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Urbanisation. What's in a name?¹**Introduction**

Urbanisation is a term which is frequently used in urban history, yet it is seldom defined. More often than not, its meaning has to be deduced from the context. Since it concerns an important basic concept in urban history, to which many theories have been attached, it initially seemed to me of use to assemble the definitions as applied in the urban historiography. An evaluation of the material would then produce the most appropriate definition which could, in turn, be propagated for further use. However, it soon became evident that most authors meant the same by this term, i.e. the numerical growth of towns and/or the related growth of urban population in general. Although there were some interesting varieties within that definition, they were too few in number to justify a continuation of the projected approach.

What did become obvious, however, was that the current definition of urbanisation is not fit for use within urban history. I shall now attempt to demonstrate why one cannot apply that definition in urban history.

Naturally, I shall then try to offer a workable alternative, followed by an investigation into whether, and how, this new concept of urbanisation can be put to use.

Urbanisation. A demographic concept

Since the appearance of the first major studies about urbanisation in the second half of the nineteenth century, of which the most important, as well as the most influential study is that of Adna F. Weber, the term urbanisation has primarily been associated with numbers of people.² One wrote about the migration of people from the countryside to the towns, about the rise of metropolises, that is to say, towns, with a large population, about the differences in the growth of population in the towns, and in the countryside, and so forth. This concept has become so common, that an explicit definition is usually no longer given. More recent works are also guilty of this. In the cases where a definition is not omitted, one usually refers to the one applied by Hope Tisdale Eldridge in 1942; 'Urbanization is a process of population concentration. It proceeds in two ways: the multiplications of points of concentration and the increase in size of individ-

¹ First published in H. Schmal (ed.) *Patterns of European since 1500* (Croom Helm: London 1981) 31-61. Translation by Dineke Prince-van Wijnen.

² A.F. Weber, *The growth of cities in the nineteenth century* (New York 1899).

ual concentrations'.³ In this concept, towns are the result of urbanisation, causing Ms Eldridge to renounce rather vehemently the definitions in which that was excluded.

There are two classes of definition which are deemed unacceptable. The first regards urbanisation as a process of radiation whereby ideas and practices spread out from the urban center into surrounding areas. This is an objectionable definition because it makes the city the cause of urbanisation rather than the result or the product of urbanisation. The second class of definition is more objectionable than the first, and more peculiar. It defines urbanisation as the increase in intensity of problems or traits or characteristics that are essentially urban. Again we have the confusion of cause and effect.⁴

Although this article does not refer to any source, nor to other works, it is clear that the first attack is aimed at the 'Schlesinger-approach', and the second at a somewhat sociological approach of which L. Wirth was the principal proponent.⁵ Schlesinger, and others with him, regarded the towns in the U.S.A. as the hearths of creativity and innovation containing a vast radiating power.⁶ Well-known in this connection, is R.E. Turner's theory, that the pioneers of innovation and progress were primarily to be found in the urban 'melting pots' and not, as his namesake presumed, on 'the frontier'.⁷ W. Diamond was the first of quite a number of historians who criticised this approach, and little by little, the concept of urbanisation that had evolved from it, disappeared from (urban) history.⁸

According to Louis Wirth, a distinct way of living developed in towns, and was characterised by a stronger interaction and frequency of social contacts, which as a result were rather superficial, than had been the case before. People no longer saw each other during the whole day, but came into contact with only a partial aspect of the other person, namely, as postman, as neighbour, etc. The resulting segmentation of social restraint produced, on the one hand, more freedom for the individual, but on the other hand, symptoms such as lawlessness. Wirth labeled this way of life in towns 'urbanism' and wished it to be interpreted solely in the specifically sociological sense. Some of the characteristics attributed by Wirth to 'urbanism' were subsequently dismissed as being irrelevant, or just not accurate, for instance by, among others, Gans.⁹ That does not alter the fact that, research into the urban way of life and its diffusion, still occupies, especially in the field of sociology, an important place. At times, though the term urbanisa-

³ H.T. Eldridge, 'The process of urbanization', in *Social forces* (1942), repro in J.J. Spengler and O.D. Duncan (eds.) *Demographic analysis* (Glencoe Ill. 1956) 338-343.

⁴ Eldridge, 'The process of urbanization', 338

⁵ L. Wirth, 'Urbanism as a way of life', *The American journal of sociology* (1938)1-24.

⁶ A.M. Schlesinger, *The rise of the city* (New York 1933).

⁷ R.E. Turner, 'The industrial city and cultural change', in C.F. Ware (ed.) *The cultural approach to history* (New York, 1940) 228-242.

⁸ W. Diamond, 'On the danger of an urban interpretation of history', in E.F. Goldman (ed.) *Historiography and urbanization* (Baltimore 1941).

⁹ H. Gans, 'Urbanism and suburbanism as ways of life', in A. Rose (ed.) *Human behavior and social processes* (Boston 1942).

tion is used instead of urbanism, which leads to confusion, and that ought to be avoided.

Eldridge, it must be admitted, did go to a lot of trouble to produce a definition so extensive that, so to speak, research can begin at zero point, that is, in periods and in places, characterised by a lack of towns. The aim, obviously, was to generalise, and to make it possible to go back in time to the cradle of mankind. As a result, the definition became somewhat vague, and that is not what we want. Fortunately, this misty veil has been lifted in the course of time. Thus, in 1965, Philip Hauser adopted the above-mentioned definition but added to it, 'As a result the proportion of the population living in urban places increases'.¹⁰

Although this then creates the problem of how to define precisely the word 'urban' - and Hauser devotes several pages to this - the introduction of the proportional relationship urban-rural population clarifies the situation and makes it more concrete. What are involved here, are facts that can be measured. Such a definition can be found either implicitly or explicitly among almost all the later authors. Quite recently, Bo Öhngren even suggested to label as urbanisation only those changes in the distribution of population that were to the benefits of towns. The real growth of towns, according to Öhngren, can better be qualified as 'urban growth'.¹¹

In fact, these are really only variations of the same theme. More and more, urbanisation came to be regarded as a demographic process, and it has been defined as such almost exclusively in the last years.

Urbanisation. A macro concept which cannot be brought down to size

The demographic concept of urbanisation appeared to be quite usable in economic history, such as in dividing the upward trend of population into rural and urban growth, and in measuring the shifts within them. This process could then be functionally matched to other developments. Thus, links have been made between urbanisation and economic growth, and between urbanisation and industrialisation. Research into this usually involved the use of models and of statistics on a national level. Thus, figures concerning the distribution of population were related to figures concerning the growth of production or the growth of labour force in the secondary sector. Most interesting facts have come to light as a result of such an approach. At the Economic-Historical Conference held in Edinburgh, H. van Dijk stated that, in the Netherlands, the relative growth of urban population preceded industrialisation.¹²

When such a relation between urbanisation and industrialisation is established

¹⁰ Ph. Hauser, 'Urbanization: an overview', in Ph.M. Hauser and L.F. Schnore (eds.) *The study of urbanization* (New York 1965) 1-47, 9.

