

## CHAPTER 6

# Communication Technologies: Means of Communication as Means of Production

Communication technologies are the means used in communication. This chapter discusses communication technologies from a materialist and critical theory perspective. To do so, the chapter introduces a typology of communication technologies (section 6.1), discusses communication technologies' roles in capitalism (6.2), and elaborates the notion of technological fetishism (6.3).

### 6.1. Types of Communication and Communication Technologies

John B. Thompson discerns three forms of communication: face-to-face interaction that is dialogical (e.g. a conversation with friends), mediated interaction that is dialogical (e.g. a phone call), and mediated quasi-interaction that is monological (e.g. mass media such as a radio and television broadcast or a newspaper article).<sup>1</sup> Building on and further extending Thompson's distinction to include digital communication, Andreas Hepp<sup>2</sup> distinguishes four types of communication: direct communication ('direct conversation with other people'), reciprocal media communication ('technically mediated personal communication with other persons [for instance, through the use of a telephone]', produced media communication ('the sphere of media communication classically identified by the concept of mass communication [newspaper, radio, TV]'), and virtualised media communication ('communication

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<sup>1</sup> John B. Thompson. 1995. *The Media and Modernity: A Social Theory of the Media*. Cambridge: Polity. p. 85

<sup>2</sup> Andreas Hepp. 2013. *Cultures of Mediatization*. Cambridge: Polity. pp. 64–68.

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by means of “interactive systems” created for that purpose’).<sup>3</sup> Friedrich Krotz, besides face-to-face communication, identifies three types of mediated communication: communication between humans via media (e.g. letters, telephone, online chat), communication with the media (e.g. television, the reading of texts), and interactive communication with robots and computers.<sup>4</sup>

Raymond Williams offers a somewhat different starting point for classifying communication and communication technologies. Williams draws a distinction between communication and communications.<sup>5</sup> Communication is the ‘passing of ideas, information, and attitudes from person to person.’<sup>6</sup> Communications are ‘the institutions and forms in which ideas, information, and attitudes are transmitted and received.’<sup>7</sup> Communication is a process and practice that takes place in human society.<sup>8</sup> In contrast, communications are not practices, but rather structures, systems, institutions, and forms. Communication and communications stand in a dialectical relationship: Humans create social relations through communication. And they communicate by making use of the means of communication (communications). Communications only have a meaningful use if they are employed and put to use by humans in the communication process. Communications enable and condition communication. The development of new communications is a social process that involves various actors (scientists, engineers, practitioners, etc.) and that is organised through communication processes focused on research and development. Table 6.1 shows a typology of communications based on Raymond Williams’ works.

Williams distinguishes between different social forms of communication. He identifies five forms of the means of communication: verbal communication, non-verbal communication, amplificatory communications, durative communications, and alternative communications. His typology differentiates between forms of communication that employ immediate human physical resources (verbal communication, non-verbal communication) on the one hand, and on the other hand, communications (= communication systems). Communications use non-human materials that human work produces. Communications

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<sup>3</sup> Ibid., p. 64.

<sup>4</sup> Friedrich Krotz. 2007. *Mediatisierung: Fallstudien zum Wandel von Kommunikation*. Wiesbaden: VS Verlag für Sozialwissenschaften. pp. 16–17, 90.

<sup>5</sup> Raymond Williams. 1976. *Communications*. Harmondsworth: Penguin Books. Revised edition.

<sup>6</sup> Ibid., p. 9.

<sup>7</sup> Ibid., p. 9.

<sup>8</sup> Raymond Williams. 2014. *On Culture & Society: Essential Writings*, ed. Jim McGuigan. London: Sage. p. 175.

**Table 6.1:** Raymond Williams' typology of the means of communication<sup>9</sup>

Communication based on immediate human physical resources of the human body	Verbal communication	Spoken language, written language, poetry, songs, etc.
	Non-verbal communication	Body language, dance, postures, gestures, facial expressions, etc.
Communications based on non-human materials socially produces by human labour	Amplificatory communications	Megaphone, television, radio, cable and satellite television, etc.
	Durative communications (storage)	Seals, coins, medals, paintings, sculptures, carvings, woodcuts, written texts, printed texts, sound recordings, film, video, cassettes, discs, etc.
	Alternative communications	Alternative speaking, listening, seeing, recording featuring democratic communal use, self-management, autonomy, collective cultural production: e.g. free radio stations, etc.

include amplificatory communications, durative storage communications, and alternative communications.<sup>10</sup>

Williams shows how in the course of history the dominant class has taken control of durative and amplificatory communication systems. The consequence has been the concentration and monopolisation of the communications industry. Such communications monopolies have not just been monopolies of economic power, but also monopolies of voice and access.

Williams identifies some key features of communication and communications systems. His typology faces the problem of overlapping categories. Computer networks are examples of the overlap of categories that Williams identifies. A computer network has the capacity to *amplify* the visibility given to information online. Computer systems such as web hosting servers *store* content and meta-data. Individual computers in a computer network are *storage* media that store content as digital data that is transmittable at high speed.

