

## SOCIAL SCIENTIFIC KNOWLEDGE ABOUT KNOWLEDGE AND INFORMATION\*

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Knowledge does not exist as an isolated “piece” of knowledge. Knowledge exists in an aggregated collective state. I define knowledge as a capacity for social action and as a model for reality, as the possibility to set “something in motion”, for example, to solve a task, to produce a material object such as a semiconductor chip or to be competent to prevent something from occurring, for example, the onset of an illness. In this sense, knowledge is a universal human phenomenon, or an anthropological constant. This definition of the term “knowledge” is indebted to Francis Bacon’s famous observation that knowledge is power, a somewhat misleading translation of Bacon’s Latin phrase: *scientia potentia est*. A basic assumption should be that knowledge is not a priori practical. The transformation of knowledge as an ability to act into practical knowledge requires congenial circumstances, such as power or authority that dictates the concrete conditions for action. In this con text, it is helpful to ask about the increasingly prominent role of algorithms (intellectual technology) in relation to knowledge such as ChatGPT software as well as contentious issue of the relation/difference between knowledge and information.

**Keywords:** knowledge, information, power, authority, AI, ChatGPT

## СОЦИАЛЬНОЕ НАУЧНОЕ ЗНАНИЕ О ЗНАНИИ И ИНФОРМАЦИИ

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Знание не существует в виде отдельных изолированных частей. Знание существует в агрегированном коллективном состоянии. Я определяю знание как способность к социальному действию и как модель реальности, как возможность привести «что-то в движение» – например, решить задачу, произвести материальный объект (такой, как полупроводниковый чип) или быть способным предотвратить что-либо (например, начало болезни). В этом смысле знание есть общечеловеческий феномен, или антропологическая константа. Этим определением термина «знание» мы обязаны знаменитому наблюдению Фрэнсиса Бэкона о том, что «знание – это сила» (немного вводящий в заблуждение перевод латинской фразы Бэкона: *scientia potentia est*). Основное предположение должно заключаться в том, что знание

\* The article draws on a discussion of knowledge and information found in Nico Stehr (2023), *Understanding Knowledge and Society*. Edward Elgar. However, the reflections on knowledge in my 2023 monograph have been substantially edited, updated and expanded.



не является практическим априори. Превращение знания как способности действовать в практическое знание требует благоприятных обстоятельств, таких как власть или авторитет, которые определяют конкретные условия действия. В этом контексте полезно задаться вопросом о все более заметной роли алгоритмов (интеллектуальных технологий) в отношении таких знаний, как программное обеспечение ChatGPT, а также о спорном вопросе об отношении/различии между знанием и информацией.

**Ключевые слова:** знание, информация, власть, искусственный интеллект, ChatGPT

To talk about knowledge is to talk about people.  
Barry Barnes [1988, p. 179]

## Introduction

In his seminal psychological study of crowd behaviour, *Crowds and Power*, Elias Canetti [[1960] 1978], who was a scholar but not an academic, emphasises, in a rather conventional sense, that is to say in a frequently invoked reflection in scholarly writings, the powerful but asymmetrical social role of knowledge and expertise, stressing above all their massively unequal distribution and the fusion of knowledge and power that begins as early as childhood.

Early childhood is characterized by two different but connected series of events, which follow each other with increasing rapidity. On the one side is the stream of commands which issues from the parents; on the other, the innumerable questions of the child. The first questions of children are like a cry for food, though already in a more developed form. They are harmless, for they never procure for the child the full knowledge possessed by its parents, whose superiority thus remains immense [Canetti, [1960] 1978, p. 287].

The stubborn asymmetry in the distribution of knowledge, due to the concentration of forms of knowledge such as secrets or political savvy, seems equally inevitable and consequential:

Let us define the concentration of a secret as the ratio between the number of those it concerns and the number of those who possess it. From this definition it can easily be seen that modern technical secrets are the most concentrated and dangerous that have ever existed. They concern everyone, but only a tiny number of people have real knowledge of them and their actual use depends on a handful of men [Ibid., p. 296].

My analysis of the social science perspective on knowledge begins not with a conceptual explication of what knowledge might mean, or why knowledge is no longer the power of the powerless, but with an examination of what knowledge is and does in the world.



## Knowledge as a Capacity to Act

Knowledge is a capacity to act or an intersubjective resource.<sup>1</sup> This is true whether the knowledge in question is a sophisticated mathematical theorem or the ability to cook a tasty meal. Placing knowledge at the centre of social scientific inquiry does not mean foregrounding and urgently posing the typical and, in an era of post-truth, undeniably central philosophical question of “is knowledge true?” or, more generally, what are the conditions for the possibility of knowledge and, more specifically, for knowledge as justified true belief. The same caveat applies in this context to the so-called “production perspective” of knowledge (making knowledge, e.g., [Felt, 2017]),<sup>2</sup> a perspective that continues to play a leading role in the social studies of science, as well as in the various modalities of conflict in which knowledge is the object of dispute. Nor do my reflections on knowledge in this context extend to the ambiguous and ambitious question of the limits, failures and breakdowns of knowledge. This is an issue that is best illuminated by careful case studies of the use of knowledge in practical circumstances, for example in the setting of political governance.

## Toward a Sociological Concept of Knowledge

Humans in general are more interested to accomplish something rather than to know how it is done and achieving the former usually preceded insights about the latter.

Georg Simmel [[1890] 1989, p. 115]

What is the general function of knowledge? And what role does knowledge play in everyday life? Does it play a prominent role? Georg Simmel is skeptical and gives priority to action rather than knowledge.

<sup>1</sup> The wealth of definitions in the social science of information, knowledge and data is impressive. Perhaps the best interpretation that can be offered in the face of such a plethora of definitions is that the wealth of concepts reflects the theoretical as well as the social importance of data, information and knowledge. Chaim Zins [2007] documents 130 definitions of knowledge, data and information based on a critical Delphi study conducted in 2003–2005 with leading scholars from 16 countries.

<sup>2</sup> For example, and in the sense in which Talcott Parsons [[1949] 1954, p. 22] defines the idea of rationality in social action as follows: “One of the necessary conditions for the rationality of his action is that the knowledge should be scientifically valid.” In other words, rational action is guided by valid knowledge; in particular, the choice between alternative means is guided by considerations of rational efficiency.



Knowledge does not exist as an isolated “piece” of knowledge. Knowledge exists in an aggregated collective state. It is not a flower in a bunch of flowers, it is the bunch of flowers and thus a bundle of knowledge or part of a system of statements, however small that bundle or system of statements may be in particular cases. This also implies that knowledge is not an individual phenomenon in the sense of being an entity that has only discrete attributes. Knowledge as an aggregated phenomenon has many authors, for example inventors, experts who mediate between invention and use, peer review filtering, councils, and so on.

To further explain the concept of knowledge, we need to distinguish between what is known, the content of knowledge and knowing. Knowing is a relation to things and facts, but also to rules, laws and programs. A kind of participation is therefore constitutive of knowing: to know things, rules, programs, facts, is in a sense to “appropriate” them, to include them in our field of orientation and competence. The intellectual appropriation of things can be independent or objective. That is, the symbolic representation of the content of knowledge eliminates the need to come into direct contact with the things themselves. The social significance of language, writing, printing, data storage, etc. is that they represent knowledge symbolically or provide the possibility of objectifying knowledge. Thus, most of what we call knowledge and learning today is not direct knowledge of facts, rules and things, but objectified knowledge. Objectified knowledge is the highly differentiated stock of intellectually appropriated nature and society, which can also be seen as the cultural resource of a society. Knowing, then, is *grosso modo* participation in the cultural resources of society. Such participation is, of course, subject to stratification; the life chances, lifestyle and social influence of individuals depend on their access to the available stock of knowledge.

## The Curious Entity of Knowledge

Knowledge, ideas and information – to use deliberately very broad and ambivalent categories – are very peculiar entities, with properties that differ from those of, say, commodities or secrets. Unlike physical property, whose boundaries are often quite precise and agreed upon, the boundaries of knowledge are typically blurred and undefined. Unlike other resources (or factors of production), the use of knowledge (sometimes covered under the heading of human capital; [Romer, 1990]) tends to grow (accumulate) rather than shrink. However, knowledge is not immune to ageing or depreciation.

When sold, knowledge moves to other domains and yet remains within the domain of its producer/owner. From an economic point of



view, knowledge is a non-rival good (i.e., it is easily shared and does not run out when used – and excluding others from using it can be costly or even impossible, as in the case of scientific discoveries, published news or digitized music); knowledge as a non-rival good naturally raises the question of how to capture the benefits of one's discovery. In addition, and also from an economic point of view, the marginal cost of producing knowledge is low compared to the production of physical capital and typically relies on lower fixed costs. On the other hand, knowledge cannot simply be transferred from generation to generation like capital or land. Knowledge does not have zero-sum characteristics. Knowledge has the characteristics of a public good [Ostrom and Ostrom, [1977] 2018]. When it is “consumed” it does not preclude its “use” by others. When revealed, knowledge does not lose its influence. However, as a non-rival good, knowledge can be transformed into a rival good. The development of patents on knowledge (as an expression of the capacity to act) and other intangible goods ensures that knowledge can be encircled (commodified and privatized). A tragedy of the knowledge commons is thus limited, if not excluded. The patenting of physical goods, as an invention of the modern nation-state, leads to restrictions on their use, but such restrictions are comparatively less contestable than the patenting of knowledge.

While it has long been recognized that the “creation” of knowledge is fraught with uncertainty, the belief that its application is without risk and that its acquisition reduces uncertainty has only recently been challenged. It is absurd to claim that knowledge always succeeds in reshaping the world. Unintended consequences, so-called luck, fortuitous circumstances, black swan events or simply chance cannot be banished even with the best of intentions. While it is very reasonable and, in a sense, urgent to speak of limits to growth in many areas and resources of life, the same does not, fortunately, seem to apply to the resource of knowledge. Knowledge has virtually no limits to its growth.

