industry under jurisdiction (Shang et al., 2015), and optimizing urban spatial structures (Wang et al., 2015), Administrative division adjustment also coordinates administrative divisions with natural divisions, urban system divisions, transportation network patterns, major function zoning and population distribution, thereby effectively promoting local economic and social development (Yang et al., 2013), The second perspective is the change to the administrative system. The administrative levels, barriers between regions, central-local relationships, cities leading the division of counties and other factors associated with administrative division all affect the methods and effects of regional spatial governance (Liu et al., 2014).

2.1. Mesh of the European territory.

The economic crisis in 2007-2010 has raised the need for territory reorganization in a lot of European countries and in the region, in order to achieve a most efficient and rational use of natural resources, more efficient way of management by the local authorities and turning these resources into essential national economical assets, respecting at the same time the principle of stable development.

Dexia (2012) summarizes some of the models of implementing the territory reform in different countries, at the center of which stands the necessity and the trend of reducing the number of small communes (according to the space and population), or their suppression by merging them with other communes or urban centers based on different reforming criteria.

The territory reform is different from country to another countries, the number of communes in Greece decreased from 1034 in 2007 to 324 in 2011, In Saxony decreased from 840 in 2007 to 220 in 2011, the number of communes In Germany decreased from 12456 in 2007 to 11553 in 2011, In Finland, the number of communes decreased to 336 in 2011 from 431 in 2006, the number of communes in Denmark in 2007 decreased from 271 to 98.

In 2011, in order to have a more stable management of urban systems, the Irish government promoted the union of towns and communes.

In addition, in 2012, the Spanish government adapted a plan which aimed at decreasing the number of localities in less than 5000 inhabitants, which made 84% of the general numbers of communes in the whole country, in these conditions, it is aimed at the same time to regulate the local rights and competences, However, this trend is not noticed in all European countries. Thus, in France and Luxembourg, this trend is developing slowly.

in Italy, the reform based to suppression of smaller communes with less than 1000 inhabitants was contested, the need to implement such a territory reform was replaced by the alternative of implementing the policies of merging these communes in the inter-jurisdictional cooperation.

The social and political history and Landforms have had a powerful influence on the territory division.

2.2. *Mesh of the Brazilian territory*

The political and administrative network of Brazil was formed by obeying three principles and mechanisms: freedom, division and inequality, Freedom first, the principle has always been that new units can be formed at the request of the inhabitants, when they reach a minimum population and in compliance with legal rules. This is how municipalities (the equivalent of municipalities) appeared over the years and new states were formed over the centuries (Mato Grosso do Sul in 1979, Tocantins in 1988 to take the last ones). Division then since the new units are formed by dismemberment of the old ones. Thus, when a new population center is formed and develops, it becomes unbearable for its inhabitants to go to the municipality on which they depend for their various administrative procedures. Their claim for autonomy has every chance of succeeding one day or another. another if their demographic dynamism is confirmed. The inequality of political and economic weight, of surface area, arises naturally from the first two mechanisms.

2.3. *Mesh of the Chinese territory.*

In China's administrative division system, the population size, resources and scale of industry under an area's jurisdiction, as well as the level and authority of an administrative region, determine whether its position in regional development is favorable (Liu, 2006).

Fan et al. (2012) used county (and city) panel data and the difference-in-difference (or "double-difference") method to discover that the policy of redesignating counties as cities did not promote urbanization and economic growth. An important reason was that the cities created by the policy were too small to form agglomeration effects.

Tang et al. (2015) expanded the scope of their sample and found that the reform to turn counties into municipal districts significantly increased the population growth rates of cities and municipal districts. This change is mainly attributed to the influxes of people from counties (and municipal districts) and from other provinces. Cities in eastern China and cities with greater potential markets had more distinct population agglomeration effects.

The territory is organized into provinces, autonomous regions and municipalities placed directly under the authority of the central government. There are currently 31, 22 provinces (Anhui, Fujian, Gansu, Guangdong, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan and Zhejiang), 5 autonomous regions (Guangxi, Nei Mongol, Ningxia, Xinjiang and Xizang), 4 municipalities (Beijing, Chongqing, Shanghai and Tianjin). Since the reforms of 1983-1984, the provinces have tended to be subdivided into municipalities which are medium or large towns with rural districts.

The districts include towns (towns are small towns augmented by rural areas) and townships. All these administrative entities are doubled by cells of the Communist Party which hold the real power of decision and supervision, on December 25, 2002, the release of the map of the administrative divisions of the People's Republic of China, the first of its kind in the history of China, on which are marked the legal boundaries of land administrative divisions at the provincial level, this is the first time since the institution of the system of prefectures and districts in the Qin dynasty (221-206 BC), that topographical work is carried out on a national scale in order to trace the provincial limits; it is therefore the first map of its kind in millennia. He also notes that although established on a small scale, this map shows the significant changes that the provincial boundaries have undergone in many places, particularly with regard to certain segments located on the boundaries between Gansu and Qinghai, between Gansu and Xinjiang, as well as between Qinghai and Xinjiang, etc., all indications which did not appear on the maps in use before, where the limits of the administrative divisions at the provincial level included only about 5% of legal lines against 77% customary lines and 18% disputed lines, from which it appears that most of the province boundaries had no legal force. It is thus, it is specified, that thanks to the arduous efforts deployed by some 300,000 topographers, the limits of the province (62,000 linear km), those of the districts (416,000 km) could be drawn and that was put an end to the absence, for more than two millennia, of precise limits between provinces and between districts on the immense territory of China.

Improving the fiscal decentralization system, especially in backward areas, can increase overall efficiency of investment in public goods (Shen et al., 2007), Moreover, administrative levels are closely related to urban development. The central government provides greater support to cities with higher administrative levels, such as preferential allocations of various resources and access to more public resources, which stimulates population and industry agglomeration, and promote urban development (Henderson et al, 2007; Cai et al, 2011).

3. Administrative reorganizations in Algeria: Historical background

3.1. The territorial organizations of the period before independence

Before independence, Algeria experienced many unfinished and discontinuous territorial transformations. The succession of conquerors in the region resulted in a succession of spatial organizations, marked by ruptures, and each time having contradictory and specific imperatives. It is a space which has been greatly disturbed and which has not known organizational or territorial stability, from the political or spatial points of view, in order to experience economic growth in continuity and permanence.

Since Roman times, Algeria has experienced about a dozen territorial redefinitions, six of which during the 20th century, each with different motivations. It must be recognized, however, that whatever the method of investigation used, we often find ourselves faced with a system where two opposing Algeria's coexist. The first corresponds more or less to the northern areas animated by large urban centres, well served by communication networks and where industrialization is relatively well established. The second corresponds to median Algeria where the precolonial sociological roots are strongly established and where the community bases are strong. It also corresponds to rural Algeria where agro-pastoralism dominates. This is the Algeria of military territories and later of mixed municipalities, and where the old land tenure system corresponded to Arch lands. Apart from a few agglomerations, these regions of the country have an urban void. It is only towards the end of the colonial period that the reorganization of the fabric seems to go in an evolutionary direction. Nevertheless, it is necessary to point out that any decentralization must be followed by many socio-economic

means. It is also necessary to take into consideration any parameter that can contribute to an effective territorial redefinition without completely confining oneself to theories or models where the social side is not taken into consideration.

3.2. *Territorial reorganizations of the post-independence period*

Since the independence of Algeria, the intervention on the territorial network was part of a situation where the control of the territory took precedence over spatial logic: "as soon as independence was acquired, one of the major concerns of each of the Maghreb States was to establish its authority and strengthen control of its territory" (Troin, 1985). In the aftermath of independence, several official texts define and govern the composition, territorial limits, consistency, organization and functioning of Algerian municipalities and provinces, in 2015 the state also created the delegated province, attached to a parent province, the Algerian regions are only geographical or cultural landmarks without legal existence, and the districts are only administrative entities, The first reorganization of the municipalities 1963 - 1965, The Algerian State reorganized the municipalities resulting from the period of French colonization. It maintained the division of Algeria into fifteen departments and gives the distribution of Algerian municipalities by department and by district and brings the number of municipalities in 1965 to 676, distributed in 91 districts, for a population of 10,281,050 inhabitants.

3.2.1. *The territorial overhaul of 1974: The search for territorial homogeneity of the provinces*

From 1974, Algeria has the means to carry out a new territorial reorganization in order to distribute the means and the tools of development through the national territory. To do this, it was necessary to rationalize the administrative structures by a better adaptation to the realities of the country by opting for decentralization of administrative powers, The existing division no longer meets the aspirations of rapid development of local and regional authorities, In this sense, the national charter specifies that "**decentralization must confer on the provinces and municipalities full competence over all the problems of local or regional interest that they can assume. It must extend to all economic, social and cultural**".