¹¹ B. Öhngren, 'Urbanization and social change', in *Proceedings of the seventh international economic history congress* (Edinburgh 1978) 75-82, 75.

¹² H. van Dijk, 'Urbanization and social change in the Netherlands during the nineteenth century', in *Proceedings of the seventh international economic history congress* (Edinburgh 1978) 101-107, 101.

with the aid of aggregated facts on a national level, then the spatial element no longer plays a part in the analysis. The division into urban and rural population is numerical and not spatial. The absence of this spatial element is, in my opinion, a compelling and sufficient reason to place these studies among the 'normal' economic history, and not to consider them as urban history. I am, of course, quite aware of the fact that there is no consensus at all as to what urban history as a distinctive sub-discipline of economic and social history entails, or ought to entail, but, urban history without space seems to me urban history without towns. That is, unless one declares a town to be a state of mind or something like it; unfortunately, that does happen some times, as has been pointed out, for instance, in evaluations of the theory and practice of the urban history by Dyos and Kooij.¹³

At that same conference in Edinburgh, David Herlihy attempted to make a connection between urbanisation and industrialisation in separate towns. His conclusion was, that some towns, such as Naples in the 18th and Athens in the 19th century, underwent an extremely large increase in population without any form of industrialisation taking place.¹⁴ Thus when pertaining to individual towns, such studies seem to have to be considered as 'urban history'. However, the concept urbanisation suddenly seems to be inapplicable. For, industrialisation can be examined at a local level, but urbanisation, by definition, cannot. The applied definition, which is based on a proportional distribution of the population, prevents this, so that the phenomena cannot be compared.

The current definition of urbanisation in social history is also quite suited for application, and that is not surprising considering the fact that historical demography constitutes an important sub-discipline of social history. Even then some immense problems arise. These manifest themselves once they leave the macro-level. Urbanisation can in no way functionally be connected to local social phenomena, neither can it be applied to research concerning small groups. As soon as the micro-sphere is given a central position, it becomes apparent that urbanisation forms a neutral category which can only function in the sense of: society urbanised, so something must also have happened in the individual towns.

The above-mentioned provides an explanation for the, in my opinion, somewhat disappointing course of the session about the relation between 'urbanisation and social change' at the conference in Edinburgh. The papers there were primarily concerned with social change in towns, with the result that urbanisation more or less was forced into the role of a peg on which to hang one's theory as it suited, but from which no interpretation whatever could be derived.

The papers did include some elements, nevertheless, which can be regarded

¹³ H.J. Dyos, 'Agenda for urban historians', in H.J. Dyos (ed.) *The study of urban history* (London 1968); P. Kooij, 'Stadsgeschiedenis en de verhouding stad-platteland', in *Economisch en sociaalhistorisch jaarboek* (Den Haag 1975) 134-141.

¹⁴ D. Herlihy, 'Urbanization and social change', in *Proceedings of the seventh international economic history congress* (Edinburgh, 1978) 55-74, 59.

as positive ones within the framework of this theme. Bo Öhngren produced, as has already been referred to, an explicit definition of the concept urbanisation, while Henk van Dijk emphasised the phenomenon migration. The concept migration seems to me to be a good one within which it is possible to show a relation between urbanisation and social change. After the facts concerning the relative growth of towns have been subdivided into figures about groups of people who settle somewhere, who leave, or perhaps sojourn somewhere, a picture of the movement of people evolves which can, so to speak, be drawn on a map. As a result, the macro-concept of urbanisation not only obtains a pronounced spatial elaboration, but can, moreover, be related to social phenomena at a local level.

It seems to me, that this is the only way in which the demographic concept urbanisation can be fitted usefully into urban history. That is, of course, only in a very restricted sense. It has, moreover, proven to be extremely difficult to analyse social phenomena in the micro-sphere in such a way that the town is an active element, and not just the background scenery for a play. It is not without reason that the 'new urban history', an epithet given by Thernstrom to the more social and quantitative urban history, has been repeatedly stigmatised as social history within an urban framework.¹⁵

Urbanism, as defined by Wirth, quite obviously included spatial characteristics, since it was linked to density and separation in local settlement-patterns. This is not surprising, as the Chicago-school regarded the interaction between man and environment as the principal element in its research. However, it is not desirable that the micro-concepts are adjusted to the limited range of macro-concepts, with the result that, in the future, only the relation between urbanisation and urbanism will be examined. That would be putting the clock back, the 'new urban history' is currently undergoing a stormy development and pretends to want to enlarge her field rather extensively, particularly into the economic sphere. The volume *The New Urban History*, contains important promises to that extend, and they continue to be made good in, for instance, articles in the *Journal of Urban History*.¹⁶ The spatial element is now receiving more attention in quantitative studies about the patterns of settlement such as have been presented in Peter Knights' work on Boston.¹⁷ Such a wide range of urban developments needs a large macro-framework, and to that end, the concept urbanisation now in force is not suited at all.

The national past. No town in sight

A conception such as urbanisation which is insufficiently applicable, naturally ought to stimulate the search for an alternative macro-framework for urban history. Unfortunately, this does not seem to exist in urban historiography. The researcher has more often than not shut himself up in his own town and looked

¹⁵ S. Thernstrom, Reflections on the new urban history, *Daedalus* (1971) 359-375.

¹⁶ L.F. Schnore (ed.), *The new urban history* (Princeton 1975).

¹⁷ P.R. Knights, *The plain people of Boston 1830-1860* (New York 1971).

no further than the top of the town wall. When an exception is made, it is usually an attempt to compare local developments to those on a national level. An example of this, for instance, is the connection made between the economic development of Manchester and that of England. Similarly, a study concerning the rise of socialism in the Hague was placed next to a study concerning the rise of socialism in the Netherlands. In such instance, problems occur that are identical to the ones mentioned in the preceding paragraphs. It appears to be impossible to connect national and local developments in such a way that an interaction can be traced. A parallel in the descriptions is the nearest that has been achieved.

The primary reason for this is, that the current picture of the social-economic past of a country is hardly regionally differentiated. There are facts about, and studies have been made of, economic growth, the growth of production, of population, of trade unions, and of the development of transport, and so forth. In these studies, especially when they are of a quantitative nature, the nation as a whole represents a statistical rather than a spatial unity. One can only then determine the contribution of the individual towns to these macro-processes if these towns are regarded as statistic entities. Even then, it will be of partial success. The statistics are often only available on a national, and not on a local level. In the Netherlands, for instance, it is impossible to determine the G.D.P. of a town for the 19th century, and also later. One is able to measure the contribution of individual towns to the increase in the national population, but it is impossible to subdivide the economic growth of a nation into urban growth.