Georg Simmel made a similar observation shortly after the end of the First World War, although for him the lack of any real limits to the growth of knowledge (cultural products) signaled above all a serious intellectual danger for individuals and society. It signals the danger of a “tragedy of culture” in which the growing cultural objectifications exceed the capacity of the individual to absorb the abundance of knowledge in any meaningful way. Human products take on a life of their own, constraining human behavior. But as he points out, “everybody can contribute to the supply of objectified cultural contents without any consideration for other contributors. This supply may have a determined color during individual cultural epochs that is, from within there may be a qualitative but not likewise quantitative boundary. There is no reason why it should not be multiplied in the direction of the infinite, why not book should be added to book, work of art to work of art, or invention to invention. The form of objectivity as such possesses a boundless capacity



for fulfillment” [Simmel, [1919] 1968, p. 44]. For Simmel, the important and dangerous result is a large discrepancy between the volume of cultural products and the ability of individuals to make sense of them.

## Knowledge as a Collective Product

Knowledge is often seen as a collective good par excellence; for example, the ethos of science demands that it should, at least in principle, be made available to all (cf. [Merton, [1942] 1973]). But is the “same” knowledge accessible to all? Is scientific knowledge, when transformed into technology, still subject to the same normative conventions? What are the costs of knowledge transfer? Despite its reputation, knowledge is almost never uncontested. In science, its contestability is considered one of its greatest virtues. In practice, the contested nature of knowledge is often suppressed and/or conflicts with the demands of social action.<sup>3</sup>

The seemingly unlimited potential of its availability, which does not affect its meaning, makes it resistant to private ownership in a peculiar and unusual way [Simmel, [1907] 1978, p. 438]. Modern communication technologies make access easier and may even undermine remaining property restrictions, although concentration (documented by [Bajgar, Criscuolo and Timmis, 2021]) rather than dissemination is also possible and feared by some. But one might just as well suggest that the increasing social importance of knowledge, rather than its distinctiveness, might actually undermine its exclusivity. The opposite seems to be the case, however, which raises the question of the continuing basis for the power of knowledge.

## Knowledge as an Intersubjective Capacity to Act

I would like to define knowledge as an intersubjective *capacity for social action* (*Handlungsmöglichkeit*) and *as a model for reality*,<sup>4</sup> as the possi-

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<sup>3</sup> As Georg Simmel [[1907] 1978, p. 437] suggests, intellect (or knowledge), like money, has a rather close relationship and proximity to individualism. Reason has an individualizing quality because it is the essence of its content that the “intellect is universally communicable and that, if we presuppose its correctness, every sufficiently trained mind must be open to persuasion by it. There is absolutely no analogy to this in the realms of the will and the emotions.” In addition, the contents of the (objective), mind “do not possess the jealous exclusiveness that is common in the practical contents of life.”

<sup>4</sup> The general definition of knowledge as a capacity to act resonates with Jürgen Renn’s [2020, p. 426] conception of knowledge as the “capacity of an individual agent or of



bility to set “something in motion,” for example, to solve a task, to produce a material object such as a semiconductor chip<sup>5</sup> or to be competent to prevent something from occurring, for example, the onset of an illness. In this sense, knowledge is a universal human phenomenon, or an anthropological constant. Humans need knowledge. Knowledge constitutes a central “cross-sectional area” of societal development: “there is knowledge everywhere – and more than one can know” [Luhmann, 1990, p. 147]. That knowledge is everywhere, that is, that knowledge is indifferent to social systems, cannot of course mean that all knowledge is everywhere.

Knowledge creates, maintains and changes existential conditions. It is precisely the quality of knowledge as a capacity to act that makes it an important resource for the economy. Its importance increases as the socially necessary volume of knowledge in society increases and thus becomes capable of gradually replacing the conventional but exhausted traditional factors of production – labour, land and capital.

Efforts to quantify the changing volume of knowledge in social relations are fraught with enormous complications, not least because of the common shortcut of conflating information and knowledge (for many examples, see [Tichenor, Donohue and Olien, 1970; Jennings 1996]). Typical efforts to measure the knowledge of a population, especially by economists, use data on the length of formal education and schooling of individuals as an empirical referent for the amount of knowledge or lack of knowledge of a population. However, this is not really a helpful empirical referent when trying to determine the capacity of a population to act. The following discussion of the idea of human capital and the notion of knowledge as a bundle of competences and skills, i.e. interrelated capabilities, will highlight the relevant deficits in more detail. Suffice it to say that capabilities refer to a wide range of social and intellectual skills.

My definition of knowledge as a capacity to act does not imply or attempts to offer a clear way of distinguishing between forms of knowledge, in particular between scientific knowledge and traditional knowledge, prescriptive and propositional knowledge, modern science and everyday forms of knowledge, organised and unorganised knowledge, and theory and practice. Indeed, it is notoriously problematic to distin-

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a group to solve problems and mentally anticipate or perform corresponding actions. Knowledge is internally represented by cognitive structures, allowing for the connection of past and current experiences”; also, [Morgan, 1993; Alearts, 2009].

<sup>5</sup> Compare Chris Miller’s [2022] discussion of the role of mass-produced semiconductors (advanced chips have millions or billions of tiny circuits etched into it) as the core processing technology of the modern economy and society: “The modern economy just cannot function without lots and lots of chips” (in: transcript “Ezra Klein interviews Chris Miller,” *New York Times*, April 4, 2023. <https://www.nytimes.com/2023/04/04/podcasts/transcript-ezra-klein-interviews-chris-miller.html>).



guish science from other forms of knowledge. Recognising scientific knowledge as a particular, even privileged, form of knowledge is difficult. Professional, popular or craft knowledge cannot really be clearly separated from scientific knowledge, especially when it comes to the function that such forms of knowledge can perform. What the definition of knowledge as a capacity for action allows the observer to do is to point to distinctive capacities for action, especially in the context of modern societies as knowledge societies. The capacities listed below have a strong affinity with symbolic capacities, as should be the case in knowledge societies.

## Multiple Capacities to Act

Knowledge refers to productive capacities (competences, skills, tools of the imagination). Knowledge creates, sustains and changes existential conditions. Knowledge enables individuals and organisations to mobilise material and symbolic resources. The temporal dimension of knowledge, with its emphasis on knowledge creation in knowledge societies, is forward-looking. New types of agency are the engine of patterns of change in modern societies, for example in the field of the economy, science, military power and force.

The ability to set something in motion or accomplish something can very well refer to the ability to achieve something centered on symbolic knowledge and not mainly based, as Joel Mokyr [2002, p. 284] maintains, on technical “equipment we use in our game against nature.”<sup>6</sup> For example, to formulate a hypothesis, to find a new metaphor for an established term, to evaluate “facts,” to interpret a poem, to classify the literature on a subject, or to defend a thesis against “new facts.” Knowledge allows us to say something, or to choose not to articulate it. Social statistics, for example, not only reflect social reality; they problematize social reality by showing that it could be different. In other words, agency does not only refer to the possibility of accomplishing something in the sense of a material-physical achievement; agency also refers to intellectual or symbolic capacities.

Shortly after the end of the Second World War, Claude Shannon [1949] published a small volume entitled *The Mathematical Theory of Communication*. In it he explained how words, sounds and images could

<sup>6</sup> As Joel Mokyr [2002, p. 285] points out in the same context, it does not follow from his definition of useful knowledge as technical knowledge that “all modern economic growth is due to technological change [...but] only an increase in useful knowledge can permanently remove the ceiling on prosperity growth.” Scholars in the tradition of Max Weber, for example, have argued that *culture* is the primary cause of the rise of Western economies.



be converted into blips and sent electronically. Shannon's mathematical and probabilistic model of communication, the bit as the basic unit of information, has been superseded by increasingly complex models in communication theory, and it could be argued that he predicted the digital revolution in communication. Knowledge as a symbolic "system" enables one to act on the world. Based on the same general definition of knowledge, a software program as a protocol for organizing "information" is a form of knowledge. How to harness water power, how to smelt iron and make tools, how to successfully shoot at a distant target, how to increase the yield of heavy soils, how to structure a state and markets, all constitute knowledge that has been at the core of the emergence of modernizing societies.

Knowledge as an ability to act can also be understood as a thought experiment (*Gedankenexperiment*), similar to Karl Marx's [[1867] 1967, p. 127] description in *Capital* of labour as an intellectual experiment awaiting its realization:

We pre-suppose labour in a form that stamps it as exclusively human. A spider conducts operations that resemble this of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labour-process, we get a result that already existed in the imagination of the laborer as its commencement.

But knowledge is not the only capacity for action that humans have developed and used. As far as I can see, another essential capacity for social action is *energy*. In the 19<sup>th</sup> and much of the 20<sup>th</sup> century, fossil fuels were among the most important resources that enabled new forms of economic activity in particular and social action in general. As a result, the social institutions and organizations that controlled the production, distribution and use of fossil fuels (including, not least, the labour movement of this historical period) were among the most important centers of power in industrial society. Today, what Timothy Mitchell [2009] calls "*carbon democracy*" is increasingly becoming a thing of the past. Carbon democracy is being replaced by *knowledge democracy*.

*Rights, duties and obligations* are further capacities and possibilities for action that people attribute to each other and that are realized in social relations in order to stabilize social conditions based, for example, on freedom and responsibility (cf. [Rosanvallon, [2011] 2013, pp. 273–274]). The conditions for the ability to make a difference certainly include *language* (vocabularies as a tool to see the world and others) and, more generally, the totality of people's (objective) material and immaterial conditions of action.