The desired goal seems to be the diffusion of the means of development in deep Algeria by the promotion of the most underprivileged regions, The new division of 1974, The essential territorial reorganization intervenes at a time when Algeria knows a massive industrialization and a very urbanization strong and very felt, It was therefore necessary to set up the necessary administrative structures that could provide for the major spatial, economic and social transformations.

It was also necessary to strengthen the supervision of the hinterland in order to divert the flow of rural populations towards the main cities, stifled by previous exoduses, towards the lower strata. The municipalities, in this context, are little affected by the new territorial reorganization which called into question especially the large administrative units. We went from 15 to 31 provinces and from 91 to 181 districts, while the number of municipalities only increased by 4%. If the number of provinces has doubled for all of Algeria, including the creation of the province of M'sila with 23 municipalities (figure 2).

Although changes have taken place, the new delimitations are based on the limits of the old districts and departments of the colonial era, the transformations were much more regroupings or divisions of the old meshes than new creations, Continuity also seems evident in level of the choices of the chief towns and this by the conservation of the great majority of the old ones, The new province has become an instrument of local and regional development, and of the planning of the territory, It is a relay level between the central power and local communities; the province manages, controls and formulates proposals which directly concern

its territory or that of the municipalities which compose it, which gives it a new role of initiative, The district, for its part, is a simple intermediate administrative district whose essential task is to assist the province, in addition to being an electoral constituency, it controls, assists and directs the municipalities that compose it on behalf of the province.

3.2.2. The territorial reorganization of 1984 (Greater attention to the local).

The strong demographic growth, the appearance of many new economic centers in the space and the accelerated urbanization, are the essential reasons for the new territorial reorganization, It is also a question of the taking into account on the part of the authorities of the local fact and its essential role in regional planning (Raham. 2001), It was therefore necessary to opt for a finer mesh by increasing the local decision-making centers, the objective of the extension of the network of local authorities and the fairly wide distribution was the improvement of equipment and services to reduce the gaps at the level of the most deprived areas.

The law relating to territorial reorganization (law n° 84-09) was promulgated on 04.02.1984 and its main action was the very significant increase in the number of municipalities with a view to reducing the regional disparities originating from the old macro-system, regional emanating from the polarization of large urban complexes, This is a voluntarist action in space which aims to create a spatial, social and economic balance between the different regions of the country, the goal is to achieve a relative balance between the different meshes in order to apply a single grid of equipment or to establish a kind of "space" Jacobinism (M. Côte, 1993), The search for spatial and social cohesion at the local level is confirmed by the intervention of the sociological factor in the determination of new municipal promotions.

Indeed, many old douars were promoted to municipalities with the aim of rediscovering the old solidarities of traditional Algeria. We know that before the French occupation, Algeria was dominated by the tribal system where there was a balance fragile and archaic between man and the environment, but the latter was welded together by the sociological solidarity of the community. It therefore seems obvious that in addition to a demographic and territorial balance, Algeria is in the process of completing it by a sort of social balance where group cohesion can play an important role in giving impetus to the local development policy. Among the highlights, we note the emergence of rural units in the most disadvantaged regions. Sometimes in the absence of real capital centers, isolated hamlets have been designated to exercise the function of first center. Some of these units were exposed to such great difficulties that they saw their population dwindle.

4. Methods and data

4.1. Study area

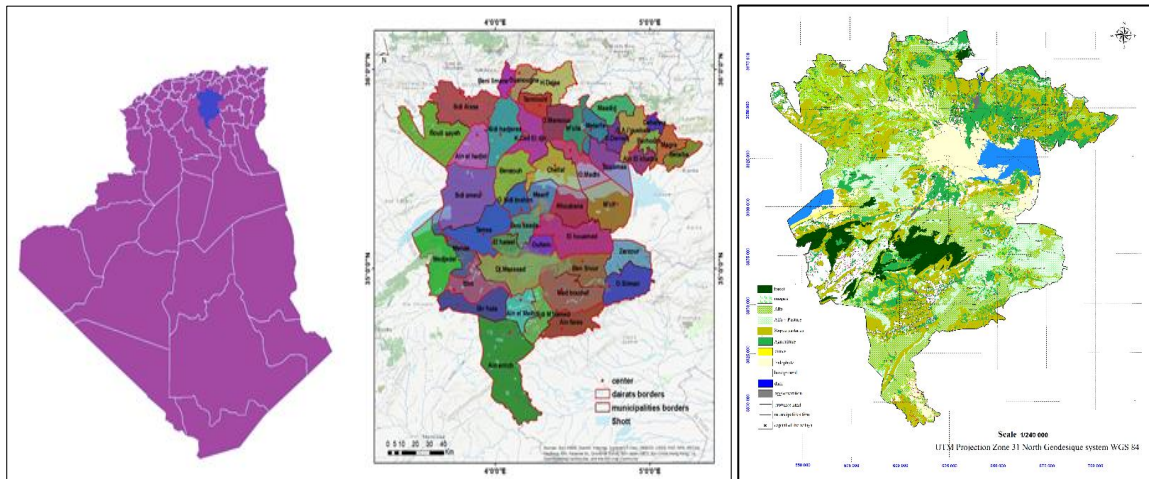
Geographically, the province of M'sila, within its current limits, occupies a privileged position in the central part of northern Algeria. As a whole, it is part of the Central Highlands region and covers an area of 18,175 km², It is limited to the North East by the provinces of Bordj Bou-Arredj and Setif, to the North-West the provinces of Medea and Bouira, to the east the province of Batna, to the west: the province of Djelfa and South East the province of Biskra.

The territory of the province constitutes a hinge and transition zone between the two great mountain ranges that are the Tell Atlas and the Saharan Atlas, the geographical configuration is divided into areas, A mountain area on either side of Chott El Hodna, A central area consisting mainly of plains and high plains, A zone of chotts and depression with

the Chott El Hodna in the Center East and the Zahrez Chergui in the Center West, An area of wind-blown sand dunes.

Administratively, these are the most deprived shreds of Province Mothers (Setif, Batna, Media) which be grouped together to form the province of M'sila in 1974. Originally composed of 23 municipalities, it now has 47 municipalities, grouped into 15 districts.

Figure 1. Geographic localization and the land use of the study area



Many small and medium-sized towns have been promoted to extended management functions, M'sila, promoted to the rank of chief town of province, had 19,675 inhabitants in 1966 with an urbanization rate of 55.62%, For the capitals of district and municipalities, and therefore for a considerable number of small and medium-sized towns, it is a question of raising villages or small urban agglomeration to the rank of real towns. Some urban agglomeration such as Ouled Derradj, Magra, Barhoum and Ouled Adi Legbala, had less than 500 inhabitants.

Table 1. The new administrative units of the division of 1974, 1984, 2019 (Municipalities, Districts, Provinces).

	1974			1984			2019		
	provinces	district	municipalitie	province	districts	municipalitie	province	districts	municipalitie
Algeria	31	160	704	48	175	1541	58	175	1514
M'sila	/	06	23	/	15	47	/	15	47

Source: Territorial reorganization of 1974, 1984 and 2019.

The number of municipalities has increased if we know that in 1977 the number of municipalities of the province of M'sila was 23 municipalities, This very significant development responds to the concern to frame as much territory as possible within the framework of 'a harmonious and global development, The objectives traced by the new network seem to take into account the imperfections of the previous division and the geographical criteria seem determining, The new creations seem to affect above all the marginal zones.