<sup>9</sup> Based on: Raymond Williams. 1980/2005. *Culture and Materialism*. London: Verso Books. pp. 53–63. Raymond Williams. 1981. *Culture*. Glasgow: Fontana-Collins. Chapter 4. This table was first introduced in: Christian Fuchs. 2017. Raymond Williams' Communicative Materialism. *European Journal of Cultural Studies* 20 (6): 744–762.

<sup>10</sup> For an overview of Williams' theoretical approach to communication, see: Christian Fuchs. 2017. Raymond Williams' Communicative Materialism. *European Journal of Cultural Studies* 20 (6): 744–762.

Computer networks form *alternatives* to human practices because they can record, store, and transmit information collected from human activities and thereby make information about society durable. Computer networks are often organised as commercial endeavours yielding profit. Most users pay money to profit-oriented Internet Service Providers for gaining access to networked resources and the Internet. But there are also *alternative*, commons-based computer networks (so-called ‘community networks’) that do not consider communications networks as commodities, but as common goods.<sup>11</sup>

Communication needs communications in order to organise the production, distribution and consumption of information. The production, distribution, and consumption of information can be based on nature, human practices, or technological systems. The computer network is a communication technology in which we find a convergence of the production, the distribution and the consumption of information. Digital technologies allow information to take on a universal format. In addition, the computer network enables the production, distribution, and consumption of information with the help of one technology. So, the computer and digitisation enable the convergence of the formats and organisation of communication. Another dimension of the universalisation of communication is that the computer enables consumers to be producers of information. The production and consumption of information converge in one technology. The computer is a universal machine for universal communication.

Traditionally, there was a distinction between machines that are means of production and media that are means of communication. Means of communication are means of production because when information is communicated, then recipients produce meanings by interpreting information. But the computer goes beyond this basic understanding of means of communication as means of production. The computer is different from television, the radio, the cinema, the newspaper, and the book in that it enables users to consume, produce, and publish information. Computer-mediated communication is not purely technological: Computer use is based on human activities (writing, typing, human speech, bodily movements) by which digital data is created. The computer is operated as a combination of the human body, the human mind, and computer technology. It combines several of the communication types identified by Williams. Technologically mediated communication helps to stretch communication over spatial and temporal distances. Communication technologies advance the spatio-temporal distancing and globalisation of communication that disembeds communication from local contexts and re-embeds it into other contexts. Mediated communication is always based on and grounded in human bodily and mental activities.

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<sup>11</sup> See: Christian Fuchs. 2017. Sustainability and Community Networks. *Tele-matics and Informatics* 34 (2): 628–639.

Marisol Sandoval elaborated a systematic typology of communication technologies (see figure 6.1).<sup>12</sup> In contrast, most other media typologies are theoretically ungrounded and arbitrary. Sandoval relates different types of media to the processes of the production, distribution, and consumption of information. This distinction between production, distribution and consumption is characteristic of political economy approaches. In the case of communication and communications, information and symbols are the goods that are produced, disseminated, and consumed. To these three dimensions Sandoval adds a fourth, namely the prosumption (productive consumption) of information that is especially enabled by digital media. Like Williams, Sandoval distinguishes communication technologies based on the question of whether communication is organised with the help of the human mind and body or uses external technologies (in addition to the human mind and body). But Sandoval combines this distinction with a political economy focus. The result is a systematic typology of five types of communication technologies:

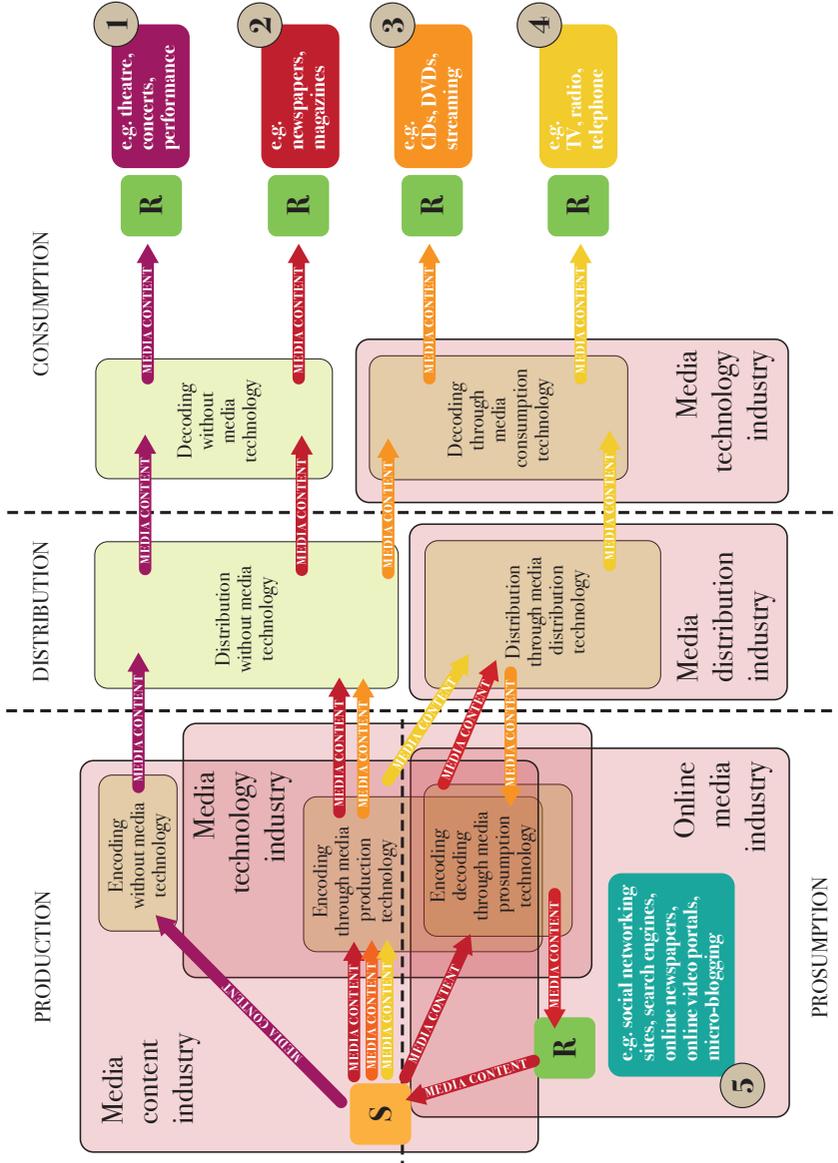
In the first case no media technology is involved for production, distribution, or consumption. [...] In the second case media technology is used for encoding content, but distribution and consumption is possible without media technology, as is the case with all print media. In the third case media technology is needed for both encoding and decoding of media content; distribution, however, takes place without the involvement of media technology. [...] In the fourth case all stages of the media production, distribution and consumption processes are based on media technology. [...] With computers and the Internet a fifth way of circulating media content has emerged, which allows the use of the same media technologies for both production and consumption of media content. These technologies can therefore be called media prosumption technologies. Based on these technologies a more interactive way of producing media content has emerged in which all users have the technological means to not only consume but also produce media content.<sup>13</sup>

Table 6.2 summarises the main dimensions of the five types of communication technologies identified in figure 6.1.

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<sup>12</sup> Marisol Sandoval. 2014. *From Corporate to Social Media. Critical Perspectives on Corporate Social Responsibility in Media and Communication Industries*. Abingdon: Routledge. pp. 42–50.

<sup>13</sup> *Ibid.*, p. 48.



**Figure 6.1:** Five types of communication technologies.<sup>14</sup>

<sup>14</sup> Based on: Sandoval, From Corporate to Social Media. Critical Perspectives on Corporate Social Responsibility in Media and Communication Industries. p. 47.

Table 6.3. presents a classification of communication technologies according to the senses and body parts primarily used for their production and reception. It also shows the way time and space are utilised.

**Table 6.2:** Five types of communication technologies.

	<b>Role of mediation by technology</b>	<b>Examples</b>
<b>Primary communication technologies</b>	Human body and mind, no media technology is used for the production, distribution, reception of information	Theatre, concert, performance, interpersonal communication
<b>Secondary communication technologies</b>	Use of media technology for the production of information	Newspapers, magazines, books, technologically produced arts and culture
<b>Tertiary communication technologies</b>	Use of media technology for the production and consumption of information, not for distribution	CDs, DVDs, tapes, records, Blu-ray disks, hard disks
<b>Quaternary communication technologies</b>	Use of media technology for the production, distribution and consumption of information	TV, radio, film, telephone, Internet
<b>Quinary communication technologies</b>	Digital media prosumption technologies, user-generated content	Internet, social media

**Table 6.3:** Forms of communication and communication technologies classified according to the role of human senses, the body, the mind, space, and time<sup>15</sup>

<b>Communication</b>	<b>Production</b>	<b>Reception</b>	<b>Formats</b>	<b>Time</b>	<b>Space</b>
Print/visual communication	Brain, hands	Brain, eyes	Newspaper, journal, books, pamphlets, leaflet, comics, satirical prints, flyers, visual art, graffiti, dress, textiles, pins, buttons, stickers, murals, etc.	Asynchronous	Distance
Audio communication	Brain, mouth	Brain, ears	Radio, telephone	Synchronous	Distance

(Contd.)

<sup>15</sup> Based on: Christian Fuchs. 2011. *Foundations of Critical Media and Information Studies*. London: Routledge. p. 93 (table 3.3).