Apart from the limited availability of source material, there is another fundamental difficulty. The attempt to adjust micro-studies to those existing on macro-level would result in a minimalising of the spatial element. This would mean a complete loss of identity for urban history. It is, of course, necessary to study those elements, but urban history deserves a more spatial approach. The rather hybrid nature of the subject, within whose framework the national past serves as a neutral reference, ought really to disappear. For, it leads, at the most, to studies in the sense of 'There was an industrial revolution in England, so something probably also happened in London'. Research titled, for instance, as, Middletown and the Industrial Revolution, ought by now to be substituted by studies named Middletown in the Industrial Revolution. It is not the micro-framework that needs to be adjusted, but the macro-framework. Progress within urban history will be stimulated in particular by a picture of the national past which is spatially constructed. The answer, in my opinion, is to re-examine the current concept of urbanisation.

The ecological complex. A framework that is too large

Upon examining the publications on urban history, one discovers that, since many years there is a slight dissatisfaction with regard to the concept urbanisation. Particularly in the 1960's, several studies appeared in whose title one frequently finds the term 'urbanisation'. Their observations purport many similari-

ties. One could call it an ecological-complex approach. The most important proponents of this approach within urban history were Eric Lampard and Leo Schnore. Characteristic is the following passage:

At stake in a broader view of urban history is the possibility of making the societal process of urbanisation central to the study of social change. Efforts should be made to conceptualise urbanisation in ways that actually represent social change. For this purpose urbanisation may be regarded as a process of population concentration that results in an increase in the number and size of cities (points of concentration) and social change as an incremental or arhythmic alteration in the routines and sequences of everyday life in human communities. The method will be to explore possible interrelationships between the phenomenon of population concentration and certain apparent trends in social organisation, structure, and behavior.¹⁸

At first glimpse, it seems as if the well-known Eldridge definition has been quoted, but Lampard claims to be able to isolate urbanisation from the too limited demographic context by relating it to environment, technology and 'social organisation'. This quartet together forms the ecological complex.¹⁹ It roughly entails that increasing populations adjust themselves to the circumstances, specifically speaking, to environment, by way of technology and social organisation. The establishment of towns is one of these adjustments. At times it seems that Lampard labels as urbanisation this very process of adjustment, that is, the origin of towns and their growth in the widest sense. In the end, he adheres to a demographic concept.

The demographic concept of urbanization, in short, is not as constricting as it first might have appeared; its scope allows inquiry into many facets of social change, and its root in population preserves a vital interest in the attributes and conditions of human beings living in organized communities.²⁰

However, it was that very relating to other matters that was more difficult than presumed. One is here concerned with gigantic variables which are barely manageable and difficult to quantify. The element population appears to be the easiest to quantify with the result that it is the most frequent object of research. An absolute highlight was obtained in the shape of Lampard's article 'The Urbanizing World', in which all the aspects of population development, which fit into the framework of the ecological complex, have been rubricated in a useful and

¹⁸ E. Lampard, 'Urbanization and social change', in O. Handlin and J. Burchard (eds.) *The historian and the city* (Cambridge Mass. 1963) 225-248, 223.

¹⁹ E. Lampard, 'Historical aspects of urbanization', in Ph. H. Hauser and L.F. Schnore (eds.) *The study of urbanization* (New York, London, Sydney 1965) 519-554.

²⁰ Lampard, 'Historical aspects of urbanization', 522

well-considered manner, and brought into relation to each other.²¹ Nevertheless, even then, it only foreshadows the connection to other variables in the ecological complex. A real relation has not been brought about. Even if this should ever succeed, the circumstance that the different elements are so comprehensive, probably results at the most in a sort of history of society in which room is also made for towns, and that is not what urban history is waiting for.

Leo Schnore still has great expectations of the ecological complex, particularly in the micro-sphere.²² Perhaps he is right; for, after all, it contains the element space. Several important studies have been made concerning the spatial distribution of the urban population. The question remains, however, whether they ought to be made within the framework of the ecological complex. Environment is rather deterministic, and that is no longer easy to prove in modern times. Studies such as by Knights and Warner have, in any case, proven that these things ought to be examined more pragmatically.²³

Town systems. A spatial form of urbanisation

It must be admitted, though, that the ecological complex does contain, apart from much unnecessary ballast, material fit for a new concept of urbanisation. It is to Eric Lampard's merit that he produced these elements and introduced them emphatically in urban history.²⁴ For it was he, who identified the concentration of a large number of functions in a central area such as towns, as one of the characteristics of the rational adjustment of man to his environment. These towns became a centre of production, of transport, of services, of politics and of culture, etc. They fulfilled this central role not only for the inhabitants, but also to the surrounding, mostly agricultural, areas. Moreover, the towns became more and more interwoven in all kinds of ways, because, for instance, there was an exchange of goods, or perhaps, because a flow of migration evolved. A whole network, or system of towns, evolved, which primarily could be determined horizontally. Besides that, however, there was the phenomenon that some towns acquired more, and sometimes more important, central functions than others. That led to hierarchical characteristics within the system of towns. Lampard c.s. assembled these into a type of pyramid structure, but it is also possible to present them horizontally, which I hope to do further on.

A similar view was also evident, quite early on, in the work of Oscar Handlin. In the article, 'The modern city as a field of historical study', he states that the modern town has developed from an organism into an organ.²⁵ From an in-

²¹ E. Lampard, 'The urbanizing world', in J. Dyos and M. Wolff (eds.) *The victorian city* (London 1973) 3-58.

²² L.F. Schnore, 'Urban history and the social sciences: An uneasy marriage', *Journal of urban history* (1975) 395-409.

²³ S.B. Warner jr., *Streetcar suburbs, The process of growth in Boston, 1870-1900* (Cambridge Mass., 1962).

²⁴ E. Lampard, 'The history of cities in the economically advanced areas', in *Economic development and cultural change* (1954/55) 81-137.

²⁵ O. Handlin, 'The modern city as a field of historical study', in O. Handlin and J. Burchard (eds.) *The historian and the city* (Cambridge Mass. 1963) 1-26.

dependent entity, often even quite tangibly divided – either due to water or to walls – from her surroundings, the town developed in the course of time more and more as a part of a larger entity. What one ought to envision by that was not exactly described; Handlin primarily touched on the mutual political and economic dependence of towns, but even then the description remains a stimulating one. The transformation from organism to organ was accomplished by three developments, according to Handlin: the rise of centralised national states, the transformation of the economy from a traditional household, to a capital-using basis and the ‘technological destruction of distance’. Although this has not been elaborated on further, one may make two important conclusions about this theory. Firstly, that the contributing forces belong to different spheres – in this case, the economic and the political – and, secondly, that the creation and development of town systems must be brought back to the pre-industrial era. In a subsequent paragraph it will be demonstrated that the first forms an obstruction to the shaping of a new concept of urbanisation, while the second seems to be confirmed by practical research.

Whilst Handlin’s view on town systems remains somewhat vague, that of Lampard is embedded with great difficulty in that burdensome ecological complex. Nevertheless, the introduction of the concept of town networks within urban history proved to be a very important development. Thus, it became possible to remove towns from their isolation and to examine them within a useful framework. The realisation, that the town constitutes a part of a larger framework, and that it is attached to it in all sorts of ways, should prevent the urban historian from pronouncing his own town as the pivot of the world commanding an eternal myopic fascination.