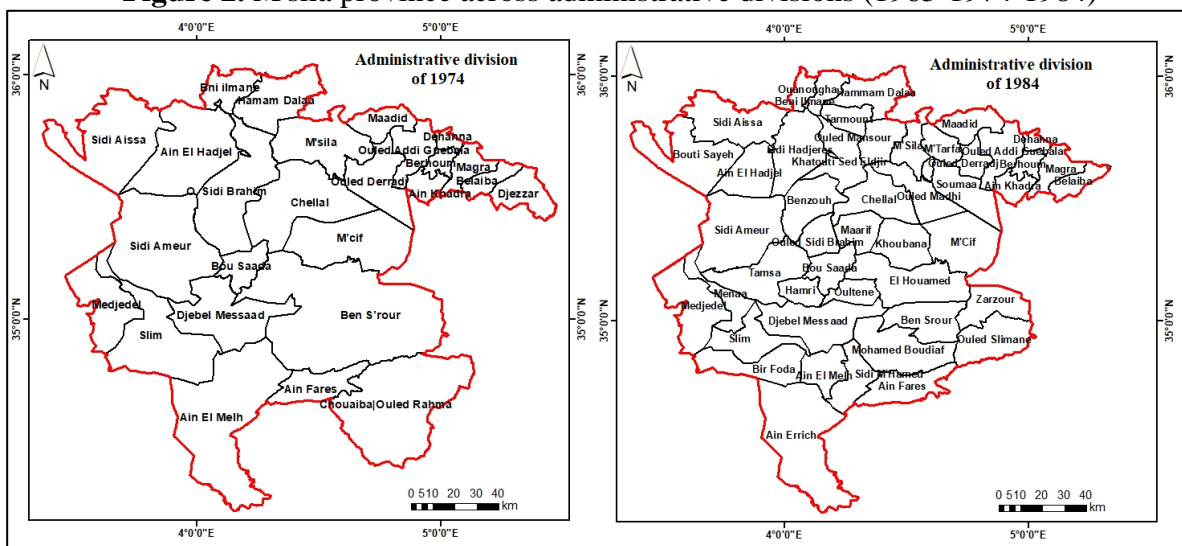
Of the 47 new municipalities, 20 were former douars (42.6%). The promotion of douars to the rank of municipalities is above all a characteristic fact of the Hautes Plaines region and of the steppe region at the level of Hodna. We are faced with a spatial logic based on societal logic. In the current situation, an administrative division based on the old community

solidarities must be supported by the tools of socio-economic development. There is a kind of return to the social or ethnic territory which can be a new form of functional space where group solidarity could be the driving force. The correspondence seems obvious but the effectiveness could only be effective on larger scales such as the case of nation-territories.

In the case of Algeria, one must be careful because the traditional system was not hierarchical and each social group was autonomous and independent. with 6,046 inhabitants in 1987, 281 inhabitants in the main town, State voluntarism in the field of new promotions goes very far and shows a fairly strong will in the field of decentralization. The administrative promotion of social territories is not new in Algeria; already in 1974 the territories of tribes or douars were promoted to the rank of chief towns of municipalities.

In 1963, the territory of the tribe resumed its initial form. This scenario does not exist at the level of the Hautes Plaines. On the other hand, the two municipalities of douar origin (Medjedel and Ain Khadra), The territorial reorganization of 1984 intervened at a time when the country needs it. The goal was to achieve the most spatial cohesion following the new economic orientations. It is also a question of reducing the gaps between the different regions of the country.

Figure 2. M'sila province across administrative divisions (1963-1974-1984)



This reorganization, undertaken in 1974 and 1984, contributes to the reinforcement of the powers of the provinces and the municipalities, by endowing them with new urban functions, So this administrative promotion gave more finesse and flexibility to the management of the territories by allowing them to acquire various public services and administrations inherent in their respective ranks, In our region, there are ten promotions to the rank of chief town of daïra, These are Magra, Bousaada, Khoubana, O.Sidi brahim, S.ameur, S.Aïssa , Ain el hadjel, Ben S'rour, Ain el Melh, Medjedel, which were simple chief towns of municipalities, add to that the city of M'sila, chief town of the province, This proactive reorganization of the urban framework induces the creation new facilities and services (technical, educational, sanitary), support for the extension of urban functions, But the establishment of these administrative facilities does not have a considerable impact on the old urban landscapes, because they are localized generally settle in the outlying districts.

4.2. *Methodology*

The administrative mesh is a simple net placed on a space, the administrative mesh can become a geographical object in itself, its geographical study requires to be interested in both the container and the content, therefore The engineering of divisions or divisions is a first approach to understand the formation of administrative networks, the size and design of the meshes are one aspect of it, in order to analyse the municipal territorial network, would consist in proceeding to the use of three simulation models of administrative territories:

- The first which is a method of measuring the shapes of territorial fields on the assumption that the circle is the optimal shape.
- The second model which is a means of comparing the real existing grid with a theoretical geometric grid having for hypothesis "the theory of minimum energy" where each inhabitant must theoretically be attached administratively to the nearest locality for a reason of accessibility and efficiency.
- The third model (Reilly's Law of Retail Gravitation) which is a means to determine the theoretical areas of influence for each agglomeration, the application of the Reilly indicator (the breaking point law) also called the law of fragmentation attractiveness, and aims to determine the point that separates the two trading areas between two urban agglomerations.

4.2.1. *The shape index (The measurement of the shapes of administrative fields)*

The geographical space is in continuous transformation towards more and more complex levels of organization according to a diachronic rhythm, Our objective is to analyse the organization of the regional space (province of M'sila) by confronting each time the reality with the theoretical models and this for the administrative mesh which composes our area of study.

The primary interest would be to see if the models used succeed in highlighting the structural antinomies that constrain the administrative mesh taken into consideration, With regard to the territorial network, it was a question in a first stage of giving a measure to the forms of the territorial fields by using an appropriate index called the index of form, this index makes it possible to compare the shapes of the municipalities with regular geometric shapes (circle, hexagon, square or triangle) in order to assess the degree of spatial efficiency and number of contacts, Some mathematical expressions measuring the shape of fields have been borrowed from other disciplines, Among the precursors Krumbein (1941) and Petti john (1957) proposed a series of indices to measure the shape of the fields but each time compared to that of a circle, In 1962, Bunge developed a method based on two theorems (P. Haggett, 1973):

- Any related shape can be identified with a polygon of any number of sides, these sides being of equal but variable lengths.

- If we sum the distances between all the vertices of the polygon, there is a set of sums, which uniquely defines the shape of the polygon, the geometric shape of the field is defined by the number of sides.

The calculation of the form indices of the administrative districts allows their comparison with the indices of regular geometric shapes such as the square or the hexagon. It is therefore not a question of looking for the hexagonal shape, the realization of which requires a very regular distribution of localities and an isotopic space, but any shape approaching a regular polygon is theoretically more effective than an irregular shape, The most suitable index is the one that corresponds to the following mathematical formulation:

$$F = \frac{1,27xA}{L^2}$$

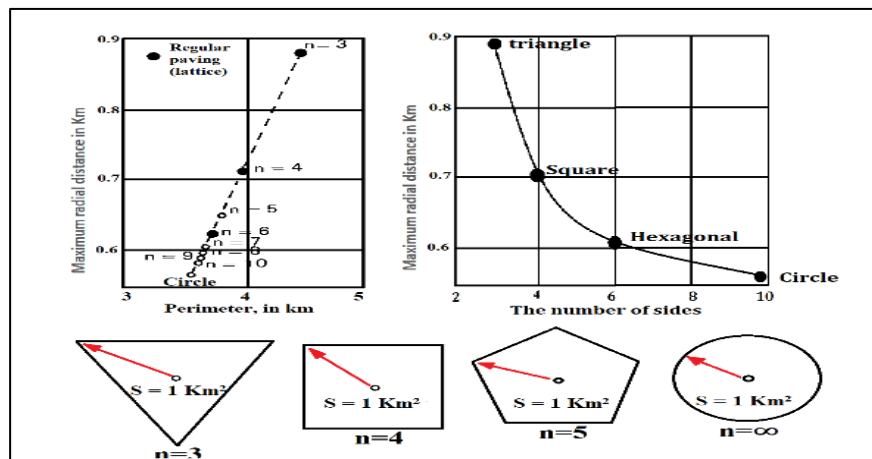
F: the form index.

1.27: constant multiplier so that $F = 1$ in the case of the circle.

A: the area of the constituency.

L: the length of the longest axis of the municipality.

Figure.3 effectiveness of various types of regular polygons



Source: p.haggett.1973

The values obtained can vary from 0 to 1 depending on the shape of the municipalities and the index must meet the requirement ($0 \leq F \leq 1$). Elongated shapes will have the lowest values while shapes approaching regular geometric shapes will present the highest scores, The hexagon has a higher index than that of the square which itself has a higher index value than that of the equilateral triangle (table 2).

Table 2. Characteristics and indices of form of certain regular geometrical figures

Shape	Area (km ²)	Side (km)	Perimeter (km)	Distance radial	Perimeter/Area	Form Index (F)	Adjacency
Equilateral triangle	1	1,5	4,5	0,849	4,5	0,43	Oui
Square	1	1	4	0,707	4	0,64	Oui
Hexagon	1	0,6	3,7	0,620	3,7	0,83	Oui
Circle	1	—	3,5	0,564	3,5	1,00	Non

The shape of the field plays an important role in the field of spatial accessibility, If the circle is therefore to be avoided because it leaves interstitial surfaces, the hexagon is the shape that best retains the advantages of the circle, its efficiency is about 80% that of the circle, the decagon 90% and the square 50%, According to all these remarks, theoretically, the efficiency or the choice of the layout of the constituencies must meet two essential conditions which are the efficiency of the movement and the efficiency of the limits, On the other hand, and in theory, any administrative division must be made according to the position of the chief town, which should normally be in a more or less central situation in relation to the surface of its territory in The event that the topography would allow it for the sake of accessibility.