**Table 6.3:** (Continued)

Communi- cation	Production	Reception	Formats	Time	Space
Audio communi- cation	Brain, mouth, body	Brain, ears	Face-to-face communication, Conversation, talks, lectures, singing songs	Synchro- nous	Presence
Audio communi- cation	Brain, mouth, body	Brain, ears, body	Concerts, choir, dancing	Synchro- nous	Presence
Audio communi- cation	Brain, mouth, body	Brain, ears, body	Sound recordings (records, music cassettes, CD, MP3, etc)	Asynchro- nous	Distance
Audio- visual com- munication	Brain, mouth, body	Brain, eyes, ears	Theatre, perfor- mance, happening	Synchro- nous	Presence
Audio- visual com- munication	Brain, mouth, body	Brain, eyes, ears	Film, video	Asynchro- nous	Distance
Audio- visual com- munication	Brain, mouth, body	Brain, eyes, ears	Live television	Synchro- nous	Distance
Multi- media, computer, Internet communi- cation	Brain, hands, mouth, body	Brain, eyes, ears	Digital text, digital audio, digital video, real time text/ audio/video chat, online radio, online TV, wikis, blogs, Internet art, etc	Synchro- nous or asynchro- nous	Distance

Next, we will discuss what roles communication technology has in capitalism.

## 6.2. Communication Technology's Roles in Capitalism

Technology is in general a means that humans use in order to achieve particular aims such as survival, organisation, and making meaning and sense of the world. Domination and class are societal relations in which humans are not ends in themselves, but means and instruments. The word 'technology' goes back to the Greek word *technê* (τέχνη) – 'an art or craft'.<sup>16</sup> Since the

<sup>16</sup> Raymond Williams. 1983. *Keywords: A Vocabulary of Culture and Society*. New York: Oxford University Press. Revised edition. p. 315

19<sup>th</sup> century, the word ‘technology’ has increasingly been used as meaning science and the application of science in the form of machines as systems of production.<sup>17</sup> The industrial revolution resulted in a changed meaning of the word ‘technology’ from subjective practices towards objects, things, and systems. It has undergone a reification.

For Aristotle, *technê* is one of the five powers of thought/the soul: *technê* (art), *episteme* (knowledge), *phronesis* (practical judgement), *sophia* (wisdom), and *nous* (intellect).<sup>18</sup> Aristotle understands *technê* as skilled making and defines it as ‘a particular active condition involving reason that governs making’ and ‘involving a true rational understanding that governs making.’<sup>19</sup> He gives the example of the art of building a house. *Technê* is concerned with ‘the process of coming into being,’ which means that it makes and creates something.<sup>20</sup> It is different from nature that makes itself or comes into being by necessity. In *technê*, ‘the source is in the one who makes it and not in the thing that is made.’<sup>21</sup> So, Aristotle argues that the ground and rationality that governs *technê* comes from the maker/producer and not from an external source.

It is not a problem as such that technological systems have emerged as a means of production in modern society. The real problem is modernity’s class character. The problem that workers face is that the means of production are not, as in the case of *technê*, collectively controlled and owned by themselves (self-managed companies), but are capital that the capitalist class owns. The historical transformation of technology from art towards technological systems has taken place in the context of the emergence of the capitalist mode of production, where the ownership of the means and results of production is privatised. As a consequence, capital controls technology, and all other means of production and the conditions of production are alienated from the immediate producers. Technology thereby acts as an alien system under the control of capital that is used as a means of exploitation, control, surplus value production and capital accumulation. In capitalism, the source of control of the means of production, including technology and the economy as a whole is not, as in *technê*, ‘in the one who makes it,’ but in the one who owns it, the capitalist. In a socialist society, technology is collectively controlled by the immediate producers and therefore becomes a form of *technê*. Marx formulates this inversion in the following way: In the capitalist system,

all means for the development of production undergo a dialectical inversion so that they become means of domination and exploitation

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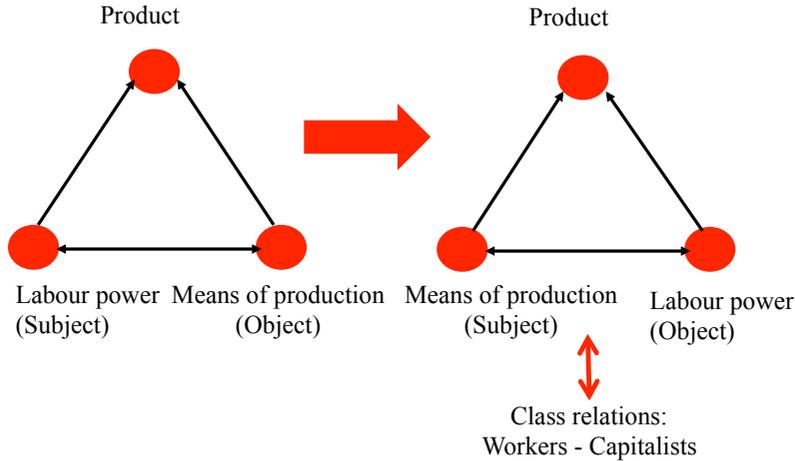
<sup>17</sup> Ibid.

