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Knowledge and Power in the Spatial Dimension

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Abstract

Contrary to the views of many neoclassical economists knowledge and skills are not ubiquitously available. Knowledge is not as mobile as information which can be spread over the globe in seconds. Spatial concentration of knowledge and spatial proximity of power and knowledge can be traced back thousands of years in human history. Knowledge is the twin sister of power. Already in scriptless societies the magician, the sage and later the priests were in the centre of power. “throne” and “altar”, throughout history tended to build coalitions and preferred close spatial proximity to each other. Almost all rulers of large social systems or territories had their advisors, their “houses of knowledge” or - in modern terms- their think tanks.

The paper will present three theoretical approaches to explain the spatial concentration of jobs for highly qualified decision makers. Organization and communication theory, symbol theory and conflict theory.

Key words: knowledge, power, centre, periphery, spatial concentration, organization theory, symbols

1 Introduction

Contrary to the views of neoclassical economists and many sociologists knowledge and skills are not ubiquitously available and not evenly distributed in space. Knowledge is rooted in people and positions, it cannot easily (without costs and training) be transferred from one person to another, it is not as mobile as information which can be spread all over the world in seconds. The assumption that every individual agent has access to or is easily able to retrieve the necessary knowledge for his/her decision-making is apparently wrong. Spatial concentration of knowledge and spatial proximity of power and knowledge can be traced back to early human history. Already in scriptless societies the magician, the sage or later the priest were in the centre of power or represented themselves the centre of the social system. Their claim to be in connection with the gods or ancestors or to represent god’s will on earth gave them a central position in their tribe or social system. This central position was connected with privileges and power. In a similar way experts, intellectuals and gatekeepers of ideologies and media in 20th century deduced their power from the claim to know better than the majority of people or to be the only reliable interpreter of the bible, the laws or the publications of Marx.

The ruling class has always been surrounded by prophets, priests, wisemen, counselors, experts and scientists. The rulers needed this connection for two reasons. First, they depended upon the analytical abilities, knowledge, creativity and advice of these experts. Second, the rulers needed the priests and sages to legitimate their power. In modern times, those with the political and economic power need the support of so-called intellectuals. On the other hand, authority has always fascinated intellectuals. Intellectuals seek to be close to power and to the media because they can play their role as critics, as transmitters of norms or as interpreters of ideology only in the centre. “Throne” and “altar”, “politics” and “research” always tended to build coalitions and therefore preferred close spatial proximity to each other. Throughout history almost all rulers of large social systems or territories had their advisors, their “houses of knowledge” or - in modern terms- their think tanks.

Why do knowledge and power seek spatial proximity?

- Knowledge helps to get and maintain power
- Knowledge supports power
- Revealed knowledge (religions, ideologies) legitimates power
- Revealed knowledge needs the protection of political (military) power
- Power tries to control the acquisition and diffusion of knowledge
- Intellectuals seek proximity of power

