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## Central place



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The term 'central place' was coined by Christaller as part of his central place theory. He defines central places as location clusters of goods (goods and services) that are characteristic for central places (descriptive term). In spatial planning practice, the municipality, as the addressee of the legal norm allocating the central place function, is mostly equated with the central place (normative term).

# 1 General terms and concepts

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The term *central place* originated in the central place theory of Walter Christaller (1933), which has its roots in neo-classical location theory. This theory was materially developed and advanced by August Lösch and other regional scientists, among others. Central places are accordingly spatial location agglomerations (location clusters) of household and related goods and ▷ *Services* (specific to central places or central facilities), which are offered for a limited sales area (intake area) (▷ *Agglomeration, agglomeration area*; ▷ *Cluster*). In ▷ *Spatial planning (Raumordnung)* practice, a central place is understood as the addressee of the legal norm allocating the central place function, as a result of which the central place is largely equated with the (political) local authority. The normative stipulations on central places in the plans and programmes of the federal states pursuant to section 8(5) of the Federal Spatial Planning Act (*Raumordnungsgesetz, ROG*) add up in each case to form the central place concepts specific to each federal state (▷ *Concepts of spatial planning [Raumordnung]*). In this regard, the central place term can be approached from a spatial analysis perspective or a spatial planning perspective. Current centrality research, which focuses on the empirically definable central place system, must navigate the space opened up by these two perspectives. In addition to the material distinction between the descriptive central place system and the normative notion of central places, spatial planning and the ▷ *Spatial sciences* have also established differentiated approaches to the concept. The resolution of the Conference of Ministers for Spatial Planning (*Ministerkonferenz für Raumordnung, MKRO*) of 8 March 2016 (*MKRO 2016*) deserves special mention in this regard. The resolution recognises the central place concept as a normative steering instrument of spatial planning, but at the same time proposes to use *central place system* as a normative term and *central place concept* as a descriptive term. It is important to note that the *MKRO* also deems this distinction necessary.

## 1.1 The notion of central place in spatial analysis

The central place theory is a location theory for the tertiary sector. Christaller derives optimal locations for goods and services aimed at end consumers from the restrictive premises of a homogeneous space (e.g. with an even spread of population and income) and the notion of *homo oeconomicus* to offer a solution for the actual key question of his work on the principles of the dimension, number and spatial distribution of urban functions. An essential characteristic of these functions is that they are not ubiquitously available; instead they are spatially concentrated. A central place in this sense must not be equated with either a settlement or the (political) local authority (Christaller 1933: 25). It is rather a location cluster of providers of various household-oriented goods and services, which are concentrated in a place and offered for a market area (intake area) due to how sensitive to distance the demand is. The dimension (spatial extent and number of inhabitants in the sense of potential customers or users) of the intake areas of the central facilities varies, however, in accordance with the incidence of supply and demand: the more rarely a certain type of good or service is offered or demanded, the greater the specific range and the more central the facility. Boustedt points out that the central facilities are not spread evenly or randomly across the relevant space, otherwise ‘there would be no central places’ (Boustedt 1962: 202).

The great attraction of Christaller's spatial analysis model is in the spatial arrangement of the central places, which results in a win-win situation for suppliers and customers: suppliers can achieve maximum exploitation of the market potential, while consumers benefit from the greatest possible decentralised supply structures with short supply routes (Blotevogel 2002b: 13).

## 1.2 The notion of central place in spatial planning

In spatial planning practice, a central place is generally understood to be the recipient or addressee of legal norms (local authority) for the allocation of the central place function. The functional allocation, in turn, does not follow directly from the empirically definable central place system; after all, it is a core concern of spatial planning to work towards an envisaged state of characteristics with the help of objectives and principles (▷ *Objectives, principles and other requirements of spatial planning [Raumordnung]*). To this extent, the notion of central place must be further differentiated by the actual centrality in the central place system (descriptive term) and the centrality aspired to by policy and planning in the central place concept (normative term). The descriptive central place concept is used, on the one hand, in centrality research in applied geography, and, on the other hand, in federal state spatial planning (▷ *Federal state spatial planning, federal state development*) as the description of the system is mostly the starting point (in the sense of a stocktaking) for the development of the concept. The terminological differentiation is, however, often not consistent, which gives rise to occasional misunderstandings (Greiving/Flex/Terfrüchte 2015).