Theoretical concepts such as nodality, centrality and hierarchy, are suited for use within urban history. For the first time, a framework is within reach that includes a spatial dimension and, since urban history always primarily regarded the individual towns as spatial units, it is, at last, possible to study the micro- and macro-level with regard to their mutual interaction.

Such an important framework deserves an important name. It seems to me desirable that the concept urbanisation receives a broader definition, which also contains the above-mentioned processes. This can be done simply by defining urbanisation not only as the concentration of people at central points, and their distribution throughout the nation, but also as the concentration of activities at central points and their distribution throughout the nation. In this sense, towns need to be seen as multifunctional central points, as a point where people, goods, services, power and impetus are concentrated. As for the concentration of activities, they include not only those of an economic and social nature, but also the political and the cultural. The dosage of the various activities over the towns in a nation produces absolute, as well as relatively, large, differences which increase the more the towns become interdependent. This is expressed by the differences in the central functions, and the shifts within these functions. This mutual de-

pendence can, for the most part, quite manifestly be spatially determined, even in the past. Thus, one could determine quite early on the flow of goods from one town to another, the migration of people, and the exchange of correspondence, whilst that same mutual dependence was given an added emphasis by (water)ways, railways, and, later on, by high tension masts and telephone cables.

By introducing a definition of urbanisation which is based on the presence of central functions and the development of dependency-relations, urban history benefits more than when one clings to a sterile, and solely demographic concept of urbanisation. The concentration of people and of activities are a logical extension of each other; there is a quite obvious interaction. In research that has been done up until now, one can observe repeatedly, that the consolidation of activities in a central point always occurred in interrelation to the numeric growth of towns. This cannot be contradicted by the assertion that, in some towns a large increase in population preceded industrialisation. In those cases, the central functions were to be found in other spheres, varying from the political function as national capital, to the cultural function as a 'magical centre'. Moreover, the definition I suggested, bypasses the difficulty encountered by Hope Tisdale Eldridge, and which prevented her from producing a wider concept of urbanisation, that is to say, that in that event, one could distinguish towns before urbanisation had actually taken place.

Of course objections can be made to the new definition. The most important one, it seems to me, could be that it is still difficult to provide a precisely outlined content for the concepts activities and central functions. By activities is meant in the first place, of course, production, consumption, and services. However, it also includes activities such as exerting political power, creating new standards and values, and accepting innovations. Practical research should throw more light on this; but, obviously, this research into the way in which, and to what extent, towns form a part of a larger entity, is only possible after introducing a new concept of urbanisation. As for the concepts centrality and hierarchy, it must be noted that they have already been well-tested and deemed applicable in another, pre-eminently spatial, discipline, namely, geography.

Geographic concepts. A too rigid regularity

One will not find the stone of wisdom in the field of geography, either. There are no theories on town systems at hand that can be applied directly to urban history. The only concept which up until now has somewhat found its way into urban history is that of Walter Christaller. In 1933, he created the concept central place.²⁶ In the course of time, certain towns have acquired a central service function with regard to the smaller towns and villages. In a spatial dimension, these small nuclei are situated at an equal distance from the service-centers so that they form corners, so to speak, of a hexagon of which that central town is

²⁶ W. Christaller, *Die zentralen Orte in Süddeutschland* (Jena 1933).

the pivot. This same pivot can, in turn, be regarded as a corner of a hexagon around a more important service-centre, thus creating a hierarchy of central points in a horizontal pattern.

Naturally, such a pronounced theory resulted into much discussion among geographers. Although Christaller's theory is, in general, no longer accepted, the concepts centrality and hierarchy have not really been meddled with; in fact, they are still often applied. Of the various criticisms of this theory, the following aspects in particular are relevant to urban history,

a) Empirical research has never really produced regular hexagons. The regularity-aspect in particular has turned the theory into a sort of Procrustean bed into which reality will only then fit after having undergone far-reaching mutilation. Also to be mentioned in this context, is Jefferson's 'law of the primate city'. Jefferson stated that, in each country, a capital city evolves, which attracts so many central functions that, with regard to growth and inhabitants, it by far outdoes the nearest ranking towns.²⁷ I need not to travel far to find evidence to the contrary. In the Netherlands, the three towns Amsterdam, the Hague and Rotterdam have been much the same in size since the 19th century, and this can also be said of the Belgian towns of Antwerp and Brussels. Not very convincing is Jefferson's argument that the three Dutch towns are situated so near to each other that they are to be regarded as one large town, nor that Antwerp and Brussels must be seen as exponents of, respectively, Flemish and Wallonian Belgium; this is especially unconvincing when one looks back into history. In any case, regularity is something which a historian will never accept in advance; if he does, it will only be after thorough research.

b) Christaller employed an institutional method of regulation. He began with institutions such as schools, markets, hospitals, and so forth, and on the strength of that, produced a honeycomb structure of primary towns. This approach meant that emphasis was laid on the services, and that industry was neglected. In this way, a new industrial town, which fabricated products for a national and an international market, and, therefore, made an important contribution to the gross national product, could obtain a very low score. This result was then accentuated even more by the fact that such industrial towns were very often situated near each other, so that they had to share the various central functions.

The emphasis on regularity disappeared from subsequent theories, and an attempt was made, often with success, to shift the accent from services to industry. An evaluation of these theories on town systems is not necessary at this point; let me suffice by referring to such competent studies as those by Berry, Buursink, Hoekveld, Pred and Robson.²⁸ Research in the field of geography, however, has

²⁷ M. Jefferson, 'The law of the primate city', *Geographical review* (1939) 226-233.

²⁸ B.J.L. Berry, *Growth centers in the American urban system* (Cambridge, 1973); J. Buursink, *Centraliteit en hiërarchie* (Assen 1971); G. Hoekveld, 'Theoretische aanzetten ten behoeve van het samenstellen van maatschappijhistorische modellen van de verhouding van stad en platteland in de nieuwe geschiedenis van Noordwest-Europa', in: *Economisch en sociaalhistorisch Jaarboek* (Den Haag 1975) 1-48; A.R. Pred, *The spatial dynamics of U.S. urban-industrial growth 1800-1914* (Cambridge Mass. 1966); B.T. Robson, *Urban growth, an approach* (London 1973).

progressed so far now, that today's USA and most West European countries have been subdivided into regional service-centers which sometimes, but not always, display hierarchical characteristics. These classifications are based on the number of inhabitants of the towns and the functions these towns occupy in the economic sphere whereby an important criterion was usually the presence of institutions in the services sector. This is quite easy to measure, but attempts have also been made to weigh other economic activities.²⁹ These classifications of towns are made with the aid of refined techniques and are possible thanks to the enormous amount of data which is available for the present.

Such an approach cannot be applied just like that to the past. Much data which is available concerning the present will be searched for in vain with regard to the past; similarly, data concerning the past cannot always be applied to the present. Moreover, it is quite the question whether one ought to apply this method to the past without making some adjustments to it. One of the primary criteria is the range of the service capacity of a town. This quite obviously depends on the available transportation and communication facilities, and these varied for each historical period. Similarly, the factors determining the establishment of industry differed as time passed.