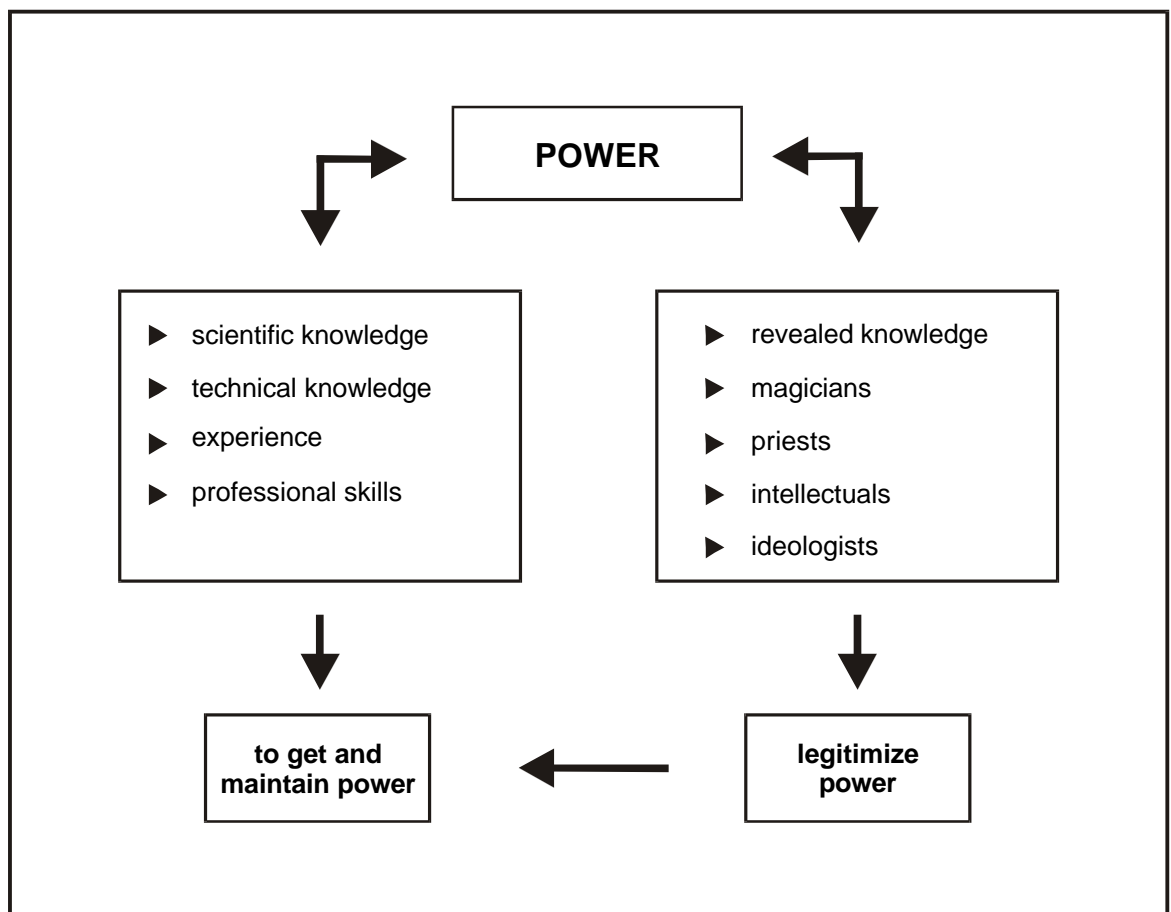


Fig. 1 The Relation between Power and Knowledge

Centrality and authority are closely connected and interrelated to each other. Jean Gottmann (1980) defined the centre as the place where authority is located. In a modern, meritocratic society authority should be based on knowledge or must be supported by knowledge. Power and knowledge are needed to organize social systems in their spatial dimension. The spatial distribution of power and knowledge constitutes the hierarchy of central places and the difference between centre and periphery. In the knowledge society of the late 20th century knowledge, skills, creativity, technical standards, research and development and educational achievement determined more than ever before the economic performance and competitiveness of social systems and regions. With regard to the places where the jobs are located, spatial disparities of knowledge, skills and experience are considered a primary structural characteristic of economy and society. Spatial disparities in knowledge are a consequence of the spatial division of labor, of the organization of social systems in space, of creativity and

inventiveness, of the spatial diffusion of various innovations, of varying educational attainment, of selective migration and many other influences.

Knowledge, skills and power contribute a great deal to the long-during persistence of socio-economic disparities and should be used as key elements in theories explaining spatial disparities. Knowledge and skills influence the creation of inventions and the spatial diffusion (adoption) of innovations. Spatial disparities in knowledge have never been resolved; they have only restructured themselves. For these and many other reasons spatial patterns of knowledge, literacy, skills and educational achievement have to be explained by geography on various scales.

Knowledge can be applied functionally that is for the maintenance, evolution and internal strengthening of a social system. It can also be applied dysfunctionally for questioning, destroying or disrupting a system or for carrying out conflicts within the system. At least three theoretical approaches can be used to explain the spatial concentration of jobs for highly qualified decision makers (command-structure) and specialists (techno-structure)

- Organization and communication theory
- Symbol theory
- Conflict theory

Each of these approaches has some advantages and some shortcomings. Each of them is able to explain the spatial concentration of jobs representing knowledge and power only to a certain extent.