*Power* is a capacity to act. In many definitions of power, for example Max Weber's seminal definition of power [[1921] 1968, p. 212] as the opportunity for an individual in a social relationship to achieve his



or her own will even against the resistance of others, power is seen as the ability to gain compliance (see [Barnes, 1988, p. 180]), using one of many possible means to enforce compliance. Finally, Michel Foucault's long study of the social phenomenon of power strongly suggests that power is a productive capacity to act. Power produces knowledge and knowledge produces power: as Michel Foucault [1973], cited in [Paras, 2006, p. 113] argues, "every site of the exercise of power is at the same time a site of formation, not of ideology, but of knowledge. And on the other hand, any established knowledge allows and guarantees the exercise of power."<sup>7</sup> And finally, what is the status of divine revelation? Many people would insist that divine revelations represent knowledge and therefore a capacity to act, even if only in the form of a thought experiment.

## Knowledge Is Power

My definition of the term "knowledge" is indebted to Francis Bacon's famous observation that *knowledge is power*, a somewhat misleading translation of Bacon's Latin phrase: *scientia potential est*. Bacon [[1620] 1960] suggests that knowledge derives its utility from its capacity to set something in motion. More specifically, Bacon asserts at the outset of his *Novum Organum* (I, Aph. 3) that "human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is the cause is in operation the rule."

The success of human action can be measured by the changes that have taken place in social and natural reality, and thus knowledge is distinguished not least by its ability to transform reality. Knowledge is discovery. The added value of knowledge should be seen as its ability to illuminate and transform reality. Of course, knowledge as an effective or productive *model for reality* requires knowledge of reality.

The theoretical conception of knowledge as agency opens up the idea of (collective) capacity, i.e., the self-determination of actors in knowl-

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<sup>7</sup> As Michel Foucault [[1977] 1984, p. 61]; also, [Rouse, 1994] - "whose view of knowledge derives from Nietzsche" and "his view of power derives from Marx" [Rorty, 1981] - argues, against a one-sided notion of power as an oppressive force: "What makes power hold good, what makes it accepted, is simply the fact that it doesn't only weigh on us as a force that says no, but that it traverses and produces things, it induces pleasure, forms knowledge, produces discourse. It needs to be considered as a productive network which runs through the whole social body, much more than as a negative instance whose function is repression. It needs to be considered as a productive network which runs through the whole social body much more than as a negative instance whose function is repression."



edge-determined social contexts. The “ownership” of knowledge, and thus the power to dispose of it, is usually not exclusive. But the prevailing legal doctrine demands precisely this exclusivity of the power of disposal as a primary characteristic of the institution of property. Formal law knows owners and possessors; in particular, it knows individuals who should have, but do not have. From the point of view of the legal system, property is indivisible. Nor does it matter what concrete material or immaterial “things” are involved.

Science is not merely, as was once widely believed, the solution to the mysteries and miseries of the world; it is rather the becoming of a world. The idea that knowledge is an agency that transforms or even creates reality is perhaps almost self-evident in the case of social science knowledge, but less convincing in the case of the natural sciences. In the case of contemporary biology, however, one is prepared to acknowledge that biological knowledge extends to the creation of new living systems. Biology does not simply study nature. Biology transforms and creates new natural realities. Biology and biotechnology are intimately linked. As a result, (most of) the reality we face in modern societies, and increasingly so, emerges from and embodies knowledge. Thus, knowledge is not power (in the usual sense of the word), but at best represents potential power. Knowledge energises. It is therefore necessary to distinguish between the possession of knowledge as a capacity to act and the ability to exercise or implement knowledge.

Not everyone knows everything; therefore, agency is stratified. As mentioned in the introduction, the distributive social mechanisms of knowledge are at the core of any sociological analysis of knowledge. However, whether knowledge always flows to the powerful, who exploit the social control that knowledge offers, should not be determined a priori, but rather critically examined (cf. [Stehr, 2016]).

Finally, the notion of knowledge as a capacity for action also signals that knowledge can remain unused or be used for irrational purposes. The definition of knowledge as a capacity for action suggests that the realisation and implementation of knowledge depends on, or is embedded in, specific social and intellectual conditions or, *enabling environments*. Controlling the relevant conditions may require social power as well as context-specific resources (cf. [Stehr, 1992; Stehr, 2021]), for example, streamlining environmental regulations that might otherwise delay the implementation of a business venture, or securing pathways for high-skilled immigration.



## Knowledge That Matters

Scientific and technical knowledge is obviously an “agency,” and in modern society it may well be a rather special agency. But scientific knowledge should not be seen as a resource that is not contestable, not subject to interpretation, and not reproducible at will.<sup>8</sup>

The special importance of scientific and technical knowledge in modern society is therefore not so much that it is sometimes treated as essentially uncontroversial (or objective in the sense of a “view from nowhere” [Nagel, 1986]), but that it, more than any other form of modern knowledge, represents an incremental capacity for social action, or an increase in the capacity for “how to do it,” which can also be “privately appropriated,” even if only temporarily. In economic terms, incremental knowledge is particularly important as a source of added value. Access to and mastery of marginal knowledge is therefore crucial for gaining advantage in societies that operate according to and depend on the logic of economic growth (see [Kim and Heshmati, 2019; Wolf, 2023]).

Further, in economic terms, knowledge is an essential ingredient of the volume and the nature of “productivity” found within an economy; knowledge effects the social organization of work. As Gary S. Becker and Murphy [1992, p. 300] point out, “the productivity of specialists at particular tasks depends on how much knowledge they have. The dependence of specialization on the knowledge available ties the division of labor to economic progress since progress depends on the growth in human capital and technologies.” The amount and extent of the available knowledge among workers impacts the coordination costs and with it the division of labor in an organization.

Science and technology are constantly add (in a non-pejorative sense) to the existing stock of knowledge and thus to the ability of individual and corporate actors to influence their circumstances of action. In this respect, i.e., in its ability and legitimacy to generate new capacities for action, science is virtually without competition in modern society. However, knowledge as a capacity for action cannot be reduced to scientific knowledge.

In the current contentious climate of “post-truth politics,” “alternative facts,” a “crisis of science” (e.g., [Fuller, 2019; Renn, 2019]), as well as the widespread media attention and affirmation of “conspiracy

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<sup>8</sup> Or, for that matter, originated and was invented in Europe sometime between 1500 and 1700 led by the Polish astronomer Nicolaus Copernicus. Modern scientific knowledge, in turn, is linked to the pioneering natural scientists of the 19<sup>th</sup> century. For the historian of science James Poskett [2022]; also, [Smith, 2022] this narrative is a myth: “Science was not a product of unique European culture. Rather, modern science has always depended upon bringing together people and ideas from different cultures around the world” [Poskett, 2022, p. 1].



theories” in parts of civil society, the question of what – outside the social science community – makes social science knowledge trustworthy and legitimate has once again become a pertinent and pressing issue in society and science. For centuries, and well into the present day, the application of knowledge from all the sciences has been held up as the gold standard for judging its importance. The by-product of claiming that a discipline is useful to society ensures public attention and support. The route to legitimacy and trust in (social) science knowledge is mainly through “practical or useful knowledge.” But what exactly is practical knowledge? Practical knowledge is scientific knowledge that “works,” that accomplishes something, that makes a difference in the affairs of society by successfully addressing for example a social problem (cf. [Drucker, [1989] 2003, p. 242; Smith, 2023]).<sup>9</sup>

## The Constituents of Practical Knowledge

A basic assumption should be that knowledge is not *a priori* practical.<sup>10</sup> The transformation of knowledge as an ability to act into practical knowledge requires congenial circumstances, such as power or authority that dictates the concrete conditions for action; in short, supporting circumstances. Moreover, the search for practical knowledge begins with a problem, which is a problem. A problem in social behavior arises as a result of an interruption in the usual “causal,” uninterrupted flow of circumstances. The break in the routine flow of behavior is itself a social construct. Knowledge that makes a difference happens to be knowledge that does not spontaneously or automatically apply or create its own momentum of use.<sup>11</sup>

<sup>9</sup> Pamela Smith [2023, p. 45] defines practical knowledge more formally – prior to the implementation of capacities to act – as “a system of knowledge that provides flexible parameters within which the exploration of material properties is behavior is undertaken, thus both informing and giving meaning to practices.”

<sup>10</sup> As far as I can see, though they are linked, separating the knowledge and capacity, implies that knowledge always is practical knowledge; for as Alaerts [2009, p. 12] argues “for our purposes [...], capacity can be defined as the capability of a society or a community to identify and understand issues, to act to address these, and to learn from experience and accumulate knowledge for the future. This definition emphasizes the linkage with knowledge as well as with a verifiable impact on-the-ground, and it also emphasizes the critical “extra” capacity for continual learning and improvement that characterizes the ‘learning organization’.”

<sup>11</sup> The notion of practical knowledge as defined here has some affinity at least to Friedrich Hayek’s concept of “local knowledge.” Local knowledge is what Hayek [[1945] 2010, p. 521] refers to as “the knowledge of the particular circumstances of time and place” [Hayek, 1945, p. 521]. Local knowledge is the kind of knowledge that specific individuals use all the time in their daily lives to gain small and large benefits



The adequacy (usefulness) of knowledge used in a context different from that of its production can be formulated in terms of the relationship between knowledge and states of local (context relevant) conditions of action. In the context of application, constraints and conditions of action are understood as either in the state of being open or in the state of being beyond the control of the relevant actors. Given this distinction between states of conditions of action, practical knowledge relates primarily and becomes effective in contexts that offer open conditions of action for the pertinent actors with respect to relevant variables.<sup>12</sup>

The social science literature in general, and writings in the field of social science methodology in particular, contain little useful information about the systematic identification and use of attributes of social action that may be open in specific situations, or that are perceived by the relevant group of actors as open to their control (cf. [Stehr, 2021]). In much of social science discourse, the decision as to which factors or attributes should be selected as objects of theoretical reflection and empirical study tends to depend on disciplinary traditions. The selection or choice of factors for data collection and analysis, which are subject to control in practical situations, becomes a matter of mundane theories but, in contrast to scientific discourse, above all a question of the relative power of actors, their resources and resolve within their settings and in relation to the environment that also affects their context of action.

