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Time : the missing category in Christaller's Model

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Christaller's model is largely taught in geography courses and has inspired numerous developments in spatial analysis. As could be expected, geographers have been obsessed with **space**, the lay-out of central places networks, i.e the famous hexagonal pattern. They seem, however, to have neglected the **time category**, curiously absent from the model¹. By "Christaller's model" is meant here the urban model proposed by Christaller in his famous thesis (Christaller, 1933)². It has been so widely exposed and publicized that it does not seem necessary to expose it again : it will be assumed that the reader is familiar with its main parts. Several ideas developed here have already been proposed by Marie-France Ciceri³. Responsibility for eventual errors is entirely mine⁴.

Point 1 : An important and complex theory is not usually developed in a vacuum : it is a part of an historical and social context, either to follow the dominant ideas or to oppose them, but rarely independently of them.

Point 2 : A large Urban System of Central Places cannot appear instantaneously. How is it born ? Then developed ? How can it survive and what kind of evolution does it follow ? In other words, what is its **history** ? There must be some forces explaining its creation and a process, probably complicated, leading to its complete extension over the famous homogeneous plain. Then, for the pattern to have any importance, it must subsist for a certain amount of time. Under which conditions ? What has been its evolution and its uses, its practical developments ? And finally, how can a model where time does not seem to play a role, explain modern urban networks, perpetually changing and particularly, the

1 Sandra L Arlinghaus and William C Arlinghaus have used a fascinating but very different kind of approach, at the University of Michigan : see <https://deepblue.lib.umich.edu/bitstream/handle/2027.42/58248/sols0104.pdf?sequence=2>.

2 Brian Berry's brilliant application of Christaller's model within the city lies outside the scope of this paper.

3 In her MS Thesis (Penn State University) and in her regional analysis of Pennsylvania (doctorate thesis at the Sorbonne, 1974, *Méthodes d'analyse multivariée dans la géographie anglo-saxonne*, available on <http://www-ohp.univ-paris1.fr>)

4 I am grateful to Professor Dan Griffith, U of Texas at Austin, for his remarks.

large metropolises ? Christaller did not completely overlook the time category, as the title of his thesis shows : *Verbreitung und Entwicklung der Siedlungen* means *Widening and development of settlements*⁵, but one may doubt if he succeeded.

This paper tries to address a few questions about the place of Time in the model :

1) What role, if any, does Time play **within** the Theory ? How does the spatial pattern appear and change ? Is it sustainable ? On which conditions ?

Christaller has not imagined his theory out of the blue sky ; it must be related to its historical environment (the *Zeitgeist*). Hence two more questions :

2) How does the theory, proposed in 1933 Germany, relate to its historical background and to the dramatic events surrounding its elaboration ?

3) What has been its history, that is, its practical applications during this period and particularly during World War II ?

Finally, with emphasis placed mainly and almost only on spatial patterns, is the model really an « urban model », explaining satisfactorily the growth and the evolution of an urban network ?

1 - How to introduce Time within the Christaller's model ?

1.1 - On the metric structures embedded in Christaller's model

I have already analyzed the topological structures used by Christaller to build his Central Places Theory (Marchand, 1973). It has been shown that the two first models (commerce principle, $k = 3$ and transport principle, $k = 4$) are topologically similar but radically distinct from the third one (administrative principle, $k = 7$).

The administrative principle ($k=7$) organizes the territories by **inclusion** of cells, vertically. Two farmers located within the same hamlet will go together shopping in the same village, the same town, the same city. This principle determines vertical regions, diverging over time one from the other : this is how independent nations have developed in Europe over the centuries. With such a principle at work, the famous "homogeneous plain" cannot remain homogeneous. It will necessarily become divided in different entities with different languages, customs, etc ... Urban cells cannot be

5 We translate all German texts.

hexagonal but will necessarily have different forms along their historical evolution. Christaller added this principle to model historical regions but it is not a necessary consequence of his theory. Space, here, is **Totality**.

On the other hand, territories organized according to the commerce principle ($k=3$) or the transportation principle ($k=4$) are based on **intersection** of cells. Two farmers living in the same cell are not likely to meet when they travel to hierarchical upper levels : Space is **Unity**.

The $k=7$ structure, built by inclusion, is old as the world. August Lösch mentions it at length (Lösch, 1954). It is clearly very important but is not original and does not fit well neither in the model, nor in this discussion. We will consider here only the $k=3$ and $k=4$ structures. One of the remarkable features of the model is to relate strictly four different sets :

- The set of central place populations (P)
- The set of cells' area sizes (S)
- The set of inter-center distances (D)
- The set of urban functions (F)

We can represent them in a simple table :

Population	Distances	Areas		Functions
.....				
Town				
Village				
Hamlet				

Let us consider the three first sets. Each one determines the two others : the population of each town, for instance, is a function of the cell's area which, itself, determines the distance between two neighboring towns. It is possible to write a function of the form $D = f(P)$ for any pair of the three sets. We might imagine different functions : $S = a P^2$, $D = \log P$, etc ...