The analysis of the forms of the administrative fields could be completed by the application of another very simple method whose purpose is to verify the relationship with the

hexagonal model, This method consists of counting the number of contacts or adjoining areas between any territory and the territories adjacent to it, The number of contacts is not always revealing of the form but can be indicative in the case where the paving is regular and where the administrative division is based on the functional forms in the spatial sense (table 3).

Table 3. Number of contacts in certain countries.

STATES	Administrative unit	Contacts
U.S.A	States (1969)	6,00
Brazil	Municipalities (1960)	5,71
Denmark	Communes (1960)	5,83
Pennsylvanie	Counties (1969)	5,66
France	Communes (1961)	5,76
France	Departements (1965)	5,81

Source: P.Pinchemel, 1986.

4.2.2. *The theory of minimum energy or the Thiessen polygons*

The purpose of this method is to arrive at an optimal division of space based on accessibility and equidistance, It makes it possible to share space according to the shortest distance starting from a locality in relation to the surrounding agglomerations, in relation to the scattered population and in relation to the whole region, it is a global approach, It is a graphical simulation method whose aim is to compare the theoretical limits to the real administrative limits by constructing polygons around the main towns, It is a method which admits that any capital must correspond to a central position in relation to its administrative territory, It is a method that was first used to calculate average watershed precipitation for the U.S. Weather Bureau by Thiessen in 1911.

The aim was to produce rainfall maps of a reception basin from data provided by a network of meteorological stations distributed irregularly, It was also used for prospecting the oil where it is a question of mapping the specificities of a basin according to regularly distributed wells or boreholes.

Its accuracy is based on two prerequisites (P. Haggett, 1973):

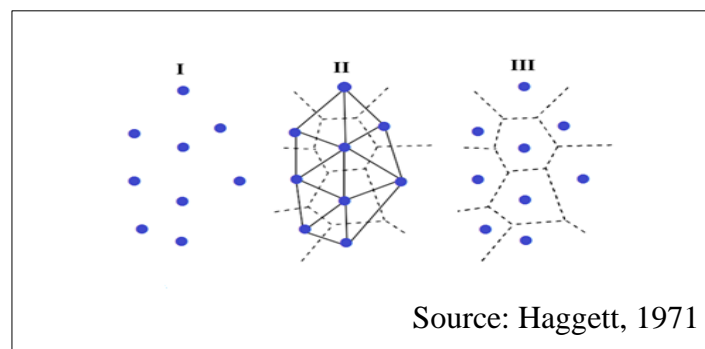
- The uniformity of population density throughout the region.
- The number of constituencies in each hexagon.

But in reality, and in the case of any spatial analysis, the establishment of the Thiessen polygons, with respect to a territorial base, would result in a series of polynomial surfaces adapting best to the irregularly distributed points; these points become the centers of gravity of these surfaces. Each of these surfaces presents a double dimensional problem of population and area. Theoretically, an administrative division only exists in relation to the centre, the capital, the chief town, the seat of power or its relays (P. Pinchemel, 1986).

This perspective should be taken into account in the context a redrawing of the space and an ideal reassignment of the interstitial surfaces in relation to the agglomerations, The validity of the method is based on two assumptions (P. Haggett, 1973), the area within the boundaries of a polygon is closer to the center included in that polygon than any other agglomeration, it is a geometric property of the Thiessen polygon, a metropolis really dominates all the localities to which geometrically it is the closest.

This method was taken up in 1949 by D. Boguej to calculate fully geometric areas of influence in the United States for 67 metropolitan centers, The realization of the polygons is very simple (figure 4), it consists of drawing straight line segments between each pair of neighboring agglomerations and determining the center of each segment, It is then necessary to draw the perpendicular to each segment which must pass through its center, The perpendiculars will thus form a polygonal figure around each point of the frame, The final objective is to achieve an equitable division of the area between each pair of neighboring agglomerations so that the surface of each polygon is closer to the agglomeration included in the polygon than any other agglomeration.

Figure 4. Method of construction of Thiessen polygons around urban agglomerations



The polygons of Thiessen divide the space so that each portion of the territory is attached to the nearest agglomeration., "The polygon of Thiessen makes it possible to divide the space according to the shortest distance from a given point while ensuring the total coverage of the territory, it shows the zones close to urban centers other than their current capital and are likely to be reassigned" (A. Belhedi, 1992), So Thiessen's polygons can give a critical overview of any administrative division and can sometimes offer solutions when problems of administrative eccentricity are raised.

4.2.3. *Reilly's Law of Retail Gravitation*

In 1931, William J. Reilly was inspired by the law of gravity to create an application of the gravity model to measure retail trade between two cities. His work and theory, The Law of Retail Gravitation, allows us to draw trade area boundaries around cities using the distance between the cities and the population of each city, Reilly realized that the larger a city, the larger a trade area it would have and thus it would draw from a larger hinterland around the city. Two cities of equal size have a trade area boundary midway between the two cities. When cities are of unequal size, the boundary lies closer to the smaller city, giving the larger city a larger trade area.

Reilly called the boundary between two trade areas the breaking point (BP). On that line, exactly half the population shops at either of the two cities, The formula is used between two cities to find the BP between the two. The distance between the two cities is divided by one plus the result of dividing the population of city B by the population of city A. The resulting BP is the distance from city A to the 50% boundary of the trade area, One can determine the complete trade area of a city by determining the BP between multiple cities or urban centers, Of course, Reilly's law presumes that the cities are on a flat plain without any rivers, freeways, political boundaries, consumer preferences, or mountains to modify an individual's progress toward a city.

In determining the theoretical areas of influence for each position, we will rely on the application of the Riley indicator, the breaking point law, also called the law of fragmentation attractiveness, and aims to determine the point that separates the two trading areas between two urban centers, This law is based on retail trade as Riley developed the laws of gravity for retail trade to see areas of influence.

Where the greater the weight of the commercial center, the greater its sphere of influence than the area of the center of less weight. We can this weight represented in the number of shops and the distance between the two urban agglomerations. The commercial boundary is represented by a straight line perpendicular to the axis linking the two agglomerations. The law is given by the following relationship:

$$C = \frac{D_{A-B}}{1 + \sqrt{\frac{T_A}{T_B}}}$$

C: the limits of the sphere of influence of the urban center.

D A- B: The distance between centers A and B.

T_A: The number of shops of urban center A.

T_B: the number of shops for urban center B.

5. Results and discussion

Municipal fields are differentiated by their extent, their outline and the weight of the administrative center, from there arises a double dimensional problem: that of the optimal area, ensuring the optimum coverage of services and equipment for population, the coincidence of the two optimal is far from being assured, the comparison of the shapes of the meshes with a theoretical territorial mesh makes it possible to estimate and explain the differences.

To do this, we used the shape index, the models of paving and minimum energy (Thiessen polygons) and Reilly law of gravity to measure retail trade between cities, this work and theory, allows us to draw trade area boundaries around cities using the distance between the cities and the population of each city, by extension, this method will make it possible to highlight areas of overlapping of several lines forming nodes and which correspond to marginalized territories that may be subject to promotion or administrative reassignment during later territorial reorganization.

Starting from the understanding that any administrative division must exist in relation to a center or a city which should be, in theory, the center of influence and management of the space administratively concerned, any optimal mesh must satisfy four requirements (G. Pinchemel. P, 1997): equality (variations in the lengths of the bonds to the urban centers and to the sides should be minimal), compactness (the ratio of the length of the perimeter to the area should be minimal), contiguity (the paving must cover everything and not leave any interstitial spaces), functionality (adapting form to function).

According to the shape index we noticed the multiplicity of types of pavings and shapes, All shapes and all values exist and change according to the topography, The shapes of the municipalities fit together tightly in the North and become more and more loose towards the South where they take stretched shapes, The statistical dispersion parameters give an arithmetic mean of 0.4594 tending towards an intermediate situation between the equilateral triangle and

the elongated shape, The median is 0.4000 and the standard deviation is 0.1292, The triangular paving is confirmed for the local level.