## 1.3 Central place functions

In the hierarchically structured ▷ *City system*, central places take over functions for neighbouring, non-central places or for central places at a lower hierarchical level; the hierarchy is mostly described as consisting of three tiers, i.e. the lower-order centres, middle-order centres and higher-order centres. In addition to the classic function as a co-supplying place (supply function), the development capacity of a place (development function) also plays a role in the allocation of functions in spatial planning. Depending on the hierarchy level, one of the two functions will have greater, but not exclusive, significance: while the supply function prevails at the level of lower-order and middle-order centres, this consideration is less important at the higher-order centre level (Blotevogel 2002a: XXV).

Metropolis functions are also related to central place notions: even though they can be understood as an additional hierarchical level above the higher-order level in the context of the supply function, and the ▷ *Metropolitan region* would thus become the supply area for the metropolis (▷ *Metropolis/Global City*), science and practice generally distinguish on a conceptual level between central place functions and metropolis functions. This follows from the knowledge that metropolis functions are generally not aimed at final consumers (high-level administrative facilities not open to the public or not offering business-related services) and, moreover, are often not located in the surrounding areas of the higher-order centres and thus do not meet requirement of co-localisation (location bundling), which is inherent to the theory (Terfrüchte 2015). Metropolis functions thus relate to metropolitan areas or metropolitan regions and not to individual municipalities.

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### Supply function

The supply function is the classic function of central places in the sense of supplying the population with goods and services (central supply facilities). In the plans and programmes of the federal states, the central place functions are allocated largely consistently to three levels:

- Lower-order centres: daily needs, basic supplies or local services, often deemed to have importance beyond the immediate locale
- Middle-order centres: higher-level needs, often deemed to be important on a (sub)regional level
- Higher-order centres: specialised, very high level needs, often deemed to be important on a (supra)regional level or in certain cases even on a state-wide level

In this way, in regard to the supply function of central places, the planning authorities essentially follow the resolution of the *MKRO* from 1968, which has been confirmed and detailed with the resolutions of 1972 and 1983 (cf. German Federal Parliament [*Deutscher Bundestag*] 1969, 1972, 1983).

The customary ranking of levels of functions are further specified in the plans and programmes of the federal states, generally through the amenities catalogue. Amenities catalogues can be in principle of a normative and descriptive nature: normative catalogues specify the criteria envisaged for facilities and provisions which the central place should have, or those it still lacks, to be able to fully carry out its functions in the sense of working towards achieving a target state through planning. The planning authorities, however, tend to highlight the orientation function or exemplary nature of such catalogues to pre-empt any demands for funding from the municipalities concerned for any lacking facilities or provisions. Descriptive catalogues are used for an empirical examination of the actual current situation of a central place system and are reflected in numerous plans and programmes of the federal states as amenities catalogues; these serve as examples without being binding.

### Development function

The academic debate, and increasingly also planning practice, has considered the development capacity of a central place, in addition to its supply function and the associated sustainability criteria, to be relevant for its designation as a central place. Hence, central places also play a role in the stabilisation and development of subareas (▷ *Regional economic policy*). Similar to the notion of development centres in the 1970s, the development capacity relates, among other things, to traffic and transport connections, the availability of land, the demographic perspectives, the workforce potential or financial scope for action on the part of the municipalities (▷ *Municipal finances*). This means that, unlike the supply function, the development function does not concern the localisation of central facilities; for this reason, there is no mono-causal relation between the characteristics ('the more .... the ...?'). Instead, the connections between the individual, development-related characteristics and the actual development capacity has remained largely unexamined in the context of central places (Terfrüchte 2015).

In relation to the development function, both the current state of development and an evolving trend play a role (in general through ▷ *Forecasting*) for a central place and its assigned central place area (i.a. sustainability for supply function facilities). To this extent, the development

function must also be seen in connection with the first guiding principle of spatial planning policy *Growth and innovation* (▷ *Guiding principles for spatial development*).

## 1.4 Central place areas

In regard to the central place areas, it is expedient to distinguish between the descriptive interactional area and the normative supply area. The planning literature and practice generally distinguish between three hierarchical tiers, which correspond to the levels of needs defined by the *MKRO*: the supply of basic, everyday goods (close range), higher-level needs (middle range) and specialised, very high level needs (higher-order range) (German Federal Parliament 1969: 149; *MKRO* 2016).