An approach of organization theory can explain why social systems which consist of competent, experienced and highly skilled decision makers function better and are more efficient and successful than systems with incompetent and unqualified leadership. This approach can explain how and why science, technology and skills increase productivity, efficiency and competitiveness. It sees the processing of information, the accumulation of knowledge, the acquisition of competence and the ability to learn and adapt in a changing environment as a precondition for a social systems' evolution and survival. A symbol oriented approach would stress the symbolic importance and meaning of centre and periphery with regard to knowledge. It explains the attractiveness of centres to intellectuals. A conflict-oriented approach can explain how superior knowledge, higher skills or advanced technology can contribute to gaining or maintaining power, influencing, dominating, exploiting others or winning a conflict. It can show how knowledge is used as a means in competing for resources and as a way of stabilizing and legitimizing power. The main interest of this paper concerns the spatial distribution of jobs for people with varying knowledge, skills and educational achievement.

2 Knowledge, competence, skills and information – some preliminary remarks

If the terms knowledge and skills are used in a general form it does not mean a kind of general or encyclopedic knowledge but the kind of knowledge, skills and competence necessary in a certain situation to solve a certain problem. The knowledge needed may be scientific knowledge, revealed knowledge (religion, ideology), tacit knowledge, professional skills or experience. Knowledge is bound to individual subjects (and positions). Spatial disparities of knowledge are referred to the spatial distribution of jobs occupied by persons with varying degrees of skills and educational achievement. Concerning the receiver of a message knowledge and information are not the same. Many forms of information can only be understood and evaluated by people with previous knowledge and experience

Throughout history, new knowledge never evolved evenly in all places; instead, it always spread from specific centres of innovation. The speed at which new knowledge spreads over space depends

- on the type of knowledge,
- on the interest of the inventor to share his/her knowledge,
- on the prior knowledge necessary to understand the contents of new information.

One must differentiate between at least three levels or categories of knowledge and information. The type of knowledge or information which is distributed most quickly in space is that which does not require prior specialized knowledge to understand the message, and whose distribution is in the best interest of the sender. This would include, for example, information about the price of a consumer good or other news easily understood by anyone. This type of knowledge can be spread around the globe in seconds. Under the assumption that all regions have the technical equipment to receive the message such knowledge is theoretically ubiquitous. The reality is however that many countries and regions do not have the technical prerequisites to utilize even these simple forms of information. At the end of 20th century more than one billion people was not able to read a written text.

With the second type of knowledge, it does not suffice to have access to the knowledge since the available information is not understandable to someone without previous knowledge and training. Previous knowledge in many cases is required to recognize and evaluate the contents of a message. Much of the generally accessible information cannot be read, understood or used because the agent or social system does not have the necessary knowledge and training to understand it. Previous knowledge could be the knowledge of a code such as a foreign language or the knowledge attained by studying a scientific discipline. Many scientific areas use a specific code (formulas, technical language) which can be understood only by those persons who have invested a great deal of time and money to achieve the required knowledge. Theoretically, the results of research in chemistry, physics or molecular biology are globally accessible after they have been published. However, the proportion of the world population being able to utilize this available information may be less than one thousandth. Previous knowledge may also comprise tacit knowledge, personal experience and skills which are difficult to transmit.

Within this relatively small proportion of persons who have the necessary prior (specialized) knowledge, new knowledge spreads very quickly, but it is not understood by all the others. Even when the necessary code is known and the message can be read, recognition and evaluation of the importance of the information depend on experience, competence, creativity, and the level of educational achievement. Collecting information is much easier than valuing it. The intellectual capabilities, skills and training necessary to utilize this type of knowledge may only to be found in a few centres.

The third level comprises knowledge and information which is kept secret as long as possible or as long as necessary in order to get an economic, political, scientific or military advantage. This kind of knowledge shows the highest degree of spatial concentration.