The capital point is that every variable is determined in a double way by any of the others, all over the infinite plain. **Vertically**, any change in the population of a village will induce necessarily changes in the population of the towns above and of hamlets under, in the urban hierarchy. At the same time, **horizontally**, any change in a village size will have impacts on all

others villages and therefore, on all central places, whatever their size. Any location and any variable is determined by the other centers and other variables. The matrix formed by the Cartesian product of the levels (hamlets, villages, etc) crossed with the variables identified above (population, distances, areas) is singular, with a rank of 1. This explains the pedagogical simplicity of the model, but also its weaknesses.

To put it more simply, once one has defined the population of a given central place and the distances with its neighbors, one has defined the complete urban landscape on the infinite plain. Actually, the Christaller structure is a **fractal**⁶, long before Benoit Mandelbrot defined these mathematical objects. Any change anywhere must be reflected all over the system. If we try and introduce Time, that is change, the urban structure is either perpetually chaotic and self-destructing or it must remain frozen, refusing any alteration.

The fourth set, the **Functions** of each urban center, is of a different nature and captures a temporal component. It is, however, mainly qualitative and has no direct relationship with the three others. Let us try and avoid this difficulty by using a metric variable as a substitute, for instance, the global turnover of a given center during a year. Here again, defining relations between the sets is simple : the turnover will obviously be a function of the population of an area, etc... But turnover is not equivalent to Functions : it may remain constant if some bakeries or shoe stores are replaced by other businesses or services like banks or new law offices, but the center's role will be different.

The Christaller's model (at least, the $k=3$ and $k=4$ structures) is perfectly and completely determined once one of its elementary cell has been defined. Only the qualitative nature of the urban functions keeps some degrees of freedom : everything is determined except the Urban Functions, which may appear quite surprising in an Urban Model where they should play the fundamental role.

1.2 - How to explain the first appearance of a Christaller's pattern ?

To find a wide ("infinite" in the hypothesis) plain, made of similar soils, is not easy, but it is still more difficult to imagine how an homogeneous population, with same wealth, same customs and equal density could colonize such a land. It would take centuries for a farmer civilization to accumulate enough wealth and to develop an urban network with a hierarchical structure. Europe needed several centuries to transform its feudal system, whose economy was based

6 B. Mandelbrot (1975) *Les objets fractals*, Flammarion, Paris.

on farming, to an urban economy. We have shown that, in the $k=3$ and $k=4$ patterns, every point in the plain was strictly correlated with every other point. The order is perfect, the entropy is nil. How could such a perfect order appear ?

Can we believe that during such long period of time, population would remain homogeneous, without forming distinct nodes, with their own culture, their own religion ? Or even that no foreign power would invade the plain and establish different settlements ?

Actually, this could be the more acceptable hypothesis, but with some change. We could imagine an empty plain invaded in a brief period of time by foreigners who would inundate the land and settle down rapidly in a quite homogeneous way. If the plain had been void of any settler, the model initial situation would appear quite naturally. If there had been precedent dwellers, we must assume that they would be sent away or disposed of. " The westward expansion of the US across its current Midwest is an example of this"⁷.

1.3 - How to maintain the model stability over time ?

* **Random fluctuations and their effects** : they are unavoidable and cannot be eliminated from a geographical model. The problem is how to limit them. In order to maintain stable the urban pattern across the immense plain, one must define some equilibrium mechanisms without which, Christaller's structure would not survive more than a few days.

The question is complicated : let us consider only P, the set of central place populations. If one center experiences an increase or a decrease in its population (or its functions), it might change its position in the hierarchy, turning from town to village or vice-versa. Since the pattern covers the whole plain, all other centers will be affected and will have to modify their location, their size and functions as well as their relationships. Any population change in a center will reverberate over the whole system.

If we want to observe Christaller's pattern during a reasonable period of time, we must imagine it as a mean situation constantly fluctuating but with such small variations that the pattern is not dangerously affected. We must also suppose the existence of some equilibrium factors, some negative feed-backs maintaining the equilibrium. The system appears then like an *attractor* subsisting over time with frequent but negligible fluctuations.

⁷ Remark made by Dan Griffith.

Let us try and predict such changes with a very simple measure : call D_p the difference in the population size of two immediate hierarchical centers, a town and a village, for example. If some migrations or even some simple local increase in natality rates upgrade the village up to town level, all the system will be disturbed. On the other hand, very small changes in population might be ignored.

Assume that such fluctuations will have no effect if they are smaller than $D_p/2^8$. In this hypothesis, the larger D_p , the smaller the probability that the system might be affected. So a Christaller pattern of centers would be more stable and more durable if D_p is large, i.e, if it consists of a small number of centers differing largely in size, in other words, if the landscape is made of many agricultural units with very few urban centers : quite a contradictory condition for an urban model.

This argument could be developed as well for the two other sets : functions (E) and distances (D). The Christaller's model is more likely to survive, only with very few cities displaying a very small number of functions and located at large and very different distances one from the others. This is quite self-defeating.

But ensuring a certain stability within each of the three sets would not be enough. It would also be necessary to ensure the stability of the three functions relating them, that is, of the relationships between city-size and distance, city-size and functions, functions and distances. So, identifying important equilibrium conditions is crucial for the model credibility. Among the many conditions we may imagine, let us consider some which appear as the most important.