The fact is that many economic theories fail to address the question of the power, resources and characteristics of economic action beyond

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for themselves; for example, “my knowledge that my neighbour plans to take a cab to the railway station just half an hour before I plan to, for example, allows me to coordinate sharing a single trip and splitting the fare” [Helmsley, 1992, p. 108]. Local knowledge is the type of knowledge Hayek asserts that “practically every individual has some advantage over all others because he possesses unique information of which beneficial use may be made” [Hayek, [1945] 2010, p. 521]. The concept of practical knowledge is much broader. Local knowledge is but a subunit of practical knowledge.

<sup>12</sup> A different approach to the idea of practical knowledge is that of “real experiments,” i.e., in order to achieve a particular result in the laboratory, one has to screen out, simplify or reduce, for example, the complex influence of the natural environment on a process. As Karl Popper [[1957] 1972, p. 139] observes, “in general it is only by the use of artificial experimental isolation that one can predict physical events.” Only then is it possible to clearly determine or identify a specific relationship that is responsible for the observed or desired effect. But in order to successfully repeat/translate the observation made in the laboratory outside the laboratory, the artificial experimental isolation must be recreated. The transfer and implementation of such a laboratory result or, as it may be the case in the social sciences, a thought experiment, into practice is of course fraught with considerable difficulties, not to mention the various risks involved in transforming society into a laboratory (cf. [Krohn and Weyer, 1989]), which could contaminate the effect or make it impossible to repeat it outside the laboratory. It is very likely that unforeseen intervening factors could arise, even with a certain delay, which could jeopardize any effort to repeat the effect observed in the laboratory.



the control, for example, of specific corporate actors. Indeed, economic discourse has excluded such considerations as a matter of disciplinary reasoning, which, for some economists at least, provides an explanation for the relative practical impotence of economic theorizing (e.g., [Rothschild, 1971]). In other words, economists often seem to erroneously assume that virtually all factors that form part of their theoretical models are somehow open to action, or that the ability of actors to engage in economic action is insensitive to the particular circumstances of action.

## Knowledge in the Age of the Algorithm

Following on from the discussion of the nature of practical knowledge, it is helpful to ask about the increasingly prominent role of algorithms (intellectual technology) in relation to knowledge such as ChatGPT software. After all, it would seem that algorithms are nothing more than (embedded) practical knowledge (or data and information). The idea that algorithms are embedded knowledge resonates with the idea that knowledge is embedded in social relations or objects (cf. [Smith, 2019; Girasa, 2020]).

Generative artificial intelligence or *General-Purpose Technology* (GPT) as a data-driven approach refers specifically, in the current case to a chatbot that answers questions based on a large amount of data in clear, well-punctuated prose. These are technologies that can generate text, images and other media in response to short prompts – thus attempting to simulate human intelligence. Generative artificial intelligence – often described as the most important AI technology [Drexl et al., 2019] and as the most important in the history of human life – can generate “novel” content, from text to audio and images, in response to user prompts.

After its release, ChatGPT became the symbol of a new and more potent wave of AI<sup>13</sup> and as a powerful, disruptive force. The technology is evolving.<sup>14</sup> The expectation is that no sector of society will be immune to the impact of generative intelligence. Political and market conditions as well as

<sup>13</sup> The first of what is now named *Chatbot* was released in January of 1966 by Joseph Weizenbaum and was called *Eliza* [Weizenbaum, 1976].

<sup>14</sup> Eva Van Dis and her colleagues [2023, p. 224] in a comment in *Nature* anticipate that soon this technology in science “will evolve to the point that it can design experiments, write and complete manuscripts, conduct peer review and support editorial decisions to accept or reject manuscripts.” *The Guardian* (“How will Google and Microsoft AI chatbots affect us and how we work?”, February 8, 2023) reports reflecting the rapidly evolving field: “Microsoft detailed its revamp of Bing on Tuesday, announcing that it will be able to answer questions using online sources in a conversational style, like ChatGPT does now. It will also provide AI-powered annotations for additional context and sources, perhaps reflecting concerns among some ChatGPT users about the accuracy of some user answers.”



social inequality patterns (cf., [Korinek, Schindler, and Stiglitz, 2022]) will be affected.<sup>15</sup> What is already clear, however, is that the politics of knowledge, i.e., the governance of new ideas and technologies, will not be able to ban large language models.<sup>16</sup>

Algorithms are embedded in computing systems, platforms and infrastructures. More specifically, algorithms facilitate the sharing economy, help detect disease, are used in government efforts to detect and control crime, may be used in military conflicts, and help us choose a television program or what to read. The social science literature on algorithms alone is vast, covering the full range of possible issues, from claims that algorithms control our romantic endeavors to decisions about war and peace (see [Lee and Larsen, 2019] and [Nowotny, 2021] for an overview). The extreme position argues/expects that it is a game between humans and algorithms rather than humans and humans: A world run by algorithms.

Once algorithms are used, the search for decisions is over. But the decision rules needed to arrive at decisions are submerged. The decision is formalized, hence the earlier terminology for “artificial intelligence” – the “mechanization of thought.” In other words, algorithms can be described as powerful tools in everyday life, and as influential in decision-making in social institutions – in law, for example, in arriving at a judge’s decision on the length of a defendant’s prison sentence,<sup>17</sup> in health,<sup>18</sup> in the labor market,<sup>19</sup> in the economy, in politics

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<sup>15</sup> These concerns are widespread in developed countries but “developing countries and emerging market economies *should be even more concerned* than high-income countries, as their comparative advantage in the world economy relies on abundant labor and natural resources. Declining returns to labor and natural resources as well as the winner-takes-all dynamics brought on by new information technologies could lead to further immiseration in the developing world” ([Korinek et al., 2022, p. 163]; emphasis added). In light of the possibility of an increase in the social inequality among nations, Korinek, Schindler and Stiglitz [2022, p. 164] propose policies “that can mitigate the adverse effects so that advances in technology lead to a world with greater shared prosperity. This will require new domestic policies and development strategies as well as strong international cooperation and a rewriting of the global rules governing the information economy.”

<sup>16</sup> [Sheikh et al., 2023]. On the idea of knowledge politics, cf. [Stehr, 2006].

<sup>17</sup> The algorithm would be designed to be a predictor of the likelihood that a defendant will be a future offender.

<sup>18</sup> For example, language models similar to those behind ChatGPT have been used to improve antibody therapies against COVID-19, Ebola and other viruses (cf. [Callaway, 2023]).

<sup>19</sup> Researches anticipate quite contradictory impacts on work in general and the labour market in particular producing winners and losers. The predictions range from estimates that anticipate a reduction in the volume of socially necessary labor to much more optimistic assumptions based on an up-skilling of the labour force and exploiting AI for the benefit of the social organization of firms (e.g., [Acemoglu et al., 2020]).



and war.<sup>20</sup> At the same time, algorithms operate largely undetected, opaque and inaccessible to external critique. Algorithms are a non-rival good. Like a digital article, an algorithm can be used over and over again without preventing someone else from studying the article that, for example, recommends a certain restaurant to us.<sup>21</sup>

However, patent laws in many countries exclude algorithms from the scope of patentable inventions [Abiteboul and Dowek, 2020, p. 72]. Given the quickness with which at least parts of algorithms develop, it may not even need much protection by the patent system. Algorithms “can be kept proprietary, and they are always evolving” [Korinek and Stiglitz, 2021, p. 34].<sup>22</sup>

In general, progress in the development of AI technology empowers those who have the data and computing power (access to powerful semiconductors, cf. [Miller, 2022]) to process and manage these resources, especially in companies such as Microsoft, Google, Apple, Amazon and Facebook – companies that are for the time being largely outside external control – based on the huge amounts of business data generated.<sup>23</sup>

<sup>20</sup> The Israeli military calls the May 2021 military conflict with Hamas the “first artificial intelligence war.” The *Jerusalem Post* quotes a spokesman for the Israel Defense Forces (IDF) at the end of May 2021: “For the first time, artificial intelligence was a key component and power multiplier in fighting the enemy. This is a first-of-its-kind campaign for the IDF. We implemented new methods of operation and used technological developments that were a force multiplier for the entire IDF.” In other words, military targets were determined using algorithms: One of these programs named “Gospel,” used AI to generate recommendations for troops in the research division of Military Intelligence which used them to produce quality targets and then passed them on to the IAF to strike (see Anna Ahronheim, “Israel’s operation against Hamas was the world’s first AI war,” *Jerusalem Post*, May 27, 2021; [www.jpost.com/arab-israeli-conflict/gaza-news/guardian-of-the-walls-the-first-ai-war-669371](http://www.jpost.com/arab-israeli-conflict/gaza-news/guardian-of-the-walls-the-first-ai-war-669371))

<sup>21</sup> One description of the kind of service AI systems provide to humans is Sue Halpern’s [2021] observation that “most of us have encountered scripted, artificially intelligent customer service bots whose main purpose seems to be forestalling conversations with actual humans.” The reason for the lack of further communication is of course that the decision at-hand has been made. No need to further engage in talk with anyone.

<sup>22</sup> See our discussion of the *self-protection* of knowledge that points to additional attributes of knowledge that make patenting unnecessary [Adolf and Stehr, 2017, pp. 106–111]. One feature of knowledge emphasized by us is for example its *indisibility*: “One feature of knowledge that tends to protect it from being easily appropriated and disseminated in market transactions, or actually from being stolen, pertains to the issue of the divisibility of knowledge in distinction to the presence of this attribute of ordinary commodities involved in economic exchange and legal considerations. In contrast to money, for example, knowledge is akin to goods that are not divisible” [Adolf and Stehr, 2017, p. 107].