### Interactional area

The descriptive interactional area results from the overlap or the totality of the different intake areas for all central facilities, which may differ significantly in terms of space (multifunctional interactional area). The intake areas are targeted towards individual central facilities. They are not static, but vary, e.g. in accordance with the day of the week, time of day or season (such as in the case of tourism facilities). It is important to bear in mind that a central place does not have a single fixed intake area for all facilities in a given tier of centrality. Hence, each multifunctional demarcation necessarily leads to an at times significant generalisation of the actual supply relationships, because the specific ranges deviate in most cases from an average or multi-functional range. This is compounded by the orientation of the population towards multiple locations, i.a. due to sinking transport costs or ▷ *Costs for bridging spatial distances*. Christaller's model-based assumption that in each case the nearest central place will be visited is thus without empirical evidence. Hence, it can basically be assumed that there are multiple orientations, even if only to varying extents. In addition, in the case of municipalities with a large territory, individual settlement areas are oriented towards different central places. Accordingly, the orientation towards multiple locations is often true for the (political) local authority, but not for the settlement areas. Yet an orientation towards multiple locations can generally be detected only in regard to freely selectable goods and services, while administrative facilities, on the other hand, are responsible for their specific administrative territory. The fact that the logic of such locations varies (▷ *Choice of location*) along with responsibilities prompted Christaller to distinguish between the supply principle, market principle, transport principle and administrative principle.

### Supply area

Unlike the descriptive interactional areas, the normative supply areas serve to implement spatial planning objectives and principles. Even though the demarcation of the supply areas are mostly based on empirical findings, the supply areas can also be perceived as supply interactions that are desirable from a political and planning perspective. Accordingly, it is the responsibility of the planning authorities to decide whether to make multiple allocations in the event of an empirical finding to this effect. Likewise, the supply areas are often structured along district borders, as the districts are the authorities and agencies responsible for the ▷ *Provision of public services* and competence conflicts may occur in fragmented supply areas.

Hence, districts are usually the smallest units for the demarcation of higher-order areas and the outer borders for the demarcation of middle-order areas. Especially in the case of cities which

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encompass a large area or densely populated cities, the middle-order area can also be limited to the specific municipal territory concerned (also referred to as places of self-supply). The notion of co-supply inherent to the theory is not affected by this; after all, it is not the (political) local authorities that supply other municipalities, but location clusters of central facilities that supply the population of the surrounding area, sometimes even exclusively the area of the municipality where the facilities are located. Thus, central places also always have an area-forming function, in addition to the supply and development function.

## 2 Centrality research: Description of central place systems

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In spatial planning practice, the centrality of a place (as a rule the (political) local authority) is indicated on an ordinal scale (of lower-, middle- and higher-order centres). As part of the measurement of centrality, the challenge is to arrive at such a classification based on the diverse range of relevant characteristics of the supply and development function with due consideration of the capacity to form an area or to empirically justify the normative classification. Practice-oriented approaches thus cannot avoid a targeted abstraction of the complex reality in a city system (cf. Terfrüchte/Greiving/Flex 2017). In principle, two strands of research can be distinguished: Either an attempt is made to transfer all of the centrality-relevant features, e.g. by means of multivariate statistical methods based on the ordinal scale (of lower-order, middle-order and higher-order centres) or to describe the centrality of a place approximately by means of proxy indicators (e.g. number of inhabitants or employees in  $\triangleright$  *Retail trade*). Christaller proposed the second path, by indirectly deducing the importance of a place as a central place from the number of telephone connections there. Various authors subsequently proposed other potential proxy indicators, such as the number of employees in the service sector or retail trade turnover. The general problem in relying on a proxy indicator is, however, in most cases the absence of a proven correlation between the chosen indicator and the characteristics relevant to the centrality of the place.

When observing several centrality-related characteristics, the catalogue method has long prevailed, according to which the classification of places is based on the presence of characteristic facilities (central facilities) that are typical for the specific ranking level. This approach, however, suffers from three fundamental flaws: first, the existence of a catalogue of typical, hierarchically ranked facilities is presumed; second, the additive linking is based on the presumed substitutability of the individual facilities; and third, the requirement of co-localisation remains unconsidered as much as the capacity to develop and to form territories.