<sup>18</sup> Aristotle. 2002. *Nicomachean Ethics*. Translated by Joe Sachs. Indianapolis, IN: Focus. § 1139b.

<sup>19</sup> Ibid., § 1140a.

<sup>20</sup> Ibid., § 1140a.

<sup>21</sup> Ibid., § 1140a.



**Figure 6.2:** The inversion of means and ends and of subject and object in capitalism: Technology as capitalist means of domination and exploitation.

of the producers; they distort the worker into a fragment of a man, they degrade him to the level of an appendage of a machine, they destroy the actual content of his labour by turning it into a torment; they alienate [*entfremden*] from him the intellectual potentialities of the labour process in the same proportion as science is incorporated in it as an independent power; they deform the conditions under which he works, subject him during the labour process to a despotism the more hateful for its meanness; they transform his life-time into working-time<sup>22</sup>.

Figure 6.2 visualises the capitalist inversion of means and ends. The object – capital – acts as the subject and the workers are not subjects, but exploited objects of capital.

Because of the inversion of means and ends, labour is in capitalism ‘*absolute poverty*: poverty not as shortage, but as total exclusion of objective wealth.’<sup>23</sup> But without labour, capital cannot exist because labour produces capital. Therefore, labour has an immense power potential because it is ‘the *general possibility* of wealth as subject and as activity.’<sup>24</sup> Labour therefore is a ‘contradictory being.’<sup>25</sup>

<sup>22</sup> Karl Marx. 1867/1976. *Capital. A Critique of Political Economy. Volume One*. London: Penguin. p. 799

<sup>23</sup> Karl Marx. 1857/58/1973. *Grundrisse*. London: Penguin. p. 296.

<sup>24</sup> *Ibid.*, p. 296.

<sup>25</sup> *Ibid.*, p. 296.

It is the subject of production, but at the same time the not-subject of the means of production that are owned by capital.

With the rise of modern technology under capitalist conditions, the logic of instrumental reason has become dominant.<sup>26</sup> Humans are instrumentalised in two ways: First, they are used by those in power as means for accumulating capital, power, and reputation. Second, ideologies aim at instrumentalising human consciousness by trying to manipulate and shape humans in such a way that they agree to, do not resist, and love their own oppression and exploitation. In *Capital Volume 1*, Marx describes in the chapter 'Machinery and Large-Scale Industry' how capitalist technology's rise was associated with the inversion of means and ends:<sup>27</sup> Technology became a means for the organisation of exploitation, control and surplus value production. Humans became an appendage to the machine, so that the objects as capital control the subjects. In capitalism, humanity is not the end, but humans are rather the means that as a resource is exploited with the help of technology for the end of capital accumulation. In capitalism, the workers in the labour process are not in control of the four Aristotelian causes: the material, the efficient, the formal and the final cause (see chapter 4, section 4.1). Capital controls and shapes these causes. Capital controls the means of production (material cause), management commands the workforce (efficient cause) and the workers' behaviour in the labour process (formal cause), and capital owns the final products that are not merely use-values, but predominantly commodities that yield profit in the capital accumulation process (final cause).

Knowledge workers use their brains, digital technologies, and other technologies as means of production. They have to be highly inventive and creative in order to produce artworks, designs, software, music, films, videos, images, animations, communication strategies, etc. Rosalind Gill characterises labour in the culture and digital industry as featuring self-determination and love of the work combined with short-term, precarious, insecure labour, a long-hours culture, low payments, and a lack of work-life-balance.<sup>28</sup> The content of labour may not feel alienated, but the conditions of labour are objectively alienated.

In conceiving the relationship between communication technologies and society, there are two extremes: Technological determinism reduces the relation to technology. It sees technology as the determining factor of society. Sociological determinism sees no relative autonomy of technological dynamics, but rather

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<sup>26</sup> Max Horkheimer. 1947/1974/2004. *Eclipse of Reason*. London: Continuum.

<sup>27</sup> Marx, *Capital. A Critique of Political Economy. Volume One*, chapter 15.

<sup>28</sup> Rosalind Gill. 2011. 'Life is a Pitch': Managing the Self in New Media Work. In *Managing Media work*, ed. Mark Deuze, 249–262. London: Sage. Rosalind Gill. 2002. Cool, Creative and Egalitarian? Exploring Gender in Project-Based New Media Work in Europe. *Information, Communication & Society* 5 (1): 70–89.

argues that effects are fully built into technology by humans and therefore are predictable and controllable. The alternative to these two approaches is a dialectic of technology and society that argues that technologies are produced by humans in society and that technologies enable and constrain production in society so that both technological and social dynamics are created by human practices, but because of their complexities are to a certain degree unpredictable. A similar dialectic concerns the assessment of the effects of technology on society: Technological optimists argue that technologies necessarily have positive effects on society, whereas technological pessimists hold that technologies create negative effects on society. Dialectical positions assume that technology in an antagonistic society has an antagonistic character and antagonistic effects. Technology does not have only one clearly determinable impact on society, but multiple ones that stand in contradiction.