* **Some necessary stability conditions :**

A - Controlling the stability of land property

If farmers may buy and sell land very easily, the plain homogeneity will soon disappear, with some landlords accumulating land, others becoming poorer and leaving, others investing their profits in urban activities. Three dangers, at least, can be identified :

A-1 - Preserving farmers from the banks and controlling particularly interest rates paid by farmers taking a loan. Such moneys going to banks might well be invested somewhere in the

⁸ We assume a very simple arithmetic measure. One could propose as well to use $\log D_p$ in order to introduce some proportional effect but such refinement would not change the argument.

urban hierarchy, without direct relation with their hinterlands. In a more complex way, capital accumulated in cities will give the urban bourgeoisie a strong control over land : landlord absenteeism has been a recurrent problem in European agriculture, leading to policies opposed to farmers' interests. Of course, one may assume that the rent flows will be the same all over the plain and also that all urban landlords will take the same decisions when they invest in the countryside, an hypothesis hard to sustain for some time.

A-2 - Controlling inheritance is necessary to avoid the division of land estates between sons and daughters. This has been one of the main problems affecting agriculture all throughout European history. Hence the appearance everywhere of laws restricting heritage to the older son, to the detriment of the rest of the family.

The emergence of individualism, with the American and the French Revolutions, at the end of the XVIII th century, changed the law and establish equality among inheritors, a sure way to fragment and weaken aristocratic property. Many children move to the cities. Those remaining on the land must buy back the other portions of heritage, depending on the size of the family and on the interest of children for agriculture. Every generation of farmers buys back the land, generating a constant flow of money from the land to the cities, changing rapidly their relationships. This could hardly help preserving equality among farmers.

A-3 - The main goal of farming should not be financial profit because, as seen above, successful farmers would accumulate land, hoard their production and distort prices or send their profit away from the region where they work. With time, it is unavoidable that some become wealthier and try and buy their neighbors' land or plant a new staple giving better return. The only way to maintain over time the global equilibrium is to assume that producing and accumulating wealth is not the farmers' main goal.

When land transactions are practically impossible and land production of little commercial value, what interest can farmers find in tilling the land ? Since it cannot be a simple monetary profit as in a liberal economy, based on some return on capital, what would farmers work for? They must have other goals, quite different, explaining their surprising but necessary lack of cupidity.

B - Controlling city sizes

There should be some sort of natality control, and, more important still, migration limitations, so the distribution of population over the plain does not change noticeably. Flows of farmers leaving the countryside would produce pockets of low density contrary to the basic assumptions, and would also swell the urban centers which would not be in equilibrium with the farm

population any longer. Rural exodus, which has been so important in Europe during more than three hundred years, implies a growing separation between rural and urban economies and leads cities to develop activities of their own. Inflows of foreign migrants are also unacceptable unless they are distributed evenly across the territory, which implies once again the intervention of a strong central administration.

C - Controlling the transportation system : Since every point in the plain is dependent on all the others, upgrading a road or closing a railroad link would induce important changes in the whole urban hierarchy : distances in time or in cost would change. A powerful and centralized planning is necessary to insure an homogeneous maintenance of the global network.

D - Horizontal equality : On a given level, farmers tastes and behavior must be quite similar and constant over the whole plain : a very strong constraint which excludes pockets of populations of other stocks, with different working and buying habits. Evidently, any social opposition, any class struggle, any differences in customs, beliefs or tastes is quite impossible. Hexagons on a given level should be very similar.

E - But the model implies a strong vertical hierarchy and a very important role for the administration. Actually, since the two main principles ($k=3$ and $k=4$) determine strongly the unity of the landscape, a *central, unique and powerful authority, which should not hesitate to limit private property rights*, is needed in order to maintain the model, at least for a reasonable period of time, which seems contrary to the basic hypothesis of a free market economy. Horizontal homogeneity contrasts with a strong vertical hierarchy. The word *hierarchy* itself, as used by Christaller, has a complex meaning : it does not designate only the superposition of centers of different sizes, which would be purely descriptive, but assumes also a vertical flow of orders and instructions to keep the model within the narrow frame of its initial conditions.

It is impossible to conceive a hierarchy of urban centers of different sizes without implying inequalities in the governing power of these centers and in the income and standard of living of their inhabitants : economies of scale on one hand, surplus costs in the biggest centers on the other, are unavoidable and their balance will change with each city peculiarities. In other words, the model implies simultaneously a strong homogeneity on each horizontal level and a definite inequality between different levels, a contrast difficult to maintain without a strong political hand.

2 - Nazi Ideology and the Christaller's model : The Zeitgeist

Many European countries, France particularly (Méline, 1905 ; Pitié, 1980), but Germany and Austria also (Bergmann, 1970 ; Fuss, 1914), considered the strong migrations of farmers to the cities, induced during the XIX^e century by the industrial revolution, as a national catastrophe. Migrations involved changes in customs, political radicalization and strong decrease in religious beliefs.