Table 4. The shape index of municipalities of M'sila province

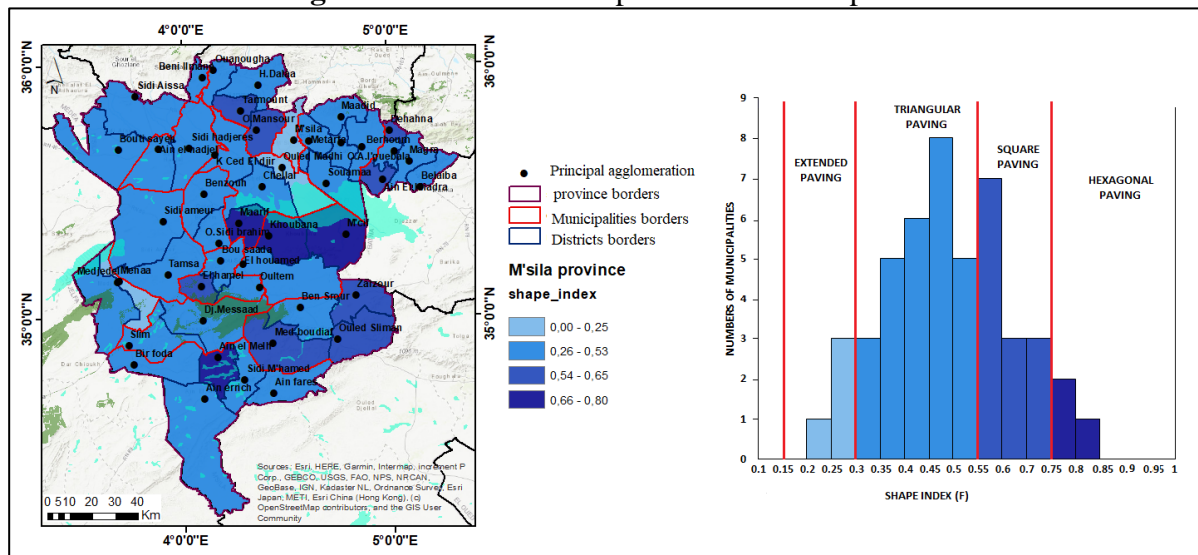
Municipalities	Area A (km ²)	Distance (km)	Index (F)	Paving type
Menaâ	242.85	37.86	0.22	Extended Paving
M'sila	232.36	34.13	0.25	Extended Paving
O.Madhi	349.37	41.79	0.25	Extended Paving
Souamaâ	378	41.9	0.27	triangular paving
Megra	222.52	28.83	0.34	triangular paving
S.hajras	549.87	45.64	0.34	triangular paving
Ain Fares	381.26	37.52	0.34	triangular paving
Belaâiba	171.36	25.02	0.35	triangular paving
O.A.Gbala	320.67	33.5	0.36	triangular paving
Oultam	177	24.56	0.37	triangular paving
K.S.Eljir	389.11	36.68	0.37	triangular paving
Slim	384.84	36.25	0.37	triangular paving
Bni Ilmane	125	20.34	0.38	triangular paving
Lahoumed	682.64	47.88	0.38	triangular paving
H.Dalaa	382.3	34.85	0.40	triangular paving
Metarfa	222.41	26.4	0.40	triangular paving
Ben zouh	350	33.33	0.40	triangular paving
S.M'hamed	295.67	30.72	0.40	triangular paving
Bir fodha	446.91	37.76	0.40	triangular paving
Tamssa	571.26	41.56	0.42	triangular paving
DJ.Masaad	674.91	44.72	0.43	triangular paving
Ouanougha	164.02	21.66	0.44	triangular paving
Bousaada	247.11	26.82	0.44	triangular paving
Ain Errich	1197.41	58.77	0.44	triangular paving
Ain lahjel	385.75	33.1	0.45	triangular paving
Medjdel	587.99	40.76	0.45	triangular paving
O.Derradj	150.07	20.25	0.46	triangular paving
S. Aissa	632.53	41.8	0.46	triangular paving
Berhoum	109.27	16.88	0.49	triangular paving
Boutti Sayah	712.53	42.98	0.49	triangular paving
Maadid	258.68	25.61	0.50	triangular paving
Ben Srour	421.85	32.58	0.50	triangular paving
S.Amer	909.46	47.12	0.52	triangular paving
Chellal	449.66	32.76	0.53	triangular paving
O.S.Brahim	206.62	22.26	0.53	triangular paving
Tarmount	190.43	21.02	0.55	Square paving
M.Boudhïaf	626.93	37.26	0.57	Square paving
Elhamel	169.44	19.23	0.58	Square paving
O.Mamssour	257.47	23.37	0.60	Square paving
Dehahna	70.52	12.25	0.60	Square paving

O.Slimane	457.7	30.74	0.62	Square paving
Ain Khadra	147.55	17	0.65	Square paving
Zerzour	346.05	26.05	0.65	Square paving
Khoubana	375.77	26.79	0.66	hexagonal paving
Ain Elmelh	268.73	22.35	0.68	hexagonal paving
Maarif	244.69	20.71	0.72	hexagonal paving
M'cif	580.14	30.3	0.80	hexagonal paving

The modal class is that for which the shape indices of the municipalities are between 0.45 and 0.50 and correspond to triangular paving, Of the 47 municipalities, 68% correspond to triangular paving, 17% illustrate square paving, 6% of municipalities are distinguished by very elongated shapes and 9% represent the paving approaching the hexagonal shape, We are very far from the hexagonal paving, but examples exist at the local scale, The municipalities with high values do not present any points in common geographically and are found at all scales.

Among them we denote the municipalities of M'cif (0.8), Maarif (0.72), Ain elmelh (0.68), Khoubana (0.66), The smallest value, which is 0.22, corresponds to the municipality of Mena, whose surface is 242.85 km² and has a very stretched shape in the northwest-southeast direction, 90% of its surface is paths and forests, The modal value, of 0, 4805, reaffirms the strong concentration of the triangular paving, The spatial distribution of the indices has no geographical significance for the whole of the region: it is explained either by the topography in certain cases, or by the organization of the space in others (figure 5).

Figure 5. Form index map of M'sila municipalities



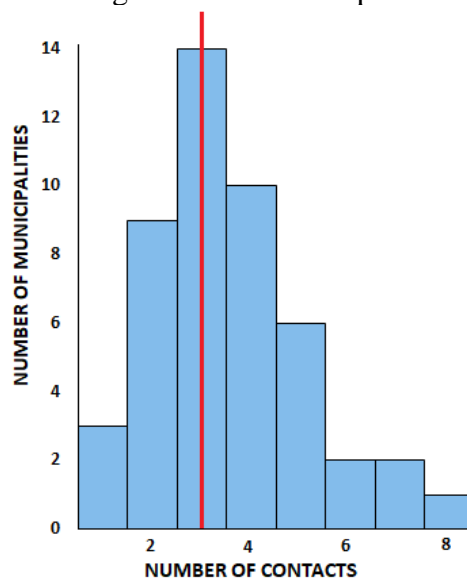
This is the natural factor that determines the administrative form of the district, the case of the municipalities of M'sila, O, Madhi, Mena, whose scores hardly exceed 0.25, the majority of the municipalities correspond above all to the triangular paving then with elongated forms whose indices do not exceed the value of 0.53, This is the form of the territory which is determined by the organization of space and which is based on the complementarity of the terroirs, This is from another logic where sociological or economic parameters take precedence over the factors of centrality and accessibility, The other important observation comes from the

fact that the shapes of municipalities approaching the square are often located in the High Plains and in the interior basin where the topographic factor allows regular shapes of constituencies, The latter is more efficient than the triangular paving of the accessibility point of view if the capital is in a central position, the index values often exceed 0.5500 and their distribution is not spatially homogeneous.

This trend is a little less significant than the previous one but indicates that the topographic factor can be decisive when it comes to flat or slightly uneven surfaces, the administrative divisions can take into consideration the geometric efficiency of the shapes of the fields, They are also regions that are better integrated and more balanced from the spatial and economic point of view, they have many important cities and where the road network is dense and better hierarchized, It is therefore a paving that has no spatial significance major but which indicates that the pavements, more or less regular, are sometimes characteristic of the zones where the topography is not a constraint, Hexagonal paving exists but only corresponds to 9% of municipalities, 4 municipalities out of 47 municipalities, The distribution of these units is sporadic and exists in all geographical areas, The index values are between 0.66 and 0.80 and are often typical of municipalities with small areas.

The analysis of the forms of the administrative fields could be supplemented by the application of another very simple method whose aim is to verify the relationship with the hexagonal model, This method consists of counting the number of contacts or joint ownerships between a territory and the territories adjacent to it, In a regular hexagonal system, the number of contacts would normally be 06 knowing that each administrative unit would have six neighboring units.