When one looks into town systems, its extension, and the changes within them – and that is, in my opinion, that with which urban history should primarily be concerned with at a macro level – then, the current divisions and criteria can be applied only in part. That is why I am not so certain that urban history benefits from an approach as was recently presented by Sam Bass Warner and Sylvia Fleisch.³⁰ They advocate the introduction in historical research of an accounting system drafted by the Bureau of Economic Analysis in co-operation with geographers. This system divides the U.S. towns into Standard Metropolitan Statistical Areas (SMSA). These SMSA's correlate to the service sectors around primary towns and have been shaped with the aid of statistics compiled from the census of 1960. Since this division uses as its point of departure the county of which long series of figures are available, Warner and Fleisch consider its application to the past of use, because, by retaining the same divisions throughout time, all sorts of quantitative comparisons become possible. However, maintaining this very SMSA throughout time will produce a distorted picture. It just is not possible to deduce the past *linea recta* from the present. Moreover, the present is sometimes completely different from what the past seemed to lead to. In any case, urban historians cannot accept *a priori* that the network of towns in 1960 corresponded to that of a century earlier, even though it may seem to be so. In point of fact, the authors recognise this, but as far as studying problems within the range of social history is concerned, they see the objection as something that can be overcome. Moreover, they point to the fact that research into town systems in the past still has to commence, so, there is no alter-

²⁹ e.g. G. Alexandersson, *The industrial structure of American cities* (Stockholm 1956).

³⁰ S.B. Warner jr. and S. Fleisch, *Measurements for social history* (London 1977).

native method.

There are, indeed, hardly any extensive studies about town networks in the past, and of the few that exist, most concern the pre-industrial period and/or specific countries such as Russia and China. As far as the industrialised society is concerned, it was Eric Lampard once more who emerged as the pioneer. In the article 'The evolving system of cities in the United States', the period after 1800 was thoroughly examined.³¹ In it, by the way, he adhered to the demographic definition of urbanisation, and that proved to be, as he himself admits in his concluding sentence, an obstacle to a further examination of the material. Important relevant passages can also be found in Pred's work, which is more concerned with the general spatial aspects of urban-industrial growth in the U.S.A. in the period 1800-1914. After that, research at a national level was hardly pursued. There is, however, the important study of Michael Conzen about the role of transportation in the town network.³²

Further important research has been done into the spatial diffusion of innovations. These, as well, have been initiated by geographers, of which the pioneer was Hagerstrand.³³ Due to their nature, these studies could not become anything but historical studies, since the acceptance of innovations has to involve time. Not only did they look into the diffusion of artefacts such as the steam engine, the automobile and the telephone, but also of matters in a more institutional sphere. Thus, Hagerstrand examined the diffusion of the Rotary, and Pred that of information.³⁴ These studies showed that innovations often tend to diffuse in a hierarchical way, and that, at the same time, the factor distance was of crucial importance. Not only did diffusion occur towards central points at a lower level, but also to the immediate surrounding area. A representative study in this connection, is that of Brian Robson into the diffusion of gasfactories, telephone and building societies.³⁵ It was there obviously a matter of ranking order (number of inhabitants) and at the same time of the distance between primary towns and dependent towns. With this, this study indicates that knowledge concerning the diffusion-pattern of innovation can be an important aid in reconstructing town systems.

Although expressions such as central points or hierarchy are not at all employed in F.J. Fisher's article 'London as an engine of economic growth', this work deserves to be mentioned, as it sketches rather evokingly how London acquired an indisputable position in the 18th century at the top of the English town pyramid, with the result that there was a strong numeric increase in popu-

³¹ E. Lampard, 'The evolving system of cities in the United States', in H.S. Perloff and L. Wingo (eds.) *Issues in urban economics* (Baltimore 1968) 81-139.

³² M.P. Conzen, 'A transportation interpretation of the growth of urban regions', *Journal of historical geography* (1975).

³³ T. Hagerstrand, *Innovation diffusion as a spatial process* (Chicago 1967).

³⁴ A.R. Pred, 'Large city interdependence and the pre-electronic diffusion of innovations in the United States', in L.F. Schnore (ed.) *The new urban history* (Princeton 1975) 51-75.

³⁵ B.T. Robson *Urban growth, an approach* (London 1973).

lation.³⁶ Another interesting aspect of this article is that it also includes the element political power, as exerted by London in order to get its own way. This political aspect can also be found in the pleasant study made by Johan de Vries about the economic rivalry between Amsterdam and Rotterdam where, in some sense, the top of the Dutch town-hierarchy was at issue.³⁷ That, then, is the only Dutch historical study concerning this subject, that exists of recent times. An important article not to be omitted was written some thirty years ago by the geographer H.J. Keuning about the town-hierarchy between the two World Wars.³⁸

The formation of networks. A primarily economic happening

If we regard urbanisation as not only the concentration of activities in the socio-economic sphere, but also in the political and cultural spheres, complications arise. Since it is impossible to measure the importance of these spheres with respect to each other, more town systems ought to be constructed. Apart from an economic hierarchy, it is also possible to construct a political one, and they need in no way coincide.³⁹ The Netherlands itself provides a clear example of that, as political power has of old been exercised from the Hague. Under that come the capitals of the eleven provinces; the Hague occupies a double function, national as well as provincial capital, The two largest, and economically most important cities, Amsterdam and Rotterdam, do not appear at the top of the political network, being neither national nor provincial capitals.

As to the cultural sphere – and here I primarily think of patterns of standards and values, and the changes within them – one encounters matters that are often hardly to be measured. However, there are possibilities of measuring the spatial diffusion of cultural innovations, but then in a roundabout way, such as by analysing the contents of local newspapers or comparing police regulations. It is not unlikely that what will then become evident is that the frequency of cultural activities can be related functionally to the size of the town. (That is where we see Wirth's urbanism reappearing.) Such a conclusion is less probable in the political sphere as it is characterised by a hierarchy of rigid, venerable and often age-old institutions.

It is, of course, not very inspiring to have to work continually with several hierarchies which only partly overlap each other. For that reason, macro-research within urban history can best devote itself primarily to socio-economic

³⁶ F.J. Fisher, 'London as an engine of economic growth', in J.S. Bromley and E.H. Kossman (eds.) *Britain and the Netherlands*, vol. IV (The Hague 1971) 3–17.

³⁷ Joh. de Vries, *Amsterdam-Rotterdam, Rivaliteit in economisch-historisch perspectief* (Bussum 1965).

³⁸ H.J. Keuning, 'Proeve van een economische hiërarchie van de Nederlandse steden', *Tijdschrift voor Economische en Sociale Geografie* (1948) 566–582.

³⁹ Even within the economical sphere, it is possible to create different systems, according to the criteria used for classification. These are, however, easy to bring into one line, as has been shown clearly by Brian Robson elsewhere in this volume.

activities that are concentrated in central points. This concentration of activities was the major driving force behind the increase in the labour market, which in turn largely caused the numeric growth of towns. Political activities can also be included, in so far as they can be translated into the number of jobs involved. Even a more outdated or materialistic interpretation of culture can be translated into the labour market and into artefacts, but that seems to me to be less desirable.