2.1)- *Drang nach Osten*, re-colonisation of agricultural land in Eastern Europe :

The German empire, before World War I (see Bergmann, 1970), organized a whole policy to foster colonization of the eastern marches against Slavic populations. At the beginning of the XXth Century, and much more so after the 1918 defeat in Germany (like in France after the 1870 military disaster), associations like *Bund Artam* fight rural exodus (*Landflucht*) and re-settle households on land (*Le retour à la terre*, Méline, 1905). They are particularly active among the young Germans. Heinrich Himmler, as well as Walter Darré, were members of *Bund Artam* before entering the Nazi party. Hostility against the big city (*Grossstadtfeindschaft*) was an important ingredient in these policies which tended to oppose farmers to urban dwellers :

*"After the [first] World War, opposition increased between the protection of the rural economy and the interests of commerce up to the point of an apparent unbridgeable gap (Unüberbrückbarkeit). It came to an either-or-situation, were German agriculture or German import-export commerce was doomed to die... Today, the new [Nazi] agricultural policy has found the way out of the labyrinth and rebuilt a bridge between the two opposite activities."*⁹

Walter Darré shows the continuity of the German policy of agricultural colonization :

*".. the Hohenzollern [German kings and emperors until 1918] have pursued a land colonization in Prussia which was an example for all Europe. On the same basis, will the Third Reich do its duty."*¹⁰

Many German geographers grew up and worked in this environment, trying to imagine the best ways for settling colonists on newly occupied land. One of the basic policies was to regroup estates in order to create equal size-domains, like in the Christaller's model. Bruno Wasser shows, for instance, how a landscape of large

⁹ W. Darré, Secretary of the Agriculture, speech in Hamburg, May 29, 1935. We translate.

¹⁰ W. Darré, (July 1932)-"Wir haben kein positives Wirtschaftsprogramm" in *Um Blut und Boden*, 1942, Lehmanns Verlag, Munich, p. 355.

and very small estates (top of the page) in Poland, was transformed into a set of quite similar ones (down the page).



2.2) - Nazi policy : Preserving estates and maintaining farmers on the land

The NSDAP¹¹, as soon as it took power, dedicated itself to freeze the farmers on the land and to ban changes as much as possible. Gottfried Feder played a key role.

* Protecting farmers from the banks :

Feder was one of the founders of the Nazi Party, even before Hitler became a member. As an engineer who learned economy by himself, he was obsessed to free farmers from the enslavement of bank interests. As soon as 1919, he wrote in *Zur Brechung der Zinsknechtschaft des Geldes*. :

“This is why the liberation from the enslavement of loan interests is the clear solution for the World Revolution, for the liberation of creative work from the shackles of the super-national money powers.^{12”}

* Controlling inheritance :

Feder was in charge of writing the Nazi political Program, in 1920 :

“Point 7 : The right to inherit land and property must be regulated by an heritage law in order to avoid the division of the estates and the indebtedness of farmers.^{13”}

Avoiding property dismemberment through heritage seemed so urgent that the Nazis voted as soon as September 29, 1933, a law¹⁴ forbidding the division of a rural estate between the sons and daughters of a farmer. Farmers lost their right to give their land to theirs heirs or to give it as guarantee when taking a loan ¹⁵.

Walter Darré ¹⁶ justified the law in 1934 (and enunciated, probably unconsciously, some basic conditions of Christaller's model) :

“Farms must be protected from excessive debt and dismemberment through inheritance so they remain the legacy of a

11 *Nazional-Sozialistische Deutsche Arbeiter Partei* : the Nazi party.

12 “Deshalb ist die Befreiung von der Zinsknechtschaft des Geldes die klare Lösung für die Weltrevolution, für die Befreiung der schaffenden Arbeit von den Fesseln der überstaatlichen Geldmächte”. Feder, 1919, p 9

13 “Punkt 7. Das Erbrecht an Grund und Boden ist durch ein Anerbenrecht so zu regeln, daß eine Zersplitterung des Landbesitzes und eine Schuldenbelastung des Betriebes vermieden wird.” Feder, 1935, p 13.

14 *Reichserbhofgesetz* : law on land heritage in the Reich.

15 “Dieses Erbrecht stand in Bruch mit der traditionellen Vererbung, denn es stand dem Bauern nicht mehr frei, seinen Besitz nach eigenem Gutdünken an seine Nachkommen zu verteilen. Die Erbfolge war von nun an genau festgelegt, und konnte nicht mehr zum Beispiel per Testament bestimmt werden; “ (Münkel, 1996).

16 Minister of the Agriculture (*Reichsbauernführer*) until 1942, member of the Nazi party and of the SS since 1930.

*family in the hands of a free farmer. A sane division of sustainable farming estates must be established, so a large number of small and middle farms, **with sizes as equal as possible, cover the land**, which is the best way to guarantee the good health of the people and of the State.”¹⁷*

*** Preserving Aryan race purity :**

As a basic constituent of Nazi ideology, Darré developed the concept of Blood and Land (*Blut und Boden*) : the purity of German Aryan blood was in the veins of German farmers, living on the land, far from large cities where different and “inferior” blood did pollute it (see Corni, 1994) : *“Peasantry is actually the life source of the Nordic Race”¹⁸*

The main duty of a farmer was not to so much to produce crops but to preserve the sanctity of German blood :

“The point is the preservation of the blood, of the race, not a form of economy. Our history shows that this blood is maintained through generations only on farm land, not on city ground ... The farmer concept is rooted in German myths on the sanctity of the blood and the farmer, as a duty to his race, must maintain this blood pure and sane on the land given to him to be protected.”¹⁹