There is also a dialectic of the exploitative and emancipatory aspects of technology's effects on society. In capitalism, technology plays a role as a means of relative surplus value production. It is also used as a means of control and surveillance. But technology in capitalism also advances the antagonism between the productive forces and the relations of production, so that germ forms of a commons-based society emerge that cannot be realised within capitalism. Within private property relations, this antagonism forms one of the factors contributing to economic crises. As a consequence, liberation from capital requires both the fundamental transformation of society and the redesign of technology. Modern technologies as such have the potential to reduce necessary labour time, abolish toil, increase the amount of self-determined free time beyond necessity, and help advance a good life and wealth for all. But under capitalist conditions, technology is a means of control and exploitation that advances the crisis-proneness and antagonisms of capitalism. Technology deepens the capitalist antagonisms that are ultimately all class antagonisms, but at the same time create socialist potentials. A negative dialectic mediates this dialectic of capitalist reality and socialist potentials of technology, so that technology in capitalism is a destructive force that deepens and advances exploitation, domination, precarious life and labour, unemployment, and crisis-proneness.

There are a number of important roles of technology in capitalism:

- *Dehumanisation*: Capitalism results in dehumanisation. It treats humans like dead objects, things, and machines for the production of capital.
- *Alienation*: The capitalist application of technologies interacts with labour's alienation. Workers are thereby appendages to the machine. Capitalist technology is alienated technology and class technology.
- *Fixed constant capital*: In capitalism, technology is fixed constant capital. It is a means for the production of relative surplus value, i.e. for the increase of productivity that goes along with an intensification of the exploitation of labour. Fixed constant capital is also employed as means of surveillance and control of workers.

- *Relative surplus value production*: A number of methods are used by capitalists in order to try to produce more commodities, value and profit per unit of time: co-operation, the division of labour, and machinery.<sup>29</sup> Technology plays a key role in capitalism as a means of relative surplus value production. It transforms the production process qualitatively.
- *The antagonism of productive forces and relations of production*: The antagonism between the relations of production and the productive forces is a source of crises of capitalism. Technology in capitalism is embedded into an antagonism between necessary labour-time and surplus labour-time. This antagonism on the one hand advances the potentials for communism and well-rounded individuality. On the other hand, it deepens the potentials and realities of crisis, precarious life and labour, unemployment, overtime, and the uneven distribution of labour time.
- *The general intellect*: Modern technology stands in the context of capitalism's need to increase productivity. Capitalism's need for technological advances and the increase of productivity has advanced the importance of science and technology and along with it of knowledge labour in the capitalist economy. Marx speaks in this context of the general intellect – 'general social knowledge' that becomes a direct productive force.<sup>30</sup> The increasing importance of knowledge and communicative labour in capitalism results from the development of the productive forces.
- *The division of labour*: Capitalist technology has a class character, which means that it is embedded in the relation between capital and labour and along with class relations into various divisions of labour: the international division of labour, the gender division of labour, the geographical division of labour between town and country as well as between developing and developed countries, the division of labour between labour and management, the division of labour between mental and manual labour, etc.
- *Social problems*: The capitalist employment of technology contributes to social problems such as overwork, unemployment, stress, workplace injuries, precarious labour, work surveillance, etc.
- *Technology and class struggles*: Technology does not determine society, but is rather embedded in class struggles. Technology is not the cause, but a means and result of social and societal change. The application of modern technology is contested. Its impacts are subject to the outcome of class struggles.
- *Contradictions of technology, the dialectic of technology and society*: Technology in capitalism has contradictory effects on the economy and society.
- *Technology and socialism*: Socialism requires highly productive technologies in order to abolish wage-labour and enable a post-scarcity society

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<sup>29</sup> Marx, *Capital. A Critique of Political Economy. Volume One*, Chapters 13, 14 and 15.

<sup>30</sup> Marx, *Grundrisse*, p. 706.

that is built around freely determined activities beyond compulsion and necessity.

- *The globalisation and acceleration of capitalism*: In order to increase profitability, capital aims to accelerate the speed of production, distribution, and consumption. It also tries to locate production in places where the conditions of production are best in order to yield profit. The effects are the globalisation and acceleration of capitalism. The development of means of information and communication stands in a dialectical relation to the globalisation and acceleration of capitalism.

Technology also has an ideological role in capitalism. In the next section, we discuss this ideological role as technological fetishism.

### 6.3. Technological Fetishism

Capitalism's commodity structure has a particular ideological appearance that Marx terms the fetishism of commodities. Because capitalist transactions such as the sales process and consumption are mediated by commodities and money, humans do not immediately see the underlying social relations of production, i.e. the class relations, the labour processes, and the workers that underpin the production of commodities. The social relations of production disappear behind the thing-character of the commodity and money. The 'social relation between' humans takes on 'the fantastic form of a relation between things'.<sup>31</sup> That which exists in the capitalist economy – class relations, exploitation, exchange, etc. – therefore appears as 'socio-natural properties'.<sup>32</sup> Commodity fetishism is a structure that makes capitalism appear natural, unhistorical, and a necessity. It therefore has ideological implications. Commodity fetishism is an ideology of naturalisation built into the economic structures of capitalism.