In any case, there do exist theories within the field of geography, which can function as a guide for research into the spatial diffusion of social and economic activities in the past. A pragmatistical approach, in which the outlines of the spatial system have not been determined in advance, is possible only if an ample amount of sources of sufficient quality is available. In my opinion and considering the results that have been achieved, there are enough possibilities to reconstruct the spatial diffusion of people, goods, services and information with the aid of archives. Some of these possibilities will be mentioned in the next paragraph. In doing that, I shall not again cross boundaries, but, in order to achieve a reasonable unity of time and place, I shall limit myself to the Netherlands, and to the turn of this century, the period within which the industrial revolution began. In doing this, I shall elaborate on an example which was not entirely an arbitrary choice.

A town system for the Netherlands. A glimpse

The most manifest characteristic of town systems comes in the shape of the communications between them. Most useful observations about the presence and the development of town systems were recorded by Jan de Vries (1978) in his study concerning the development of a network of (tow-)barges in the pre-industrial period.⁴⁰ This can also be done with regard to the industrial period. Railroads, overland routes and waterways were the channels along which goods were transported from one town to another. The quantity and the nature of these goods are, alas, usually no longer to be traced, even though there are sources available. For instance, the *Staats Spoorwegen* (National Railways), for many years published in their annual report the volume of goods that was transported from one town to another. However, this was not subdivided into the nature of the goods. The figures available concerning tolls and clearances of goods are usually not very reliable. Nevertheless the course of the connecting routes, the frequency of various types of regular and carrier services, information about the number of passengers carried, and such, do present us with operational indications concerning the nature of the system.

The nature and the volume of the flow of people between towns can be reconstructed with precision. A hypothesis worth putting to the test, is, that these

⁴⁰ Jan de Vries, 'Barges and capitalism, Passenger transportation in the Dutch economy 1632-1839', *A.A.G. Bijdragen* no. 21 (Wageningen 1978) 33-398.

flows of people moved particularly in the direction of those centres where the flow of the most goods originated. This migration can be measured with the aid of registrations concerning settlement and departure, which were made by each town. After comparing this information with the town registers, one can classify these migrants according to age, profession, place of origin, size of family, etc. Unfortunately, this type of research has only been done for a few towns, so that there is no prospect at all yet of a national picture subdivided into towns.⁴¹

The spatial diffusion of innovations with regard to the Netherlands, has barely been subject of investigation. A first attempt was the research into, among other things, the diffusion of bicycles and electric services.⁴² The diffusion of the first (electric) power stations, though, offers a picture which is somewhat difficult to interpret (Table 1.1).

If one tries, one can discover the hierarchical aspect (though Bloemendaal, for instance, preceded Haarlem, but less that of proximity. Political motives were often at stake. In large towns, the local authorities often checked private initiative whilst they themselves wished to establish a power station at a later date. In small towns, the rich inhabitants, or the large industries, frequently forced the town council to approve the establishment of a private owned power plant. It is, furthermore, of interest that the diffusion of this innovation not so much emanated from the top of the town hierarchy, but more from the towns that were comparable either as to the number of inhabitants, or as to their social or political structure. For instance, when the debate concerning the introduction of electricity began in Groningen, one turned to Den Haag and Nijmegen for advice, not to Rotterdam and Amsterdam. As Pred indicated, this possibility of a horizontal diffusion is missing in most diffusion models.⁴³ The top of the pyramid of towns is usually the only link between regional subsystems. Horizontal diffusion occurred in more areas. Thus, the twentieth century saw the development of chains of department stores – also an innovation –, which were confined to comparable towns such as Groningen–Arnhem–Nijmegen; although the locations Groningen–Amsterdam also occurred.

Concentration numbers

Much of the research done by geographers concerning the present, can, without much difficulty also be done for the past. The relatively easiest approach is the much-applied method of institutional regularity, based on the presence of institutions of the third sector.

There are, however, other approaches in existence as well which concentrate more on industry. These then seem more dynamic and indicate more rapidly the

⁴¹ H. de Vries, *Landbouw en bevolking in Friesland tijdens de agrarische depressie* (Wageningen 1971); H. van Dijk, *Rotterdam 1810-1880* (Rotterdam 1976).

⁴² H. Baudet, J.W. Drukker, P. Kooij, H. van der Meulen, S. de Vries, W.G. Whitney, *Innovation and consumer demand* (Groningen 1974).

⁴³ Pred, *Large city interdependence* (1975).

Table 1.1 *The establishment of electric power stations in the Netherlands 1886-1910.*

	Private	Municipal
1886	Kinderdijk	Nijmegen
1889	Den Haag	
1892	Amsterdam	
1895	Borne	Rotterdam
1898	Elst, Baarn, Terborg, Beek-Ubbergen	
1899	Boxtel, Hilversum, Naarden, Bloemendaal, Abcoude, Maarssen	
1900	Driebergen, Hengelo, Valkenburg, Watergraafsmeer	
1901	IJmuiden, Rijswijk, Terneuzen, Enschede, Veendam, Haaksbergen, Almelo	
1902	Rhenen	Groningen, Haarlem, Heerlen
1903	Voorburg	Soest
1904	Ginneken, Scheveningen	Amsterdam
1905		Utrecht
1906	De Bilt, Blaricum, Helpman (Groningen)	Den Haag
1907	Monster, Nunspeet, Wassenaar	Arnhem, Leiden, Naaldwijk
1908	Raamsdonk	Delfzijl, Nijmegen
1909	Aalsmeer, Ulft	
1910	Breskens, Cuyk, Eindhoven, Helmond, Kimsverd, Middelstum, Oosterwolde, Vlissingen	Delft, Dordrecht, Gouda

changes that occur within the system. One of these is the rather old, but still applied method of concentration numbers.⁴⁴ A concentration number is:

$$\frac{\text{The proportion of the national labour force per category living in a town}}{\text{The proportion of the total population living in a town}} \times 100$$

High concentration numbers, therefore, show that a certain category is overrepresented, while low ones refer to an underrepresentation. One need not in this case regard the number 100 as an absolute turning-point, since some economic activities without doubt take place primarily in towns, and others in rural areas.

⁴⁴ L. van Vuuren, *Rapport betreffende een onderzoek naar de sociaal-economische structuur van een gebied in de provincie Utrecht* (Utrecht 1938).

The concentration numbers indicate, in the first place, regional specialisation. They show to what extent, and for which goods and services a town depends on other towns, and to what extent some towns in turn supply others. Moreover, the height of the concentration numbers give some indication of the volume of the flow of goods from, and to, certain towns. That then, introduces the hierarchical element into the picture, especially when the nominal figures are taken into consideration. The direction of the flow of goods can, theoretically, also be determined with the aid of the concentration numbers if one assumes that the goods flow from towns with high scores to those with low ones in a certain category, whereby an attempt is made to limit the distance as much as possible. This, of course, should be examined with the aid of more concrete data; at the same time, attention should be paid also to the double role of the large ports, for they also provide connections with other national systems.