And Darré repeated that a farmer's main goal is not to produce goods but to preserve the purity of the race :

“... this is precisely the characteristic of a true peasantry, that in its deepest feelings, it does not think like a businessman, that is, not like a Jew, because he does not work to satisfy commercial needs but to maintain his race on his land.”²⁰

Such (extravagant) utterances explain the role of Christaller's farmer who should not strive with other farmers to increase his profit but to maintain his estate as stable and his blood as pure as possible, in order to transmit them untouched to the new generations :

17 “Die Bauernhöfe sollen vor Überschuldung und Zersplitterung im Erbgang geschützt werden, damit sie dauernd als Erbe der Sippe in der Hand freier Bauern verbleiben. Es soll auf eine gesunde Verteilung der landwirtschaftlichen Besitzgrößen hingewirkt werden, da eine große Anzahl lebensfähiger kleiner und mittlerer Bauernhöfe, **möglichst gleichmäßig über das ganze Land verteilt**, die beste Gewähr für die Gesunderhaltung von Volk und Staat bildet”, Darré, 1934. (We underline)

18 “Das Bauerntum ist tatsächlich der Lebensquell der Nordischen Rasse”. Darré, 1929

19 “Auf die Erhaltung des Blutes, des Geschlechts, kommt es an, nicht auf die Wirtschaftsform. Und dieses Blut lässt sich nach den Erfahrungen unserer Geschichte nur auf bäuerlicher Scholle, nicht auf städtischem Grunde durch Generationen hindurch erhalten ... Der Begriff des Bauern hat seine Wurzel im germanischem Mythos von der Heiligkeit des Blutes und der Aufgabe des Bauern, dieses Blut durch Dienst an seinem Geschlecht rein und gesund auf der ihm vertrauten Scholle zu bewahren und zu sichern.” Darré, speech *Die Bodenfrage*, 15.4.1934.

20 “... es ist gerade das Kennzeichen echten Bauerntums, dass es, im tiefsten Grunde seines Wesens unhändlerisch und also unjüdisch denkt, weil seine Arbeit nicht der Befriedigung eines Handelsbedürfnisses dienst, sondern der Erhaltung des Geschlechts auf der Scholle”, Darré, 1933,

*"It is conform to the thought of the German farmer that his farm and his land is not a capital one generation can dispose of at will, but a patrimony obtained from ancestors and which must be transmitted to successors."*²¹

2.3)- Christaller's work within the Nazi regime :

Walter Christaller, born in 1893, studied economy in Berlin and Heidelberg and became assistant professor under the Nazi regime at the University of Freiburg in Breisgau²². It was a small university²³, where most professors adhered to the Nazi ideology, like Hans Dörries or like its prestigious rector, the famous philosopher Martin Heidegger. Professors who did not partake in the general enthusiasm for the Nazi ideas were fired, like Walter Wundt, who retired forcedly in 1934. The department of Geography saw the role of a geographer not only as a scientist but also as a practical worker at the service of the Party:

*"Staff ... must not only be able to lead in general the students in the sense of the Nazi doctrine ; he must also be ready to put his knowledge entirely (ganz) at the service of the national community"*²⁴.

During two years (1935-37), Christaller worked on an *Atlas of the German Vital Space (Atlas des deutschen Lebensraums)* : one basic motto of Hitler was that Germany lacked vital space (*Lebensraum*). The Atlas was, in a way, preparing the conquest and the colonization of new territories on its eastern borders. As the war began (1939), he got a staff position (*Referent*) in the *Commission for the Defense of the German Volk*²⁵. While he never became a member of the Nazi party, Christaller adopted, like so many people at the time, concepts from the Nazi ideology:

21 "Es entspricht dem bäuerlichen Denken des germanischen Menschen, dass der Hof und Acker kein für die Zwecke einer Generation beliebig verfügbares Kapital, sondern ein Erbe ist, das von Vorfahren überkommen und die Nachkommen zu übergeben ist." Darre, speech *Die Bodenfrage*, 15.4.1934.

22 It should be very clear that this paper does not try and judge in anyway whatsoever Christaller's personal behavior. He never was a member of the NSDAP, fought in his youth against nationalist students, entered the communist party between 1951 and 1953 and seems to have been quite a pacifist during difficult times. Our only goal is to discuss his theory and the use it has been put to before it became widely known in the 1960's. See : Bunge, W (1977), Hottes (1982).

23 See the excellent publication which we use thereafter: Fahlbusch Michaël M, M. Rössler & D. Siegrist (1989)

24 in Fahlbusch, p. 88.

25 "Referent beim Planungsamt im Stabshauptamt des Reichskommissars für die Festigung deutschen Volkstums". Nazi ideology used the term "Volk" with a very racial meaning: Volkstum means not only nationality but ought to be translated by something like "the essence of the German nation as preserved in the pure blood of the true German population, unpolluted by foreign and particularly by Jewish blood". We will use the terms of "blood" or "Volk" to try and convey such meanings which have fortunately no correspondence in the American language, in a country built by immigration.