Figure 6. Contact Histogram of the municipalities of M'sila province



In the case of the province of M'sila, one municipality out of three has between five and six neighbors (figure 6), The average number is 4,553 contacts, The modal class is 5 contacts whose relative frequency is more than 21% of the municipalities, the number of 6 contacts also has a good frequency of 13%, This trend specific to the province of M 'sila does not mean that the pentagonal shape or the hexagonal shape are the dominant shapes knowing that using the shape index, the triangular paving characterizes 68% of the municipalities.

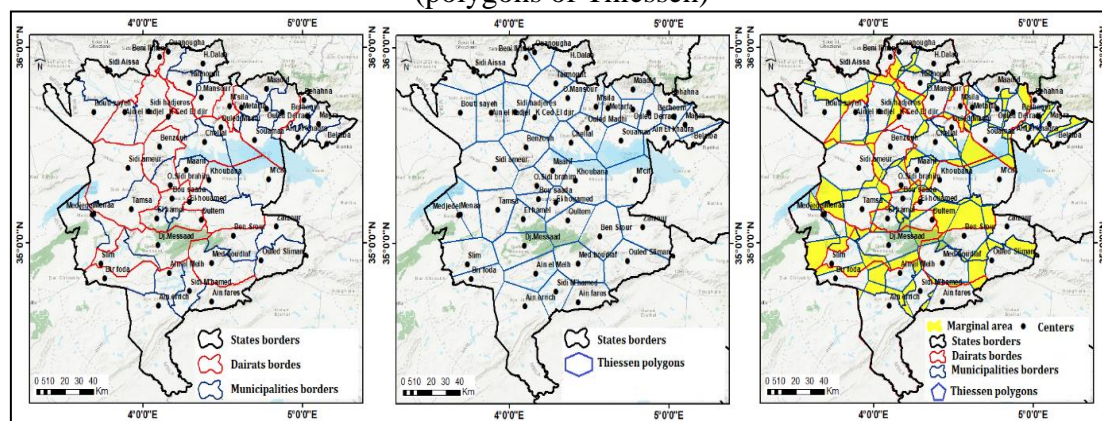
This new appreciation of the form of the fields only shows that it is a grid dominated by the triangular paving from the point of view of value but under the irregular polygonal form from the point of view of the form of the field, The predominance of 5 to 6 contacts is quite frequent and any form of administrative surface can only be contiguous if it is close to three other surfaces. On the other hand, it is good to know that each time the area of the district increases, the number of contacts increases, the number of contacts is not always indicative of the shape but can be indicative in the case where the paving is regular and where the administrative division is based on the functional forms in the spatial sense.

The study of the form of the constituency is necessary because it determines the territory in which a community lives or will live. It is interesting to take this essential criterion into consideration by using methods of approach giving weight or a measure in any form based on the factors of equidistance and accessibility to main town centres, The application of the measurement of the forms of administrative fields led to the conclusion that the administrative grid of the region is dominated by the triangular paving and that the form of the field may depend on the topography or other social factors, The purpose of this analysis was to manage to quantify or qualify the forms of administrative fields in order to determine spatial differences. In order not to remain dependent on a single theory, we will try to analyse the administrative division by using an empirical model based on Thiessen polygons.

The polygons of Thiessen make it possible, at least, to constitute a reference to measure the deviation from the objectives set, At the local level, the polygons of Thiessen which are based on the principles of accessibility and equidistance make it possible to identify the discordances of the territories compared to their chief towns; it is a question of delimiting the areas likely to be reassigned towards other chief towns or for new creations within the framework of any administrative redefinition, They also release the concordances as well as the eccentric spaces compared to a point or by relative to a position.

The production and analysis of the polygons of Thiessen at the level of the municipal grid is quite complex and presents a very varied situation (figure 7), Analogies and dissimilarities exist at all levels, There are examples of municipalities whose forms are imposed by nature, others whose very old fields, emanate from sociological considerations as well as certain cases of concordances at the level of the province, The situations of dissimilarity are the most numerous and exist at the level of the whole region, they present themselves according to variable and sometimes rational characteristics following certain natural or sociological conjunctures.

Figure 7. Application of the theory of minimum energy to M'sila province (polygons of Thiessen)



The gaps that arise between the real limits and the theoretical limits are sometimes greater than the areas that remain around the main towns, Some meshes are sometimes decided by the morphology of the relief, the shapes of the fields of the municipalities of Menaa, Bir foda, O.Madhi, M'sila, Ain Fres and slim have elongated field shapes in different directions and in no way coincide with the optimal shapes from the Thiessen polygons, These are certain municipalities-slopes at the level of Djebels Hodna, Tittri and O.Nail whose shape of the field, dictated by the topographical conditions, is more plausible and more functional knowing that the current limits between these municipalities are often located in ridge lines.

The tiny municipalities M'sila, O.Derraj, H.Dalaa, O.Sidi brahim, sidi aissa, Ben serror and Ain elmelh are typical of a perfect discrepancy, this is an example of urban municipalities whose surface is deliberately reduced because of their high population concentration, The southern municipalities of the Hodna region are those whose very elongated shapes do not present any spatial logic and may be subject to possible reassignments or new promotions.

The municipalities of the province of M'sila are those whose very curious and very asymmetrical forms do not correspond to any spatial logic, they are municipalities whose forms, very old, come from the forms of the old douars, more than 42% of the municipalities of this province, The situation of the chief towns in relation to the municipal territory should also be taken into consideration. deep imbalances within the same municipality, This is a situation that characterizes the southern municipalities, This state of affairs is very widespread in the province of M'sila where 47% of the municipalities correspond to this situation, Medjedel, Slim, Sidi Aïssa and Ain El Melh are typical cases, This situation of dysfunction is to be taken into account in any prospect of spatial redefinition, It makes it possible to reconsider isolated areas, especially if these are disadvantaged, it allows the creation or promotion of certain areas provided that these are not natural regions, that they include a locality which could act as a capital as well as favourable population densities.

The correspondences between the real and theoretical limits are few in number but arise according to very differentiated situations, These cases have neither geographical nor spatial particularities, but they are sporadic cases found in all geographical units, municipalities along the northern border of the province of M'sila have limits coinciding moderately from north to south but show areas of discrepancy inwards, it is a division for the sake of spatial coverage for functions of the same order and therefore of the same surface area, this situation is remarkable at the level of some towns in the center and some border towns of the province, There are examples where the elongated shape fits well with the theoretical shape emanating from the Thiessen polygons. This situation is typical of the municipalities of M'sila and Metarfa in the North, of Ain errich, of M.Boudhiaf and of Ain fares in the south of the province, especially in steppe regions where the lack of localities is evident, the chief towns are very northern.

The large urban agglomerations like M'sila, Bousaada, Magra and Elhamel have municipal areas which often coincide with the polygons, Municipalities with modest surfaces are often subject to territorial readjustment because of their very large agglomerated population, At the level of the province, the interstitial areas are more pronounced than those of the mountainous regions where the differences are small and the topography allows functional spatial divisions, The best examples of a generally favourable situation are, no doubt, where the topographical factor plays in favour of the shape of the constituencies, The position of the capitals in relation to the municipal territory is very variable and does not often correspond to positions plants, There are however situations of eccentricity of the main cities but which seem functional, it is dictated by the economic factors, The cases of discrepancies are quite numerous

and testify to an administrative division where the factors of accessibility and equidistance are little respected, These cases are very present especially at the level of the municipalities of the provinces of M'sila where the topographical factor seems to be an unfavourable factor as for the layouts of the communal limits.

In general, the polygons bring out two major situations that have persisted in Algeria since the colonial period, we find ourselves faced with the classic dichotomy inherited space / traditional space that the method brings up again, the steppe region, as well as the Hodna region is where the shapes are very irregular and where the discrepancies are strong, The elongated shape of the meshes can generate disparities within the same unit, i.e. local disparities, if the capital is very eccentric (example of the municipalities of Menaâ and Lahoumed), remote regions would be subject to profound weakening, This form would be at the origin of a new imbalance at the local level where the most disadvantaged areas will often be the furthest from the main capitals: in addition to a classic regional duality opposing inherited system / traditional system, there will remain a dichotomy local spatial opposition between the surroundings of the main capitals and the most remote and landlocked sectors. These are areas where services and socio-economic facilities are needed to reinforce the irregular shape of the territory.

Man adapts and adapts with natural conditions in order to organize his space in the most advantageous way possible, Symmetry between the different guiding parameters is essential in any economic integration, Community identities can be a factor of balance rather than a means of rivalry, "The administrative frameworks, especially if they are old, correspond to real communities with asserted identities, their territories are strongly spatialized, punctuated with traditions, signs" (P. Pinchemel, 1986), It is true that the old solidarities can become effective, but they must be accompanied by the means of economic and social integration.