Knowledge, information processing and the ability to learn, imitate and adapt should be key elements of any theory of social evolution and development. The acquisition of new knowledge, skills and information is regarded as the best means to cope with uncertainty. New knowledge, skills and information reduce uncertainty, increase transparency and predictability, reduce complexity and redundancy of information, create efficiency, induce self-organization of social systems, contribute to maintaining flexibility, adaptation and competitiveness, stabilize and legitimize power.

3 Organization theory

Organization theory views organizations or companies as social systems that regulate, control and structurally adapt themselves to their declared goals via information and communication processes. Scarce resources, economic competition and the uncertainty of the environment constantly force social systems to be efficient and productive.

3.1 Knowledge and social evolution

In this approach knowledge, skills, training, experience, creativity and constant learning are regarded as necessary preconditions to survive in an uncertain environment. Knowledge, training, skills, creativity and information in due time are the preconditions for the so-called “noogenetic evolution” (Boulding K. 1978). The evolution of economy and society is a dynamic process which is based on new challenges, competition and conflicts. This evolution forces the majority of social systems to adjust to changing environments. Social systems which are not able to carry out these adjustments and learning processes, and which are not in the position to constantly reorganize themselves and acquire new skills, run the risk of losing their competitiveness.

Asking the question why some social systems are successful and survive competition for a long time and why others fail, one cannot avoid the issue of knowledge and information processing. Theories dealing with the dynamic change and development of economy and society have to focus on knowledge, skills, educational achievement and the ability to learn and adapt. According to this approach, not the “fittest” do survive, but those who constantly acquire new knowledge, skills and information and therefore are able to adapt quickly to new situations and challenges and to change their behavior or those who are able to transform their own environment. “...it is evolution through learning that clearly dominates and accounts for the major variations in human social behavior” (McClintock Ch. G. 1988, 60).

According to this approach, uncertainty, mistakes, wrong perceptions, wrong evaluations and wrong decisions can be reduced by acquiring new knowledge, skills and information. The acquisition of new knowledge e.g. the invention of new technology may ensure a competitive advantage. New knowledge and information can also influence the orientation (the motivation and the problem awareness) of the agents involved. New or earlier (advance) knowledge can be transformed into inventions, new technologies and new forms of organization. New knowledge allows access to and use of new resources. It may improve the degree of the exploitation of resources. New knowledge also enables better judgment of a situation, and it helps to find alternatives and to recognize unwanted or unintended results in time. A better knowledge of the environment will help to avoid unintended negative results of actions. Additional knowledge, new information and a deeper understanding of mutual influences can raise new questions and create new uncertainties which did not exist before.

Organization theory assumes that in difficult situations which fall outside of the ordinary routine, the number of wrong decisions made by an individual is inversely proportional to his/her knowledge (educational level, skills, experience) and level of information. Moreover, it assumes that every social system can only compensate a certain amount of incompetence. The question of how many wrong decisions and how much incompetence a social system can afford, depends primarily on the intensity of competition, on the uncertainty of the environment and on the available resources of the system. In a protected market or in a competition-free environment a lack of skills, knowledge and competence does not have immediate negative consequences for the survival of the system.

Overcoming uncertainty is one of the fundamental goals of organizations. Any division of labour within a system and each additional growth of a system is increasing the tasks of coordination, control and management, that are necessary to maintain the system. It is in the interest of each organization to fill the key positions of decision and control with highly qualified persons. In particular, those elements and subsystems that are constantly confronted with uncertainty and/or those elements whose decisions have long-lasting consequences for the entire system need to have a redundancy of qualifications and specialized knowledge. Redundancy reduces uncertainty and enhances stability.

In the approach of organization theory centres are defined (regarded) as “loci of control processes within systems” (Strassoldo R. 1980, 37). “Power is defined as control over communication flows, and such control is exercised at the nodes of the channel systems; in particular, at those nodes, [...] where *decisions* can be made. Commands flow down from the centre to the periphery” (Strassoldo R. 1980, 39).