"Christaller is strongly influenced by the Nazi idea of the blood community (Volksgemeinschaft) which he applied in his project of a municipal geography"²⁶.

He regretted that the concept of *blood community* had not penetrated geography more deeply :

" It is surprising that this Nazi fundamental conception of the world, which has proved so fecund in all sciences, and which teaches us to perceive all aspects from the viewpoint of the blood community, has so little penetrated yet the methods and the research of settlement geography"²⁷.

Christaller's work consisted mainly in devising a method for populating the territories conquered by the German armies in the East : *"One of [Christaller's] goals was to integrate as quickly as possible the conquered territories into the German Reich"²⁸.*

He worked *"in order to plan the expanded territories of the German east until the border of the General Government [of occupied Poland]"* (Hottes R., 1982).

"Within the general frame of centralized spatial planning during the Third Reich, a theoretical spatial model became increasingly necessary. The foundations were built by Christaller's book "Die zentralen Orten..." (1933) ; but only at the end of the 1930's, could his theoretical considerations on spatial research and ordering begin to find applications. His theory was a precipitate of a long sequence of theories and publications on the centrality principle in settlement hierarchies... He did not consider his theory as a basis for further theoretical thought but as a theoretical basis for applications in spatial organization."²⁹

So, it should not come as a surprise that most of the conditions built implicitly into the model were important parts of Nazi ideology and Nazi policies. No scientist can free himself completely from the intellectual and ideological environment where he lives, and this is particularly true within such a heavy dictatorship like the regime Hitler established in 1933.

26 in Fahlbusch, p. 125.

27 W. Christaller (1938)-"Siedlungsgeographie und Kommunalwissenschaft", *Petermanns Mitteilungen*, p. 51.

28 J. G. Smit (1983) "Neubildung deutschen Bauerntums: innere Kolonisation im Dritten Reich", *Urbs et Regio*, #30, Fallstudien in Schleswig-Holstein, Kassel, p.79.

29 "Im Rahmen der Zentralisierung der raumordnerischen und raumplanerischen Tätigkeit während des dritten Reiches, wurde ein theoretisches Raummodell zunehmend bedeutsam. Die Grundlagen hierfür wurden von Walter Christaller mit seinem Buch "Die zentralen Orten., 1933" geschaffen; aber erst Ende der Dreissiger Jahre, fanden seine theoretischen Erwägungen in Raumforschung und Raumordnung ansatzweise Anwendung. Das Konzept Christallers war der theoretische Niederschlag einer längeren Reihe von Theorien und Veröffentlichungen über das Prinzip der Zentralität im Siedlungsgefüge... Er betrachtete sein Konzept nicht als Basis weiterer theoretischer Überlegungen, sondern als theoretische Grundlage zur Anwendung in der Raumordnungspolitik." J. G. Smit (1983), page 74.

3 - Nazi applications of the Christaller model :

For the Nazis, spatial planning was part of political action :

*“ Organizing life in space is a part of the general duty, the life of the population to organize and is also linked to forming the people through a political organization. Organizing the masses of settlers through urban planning and organizing the mass of the people through the Party are concomitant and correlated tasks.”*³⁰

Bruno Wasser adds :

*“The Theory of Central Places was then, for the reconstruction of the East by the National-Socialists, of such decisive importance, because only with a rigid structuring, fitting the needs of the administration, of the conquered territories and of their urban centers, could they establish a durable and smooth domination.”*³¹

The conquering SS, in charge of the colonization of eastern land³² after 1939, hoped that the German settlers, who could not first occupy the land in large numbers, would, from a few upper Central Places, inculcate to the local inhabitants (Russian and Polish farmers) their language and their customs, in such a way that German culture would trickle down the new urban hierarchies. Imposing authority from top to bottom was of the essence and gave a deep meaning to the centrality concept. Reluctant farmers would be expelled : at least 31 million people were cast away (Wasser, 1993, p 51). The resulting new population would be quite homogeneous.