<sup>23</sup> An examination of AI inventions, using patent data (cf. [Petralia, 2020]), by Hötte, Kerstin Taheya Tarannum, Vilhelm Verendel and Lauren Bennett [2023] confirms the widespread economic concentration generally characteristic of *Knowledge Capitalism*



In these large companies, AI appears to be progressing at an incremental pace rather than in leaps and bounds. Nonetheless, innovations in AI technology are outpacing the pace of change in social organizations (cf. [Davenport and Miller, 2022, pp. 260–262]).

What social conditions make it more likely that knowledge will be demanded, that the search for knowledge will be activated, and that efforts will be made to implement knowledge? Knowledge is demanded in response to social pressure to act. The pressure to act is generated by a specific problem, an order or an issue that requires a response. Helmut Willke [2001, p. 4] calls the resource that is mobilized in such circumstances “intelligence”; intelligence describes solutions to problems that are incorporated, for example, in technologies: “in tools, cars or telephones means that I, as a user of these technologies, don’t usually have to know more and no longer know how these technologies work, i.e., what specific intelligence is built into them. It’s enough that I know how to use these machines. The use does not require an understanding of the built-in intelligence” [Ibid., p. 10].

Intelligence could of course also be embedded in a recipe to prepare broccoli for dinner. Joel Mokyr [2002, pp. 14–15] labels the ability to utilize embedded knowledge *competence*. In order to differentiate between knowledge “needed to invent and design a new technique from that needed to execute it, I shall refer to the latter as *competence*. [...] Judgment, dexterity, experience, and other forms of tacit knowledge inevitably come into play when a technique [embedded knowledge] is executed. Another element of competence is the solution of unanticipated problems that are beyond the capability of the agent: knowing whom (or what) to consult and which questions to ask is indispensable for all but the most rudimentary production processes.”

What Helmut Willke calls intelligence and Joel Mokyr competence could just as well be called an algorithm. A recipe is an algorithm. Algorithms make things happen. The chain of thought that leads to action is embedded in algorithms. Thus, as Robert Sedgewick, a leading researcher on computational algorithms, points out, an algorithm is a “method for solving a problem” (quoted by [Finn, 2019, p. 561]).

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(ct. [Stehr, 2022]) based on quasi-monopolies of capacities to act (winner-takes-all dynamics) in the hands of a few large corporations: AI inventions too become increasingly concentrated in superstar corporations located in a few countries that serve the entire world. However, whether the concentration of immaterial capital has increased due to AI inventions is an open issue (Hötte, Kerstin Taheya Tarannum, Vilhelm Verendel and Lauren Bennett [2023, p. 27]). Similarly, it remains to be seen whether the famous called productivity paradox (observed along with the widespread introduction of computers in the workplace in the decades of the 1980s and 1990s [Solow, 1987; Stehr, 2002]) will be repeated with the use of AI (cf. [Brynjolfsson, Rock, and Syverson, 2019; Korinek, Schindler and Stiglitz, 2022, pp. 180–183]).



An algorithm is a bridge between knowledge as capacity to act and the solution to an issue at hand, or an algorithm represents the closure of the circle between knowledge and a goal. Finn [2019, p. 561] quotes from a Google document that offers a similar definition: “Algorithms are the computer processes and formulas that take your questions and turn them into answers.” The ability to get something done is in fact accomplished by algorithms; and it is accomplished relentlessly, faster, and without deviating from the coded path. Algorithms apply to virtually all phenomena. The foundations on which algorithms operate are not objective or raw information. As in similar cases of decision-making, algorithms employ socially constructed information. Whether algorithms are capable of learning is a contentious issue, however, for some observers, “algorithms can learn by repeating the same task and improving” [Abiteboul and Dowek, 2020, p. 16].

The solution to the problem to which algorithms are responding with closure requires judgments of course, possibly a series of compromises and presumptions about courses of action that may be available as solutions and their effectiveness in answering the issue at hand. But once the solution is taken on board embedded in an algorithm, the bridge between knowledge and action can be passed without further exercising our brains many times if not indefinitely. It is not too audacious to conclude that the function algorithms perform follow Alfred Whitehead’s [1911] controversial observation in his *An Introduction to Mathematics*, civilization advances “by extending the number of important operations which we can perform without thinking about them.”

The risks and dangers associated with knowledge in the age of algorithms are considerable and certainly worthy of close attention, as evidenced by the first state-based efforts to set standards for the use of algorithms by government and public agencies.<sup>24</sup> Claims about the growing and negative but hidden influence of embedded knowledge in the form of algorithms are extensive, as Nicholas Diakopoulos (quoted in [Ziewitz, 2016, p. 5]) notes: “We are now living in a world where algorithms, and the data that feed them, adjudicate a large array of decisions in our lives: not just search engines and personalized online news systems, but educational evaluations, the operation of markets and political campaigns,

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<sup>24</sup> In May of 2023, the CEO of ChatGPT and creator of OpenAI, Samuel Altman, “called on [US] Congress to create licensing and safety standards for advanced artificial-intelligence systems, as lawmakers begin a bipartisan push toward regulating the powerful new artificial-intelligence tools available to consumers [...] ‘If this technology goes wrong, it can go quite wrong.’ Mr. Altman called for ‘a new agency that licenses any effort above a certain scale of capabilities and could take that license away and ensure compliance with safety standards’” (Ryan Tracy, “ChatGPT’s Sam Altman Calls on Congress to Adopt Safety Standards for AI Systems Congress looks to impose AI regulations, if it can reach consensus,” *Wall Street Journal* Online, May 16, 2023).



the design of urban public spaces, and even how social services like welfare and public safety are managed.”<sup>25</sup> Algorithms can arguably make mistakes and operate with biases.<sup>26</sup> The opacity of technically complex algorithms operating at scale makes them difficult to scrutinize, leading to a lack of clarity for the public about how they exercise their power and influence.

The claims made about the enormous social, cultural, political and economic impact of AI are extraordinary,<sup>27</sup> highlighted by claims that a so-called “singularity” is possible in the not-too-distant future when AI can do everything humans are capable of doing only better or, the idea that algorithms are akin in their impact as a critical turning point to the industrial revolution (cf. [Kurzweil, 2005; Korinek and Stiglitz, 2021, p. 35]). Stuart Russell, the initiator of the Center for Human-Compatible Artificial Intelligence expects that “machines more intelligent than humans would be developed this century.” Russell not only offers such a bold prediction but calls for “international treaties to regulate the development of the technology.” Similarly, the historian Yuval Noah Harari anticipates that “humans are at risk of becoming ‘hacked’ if artificial intelligence does not become better regulated.” To hack human beings means “to get to know that person better than they know themselves. And

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<sup>25</sup> In the sceptical camp, noting the limits of the application of AI, see Landgrebe and Smith [2023, p. 298]: “The use of AI in the real world is subject to tight limits. Whenever there is a need for adaptive cognitive behaviour in an open context, whenever the sensorimotor requirements of human dexterity are demanding, as in any kind of surgery, or musical or theatrical performance, or in social tasks such as accompanying schoolchildren to provide for protection against bullies, or whenever spontaneous use of language (both natural and mathematical) is involved, attempts to replace humans by machines will quickly lead to unusable results and will in due course be abandoned.” However, for “companies like OpenAI and DeepMind, a lab that’s owned by Google’s parent company, the plan is to push this technology as far as it will go. They hope to eventually build what researchers call *artificial general intelligence*, or A.G.I. – a machine that can do anything the human brain can do” (Cade Metz, “What’s the future of AI,” *New York Times*, March 31, 2023). The important question, of course, is what could stop it? Perhaps Landgrebe and Smith are pointing to an ultimate barrier.

<sup>26</sup> See also the article by Jyoto Madhusoodanan, “Is a biased algorithm delaying health care for black people?” (*Nature* 588, December 24–31, 2020, pp. 564–547) that reports “one million Black adults in the United States might be treated earlier for kidney disease if doctors were to remove a controversial ‘race-based correction factor’ from an algorithm they use to diagnose people, a comprehensive analysis finds.”

<sup>27</sup> A summary of what we know to date on the most widely discussed impact of AI, robots and advanced automation on employment levels may be found in Lukas Walters [2020]; also [Korinek, Schindler and Stiglitz, 2022, pp. 169–172].



based on that, to increasingly manipulate you.”<sup>28</sup> Even more radical are assertions claiming that AI *is already* manipulating us.<sup>29</sup>

It cannot be overlooked that narratives dealing with the characteristics and consequences of new technological developments often exhibit a technocratic drift. Technical discovery is expected not only to emancipate itself from its discoverers, but also to dominate its discoverers and developers as a phenomenon in itself. As a result, people are urged to make sure that they do not lose control over the automation of the world of work, or even over AI.

So far, however, artificial intelligence (AI) has not lived up to the hype of its proponents or the fears of its opponents. AI inspires exaggerated promises and existential doubts. Robots have not taken over humanity. But there is real concern among some observers about the impact of AI and the extent to which it might emancipate itself from human control: for example, a recent headline in an opinion essay in a national German newspaper reads not if but “When machines take power.”<sup>30</sup> Algorithms are seen as a social power that operates through algorithms, as well as the cultural image that such codes have in society. Algorithms are seen as central to everyday life, the world of work and science. Algorithms are seen as a threat to jobs; they may restrict civil liberties and/or spy on us on behalf of governments and large corporations.

But then there are or will be better outcomes as well. For instance, “algorithmic decisions are depicted as neutral decisions, algorithmic decisions are understood to be efficient decisions, algorithmic decisions are presented as objective and trustworthy decisions” [Beer, 2017, p. 11]. The weaknesses of AI include the fact that decisions are largely based on the status quo, i.e., on existing and accessible data; that AI has no understanding of the content (meaning) of the data sets it uses; that judgments are based on statistical correlations (reasoning), which in principle include spurious correlations; and that decisions cannot be justified.