Table.5. The province M'sila Application of Reilley's Law on Municipalities

Centr A	Centr B	TA	TB	D A- B	C
Sidi Aissa	Ain Lahjel	1976	505	25,93	8,71
	Sidi Hajres		68	36,25	5,67
	Tarmount		145	49,13	10,47
Bouti-Sayah	Sidi Aissa	48	1976	26,58	23,00
	Ain Lahjel		505	19,6	14,98
Ain Lahjel	Sidi Ameur	505	245	29,62	12,16
	Sdi Hajres		68	13,38	3,59
	Bni Ilmene		505	35,77	17,89
Sidi Hajras	Sidi Ameur	68	245	28,55	18,70
	Ben Zouh		46	24,55	11,08
	Tarmount		145	32,6	19,35
Bni Yilmen	Tarmount	505	145	22,15	7,73
	Sidi Hajres		68	34,43	9,24
	Sdi Aissa		1976	31,27	20,77
Ouanougha	Bni Ilmene	213	505	8,5	5,15
	Sidi Hajres		68	43,5	15,70
Hmnam Dalaa	Tarmount	1313	145	13,54	3,38
	Ouannougha		213	16,93	4,86

Tarmount	Ouled Mensour	145	52	15,4	5,77
	Khettouti Sed Eljir		47	23,74	8,61
	Ouannougha		213	20,03	10,97
Ouled Mansor	Ouled Madhi	52	54	15,98	8,07
	Chellel		55	24,08	12,21
	Hammem Dalaa		1313	26,71	22,28
Khttoui Sed Eldjir	Ouled Mensour	47	52	17,29	8,86
	Sidi Hajres		68	14,66	8,00
M'sila	Ouled Mensour	8857	52	13,68	0,97
	Souamaa		189	18,94	2,41
	Metarfa		103	9,19	0,89
Ouled Madhi	M'sila	54	8857	11,71	10,86
	Metarfa		103	15,68	9,09
	Khettouti Sed Eljir		47	27,81	13,42
Chellal	Ouled Madhi	55	54	18,63	9,27
	Khettouti Sed Eljir		47	22,32	10,72
Metarfa	Ouled Derraj	103	693	13,5	9,74
	Souamaa		189	13,13	7,55
Maadid	Ouled Derraj	405	693	16,05	9,10
	Metarfa		103	21,77	7,30
Ouled Adi Laabala	Berhoum	703	1110	13,15	7,32
	Maadid		405	17,43	7,52
Ouled Derraj	Ouled Adia Lagbala	693	703	10,5	5,27
	Khadra Ain		471	24,83	11,22
Souamaa	Ouled Derraj	189	693	13,3	8,74
	M'cif		106	34,14	14,62
	Ouled Madhi		54	16,06	5,59
Dhahna	Berhoum	90	1110	7,7	5,99
	Ouled Adia Lagbala		703	13,06	9,62
Berhoum	Ain Khadra	1110	471	19,63	7,74
Ain Khadra	Magra	471	811	21,51	12,21
	Ouled Adia Lagbala		708	19,66	10,83
Magra	Berhoum	811	1110	10,57	5,70
	Dehahna		90	16,72	4,18
Belaiba	Magra	587	811	10,87	5,87
	Elkhadra Ain		471	21,73	10,27
M'sif	Ouled Madhi	106	54	43,46	18,10
	Elhouamed		45	47,52	18,75
Khobana	Chellel	59	55	17,68	8,68
	M'cif		106	36,6	20,96
	Maarif		171	12,82	8,08
Maarif	Chellel	171	55	12,4	4,49
	Elhouamed		45	18,95	6,43
	Ben Zouh		46	25,13	8,58
Hwamed	M'cif	45	106	47,51	28,77

	Khoubana		59	16,14	8,62
	Ben Serour		429	30,4	22,96
Elhamel	Bousaada	128	3207	12,35	10,29
	Tamssa		21	14,73	4,25
O.Sidi Brahim	Ben Zouh	117	46	17,83	6,87
	Maarif		171	12,87	7,04
	Bousaada		3207	10,62	8,92
	Tamsa		21	27,18	8,09
	Sidi Ameur		245	26,28	15,54
Sidi Amer	Boutti Sayah	245	48	34,4	10,55
	Zouh Ben		46	10,41	3,15
Tamsa	Sidi Ameur	21	245	26,98	20,87
	Mena		20	24,52	12,11
Oultem	Elhouamed	8	45	10,26	7,22
	Boudiaf Mohammed		222	24,94	20,96
	Messaad Djebel		129	29,76	23,83
	Elhamel		128	23,86	19,09
Bousaada	Maarif	3207	171	19,4	3,64
	Elhouamed		45	9,7	1,03
	Oultem		8	18,11	0,86
	Tamssa		21	24,38	1,83
Ben Zouh	Khettouti Sed Eljir	46	47	29,26	14,71
	Chellel		55	31,85	16,64
	Tamsa		21	28,89	11,65
Ain Errich	Bir Foda	257	31	31,35	8,08
	Ain Elmalh		981	20,19	13,35
	Sidi M'hamed		65	27,76	9,29
Bir Foda	Medjdel	31	339	31,06	23,85
	Slim		112	9,38	6,15
	Ain Elmalh		981	32,8	28,85
Mena	Sidi Ameur	36	428	26,96	20,9
	Tamsa		21	20,98	9,08
	Slim		112	24,78	15,81
Medjdel	Mena	339	36	4,74	1,17
	Slim		112	22,3	8,14
Slim	Djebel Messaad	112	203	32,09	18,41
Djebel Mesaad	Tamsa	112	21	24,88	7,52
	Elhamel	112	235	16,19	9,58
	Ben Serour	112	696	36,99	26,4
	M.Boudhiaf	112	312	21,3	13,32
	Ain Elmalh	112	981	14,8	11,06
Sidi Mhammed	Ain Fares	65	16	20,24	6,71
	Djebel Messaad	65	203	19,48	12,44
	Ain Almalh	65	981	12,43	9,89
	Ain Errich	65	257	27,76	18,47

Zerzour	Elhouamed	43	45	43.6	22.05
	Ben Srour	43	696	20.54	16.45
	Ouled Slimane	43	48	15.7	8.07
Ben Srour	Elhouamed	696	45	27.43	5.56
	Mohammed Boudiaf	696	312	22.03	8.83
	Ouled Slimane	696	48	19.03	3.96
Med Boudiaf	Ouled Slimane	312	48	32.71	9.22
	Ain Fares	312	16	20.24	3.74
	Sidi M'hamed	312	65	8.89	2.79

The spheres of influence are among the most important factors controlling the spatial organization, they give any agglomeration the ability to control the field, The spheres of influence can be divided into two parts:

- Administrative areas of influence resulting from administrative divisions, and these areas do not represent the reality of the influence of existing agglomerations in reality, but despite this, the administrative character of the center remains an important factor in giving it value within its field.

- Areas of influence imposed by the reality of the daily movements of the population, and thus the dynamics and degree of activity of the urban agglomerations, which depend mainly on the degree of their equipment.

Retail trade, equipment and population have an important role in determining the spheres of influence for each urban agglomeration, but the most important and effective element in controlling population movement is retail trade. Therefore, we relied on it in determining the theoretical spheres of influence of the main gatherings of each administrative unit (D. Raham, 1982)

After applying Reilly's law to the province's municipalities, defining the theoretical areas of influence for each agglomeration and comparing this map with the administrative boundaries map, Map No. (00) we fined two categories, The first category: the municipalities in which the administrative boundaries coincide with the functional boundaries (Bousaada, Al Hamel, O.S.Brahim, M'cif, Sidi M'hamed ... etc), This category is characterized by its shape close to the square, its flat nature (steppe), and the location of its administrative headquarters in the agglomeration geometric of its field, The second category in which theoretical borders and administrative borders diverge for reasons including natural, Where by comparing the administrative borders with landforms, we found that Administrators adopted the topographic elements (Shott, valleys, mountains ...) as administrative borders.

Secondly, human reasons, where administrators adopted as the boundaries of Dowars and Arsh as the boundaries of these municipalities, which resulted in marginal areas and spatial and developmental imbalances between the municipalities.