3.2 Architecture of social systems

As the so-called span of control of a supervisor is limited, and since a single decision-maker does not have the capacity to absorb, process and pass on all the information necessary for long-term survival of an organization, management and formal communication structures are hierarchically arranged. In the context of organization theory the term hierarchy is not defined as a command chain from top to bottom where every level has a differing amount of authority and privileges, but as a differentiation of a complex system. Once it reaches a certain size and complexity, no social system can exist without adopting hierarchic structures. The purpose of a hierarchy is to reduce the flood of information to those elements essential for decision-making, to accelerate information processing and decision making and to facilitate control of performance and evaluation of results.

Since an organization can only cope with a limited degree of incompetence for any extended period of time, it acts in its own interest when it fills the key positions of decision making and control with competent and highly skilled persons. In particular, those positions and subsystems that are constantly confronted with uncertainty and/or those elements whose decisions have long-lasting consequences for the entire system require highly developed skills and specialized knowledge. In social systems skills and knowledge have the same function as redundancy in technical systems. They reduce uncertainty and enhance stability.

Since it is not knowledge or information per se but an advantage in knowledge and information that is the basis of success in a competitive society, the skills and knowledge needed by the top decision makers of a system will always be scarce and expensive commodities. Therefore the crucial question is where to locate scarce skills, competence and knowledge within a social system. In which circumstances is centralization of knowledge and decision-making more efficient and in which cases decentralization? Which elements of the social system do constantly need face-to-face-contacts with decision-makers and highly skilled specialist of other systems and therefore tend to spatial proximity to certain locations (central places)? Which positions of the social system do mainly deal with routine work and can be decentralized?

Organization theory suggests that the answer to this question depends on the goals of the social system, the uncertainty of its environment, the size, age, autonomy and complexity of the social system. The goal (task) of an organization can be described as simple or complex, its environment as stable or dynamic. The structure of an organization can be bureaucratic or organic.

A simple task and stable environment encourage a system to become a centralized bureaucracy. In a centralized bureaucratic system, production and administration on the lower levels of the organizational hierarchy can be largely automated and routinely executed - i. e. according to fixed rules and regulations. Therefore the decision-making and problem-solving processes, the research and development as well as the planning and coordination will shift to the upper levels of the organizational hierarchy and consequently the lower levels will lose competence and decision making and will only keep routine work. A complex task, but stable environment leads to decentralized bureaucracies (e. g. university) where coordination is not achieved by supervision or numerous regulations but by highly skilled personell, that is responsible for its actions. A simple task, but dynamic environment leads to a centralized organic structure (fashion atelier), where coordination is achieved by direct supervision. A

complex task and dynamic environment is best managed by a decentralized organic structure, where coordination is achieved by mutual adjustment of highly skilled personell (Mintzberg H. 1979).

If the subsystems at the lower levels of the organization deal with constantly changing, unpredictable, one-time transactions, then decentralization of competence and authority is more efficient. Where control is decentralized, a large number of actors of a system can accumulate information independently and use it to update their own relatively complex services. The greater openness of the system to its environment achieved in this way facilitates rapid adaptation to new situations and allows effective innovation (see Geser H. 1983, 172).

3.3 Knowledge and skills in the spatial hierarchy

The architecture of a social system has a direct effect on the spatial distribution of jobs involved with specialized knowledge, skills and important decision making. Large, bureaucratically structured organizations with a high degree of vertical division of labour and a centralization of the decision-making authority tend to increase the central-peripheral disparities of skills and educational achivement of the labour force. Conversely, a decentralization of decision-making authority and the tendency towards small and medium-sized organizations tends to decrease the central-peripheral gradient of educational achievement.

In almost all economic branches jobs involving far-reaching decision-making authority and requiring a high level of education as well as frequent face-to-face contacts with other highly qualified specialists show a strong tendency toward spatial concentration in a few centres, whereas routine activities in production and administration calling for low levels of educational achievement show a trend towards decentralization. The higher the educational level of the employees the higher the spatial concentration of their jobs.