<sup>28</sup> In a 2021 interview with CBS 60 minutes: [www.cbsnews.com/news/yuval-harari-sapiens-60-minutes-2021-10-29/](https://www.cbsnews.com/news/yuval-harari-sapiens-60-minutes-2021-10-29/)

<sup>29</sup> It is notable that for the first time in history, in 2019, the United States Patent and Trademark Office (USPTO) received two patent applications listing an Artificial Intelligence (AI) powered computer named “DABUS” [short for *Device for the Autonomous Bootstrapping of Unified Sentience*] as an inventor. The fling of this patent application was significant because only a human or “natural person” can be listed as an inventor on a patent application. Although Title 35 of the United States Code does not explicitly state natural persons, the USPTO interprets the word “whoever” to suggest a natural person. The patent applications list DABUS as the inventor, and the AI’s owner as the patent applicant and the prospective owner of any issued patents. [Hopes, 2021, p. 120]. DABUS supposedly is a “creativity machine” that’s able to generate ideas without human intervention.

<sup>30</sup> „Wenn Maschinen die Macht übernehmen,“ *Frankfurter Allgemeine Zeitung*, January 26, 2023.



As a result, algorithmic decision-making tends to reinforce prevailing biases by incorporating data sets that contain such established preferences/prejudices.<sup>31</sup>

Ultimately, algorithms remain social constructs. They are phenomena that cannot be placed beyond the control of all, unless one is prepared, as some critics are quick to note that AI poses an existential risk to human existence, for example in the sense that AI systems become smarter than humans in a hyper-accelerated evolutionary process (cf. [Hendrycks, 2023]).<sup>32</sup> It is thought that *Artificial General Intelligence* (AGI) will only be achieved through the massive expansion of Large Language Models (LLMs such as ChatGPT).

Knowing about algorithms and their implications becomes an important capacity: defined as the ability “to make appropriate generalizations in a timely fashion based on limited data” [Kaplan, 2016, pp. 5–6]. AI can be used as weapon at lower cost compared to conventional methods of repression. Critical observers stress that AI is a “boon to authoritarian forces. [...] The advantage lies with the biggest information companies, such as Google, and the biggest authoritarian states, above all China” [Diamond, 2019, p. 23]. Political resistance in autocratically governed societies in transition to a knowledge society is likely to come from the middle of society, not as a rebellion by members of the ruling class. Even democratic regimes are not and will not be immune to the temptation to use surveillance tools.

In addition, algorithms have a significant impact on economic transactions, economic policy, the globalization process, and, in its wake, global social inequality. As Anton Korinek and Joseph E. Stiglitz [2021, p. 1]; also [2019] point out, “the new technologies [e.g., AI] have the tendency to be labor-saving, resource-saving, and to give rise to winner-takes-all dynamics that advantage developed countries.” Inasmuch as developing economies reply for competitive advantages on lower labor cost,

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<sup>31</sup> See Michael Vogel, “Im Kopf einer künstlichen Intelligenz,” *Neue Zürcher Zeitung*, Sunday, July 4, 2021.

<sup>32</sup> In his paper, Dan Hendrycks [2023, pp. 3–4] discusses the risk of the “the AIs of the future. If current trends continue, we should expect AI agents to become just as capable as humans at a growing range of economically relevant tasks. This change could have huge upsides – AI could help solve many of the problems humanity faces. But as with any new and powerful technology, we must proceed with caution. Even today, corporations and governments use AI for more and more complex tasks that used to be done by humans. As AIs become increasingly capable of operating without direct human oversight, AIs could one day be pulling high-level strategic levers. If this happens, the direction of our future will be highly dependent on the nature of these AI agents [...] At first, AIs will continue to do tasks they already assist people with, like writing emails, but as AIs improve, as people get used to them, and as staying competitive in the market demands using them, AIs will begin to make important decisions with very little oversight.”



developing countries have especially reason to be concerned about the influence of AI and other automation technologies that they may lose the advantages that they now possess. “The worst-case scenario,” Korinek and Stiglitz [2021, p. 35] remind us, is the unravelling of much of the gains in development and poverty reduction that we have seen over the last half century [...and the] new advances may arrest the convergence in standards of living between rich countries and developing countries.

At the same time, this is a useful point to reiterate that there is a danger that the discourse on AI will develop into technological determinism. There is, of course, the cognitive side of the process, which is underdeveloped, in addition to the technical side. Technology is not a coercive force. Technology itself cannot tell us what to do. At the collective level, it is the power of a corporation and probably the state that is a coercive power. At the individual level, it is human initiative that challenges and shapes technology.<sup>33</sup> Appropriate policy measure and the simple reminder that different choices are possible may be able to counter the developments Korinek and Stiglitz describe. In other terms, what I have called *knowledge politics* comes into view [Stehr, 2003]: How do societies, civil society, and its institutions respond to the development AI systems? AI systems are not merely a technical problem but importantly a political issue demanding co-ordination and regulations.<sup>34</sup>

## Knowledge and Information

In the context of an examination of some of the important properties of knowledge, it is inevitable to address the contentious issue of the relation/difference between knowledge and information. Before attempting to differentiate and explore the relationships between knowledge and information, the first puzzle to be addressed is whether it is even possible and useful to distinguish between them at this point in time, with its typical insistence on the close affinity, if not conflation, of the two phenomena.

Given that the terms are mostly used as equivalents, it seems difficult, if not impossible, to maintain a distinction between the two: Information as knowledge and knowledge as information (e.g., [Hayek, 1937; Faulkner, 1994; Stewart, 1997; Lyotard, [1979] 1984; May, 2000, p. 1;

<sup>33</sup> As Frank Pasquale [2020, pp. 207–208] notes in the case of New York Uber drivers: “Workers can organize and change the terms of work, as New York Uber drivers did when they demanded a chance to challenge arbitrary ratings by passengers. Other drivers are setting up platform cooperatives to challenge the firm’s dominance” (see [Griswold, 2016]).

<sup>34</sup> J. Nathan Myles [2023, p. 248], for example, comments that “adaptive algorithms have been linked to terrorist attacks and beneficial social movements. Governing them requires new science on collective human – algorithm behaviour.”



Knorr-Cetina, 2010, p. 172; Haskel and Westlake, 2018, p. 64; Stiglitz, 2017, p. 14; Renn, 2020, p. 426)].<sup>35</sup>

Many dictionaries and academic papers simply describe information as a particular kind of knowledge, or refer to the apparent ease with which knowledge can be transformed into information. A similar symmetry between information and knowledge is evident when information is expressed as “knowledge reduced and transformed into messages that can be easily communicated among decision makers” [Dasgupta and David, 1994, p. 493]. In other definitions of information and knowledge, information is simply conceptualised as a subspecies, an essential element or raw material of a range of knowledge forms.

I would like to argue for the need and the benefits of making a clear distinction. Such a distinction is particularly valuable given the importance of knowledge not only for the modern economy, but also for the emergence and sustainability of democratic conditions. Both political information and political knowledge are important. I argue that the substance of information is primarily concerned with the properties of products or outcomes (attributes), while the substance of knowledge is concerned with the qualities of processes or inputs (recipes).<sup>36</sup>

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<sup>35</sup> Jürgen Renn [2020, p. 426] (my emphasis) notes that “In the context of a knowledge economy, information is *knowledge* encoded in external representations for exchange purposes. Similarly, Joseph Stiglitz [2017, p. 14] comments – in the context of an analysis of the “economics of information” – that “knowledge can be thought of as a particular form of information.” Jonathan Haskel and Stian Westlake [2018, p. 64] suggest that knowledge represents “connections made between pieces (sic!) of information, supported by evidence, to form a coherent understanding”. Shoshana Zuboff [2021] claims “on the strength of their surveillance capabilities [of the superstars of the tech industry; see also the following chapter] and for the sake of their surveillance profits, the empires engineered a fundamentally anti-democratic epistemic coup *marked by unprecedented concentrations of knowledge* about us and the unaccountable power that accrues to such *knowledge*” (“The coup we are talking about,” *New York Times*, January 29, 2021; emphasis added). As I will argue what is collected is information and not knowledge; however, information can still be turned into a profitable enterprise. As Zuboff [2015, p. 75] explains the business model: “‘big data’ is above all the foundational component in a deeply intentional and highly consequential new logic of accumulation [...] information capitalism aims to predict and modify human behavior as a means to produce revenue and market control.” The developments surrounding AI only amplify the extraordinary power of the few high-tech corporations (cf. [Stehr, 2022]). In light of the conspicuous power and new control exercised the large corporations of the information capitalism, it is difficult to imagine how the observer is capable of escaping the powerful corporate veil to a meta-level of analysis?

<sup>36</sup> Illustrating the point, and as Max Weber’s [[1922] 1989, p. 139] (my emphasis) in his lecture “Science as a Vocation” emphasizes, the disenchantment of the world does not mean, that we have to have an idea, for example, when we take the streetcar “how the car happened to get into motion. And he does not need to *know*.”



## Divorcing Information and Knowledge

A discussion of the interrelationship between knowledge and information provides an opportunity to summarise some of the comments I have made on the role of knowledge in social affairs. Knowledge, as I have defined it, is a capacity for action. Knowledge is a model of reality. Knowledge, combined with control over the contingent circumstances of action, enables an actor to set something in motion and (re)structure reality. Knowledge enables an actor or actors to generate a product or other outcome. Knowledge is ambivalent, open, and hardly blind to the specific meanings that knowledge claims contain. But knowledge is only a necessary and not a sufficient capacity for action. As we have seen, in order to set something in motion or produce a product, the circumstances in which such action is to take place must be under the control of the actor. The knowledge of how to move a heavy object from one place to another is not enough to accomplish the movement. In order to accomplish the transfer, one needs control over some means of transport that is useful for moving heavy objects, for example. The value that resides in knowledge, however, is relational in the sense that it is linked to its ability to set something in motion. But knowledge always requires some kind of accompanying interpretive skill and a command of situational circumstances. In other words, knowledge – its acquisition (see [Carley, 1986]), dissemination and realisation – requires an active agent; a knower who “has a particular history, social location and point of view” [Oyama, 2000, p. 147]. Knowledge involves appropriation and transaction rather than mere consumption or assimilation. It requires something to be done in a context that is relevant beyond the situation in which the activity takes place. Knowledge is behaviour. *Knowing*, in other words, is (cognitive and collective acquiring) *doing* and the active accomplishment of multiple actors.