The concentration numbers have been calculated for these 20 Dutch towns which, according to the census of 1889 had the most inhabitants, and also for the top 20 of 1909. The source of information is the census of the labour force held in 1889 and 1909 (see for the national totals Table 1.2).

The division into categories in the census of 1889 showed some disparity with that of 1909. This difference has been wiped out by joining together three categories of trade, and by dividing the category illumination into chemical production and the fabrication of gas. The numbering of the categories corresponds to that of 1909. It must be noted, though, that the figures are only partially comparable since in 1889 the profession was that one was concerned with, while in 1909, it was the place where one worked. According to the calculations made by J.A. de Jonge, 8,16 and 22,23 in particular cannot be compared.⁴⁵ As far as 16 is concerned, this has been set right.

For most of the above-mentioned categories, the concentration numbers have been determined.⁴⁶ Some have been omitted, either because there were too few labourers concerned, or because they included professions that were too dissimilar.

Furthermore the diamond-cutting profession occurred, apart from in Amsterdam, only in Hilversum, so that it seemed of little use to include it in the comparison (see Table 1.3 and 1.4).

A further complication is the fact that the results for 1909 include the complete information pertaining to only the 10 largest towns. For the other towns, only the most important professions were mentioned. Consequently, the concentration numbers for Dordrecht, Maastricht etc. are relatively too low and sometimes are not even mentioned. A comparison between the complete and the incomplete figures for the 10 largest towns revealed that there are rather large discrepancies in 5, 6, 16, 17, 28 and 29-32. Either none, or practically no

⁴⁵ J.A. de Jonge, *De industrialisatie in Nederland tussen 1850 en 1914* (Amsterdam 1968), 457.

⁴⁶ Theun Dankert's expertise in determining the concentration numbers was of great assistance to me, while Piet Pellenbarg offered useful advice as to how I could apply them. I am grateful to them both for this.

discrepancies were found in 11-13, 18-19, 27.

Unmistakeably high concentration numbers are naturally not very revealing when they concern a small labour force. Thus, the impression is given that Leeuwarden was an important centre of the paper-manufacturing industry, and

Table 1.2 The Dutch labour force, divided into categories, 1839 and 1909

	Category	1889	1909
1	Pottery, glass, lime, stone	18,080	27,907
2	Diamond cutting etc.	10,447	9,709
3	Printing	12,105	17,955
4	Building activities	120,975	174,877
5	Chemical products, candles, oil, wax	3,751	11,558
6	Wood-, cork-, straw-industries	37,387	48,529
7	Clothing, laundry	75,645	105,839
8	Arts and crafts	1,598	2,377
9	Leather, oil-cloth, caoutchouc	37,422	36,939
10	Bog-ore, coal, peat	15,371	22,174
11	Metal-industries	41,633	47,677
12	Steam- and other machines	6,456	58,176
13	Shipping, coach-works	13,516	26,006
14	Paper-mills	2,923	10,075
15	Textiles	44,455	57,054
16	Gas, electricity works	2,490	4,771
17	Food and luxuries	84,327	120,759
18	Agriculture	524,624	616,395
19	Fisheries, chase	16,650	23,182
20	Trade	135,669	185,357
21	Transport	131,255	216,603
22	Banking	708	3,506
23	Insurance	1,098	4,104
24	Professions such as doctors, artists, authors, accountants	30,015	65,221
25	Private education	9,655	19,199
26	Nursing, caring for the poor etc.	3,782	14,969
27	Domestic service	166,495	222,562
28	Free labour	25,164	22,744
29	Civil service	34,436	36,747
30	Provincial civil service	886	494
31	Local service	25,299	36,529
32	Polder-board	2,604	1,545
33	Church officials	12,208	10,088
	Total labour force (1-33)	1,652,729	2,261,590

Figure 1.1. The largest towns in the Netherlands, 1909 and labour force categories in which they are strongly over- and underrepresented.⁴⁷



⁴⁷ These figures following the name of a town that are preceded by a + sign refer to the categories that are strongly overrepresented in that town. The strongly underrepresented categories are indicated by the - sign. The situation refers to 1909, as it gives a clearer picture than that of 1889. If a certain category already showed a high or low concentration number in 1889, this is indicated by underlining the figure. One of the things that emerges, is, that towns which had specialized themselves in a certain sector and, therefore, showed a high concentration number in a certain category and relatively low in many others (for instance Schiedam, Den Helder, Apeldoorn, Enschede and Hilversum) had more chance to rise or fall in rank than towns which showed a more balanced pattern. This picture confirms the observations made by Brian Robson elsewhere in this volume.

Schiedam of the chemical industry (see Figure 1.1). In reality, there was, respectively, one strawboard factory, and one candle factory. Similarly, the high concentration number for the banking business in Amsterdam is of no significance.

It is quite another thing when large categories such as the textile industry and trade are at issue. The high concentration numbers for Tilburg and Enschede confirm that these towns, followed at some distance by Leiden, supplied the greater part of the national production of textiles. Moreover, Tilburg and Enschede are both prime examples of new industrial towns, as reflected in the relatively low-scoring services category, and, as can be expected with factory-workers, few domestic services. These types of towns exported, as well as imported, many goods.

Other towns show a more stable build-up. This was, for instance, notable in the case of Amsterdam and Rotterdam. That trade was the primary function of these towns is, indeed, reflected in the concentration numbers. This is also the case with Groningen and Leeuwarden. Quite remarkable is the low figure noted for Schiedam; the proximity of Rotterdam is guilty to that. Then, especially if one takes into account that figures concerning the third category are incomplete, there is an unmistakable rise in the services-function of Apeldoorn.

As far as Amsterdam and Rotterdam are concerned the concentration numbers do show that the industrialisation in the Netherlands is to be attributed largely to the balanced growth of the industrial sector in these towns. The figures also reflect the transformation of the old trading centre, Dordrecht, and the agricultural centre, Delft, into industrial centres.

It is, by the way, not easy to distinguish, with the help of these concentration numbers, the peculiarly residential towns. Den Haag and Arnhem, which to us are known, thanks to other source-material, as offering attractive living-surroundings for the upper social classes, both had high concentrations of domestic services. This can also be said of Hilversum, where, in this period, many well-to-do citizens of Amsterdam took up residence, but not of the rapidly growing residential town of Apeldoorn.

The numbers seem to me of particular use when we examine the highest and lowest concentrations within a specific category. They give an indication as to the goods that left the towns and those that entered the towns. That also goes for the rendering or receiving of services. The high standard deviation in the category pottery confirms that production was primarily restricted to Maastricht. A comparison of the standards per category throughout time, may reveal that the concentrations dropped only to increase in other towns. This indicates a regional specialisation. In the period 1889-1909, this is evident of, for instance, category 9, the shoe-industry, which was transferred to some towns in Brabant. Similarly, the rise of Groningen as a national clothing-centre, became apparent very gradually in the same period. The divisions in category 29-32 reveal less in this connection, since most of the labour force here represents the military.