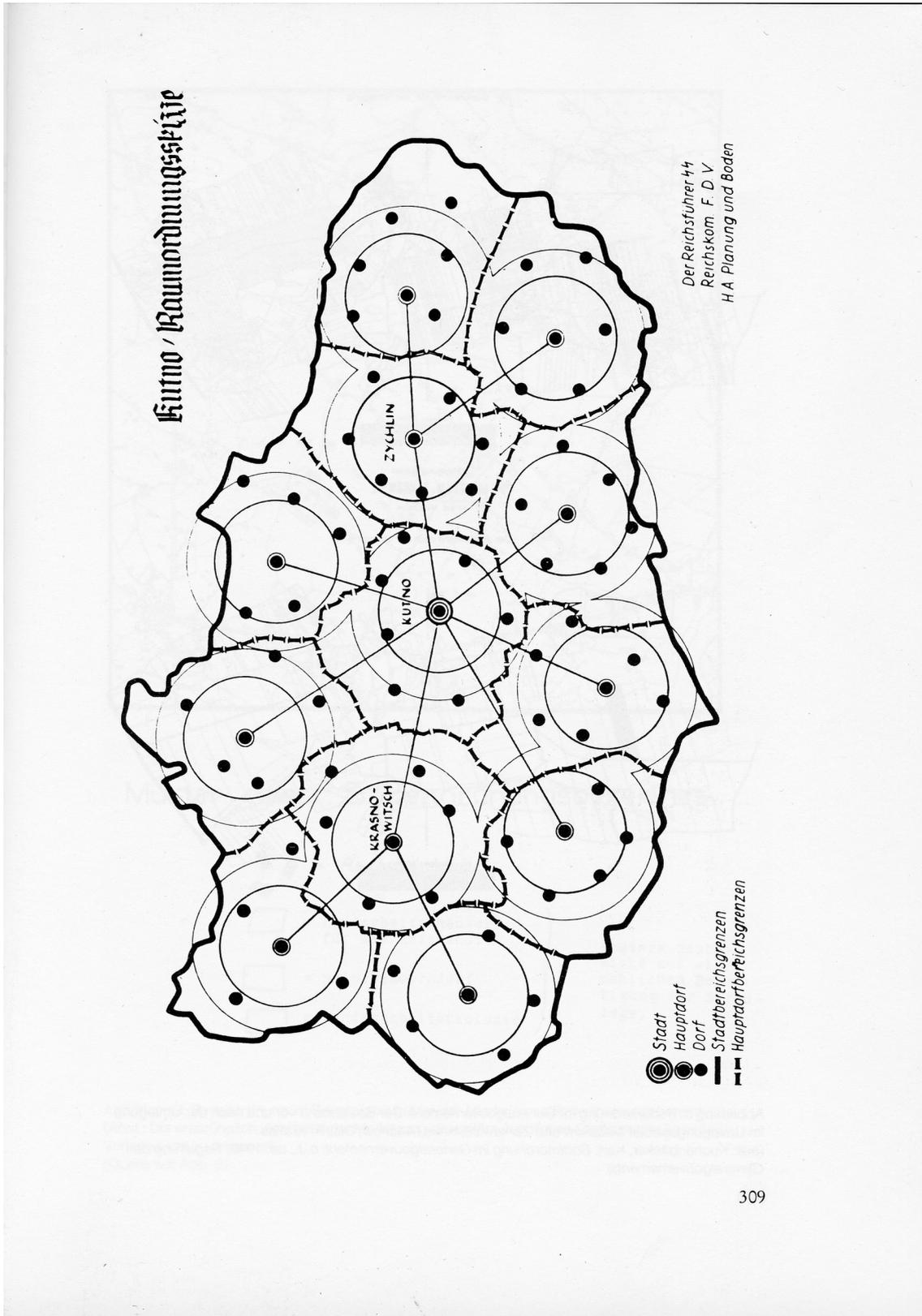
Within the SS organization, a section was in charge of the colonization, based on Christaller's theory. Its leader was Professor-Doktor Konrad Meyer-Hetling, SS-Oberführer and professor of Geography at the University of Berlin³³. Christaller worked for Konrad Meyer and participated in designing central places maps for Polish territories, for instance, in the Kutno region :

30 “ Die Gestaltung des Lebens im Raum ist Teil der allgemeinen Aufgabe, das Leben des Volkes zu gestalten, und läuft also parallel zu der Gestaltung des Volkes durch die politische Organization. Die Gestaltung der Siedlungsmasse und die Gestaltung der Masse des Volkes durch die Partei sind gleichlaufende und verwandte Aufgaben.” Culemann, 1941 in Wasser, 1993, p 28.

31 “Die Theorie der Zentralen Orten war für den Ostaufbau der Nationalsozialisten deshalb von so entscheidender Bedeutung, weil nur durch eine organisatorisch und verwaltungsmässig straffe Gliederung der eroberten Gebiete und ihrer Siedlungen eine dauerhafte und reibungslose Beherrschung möglich war.” (Wasser, 1993, p 30)

32 Führererlass, October 7, 1939 ; installation of Himmler as Reichkommissar für die Festigung deutschen Volkstum.

33 Berliner Universitätsinstitut für Agrarwesen und Agrarpolitik.



Source : Bruno Wasser, 1993, p 309

The basic conditions which, as discussed above, are necessary for building and maintaining over time Christaller's Central Place System were thus satisfied by the Nazi regime : the immense plains of eastern Europe occupied by a swift migration of German farmers,

all quite alike because chosen by the regime ; a reshaping of estates so they would have approximately the same size ; a contrasted distribution of power according to the *Führer Prinzip*, with equality between cells on a given level and strong hierarchical authority from top to bottom³⁴ ; a very stable set of farms not competing, like in a true market economy, to produce goods and make profit but to preserve the German race ; the use of urban hierarchy to dominate more quickly the conquered Slavic populations until they could be definitely absorbed or eliminated, a model made to organize conquered rural space in subservience to germanized cities

Conclusion : a Timeless Urban Location Theory ?

The reader of Christaller's thesis should not be surprised by the peculiarities, sometimes strange, of his theory : its requirements were particularly well fitted to the Nazi ideology. He can also understand why, in such political situation, the Time category could be neglected : the *Blitzkrieg* and the rapid conquests made colonization of eastern land a quasi immediate phenomenon ; and the Führer predicted a stable and dominating Germany for ever : the dream of the *One Thousand Years Reich*.