In contrast, the function of information is, as I would see it, both more restricted and more general. Information is something actors have and get. It can be reduced to “taking something in,” as something whose function it is to *signify*. Information can be condensed into quantifiable forms. It therefore is possible and sensible to conclude that someone has more information than another individual. It is much more difficult and contentious to conclude that someone commands more knowledge than another person.

In its compressed form, information can be more easily transferred. Information requires sophisticated cognitive skills, but makes fewer intellectual demands on potential users. Information is immediately productive but not necessarily politically neutral [Burke, 2000, pp. 116–148]. This is true, for example, of a map, a timetable, legal documents, charts, bibliographies, a census questionnaire, a directory, etc. The information is the equivalent of a document (cf. [Buckland, 2017, pp. 22–27]).



In many cases it is not necessary to master the conditions of its implementation, as is the case with knowledge as a capacity for action. Information is more general. It is not as scarce as knowledge. It is much more self-sufficient. Information travels and is transmitted with fewer contextual constraints. Information is separable. Information can be separated from meaning. It tends to be more discreet than knowledge. In addition, access to and use of information is not limited solely (or as immediately) to the actor or actors who come into possession of it. Information is not as situated as knowledge.

Compared to knowledge, information can have a very high depreciation rate over time. The information that stock X is a good buy quickly loses its value. The information that it is a good idea to buy the stock quickly loses value, and not just because of its widespread dissemination and the possibility that many people will follow the advice. In other words, the marginal utility of information can be quickly reached. However, if you want to make sure that information depreciates quickly, you should act on it and encourage others to act on it. For example, if you are informed that the price of a stock is likely to fall, acting on that information is likely to cause the price to fall even further, depending of course on the extent to which those stocks are sold.

However, the use of knowledge can also be quite limited and of limited value, because knowledge alone does not allow an actor to set something in motion. Information can be a step towards the acquisition of knowledge. Acquiring knowledge is more problematic. In general, a simple and fairly straightforward model of communication is appropriate for tracing the “diffusion” or transfer of information. Whether it is even possible to speak of a transfer of knowledge is doubtful. The “transfer” of knowledge is part of a process of learning and discovery that is not necessarily limited to individual learning. Knowledge is not a reliable “commodity”. It tends to be fragile and demanding, with in-built insecurities and uncertainties.

Good examples of information are price advertising and other market information such as product availability (signalling function). Such information is easy to obtain, easy to have, often robust, and can certainly be useful. In the context of the modern economy, it is very common and widely available, but the consequences of having such information as such are minimal. From the consumer’s point of view, price information, combined with knowledge of how the market works, may provide the ability to make some savings. However, price information does not provide any insight into the advantages or disadvantages of different economic systems within which such prices are generated. A comparative analysis of different economic systems and the benefits they may bring to different groups of actors requires special economic knowledge.

Not unlike language, information, especially on the supply side, has attributes that ensure that it is a public or free good, certainly to a greater



extent than is the case with knowledge. It is not enabling in the sense that it enables an agent to produce a product. Information merely reflects the characteristics of the products from which it is and can be abstracted. In the economic context, and more specifically in the context of market relations, information concerns the characteristics of the goods or services being traded (see also [Stiglitz, 2000, p. 1447]). Of course, the information of interest to the consumer or producer is by no means limited to the price of a good or service. The interest on the demand side of the transaction extends to many characteristics of the good, as well as to the (often hidden) behaviour of the item being paid for.

## Summing up

As I suggested at the beginning of this chapter, knowledge refers to and specifies attributes of the process or input, whereas information refers to attributes of the product or output (state). In other words, information is both input and output, whereas knowledge is only or primarily found as an input element in the production process. It may now be clearer why I make this distinction between knowledge and information. As Charles Lindblom [1995] explains in relation to the attributes of goods and services and the choices consumers make about goods and services: “In many cases in the marketplace, you have no control over and little knowledge about how and where the refrigerator was made, whether the workers were treated well, whether the process produced harmful waste, and the like. The consumer is usually informed about the price of the refrigerator, its energy efficiency, its life expectancy, its warranty, its colours, its capacity, its size and so on. None of the information about the refrigerator that is typically provided in one way or another in the marketplace allows you to find out about the process of building the refrigerator, let alone the possibility of building it yourself.”

## Appendix

### ChatGPT:

**Question:** *Please write an essay on knowledge as a capacity to act*

**Response:** Knowledge is a concept that has been explored and studied extensively in various fields, including philosophy, psychology, and education. Traditionally, knowledge has been defined as a set of beliefs or facts that an individual possesses. However, in recent years, there has been a growing recognition that knowledge is not just a matter of what



we know, but also what we can do with that knowledge. In this essay, we will explore the idea of knowledge as a capacity to act.

The capacity to act refers to the ability to use one's knowledge to accomplish a particular task or goal. It involves the application of knowledge in practical settings and the ability to adapt one's knowledge to new situations. In this sense, knowledge is not just a passive possession, but an active capability that enables individuals to make sense of their environment and take effective action.

The idea of knowledge as a capacity to act has important implications for how we think about education and learning. Traditionally, education has been viewed as the acquisition of knowledge and skills that can be applied in various contexts. However, this view often overlooks the importance of developing the capacity to act. Education should not just be about acquiring knowledge, but also about developing the ability to use that knowledge in meaningful ways.

In order to develop the capacity to act, individuals must be given opportunities to apply their knowledge in real-world situations. This can involve hands-on learning experiences, such as internships, apprenticeships, or service learning projects. It can also involve problem-solving activities that require individuals to apply their knowledge to novel situations.

In addition to providing opportunities for practical application, education must also focus on developing the metacognitive skills necessary for effective action. Metacognition refers to the ability to monitor and control one's own thinking and learning processes. It involves understanding how one's knowledge is structured and how it can be used in different situations. By developing metacognitive skills, individuals can become more effective learners and problem solvers.

The idea of knowledge as a capacity to act also has important implications for how we think about knowledge production and dissemination. In a knowledge-based economy, the value of knowledge is not just in what we know, but in what we can do with that knowledge. This has led to a greater emphasis on collaboration and the sharing of knowledge across different domains and disciplines.

In conclusion, knowledge is not just a matter of what we know, but also what we can do with that knowledge. The capacity to act is a crucial aspect of knowledge that enables individuals to use their knowledge effectively in real-world situations. Education must focus on developing this capacity through practical learning experiences and the development of metacognitive skills. By doing so, we can create a society that is better equipped to tackle the complex challenges of the modern world.

Generated on April 7, 2023



**ChatGPT:**

***Question: Act as if you are a sociologist and write an essay on knowledge as a capacity to act:***

***Title: Knowledge as a Capacity to Act: Unleashing Human Potential***

Introduction: Knowledge has long been revered as a powerful tool that empowers individuals and societies. Beyond the accumulation of information, knowledge possesses the transformative ability to catalyze action and shape the course of human affairs. In this essay, we will explore the concept of knowledge as a capacity to act and delve into its profound implications for individual agency, societal progress, and the pursuit of collective well-being.

Knowledge and Empowerment: At its core, knowledge represents the understanding and awareness of the world around us. However, the true power of knowledge lies in its capacity to empower individuals to take action. By possessing knowledge, individuals are equipped with the necessary tools to navigate their environment, overcome obstacles, and seize opportunities. This empowerment is derived from the ability to discern and make informed decisions based on acquired knowledge, ultimately enabling individuals to shape their own destinies.

The Acquisition of Knowledge: The acquisition of knowledge is a dynamic and ongoing process that involves various sources and methods. Formal education, through schools and universities, imparts foundational knowledge and equips individuals with specialized expertise. Additionally, informal learning through experiences, observations, and interactions with others also contributes significantly to our knowledge base. The accumulation of diverse knowledge broadens our perspectives, fosters critical thinking, and expands our capacity to act meaningfully in the world.

Knowledge and Social Change: Knowledge acts as a catalyst for social change by challenging existing norms, values, and power structures. Throughout history, the dissemination of knowledge has sparked revolutions, civil rights movements, and social reforms. The awareness of societal injustices, coupled with knowledge of alternative possibilities, emboldens individuals to mobilize for change. From the abolition of slavery to the fight for gender equality, knowledge has played a pivotal role in empowering marginalized groups and reshaping societal structures.

Knowledge and Innovation: Innovation is a manifestation of knowledge's capacity to act, as it leverages existing knowledge to create new possibilities. Advancements in science, technology, and the arts are driven by individuals who possess knowledge and the ability to apply it creatively. Through innovation, societies can address pressing challenges, improve living conditions, and shape a more sustainable future. Knowl-



edge enables individuals to envision new solutions, experiment with novel ideas, and take risks that push the boundaries of human progress.

**Knowledge and Ethical Responsibility:** The capacity to act that knowledge bestows upon individuals carries a corresponding ethical responsibility. Knowledge can be a force for both positive and negative outcomes, depending on how it is employed. Individuals must recognize their responsibility to utilize knowledge in ways that promote justice, equality, and the greater good. Ethical considerations should guide the application of knowledge, ensuring that the actions taken align with values that prioritize human dignity, environmental stewardship, and social harmony.