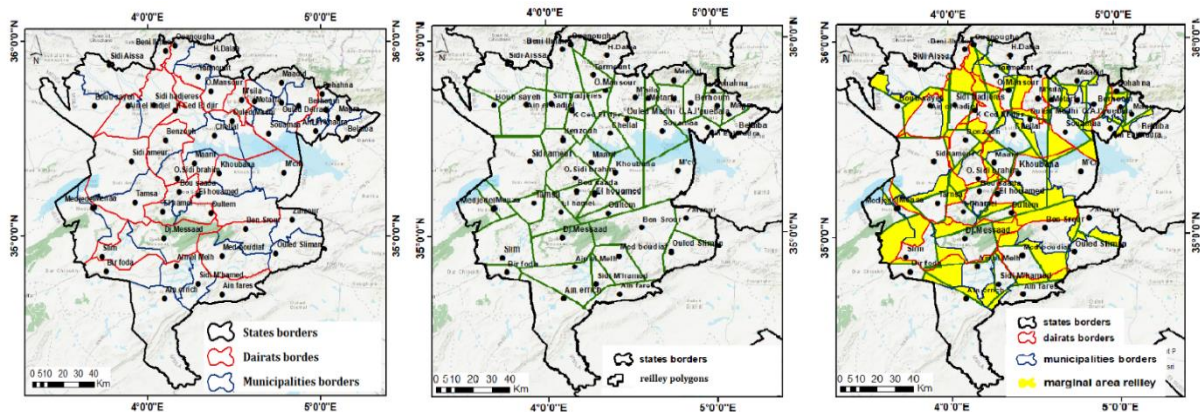


Figure 8. Application of Reilly's Law of Retail Gravitation

We found that the imbalances and spatial differences resulted mainly from the topography of the regions, which sketched the administrative boundaries, The administrative boundaries of the municipalities of M'sila province correspond to the borders of the douars during the colonial period, and this led to creation dysfunctional areas that the responsible were unable to eliminate despite attempts to mitigate them, Therefore, it was necessary to think about a new organization for the state in order to reduce the spatial differences in order to integrate isolated and marginalized areas and try to advance them for development in order to serve its field and the surrounding area, thus achieving comprehensive development.

6. Situation of the proposed delegate provinces:

The measurement and analysis of municipal fields can show the imperfections or the correspondences which exist in an administrative division, The province of M'sila has limits which fit well with the model, M'sila is badly located in relation to its territory while Bousaada seems better placed for a possible promotion to command the southern half of the province. main capitals, sometimes correspond to under-administered and neglected regions, Our way of seeing comes from the results of the various methods which served us as a prerequisite for presenting a new division of the province of M'sila. It is a question of proposing a new province which corresponds to territorial, geographical and demographic foundations founded and their size and shape would be all the more natural as it seems necessary.

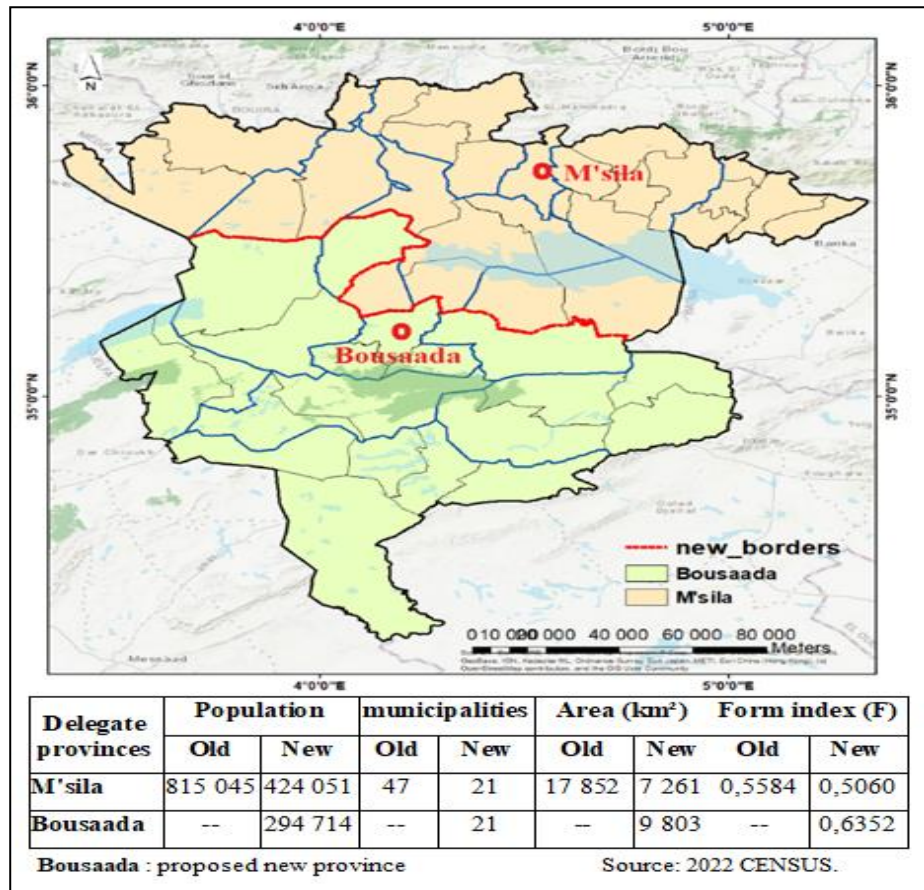
The analysis of maps, highlights the existence of areas squeezed between several large cities or being isolated and could be the subject of administrative promotions, The region concerned is represented in green on the map (figure 9) and essentially corresponds to the Bousaada region south of M'sila and could replace it for this southern part of the province, The locality of Bousaada meets all the functional criteria for the creation of a new province at the level of the deprived area and where the population density is high, This locality meets the following requirements:

- demographically, the locality has a population of more than 100,000 (Bousaada 131,665 inhabitants in 2008), their province population, according to the proposed division, would be more than 300,000 inhabitants.
- territorially, the new constituency would have 21 municipalities.
- functionally, the new capital would be in a central position in relation to their respective territories.
- geographically, Bousaada animates the great plain of Hodna.

- in terms of access, it is connected by four roads of national importance as well as departmental roads that criss-cross the entire region and the other major towns that surround them.

Bousaada would be made up of the southern half of the province of M'sila where many municipalities (21 municipalities) are far from the capital M'sila, facing north; the city of Bousaada would be more appropriate to command this very marginalized region.

Figure 09: Situation of the proposed provinces (delegated province)



The new forms of province fields would be more functional than the old ones, The proposed new province, Bousaada, correspond to square paving due to their plain situation and the regular shape of their territories, The only inconsistency corresponds to the province of M'sila whose fitness index is slightly decreasing but its situation is better balanced in relation to its "new" territory.

The measurement and analysis of municipal fields is interesting when it comes to the problem of optimizing the territory at the local level (municipalities) and when the spatial logic prevails over the urgency of taking control of the territory.

7. Conclusion

The Algerian territory in general has undergone several territorial reorganizations, each having a specific goal according to the type of dominant politico-economic system, each type of occupation has divided the space according to its needs and its politico-economic

foundations, made of a succession of sudden changes that have meant that the Algerian space has remained unfinished and full of discontinuities and inconsistencies, Despite The 1984 territorial overhaul seems to be going in a positive direction by seeking a finer and more studied cohesion of the new meshes, There are local specificities that must now be taken into consideration.

Measurement and analysis of municipal fields is very important, it allows decision-makers and users to have spatial information on the municipal network and the various dysfunctions and deviations. to predict and prepare the response to an organization of space, by intervening on space in the name of development and well-being, it produces homogeneous spatial forms, ensuring a balance,

This study presented a contribution to the measurement of the municipal mesh of the province of M'sila, the purpose of this study is to measure and analyse the municipal paving with the use of three methods (Thiessen polygons, the shape index, Reilly's law of retail gravitation), brought out the main imbalances in the shapes of the communal fields in relation to the chief town agglomerations, These are effective means that can help the planner in the context of any spatial action or territorial redefinition, In another way, they can give the beginnings of a response to the main discrepancies that are highlighted in a perspective of territorial reorganization. On the one hand, they distinguish the areas that can be reallocated to another administrative territory than the one to which they belong.

Also, these methods bring out the regions which are within the framework of an administrative redistricting, could be the object of new administrative promotions, They make it possible to detect zones which form nodes by the overlapping of several theoretical limits.

The results show that the municipalities of the province of M'sila are those whose very curious and very asymmetrical forms do not correspond to any spatial logic, they are municipalities whose forms, very old, come from the forms of the old douars, i.e. more than 42% of the municipalities of this province, the administrative fields of the region are dominated by triangular paving and that the shape of the field can depend on the topography or other social factors such as the complementarity of the soils, Thus, any administrative reorganization is a spatial tool that must take into consideration all spatial, social and economic data. Only in this way can the administrative redefinition of a given territory work in a fairly balanced way.

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