The question concerning which parts of an organization and which services and professions are bound to higher-ranking central places as well as the question as to which economic activities or parts of an organization can be moved to smaller cities or peripheral regions without a loss or even with a gain in efficiency and competitiveness have to do increasingly with the problems of face-to-face communication and information processing. Many studies have shown that the higher the professional status in an organization, the greater the amount of external face-to-face contacts to decision makers of other organizations and the higher the amount of contacts involving planning and orientation and the lower the proportion of routine and indirect contacts (see Goddard J. B. 1973, 160-162; Törnqvist G. 1970, 27; Thorngren B. 1970, 415-419).

The economic success of many decision makers, providers of specialized services and highly skilled professions depends largely on whether they can make on-the-spot face-to-face contacts with decision-makers of other social systems. The lowest levels of the hierarchy of a large organization which perform mostly routine activities call for very few face-to-face contacts with other organizations and can therefore, at least theoretically, be situated in a great number of smaller cities, as long as the traditional location factors such as transportation costs, wage costs, etc. make it feasible. The harder it is for decisions to be governed by guidelines, plans, regulations or so-called hard information and the greater the uncertainty about the consequences of a certain decision, about the future development and about the correctness of the methods and objectives, the more necessary it is to have face-to-face contacts with qualified and well-informed representatives of other organizations. Uncertainty generally increases the need for and the frequency of face-to-face contacts with important decision-makers of other political, economic and cultural organizations.

Functions and subsystems in the middle range of the organizational hierarchy have a more limited number of choices of suitable locations. The requirements of face-to-face contacts of the upper management levels of a large organization can be fulfilled only by a few major cities.

Only in major cities are the prerequisites met that enable fast and spontaneous face-to-face contact among decision makers in government, large industrial corporations, research, finance, insurance or international news agencies. Proximity to these institutions provides the top management with a head start when it comes to crucial information, thus facilitating their adaptation to new situations and developments. Early information is especially important in areas that have to deal with a high degree of uncertainty and where economic success often depends on fast, risky decisions. The most important reassurance against the uncertainties of business life is prompt knowledge of innovations, economic developments and political changes.

4 Symbolic meaning of Centres

From the perspective of a functional approach, it does not matter whether the location of a company's headquarter or a lawyer's offices vary by 200 metres, at least as long as the housing prices or rents are comparable. Face-to-face contacts and participation in social networks are not negatively affected by such a short distance. However, these 200 metres can make an enormous difference with regard to the symbolic value and prestige of the place.

A city neighborhood, plaza or street can be a symbol for prestige, reliability, credit-worthiness, and power. However, another address can suggest danger, poverty or criminality. Terms such as centre, periphery and distance are not only fundamental elements of the spatial sciences, but they also describe the structure of social relations and power relationships, and are largely symbolic in nature. A symbol can represent a very complex statement or situation. As individual subjects cannot cope with the information overflow of reality, they have to reduce complexity and do this by projecting their experience of social relations on places and symbols.

Why do centres have such a high symbolic value? Throughout the history of religions we find a large number of ritualistic constructions of centres (Eliade M. 1969). According to M. Eliade (1969) in many religions the centre was a "sacred place" where the gods revealed themselves. The connection with heaven and with the gods was initiated from the centre. In regions influenced by Confucianism (China, Korea, Japan), the term centre was associated with social attributes such as power, authority, dominance, prestige, control, and influence.

Everyday language gives us many examples for such kinds of projections. Someone in the „centre“ (of attention, interest, information exchange, discussion, social interaction, social networks, development) enjoys prestige, has influence and power, and generally has more information and knowledge. Someone on the periphery is an "outsider"; he or she is marginalized, has less influence, fewer resources, and enjoys less prestige.

The centre is the place where authority is located and where important decisions are made. The centre rules, controls, siphons off the profits and distributes resources. It is the point of interaction for transactions and the marketplace for the exchange of ideas and face-to-face communication. Proximity to the centre (to top rank decision-makers) offers security, prestige, status and privileges. Theoretically each social system may have its own centre or its hierarchy of centres. Mobile social systems change the location of their centre continually. Rooted systems change the locations of their elements only in long periods of time.