The last point in particular can only be reasonably included when the centrality measurement and area demarcation occurs within a methodical approach and not separately from each other. In this regard, demarcation methods that are based on a normatively defined or empirically determined set of potential central places pose a problem, as only a subset and not the entire range of spatial and functional interactions are taken into account. For this reason, this was measured for quite some time based on the surrounding area (*'Umlandmethode'*). The actual supply relations within a city system are determined based on customer or user surveys at (potential) central places and in the (potential) interactional area). However, this approach entails not inconsiderable empirical effort. Hence, commuter networks are frequently used as proxy indicators for the large

number of supply interactions. Irrespective of the specific allocation algorithm in question, the objective is to identify not only those places as central places which have relevant characteristic facilities, but which can also form an independent interactional area. Accordingly, the facilities of a place cannot be used as the sole criteria for determining its position in the central place system.

### 3 Steering impact of central place concepts

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Christaller was aware of the normative character of his deductive development of the theory, because in addition to its explanatory power, he sought to derive optimal settlement or market systems based on it (Blotevogel 1996: 14). With the resolution of the *MKRO* of 1968, central places found their place at the national level of spatial planning. This was associated with a transformation process, at the end of which the central place was no longer related to the location cluster of central facilities, but was transferred to the (political) local authority as a functionary.

#### Significance and development of central place concepts

Up into the 1980s, the planning mandate to improve the infrastructure facilities (▷ *Infrastructure*) of central places was derived from the determinable discrepancies between the descriptive central place system and the normative central place concept in order to meet the objective of creating equivalent living conditions by reducing disparities (▷ *Equivalence of living conditions*; ▷ *Disparities, spatial*). This type of planning, which was aimed at expansion and development, was associated with the central place theory, as those places were primarily developed which were particularly suitable locations for central facilities according to the model-based assumptions. The significance of central places was also positively reflected in other ▷ *Concepts of spatial planning (Raumordnung)* of that time, in particular the concept of balanced functional spaces and the concept of development centres. Due to the conceptual expansion around development and steering responsibilities the central place concept as an instrument was increasingly overburdened and became the 'all purpose' tool of spatial planning. Accordingly, the voices criticising the central place concept as being an overly rigid and rather conservative spatial structure model multiplied, along with increasing scepticism about long-term planning programmes in the late 1980s and 1990s. In 2002, a Working Group at the Academy for Territorial Development (ARL) answered the question of the obsolescence of central place concepts, finding that the concept is not only seen as compatible with the guiding principle of sustainable spatial development, which was endowed with binding force since the recasting of the Federal Spatial Planning Act in 1998, but that the concept was also predestined to be an instrument for achieving this goal (cf. Blotevogel 2002a). Consequently, the second guiding principle – *Ensuring the provision of public services* – which was formulated in 2006 and confirmed in 2016, led to a reinforcement of the notion of central places. Especially in subareas that are particularly affected by ▷ *Demographic change*, central places are intended to serve as anchor points in which a minimum of infrastructure facilities must be kept available with reasonable accessibility to spatially secure the equal opportunities guaranteed by the Basic Law (*Grundgesetz*). Function allocations which diverge from empirical findings are thus rather an expression of a steering strategy to ensure minimum standards for the provision of public services. The central place concept in this regard is no longer a blueprint for the expansion of infrastructure, but rather for planned and controlled downsizing.



### Fields of action and steering approaches to central place concepts

From the perspective of the current perception of problems associated with spatial planning policy, a nexus with the central place concept is created in the following spatially relevant fields of action (▷ *Spatial impact*).

- Settlement development (▷ *Settlement/settlement structure*): According to the guiding principle of decentralised concentration, settlement activities are to be bundled at locations well suited to this purpose, but also to counteract massive urban concentrations with overwhelming agglomeration disadvantages (section 2(2) no. 2 of the Federal Spatial Planning Act). Central places (location clusters of central facilities) must thus be seen as functional cores within settlement areas, where facilities for the provision of public services are sustainably kept available; this allows them to qualify as a location matrix for settlement development.
- The commercial sector: Due to the combination of the supply and development function, central places are generally suitable locations for the commercial sector. In addition, the concentration of higher-order educational facilities ensures that central places also offer a quantitatively and qualitatively high workforce potential. In the context of the first guiding principle – *Growth and innovation* – middle-order centres in rural subareas next to higher-order centres in densely populated areas are considered particularly suitable for public incentives in connection with the development mandate of spatial planning aimed at enhancing the growth and innovation potential in the regions.
- Transport: Central places are also always hubs and mobility destinations for private and public transport. Accordingly, the linking with regional transport strategies is of considerable significance to ensure the provision of services to the population with reasonable accessibility even in sparsely populated regions (section 2(2) no. 3 of the Federal Spatial Planning Act (▷ *Transport policy*; ▷ *Transport planning*)).
- Steering of large-scale retail trade: Many instruments for steering retail trade in spatial planning rely on the classification of a place as a central place within the central place concept instead of general population thresholds. The purchasing power and thus the sustainability of the supply areas (congruence rule) and securing the supply function of central places for their supply areas (no adverse effects rule) are also used to assess the permissibility of projects (▷ *Permissibility of projects in building law*).