Fetishism is not limited to the commodity and money, but extends into phenomena such as the state, labour, ideology, nationalism, and technology. Technological fetishism is an ideology that makes capitalist technology appear natural and without alternatives. In his book *History and Class Consciousness*, Georg Lukács describes how in capitalism, technologies are turned into fetish objects. He speaks of 'the exploitation for particular human ends (as in technology, for example) of [...] fatalistically accepted and immutable laws'.<sup>33</sup> Technological fetishism distorts technology's 'true objective nature by representing its function in the capitalist production process as its "eternal"

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<sup>31</sup> Marx, *Capital. A Critique of Political Economy. Volume One*, p. 165.

<sup>32</sup> *Ibid.*, p. 165.

<sup>33</sup> Georg Lukács. 1923/1971. *History and Class Consciousness*. London: Merlin. p. 38.

essence.<sup>34</sup> Technological fetishism does not see and present capitalist technology as historical, changeable, antagonistic and a site of class struggles, but rather as unhistorical, unchangeable, one-dimensional, and unitary. Lukács explicates a critique of technological fetishism in his review of Nikolai Bukharin's book *Historical Materialism: A System of Sociology*. Lukács contests the idea that 'the development of society depends on technique' and argues against separating technology 'from the other ideological forms [as] a self-sufficiency from the economic structure of society'.<sup>35</sup> Such assumptions constitute a 'false "naturalism"' and technological fetishism.<sup>36</sup> Lukács analyses technological determinism as technological fetishism.

There are some typical characteristics of technological fetishism:

- *Autonomy*: Technology is presented as being a force that is autonomous from society's power structures. Technology is not situated in society as totality. Capitalist technology's situatedness in class structures, exploitation, and domination is neglected.
- *Subjectivity*: Technology is presented as a subject that acts. Human actors are neglected or their role is downplayed. The purpose of this ideological move is to reify technological developments as inevitable, unchangeable, unavoidable, and irreversible by presenting them as independent of human will and action.
- *Claims of revolution*: Technological developments are presented as revolutionary. It is assumed that they bring about rapid and fundamental changes of everything. The goal of this strategy of presentation is to ensure that humans do not question or attempt to reverse new technologies.
- *Technology as one-dimensional cause*: Technology is said to be the cause of changes in society. It is disregarded how power structures and social contradictions shape changes.
- *Technological optimism/pessimism*: Changes in society that stand in the context of technology are said to be either purely positive (technological optimism) or purely negative (technological pessimism).

Technological determinism presents machines as autonomous actors that determine the development of society. The optimistic version of technological determinism (technological optimism) is an ideology that propagates the love and worship of machines. Machines are presented as a modern version of God that is said to solve all problems. In technological pessimism, technology is presented as a modern worldly Satan that causes evils in society. In technological optimism, it is argued that machines have to result in positive developments of society. In technological pessimism, it is argued that machines necessitate negative features of society.

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<sup>34</sup> Ibid., p. 153.

<sup>35</sup> Georg Lukács. 2014. *Tactics and Ethics, 1919–1929*. London: Verso. p. 137.

<sup>36</sup> Ibid., p. 137.

Raymond Williams argues that technological determinism assumes that technologies drive history and society's development. Such accounts argue that '[t]he steam engine, the automobile, television, the atomic bomb have *made* modern man and the modern condition. In *technological determinism*, [...] [t]he new technologies are invented as it were in an independent sphere, and then create new societies or new human conditions.'<sup>37</sup> Williams stresses that the development and use of technology is shaped by 'social, political and economic intention.'<sup>38</sup> Such intentions 'set limits and exert pressures, but neither wholly control nor wholly predict the outcome of complex activity.'<sup>39</sup> For Williams, there is neither technological determination of society nor social determination of technology, but a relative unpredictability of technological and societal development, in which economic, political and ideological forces exert pressures and have conditioning influences. Technology as a complex system has dynamics that can sometimes result in unforeseen events such as technological failures and accidents. There is a dialectic of technology and society and a dialectic of chance and necessity of technological development.

In a truly free society, modern technology must be dialectically sublated (*aufgehoben*). In sublation, capitalist technology is at the same time eliminated, preserved and lifted to a new quality of existence. The sublation of capitalist technology and capitalism, and technology and society's redesign, would help to solve society's problems and heal its wounds. A truly free society has to abolish repressive uses of technology in general and communication technologies in particular. It needs to go from the repressive to the emancipatory design and use of technology.