**Conclusion:** Knowledge is not a static entity confined to books or digital archives; it is a dynamic force that empowers individuals to shape their own lives and the world around them. As a capacity to act, knowledge has the potential to drive personal growth, inspire social change, foster innovation, and carry ethical responsibilities. Recognizing the transformative power of knowledge, we must strive to cultivate a society that values and promotes the acquisition, sharing, and responsible application of knowledge, thereby unlocking human potential and building a better future for all.

Generated May 26, 2023

### **ChatGPT:**

***Question: Act as if you are a sociologist of science and writer an essay on knowledge as a capacity to act***

***Title: Knowledge as a Capacity to Act:  
Exploring the Sociological Dimensions***

**Introduction:** As a sociologist of science, I am interested in examining the intricate relationship between knowledge and action within the context of societal structures and dynamics. In this essay, we will delve into the concept of knowledge as a capacity to act, emphasizing its sociological dimensions and shedding light on how knowledge influences human agency, social change, and the construction of reality.

**The Social Construction of Knowledge:** Sociology of science recognizes that knowledge is not an objective entity existing independently of society but is socially constructed. It is shaped by various social processes, including scientific communities, cultural values, power dynamics, and institutional frameworks. Knowledge is influenced by social factors such as biases, interests, and the distribution of resources. As a result, knowledge is not a fixed or universal truth but a dynamic product of social interactions and negotiations.

**Knowledge and Social Power:** Within societies, knowledge is unequally distributed and controlled, which gives rise to power differentials.



Those who possess knowledge often have a greater capacity to act and influence the social world. Power structures determine who gets to define what counts as knowledge, whose knowledge is valued, and who is marginalized or excluded. The ability to control and shape knowledge can reinforce existing social hierarchies or challenge them, making knowledge a critical tool for those seeking to enact social change.

**Knowledge as a Resource for Action:** Knowledge equips individuals and groups with the resources to act effectively in their social environments. It provides a framework for understanding and interpreting the world, enabling individuals to make informed decisions and navigate complex situations. In this sense, knowledge acts as a form of cultural capital that empowers individuals to engage in meaningful action and pursue their goals. The capacity to act is directly linked to the possession and application of knowledge.

**Knowledge and Collective Action:** The capacity to act is not limited to individuals but extends to collective endeavors. Shared knowledge serves as a basis for collective identity formation, mobilization, and the pursuit of collective goals. Social movements, for example, rely on shared knowledge to articulate grievances, develop strategies, and challenge dominant narratives. The capacity to act collectively is amplified when knowledge is shared, debated, and collectively produced, enabling social groups to challenge existing power structures and reshape societal norms.

**Knowledge, Technology, and Social Transformation:** Technological advancements have significantly expanded our capacity to act and transformed the ways in which knowledge is accessed, produced, and disseminated. Digital platforms, social media, and online networks have democratized access to knowledge, allowing marginalized voices to be heard and facilitating new forms of collective action. However, the proliferation of information and disinformation also presents challenges, as the veracity and reliability of knowledge become contested. Societal responses to these challenges will shape the future dynamics of knowledge and its capacity to act.

**Conclusion:** Knowledge as a capacity to act is a dynamic and socially constructed phenomenon that influences individual agency, collective action, and societal change. Recognizing the social dimensions of knowledge empowers us to critically engage with the power dynamics that shape its production, distribution, and utilization. By fostering inclusive and equitable access to knowledge, promoting diverse perspectives, and challenging existing power structures, we can harness knowledge's capacity to act for the betterment of society. As sociologists of science, we play a vital role in illuminating these dynamics and advocating for a more just and knowledge-informed world.

Generated May 26, 2023



## ChatGPT:

**Question:** *Act as if you are a sociologist and write an essay on AI and knowledge as a capacity to act*

**Title:** *AI and Knowledge: Exploring Knowledge as a Capacity to Act*

Introduction: The rapid advancements in artificial intelligence (AI) have transformed various aspects of human life, including the way we acquire and utilize knowledge. Traditionally, knowledge has been perceived as the accumulation of information and facts, but in the context of AI, it can be viewed as a capacity to act. This essay aims to explore the dynamic relationship between AI and knowledge, highlighting how AI systems have enhanced our capacity to act and the implications this has on society.

1. **Redefining Knowledge in the Age of AI:** In the age of AI, knowledge is no longer limited to static information stored in books or human memory. AI systems can process vast amounts of data, learn from patterns, and generate insights that humans might not have considered. This expanded definition of knowledge opens up new possibilities for problem-solving, decision-making, and innovation. It transforms knowledge into an active, dynamic force that empowers individuals and organizations to take informed actions.
2. **Enhancing Human Capacity with AI:** AI systems augment human capacity by providing access to vast repositories of information, enabling faster analysis, and generating valuable insights. Through machine learning algorithms and natural language processing, AI can process and understand unstructured data, such as texts, images, and videos. This capacity empowers individuals to make more informed decisions, whether in business, healthcare, or other domains. For example, AI-powered medical diagnostics systems can assist doctors in diagnosing diseases by analyzing patient data, leading to more accurate and timely treatments.
3. **Transforming Work and Productivity:** AI's capacity to act goes beyond mere information retrieval. AI-powered automation and robotics have the potential to revolutionize the workforce, transforming the nature of jobs and increasing productivity. As AI systems take over routine and repetitive tasks, human workers can focus on more complex, creative, and strategic activities. This shift can lead to increased efficiency, improved quality of work, and enhanced problem-solving capabilities.
4. **Ethical Considerations and Challenges:** While AI expands our capacity to act, it also raises ethical concerns and challenges. One major concern is the potential for bias in AI algorithms, which



can perpetuate existing social inequalities and injustices. Additionally, the reliance on AI systems for decision-making raises questions of accountability and responsibility. Ensuring transparency, fairness, and ethical guidelines in AI development and deployment is crucial to mitigate these concerns and ensure that the capacity to act provided by AI is used for the betterment of society.

5. **Societal Impact and Future Directions:** The integration of AI into various domains has profound societal implications. It affects industries, economies, and social structures. The transformative potential of AI in healthcare, education, transportation, and other sectors is vast, with opportunities for increased efficiency, accessibility, and innovation. However, it also demands continuous evaluation of its impact on employment, privacy, and human interaction. Striking a balance between AI capabilities and human values is crucial to harness the full potential of AI knowledge as a capacity to act.

**Conclusion:** Artificial intelligence has redefined knowledge as a capacity to act, enabling individuals and organizations to make informed decisions and take effective actions. AI systems enhance human capacity, transform work dynamics, and present opportunities for societal progress. However, ethical considerations and challenges must be addressed to ensure that the power of AI is harnessed responsibly. As AI continues to advance, it is vital to foster a collaborative and inclusive approach to ensure that the knowledge gained through AI contributes positively to the collective well-being of humanity.

## ChatGPT 2/2

**Question 2: Act as if you are a sociologist and write an essay on AI and knowledge as a capacity to act**

**Title: AI and Knowledge as a Capacity to Act:**

**Sociological Perspectives**

**Introduction:** In the realm of artificial intelligence (AI), the concept of knowledge extends beyond its traditional understanding as a collection of facts and information. Today, knowledge is increasingly seen as a capacity to act, enabling AI systems to perceive, reason, and make decisions autonomously. This sociological essay explores the intersection of AI and knowledge, shedding light on how AI's capacity to act is transforming our societies, institutions, and individual experiences.

1. **Redefining Knowledge in the AI Era:** In the context of AI, knowledge transcends the passive acquisition of information. Instead, it encompasses the ability to interpret, process, and apply that information in practical ways. AI systems possess the capac-



ity to accumulate vast amounts of data and employ sophisticated algorithms to derive insights and patterns. Consequently, knowledge becomes dynamic, adaptive, and responsive to real-world situations, empowering AI to act in ways previously reserved for human intelligence.

2. **AI and Transformations in Social Institutions:** AI's capacity to act has profound implications for social institutions such as education, healthcare, governance, and the labor market. In education, AI-powered adaptive learning systems offer personalized instruction, tailoring content and feedback to individual students' needs. Similarly, in healthcare, AI enables accurate diagnoses, precision medicine, and more effective treatment plans. These developments challenge existing structures and demand new modes of governance to ensure ethical, equitable, and accountable use of AI technologies.
3. **AI, Automation, and the Future of Work:** The rise of AI-driven automation raises questions about the future of work. As AI systems increasingly assume complex cognitive tasks, the nature of jobs and labor dynamics undergoes significant transformations. While AI can augment human capabilities, there are concerns about job displacement and socioeconomic inequalities. Sociologists argue that these changes necessitate reevaluating work's meaning, promoting reskilling and lifelong learning, and developing social policies that ensure a just transition into an AI-driven future.
4. **Individual Experiences and the Societal Impact of AI:** AI's capacity to act extends to individual experiences, shaping how we interact with technology and each other. Chatbots, virtual assistants, and social media algorithms demonstrate AI's ability to learn and simulate human-like behaviors, influencing our emotions, decisions, and beliefs. However, concerns arise regarding privacy, bias, and the potential for manipulation. Sociological inquiry into these areas sheds light on how AI impacts our autonomy, social relationships, and the construction of our identities.
5. **Societal Challenges and Ethical Considerations:** As AI's capacity to act expands, it raises critical ethical questions. Sociologists explore the inherent biases embedded in AI systems, the unequal distribution of AI benefits, and the impact on human agency and social cohesion. They advocate for interdisciplinary collaborations involving computer scientists, policymakers, ethicists, and sociologists to develop AI technologies that align with societal values, foster transparency, and ensure democratic participation.

**Conclusion:** The concept of knowledge as a capacity to act in the realm of AI has far-reaching implications for society. AI's ability to process information, reason, and make decisions challenges existing



notions of knowledge, transforming social institutions, labor markets, and individual experiences. As sociologists delve into the societal impacts of AI, it is crucial to address ethical concerns, foster inclusive and equitable practices, and actively shape the development and deployment of AI technologies to ensure their positive contributions to humanity.

Generated June 7, 2023

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