However, central place concepts not only have a direct but also an indirect effect:

specific spatial planning clauses in sectoral legislation (▷ *Spatially-relevant sectoral planning*) ensure that objectives of spatial planning are complied with when taking spatially-related measures; this is established by means of the general spatial planning clause in section 4(1) of the Federal Spatial Planning Act. While in most cases the overall system of objectives of spatial planning is taken into account, the relevant central place concept is often directly referenced especially as far as public services provision is concerned, e.g. in regard to requirements planning for hospitals or school development planning in many federal states (Greiving/Flex/Terfrüchte 2015). Yet central place concepts also have a direct steering effect in the provision of public services organised under private law. In requirements planning for statutory healthcare providers, the intermediate central place areas are the planning remits responsible for determining a sufficient number of general practitioners (section 11(3) of the Requirement Planning Guideline [*Bedarfsplanungs-Richtlinie*,

BPL-RL]), and based on section 2(1) of the Postal Universal Services Ordinance (*Post-Universaldienstleistungsverordnung, PUDLV*), the minimum supply density for postal and parcel delivery services is standardised with reference to the central place concepts.

The municipal fiscal equalisation acts of the federal states (▷ *Fiscal equalisation at the level of local authorities*) provide to about 50% for direct preferential treatment or betterment of central places compared to cities and municipalities without such an allocated function (Greiving/Flex/Terfrüchte 2015). Due to their co-supplying function for other municipalities, it is presumed that central places require greater financial resources to finance the provision of these tasks. In their specific implementation, the central place status is taken into account in part through extra payments or by advance allocation of funds and in part indirectly through the mostly higher number of inhabitants in central places. To some extent, facility-specific grants are also envisaged for individual central facilities, e.g. in the educational, health and cultural sectors (Greiving/Flex/Terfrüchte 2015).

## 4 Outlook

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It is evident that the actual steering effect of central place concepts are sometimes significantly greater than the anticipated steering impact intended by the planning authorities at the time the plan was drawn up. This alone evidences a need for reform. Moreover, in conjunction with the increasing need for downsizing, the established spatial structures require a broader perspective in the sense that the central place concepts also have to serve local or intra-municipal steering and regulating tasks by virtue of supra-local demand (i.a. ensuring area-wide provision of public services). In addition to describing the (supra-local) central place system, it is then the task of centrality research to differentiate at the intra-municipal level to register location clusters of facilities at the level of lower-order centres as an additional classification criterion, and to identify the settlement areas where the basic provision of essential services in proximity to residential areas is ensured in the medium term (cf. the second guiding principle *Ensuring the provision of public services*; MKRO 2006: 18 et seq.) and on which future settlement development must focus to secure sustainability (cf. Flex 2016).

In this connection, in 2002 the ARL highlighted the need for a differentiated consideration from the perspective of spatial structures. In addition to the classic, mono-central place with a clear supply area, structural variants are needed in particular in densely populated areas and very sparsely populated ▷ *Rural areas*, as these structures allow for several places to cooperate to jointly assume central place functions (Greiving/Flex/Terfrüchte 2015). For example:

- An urban network, for when a supply area does not have a clearly dominant central place, but rather two or several central places that divide the responsibilities and supplement each other; in this case, the locations are jointly designated as the central place.
- A functional space, for when a supply area is characterised by decentralised location clusters of central facilities, which in their totality ensure the supply of the population living in that area; in this case, there is no designated central place, but rather a central place type of functional space.

For both urban networks and functional spaces the general principle applies that the respective

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central facilities of the entire supply area must be within reasonable reach of the population and that the overall sustainability of the central facilities must be ensured. To do justice to the bundling principle and the notion of decentralised concentration, urban networks and functional spaces must be seen as second- or third-best variants of designation from a spatial planning perspective.

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