But one cannot avoid wondering why this theory has gained such a wide audience in the last decades, in so completely different situations. A first answer, of course, is given by its simplicity. Developing the model in an introductory course is straightforward and, at the same time, logical and quite satisfactory at first glance. It satisfies the imagination. The author himself has enjoyed presenting it in 101 Geography courses.

But, on deeper analysis, one may doubt if Christaller's theory does model really and effectively an urban network. There are several reasons to refute it.

The most important one, as we have seen, is the complete absence of Time : Christaller's landscape seems to come out of the blue sky like Minerva jumping from Jupiter's brain and then, to remain immobile, perfect, frozen for eternity. Modern geographers have dangerously neglected the historical and ideological environment where the model was born, making its so particular features difficult to understand.

A deeper reason might be the triumph in the 1970's and 1980's, of the *structuralist* paradigm which gave predominant importance to *synchronic* relationships, neglecting the *diachronic*

³⁴ This so-called *Führer Prinzip* was so essential for the Nazis that, when they organized the Waffen-SS, a parallel army, they abandoned the old grade denominations of the Prussian army and invented new grades, based on this principle : SS-Standartenführer, SS-Oberstgruppenführer, etc ...

ones. Following the lead of linguistic, most human sciences, like the *new geography*, used this remarkably fecund approach : was it partly blinded by it ?

Huge metropolises are developing all around the globe and they tend to attract a growing portion of population. Unfortunately, the Theory of Central Places does not seem to be suitable to large urban agglomerations.

Christaller defines cities in a very limited way : “*The city is the center of a territory*”³⁵. This makes it a *rural center* but does not fit to large cities and metropolises which have little to do, except for their gardening belts, with their surrounding hinterland. Huge cities work in large distance networks : Paris is much more dependent on events in Frankfurt, Osaka or Los Angeles than on what happens in a nearby small French town. Many geographers seem to have been mainly interested in rural environments, viewing cities, as did Christaller, only as centers serving their hinterland. This was the definition of a geographical region. For instance, in a famous paper, Etienne Juillard, defining the *region*, wrote : “*We cannot understand a piece of land (une campagne) without the city which fosters it, nor a certain city without the support of its Umland. Here is definitely the way to regional reality.*” (Juillard, 1962, p 491). To regional reality, maybe, but to urban reality ?

One may wonder if the urban hierarchy is really homogeneous and if the upper levels are not radically different, not only in size, but more importantly in their functions, their role and their evolution, from the lower urban levels, dedicated to services for their local surroundings³⁶.

Metropolises are also known for depending heavily on Time : they are centers of innovation, specializing in particular activities, attracting migrations, changing rapidly their forms, their contents and their functions, characteristics which have no place in Christaller’s theory.

Time has been re-introduced, however, in a brilliant manner, by an economist who built on Christaller to propose a much deeper model : August Lösch’s *Economics of Location*. Actually, economists had introduced Time in their models since a long time³⁷. Lösch explains his own role :

“The center of gravity of theoretical economics is shifting once more. Emphasis was laid at first on a price theory that neglected time and space ; then, the theories of interest and business cycles

35 « Der Stadt ist es, Mittelpunkt eines Gebietes » in Schrepfer, 1941, p 11.

36 Neglecting the originality of huge metropolises may be related to a deep and constant hostility running through history versus the City. See Spengler, 1923, White, 1962, Bergmann, 1970, Marchand, 2009, etc.

37 See for instance the famous Alfred Weber’s book, 1922,

introduced time ; and now, the third period has dawned, when space is seriously considered.” (Lösch, 1967, p 93)

He shows the necessity of closely intertwining the two basic categories of human understanding :

“If everything occurred at the same time, there would be no development. If everything existed in the same place, there could be no particularity. Only space makes possible the particular, which then unfolds in time.” (p 308)

Starting with Christaller’s model (“*an admirable monograph*”, p 431), Lösch makes it deeply dynamic. He discusses two main problems, both dependent on Time ; the *Transfer problem* : “*Everything connected with these **price fluctuations** ... is among the most important topics of the Theory of International Trade.*” (p 265 sqq) and the *Combination Problem* (p 305) : “*the problem of new spatial combinations of labor, capital and land [resulting from **migrations**] ... The economy adapts itself to brief disturbances by movements of products ; to long-continued disturbances by movements of productive factors. The former is a sales problem, the latter a problem of location”(p 312)”³⁸. In both cases, movement, i.e time, is crucial.*

Lösch development of Christaller’s location theory is not only completely diachronic but even dialectical : he defines Time as the very motor of his theory. He shows that, in a perfectly homogeneous environment where free market rules, the necessary evolution of the upper part of the urban hierarchy, by its inner logic, will create zones concentrating population, activities and wealth and other depleted zones abandoned by their dwellers, where poverty increases. **The perfect equality of environment and market rules will dialectically result in regional inequality.** Such theoretical development, if it is accepted, has much more depth, theoretical implications and practical effects than dividing space in hexagons.

Political consequences are impressive and may explain why Lösch’s theory remains largely ignored. It is also true that its complication is more daunting than the simple Christaller’s model. One may regret, however, that Lösch’s main work, which he could not achieve in Kiel, under the bombs, remains quite neglected.

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38 Lösch, 1967, we underline.

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