On the other hand, the periphery is not only defined by its distance to the centre, it also symbolizes dependency, marginality, alienation, weakness, backwardness and subordination. Innovations come late and investments tend to have a predominantly exploitative and colonial character, with no spin-off effects (Strassoldo R. 1980).

Whereas the functional role of proximity to prominent decision-makers has been studied in detail, the psychological and symbolic aspects of proximity to power are not as well researched.

5 Conflict theory

Some aspects of spatial concentration and regional disparities of knowledge can be explained better through conflict-oriented approaches. Different forms of knowledge (religious knowledge, ideologies, scientific versus narrative knowledge, knowledge of the centre versus knowledge of the periphery) and the institutions of knowledge production and transfer (schools, universities, media) have always been used in social and political conflicts. Throughout history, knowledge production and transfer has been associated with control, exclusion, censure, lies, falsifications, propaganda, and discipline.

Persons in power have always tried to exercise tight control over institutions of knowledge production and transfer (education). Already secret societies, shamans, and magicians of earlier centuries passed down their secrets and initiation rites only to their descendants or selected followers, ensuring that outsiders would not find out. The greatest control was exercised over “sacred” or revealed knowledge, because this was more dangerous to the powerful than scientific knowledge. Those who are able to construct the history, memories and narratives of other groups (countries) have a very effective method of exercising power. Institutions of knowledge transfer were always controlled by religious and later by political power.

The school was constantly used by the central authority to enforce the central, universal knowledge of those in power against the individual, local knowledge or over the minorities or ruled classes. This was particularly true in regions with ethnic, linguistic or religious minorities and in those areas newly conquered in war. Since school was considered an important instrument in the socialization process of the young generation and in nation building, its mission also included consolidating the nationalist state, assimilating the linguistic minorities, supporting the ideological propaganda of the dominant centre, transmitting particular historical images, and furthering the population’s identification with “their” nation. Schools of the eighteenth and nineteenth century were institutions where first of all discipline, diligence, industriousness, and obedience to authority were learned. “Power decides what is knowledge and what is not knowledge” (Alvares C. 1992). Anybody having the competence and authority to interpret an important text (the bible, talmud, the works of Karl Marx or Mao) or an historical event has the power to define reality and to influence decision making and formulation of laws. Throughout history, those in power decided how historical events should be represented, which memorable events should be carried over, and which books should be outlawed or even burned.

This kind of “organized memory formation” (Werner T. 1995) reached its high point in the twentieth century. In Marxist systems, the names and photos of previously well-known politicians disappeared suddenly from encyclopedias and history textbooks after ideological changes and “ideological cleansing”. Even highly developed democracies often hold onto narratives from the recent past which have little to do with reality.

Throughout history an actual or alleged advance in knowledge or level of development was always used to justify colonization or civilization of “backward” people and regions. The concepts of colonization, missions, modernization and foreign development aid are inseparably linked with the notion that those with superior knowledge are legitimated to devalue, undermine and even destroy the centuries-old traditional, unscientific or local knowledge. The construction of “belief systems” and enemy images, the creation of an ethnic, regional or national identity, the medial construction of reality, and the construction of symbolic meanings is above all a matter of the coalition of power and knowledge.

The distribution, control and suppression of information as well as the construction of knowledge, images and memories is guided by the centres, while the periphery is mainly alienated from information access.

Conclusion

Knowledge and power are so essential for the behavior and action of individuals, for the decision-making in organizations, for the ruling of territories, for the development and evolution of society and the competitiveness of economy that they should be included in any theory of human geography dealing with spatial disparities, no matter which scientific or philosophical approach is pursued. By putting different kinds of knowledge, skills, educational achievement, learning capability and creativity in the centre of scientific discourse, the gaps between various theoretical approaches may easily be bridged.

Since the early history of human civilization, most of the important economic developments were linked with an increase in knowledge and skills. Towards the end of 19th century science, technology and inventive capacity and a skilled and educated labour force became a crucial factor of economic competitiveness.

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