In *History and Class Consciousness*, Lukács develops a critique of quantification. He argues that quantification is at the heart of capitalist society and therefore also of reified, bourgeois consciousness. It lies in the 'nature of capitalism to' reduce 'the phenomena to their purely quantitative essence, to their expression in numbers and numerical relations.'<sup>40</sup> It lies in the logic of accumulation that underpins capitalism that there is a structural need for dominant actors to increase the quantity of capital, power and reputation in order to remain dominant. The more the logic of accumulation and thereby commodification and bureaucracy come to control everyday life, the more there is a need to control and assess the status of the managed systems in order for the dominant groups to remain in power.

Capitalism uses the sciences in order to create methods for assessing and optimising investments, labour-time, capital accumulation, commodities, power,

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<sup>37</sup> Raymond Williams. 1974/2003. *Television: Technology and Cultural Form*. New York: Routledge. pp. 5–6.

<sup>38</sup> *Ibid.*, p. 133.

<sup>39</sup> *Ibid.*, p. 133.

<sup>40</sup> Lukács, *History and Class Consciousness*, p. 6.

etc. Capitalism is the society of capital accumulation. The logic of accumulation also shapes politics and culture in capitalist society. Capitalist society is about the accumulation of capital, decision-power and reputation. In order to accumulate, one needs to evaluate the current status and existing quantities in order to implement strategies of growth. At the end of an assessment or measurement, there are quantifications that help to identify strategies for how to increase accumulation. Capitalism has to continuously develop new forms of rationalisation and production in order to increase productivity, reduce costs and accumulate capital. The history of capitalist technology is therefore a history of rationalisation and the development of ever newer methods of quantification.

The logic of computing and quantification is an anti-dialectical reductionism. The bourgeois belief in the power of quantification and the natural sciences is reflected in the ideology of mechanical determinism. Critical thought in contrast stresses human qualities such as, for example, humans' capacity to change the world and make it their common world that benefits all. That reification uses quantitative logic that stems from science does not mean that all science is reified or that we only can have reified technologies.

Reified technology is based on an instrumental logic of quantification so that its use means that capitalism or bureaucracy subsume human activities and destroy human solidarity. But modern technology has also created new capacities for humans to co-operate and for human socialisation. Socialist society and socialist technology do not mean that we abolish computers and calculations, but that we transform design so that technology is human-centred and humans collectively control its use and design. Quantification is then subsumed under humanism. Its goal then is that it helps enhance the flourishing of humans, society and nature. It then aims at enabling human beings to fully realise their individual and collective potentials.

Figure 6.3 shows three approaches for conceptualising the relationship of technology and society. Technological determinism assumes that technologies are the cause of changes in society and that technology determines changes in society. It reduces the relationship of society and technology to technology. There are techno-optimistic and techno-pessimistic versions of technological determinism. The approach of the social construction of technology is a type of social determinism. It assumes that causes and uses are socially designed into technology. Such an approach does not give enough attention to the relative unpredictability of technology's uses, consequences and impacts on society. Social construction approaches reduce the relationship of technology and society to society.

In dialectical approaches, technology and society stand in a contradictory relation. In antagonistic society, there are often antagonistic potentials and effects of technology's use on society, i.e. impacts that stand in contradiction to each other. Society enables, constrains, and conditions the invention process, the design process and the engineering of technology. Technology conditions society, society conditions technology. Society's



then this means there are at least two contradictory tendencies. Often, there are multiple tendencies of technological effects on society that co-exist or stand in contradiction to each other. Which potentials of technology use are realised depends on society's power structures, how conflicts of interest and social struggles develop. The way conflicts and struggles shape (or in the case of their forestallment do not shape) the design and use of technology is an important aspect of the technology-society dialectic.

#### 6.4. Summary and Conclusions

We can summarise this chapter's main findings:

- Communication always involves the use of the human body and the human mind. In many cases, it also involves the use of communication systems (communications). One can distinguish different types of communication technologies based on the question of whether or not for each of the three dimensions of the production, distribution and consumption of information only the human body and mind or also communications are used.
- 'Technology' comes from the Greek word *technê* that designates the process of skilled making, where the making is shaped by the maker or group of makers. In capitalism, technology is a thing and means of production that is not controlled collectively by the workers, but by capitalists. Technology is fixed constant capital that is used as a means of exploitation, relative surplus value production, control and domination. Capitalism is based on a reversal of means and ends: Capital is the end that instrumentalises and exploits workers as a means for capital accumulation. Technology serves under the rule of capital as a means of exploitation and domination. In capitalism, technology is governed by instrumental reason.
- Technological fetishism is an ideology that presents technological systems as autonomous subjects that are the cause of changes in society, bring about revolutionary changes and have one-dimensional effects. Technological optimism and technological pessimism are two versions of technological fetishism. In the analysis of how technology and society are related, the dialectic of technology and society is an alternative to technological determinism and social constructionism.
- A socialist society entails the collective control of the immediate producers over the means of production, including technologies. Technology thereby turns from a means of exploitation into *technê* as a means that the producers collectively control, shape and use.

In the context of the analysis of communication in society, there is again and again talk about the information society or the communication society. The next chapter discusses whether and in what respect these categories make sense for a critical theory.