The longer the series of concentration numbers become, the more conclu-

sions can be made. Unfortunately, the few labour censuses that were held before 1889 are not very reliable. Perhaps of good use are the figures concerning license fees that have been preserved by many towns. Information about professions can also be found in nineteenth century registries.

Such series constitute only one brick in the reconstruction of a town system. In this case, they represent merely an example, and hopefully, can be related to facts and approaches which have been produced elsewhere. Combined together, it ought to yield, in the end, a picture of urbanisation in which not only people, but also towns occupy a central place.

Table 1.3. Concentration numbers of the largest Dutch towns, 1889

	inhabitants	1. Pottery	3. Print	4. Building	5. Chemical	6. Wood	7. Clothing	9. Leather	11-13. Metal	14. Paper	15. Text	16. Gas	17. Food	18-19. Agriculture	20. Trade	21. Transport	22-23. Bank	27. Dom	28. Free	29-32. Civil
1. Amsterdam	408061	35	249	127	123	101	163	86	138	45	000	94	117	1	185	183	279	162	162	110
2. Rotterdam	201858	41	198	130	87	133	216	92	150	89	28	204	142	2	189	221	208	138	194	90
3. Den Haag	156809	39	283	165	54	127	171	100	121	25	15	269	86	13	132	97	213	203	67	222
4. Utrecht	84346	88	255	147	137	96	178	102	183	16	14	256	130	11	137	123	234	150	301	199
5. Groningen	56038	60	298	122	116	144	155	94	97	22	49	262	132	8	185	152	205	165	235	126
6. Haarlem	50500	43	426	166	143	63	166	101	227	12	52	187	105	12	152	100	203	173	248	127
7. Arnhem	49727	115	234	157	49	102	186	119	105	99	40	281	101	18	133	117	226	193	67	202
8. Leiden	43379	55	336	124	123	135	200	126	130	14	405	200	122	6	142	123	150	147	91	202
9. Tilburg	33905	21	77	108	42	72	176	199	190	23	1415	75	103	28	74	77	192	75	29	21
10. Dordrecht	32622	89	187	141	203	178	156	107	256	47	21	222	159	6	158	191	337	153	51	112
11. Nijmegen	32101	105	248	136	115	104	121	113	84	87	7	316	119	35	105	104	265	151	77	162
12. Maastricht	32078	2376	115	51	75	157	181	162	173	1944	33	68	152	7	115	90	148	129	31	182
13. Leeuwarden	30433	92	252	118	163	107	199	104	132	669	23	167	108	16	199	125	246	177	240	248
14. Delft	28458	92	102	127	774	126	150	140	271	38	9	191	170	10	144	103	105	109	200	153
15. Den Bosch	27138	86	457	104	52	104	191	241	331	17	53	280	216	7	146	127	166	146	0	233
16. Zwolle	26384	30	230	134	256	200	141	111	289	41	41	254	107	20	145	172	256	153	10	117
17. Schiedam	25533	99	143	116	760	228	102	80	109	0	27	177	479	8	97	142	147	85	1	57
18. Deventer	22914	138	218	158	161	158	135	102	200	67	240	221	176	20	119	96	196	135	15	246
19. Den Helder	22221	3	81	112	36	42	59	94	166	7	26	114	63	19	111	143	22	72	62	804
20. Breda	22176	41	208	112	603	101	186	157	189	70	49	172	145	8	118	111	270	166	12	410
Apeldoorn	19275	18	66	103	64	107	110	61	62	2570	12	47	74	115	52	61	104	117	4	54
Enschede	15229	10	78	117	40	23	100	75	102	111	2286	131	6	9	87	66	180	66	67	56
Hilversum	12470	6	60	128	30	28	88	68	96	0	815	116	76	24	127	106	200	154	270	50

Table 1.4 Concentration numbers of the largest Dutch towns, 1909

	inhabitants	1. Pottery	3. Print	4. Building	5. Chemical	6. Wood	7. Clothing	9. Leather	11-13. Metal	14. Paper	15. Text	16. Gas	17. Food	18-19. Agricult.	20. Trade	21. Transport	22-23. Bank	27. Dom	28. Free	29-32. Civil
1. Amsterdam	533131	19	263	109	152	104	190	85	101	160	103	522	140	2	225	140	979	142	183	116
2. Rotterdam	417989	19	172	103	127	122	149	74	113	66	32	290	133	4	192	254	382	106	3	101
3. Den Haag	271280	27	248	154	101	125	199	76	64	105	15	505	84	16	165	87	560	188	45	218
4. Utrecht	119006	71	225	133	238	75	174	84	112	121	3	498	126	9	168	134	347	136	103	188
5. Groningen	74613	21	261	113	170	146	207	78	70	156	61	362	152	9	218	142	364	146	304	124
6. Haarlem	69410	14	424	168	215	85	182	93	122	94	52	180	106	9	214	118	583	155	276	155
7. Arnhem	64019	45	232	149	107	113	174	92	102	103	49	393	114	17	175	95	545	169	263	193
8. Leiden	58253	67	313	124	187	100	171	92	92	110	528	365	150	9	183	66	164	119	281	169
9. Nijmegen	54803	56	263	148	230	55	141	111	78	139	10	338	109	24	122	91	233	143	182	151
10. Tilburg	50405	52	103	88	48	75	124	370	91	57	1157	234	95	24	115	119	174	62	75	30
11. Dordrecht	46355	35	118	79	127	55	21	86	266	40	..	..	43	5	121	83	..	115	269	..
12. Maastricht	37483	3376	..	46	72	24	59	178	41	455	..	..	137	..	95	12	..	114	10	..
13. Leeuwarden	36522	..	166	99	64	47	121	9	56	283	..	208	107	12	190	67	..	151	310	..
14. Apeldoorn	35626	12	62	117	111	127	121	66	54	878	107	..	10	74	72	37	..	103	80	21
15. Den Bosch	34928	..	229	60	..	..	46	339	101	123	46	..	206	4	121	56	..	113	9	..
16. Enschede	34201	36	83	114	233	35	91	65	103	134	2115	..	2	4	97	25	160	55	23	11
17. Delft	34191	264	122	65	629	59	35	98	141	..	..	..	117	9	123	22	..	104	167	..
18. Zwolle	34055	..	171	105	202	142	104	117	136	90	27	..	51	19	163	117	362	115	244	19
19. Schiedam	32055	472	123	47	377	161	6	49	169	145	..	..	139	4	73	41	..	72	302	..
20. Hilversum	31458	..	125	142	60	59	14	85	63	83	229	..	70	13	123	37	..	193	36	..
21. Den Helder	27159	..	78	58	..	236	41	69	149	..	..	..	..	28	105	24	..	66	237	1026
22. Dordrecht	27787	63	176	137	126	100	90	88	143	82	213	..	99	13	128	41	103	113	55	92
23. Breda	27389	..	117	62	..	166	51	167	110	..	39	..	35	4	109	31	..	128	73	..