1. On the Political Economy of Transport

Transport is the most important subsystem of modern, highly mobile societies, which makes it all the more astonishing that the *grand seigneur* of systems theory, Niklas Luhmann, does not mention this subsystem at all. Possibly he was simply not interested in the topic, or perhaps Luhmann had an inkling of the difficulties he would run into with the transportation system. After all, transport is particularly difficult to delineate from other subsystems, such as the health, education, legal or economic systems. Rather, the transportation system is situated transverse to all other social subsystems; it constitutes their basis and is at the same time influenced by them.

Transport ensures the cohesion of modern capitalist societies and is in every respect vital for what Luhmann calls compatibility or connectivity (*Anschlussfähigkeit*). In the field of transport studies, the term "forced mobility" has thus acquired wide currency (cf. Linder et al. 1975). However, using the terms "transport" and "mobility" as synonymous points to a conceptual ambiguity that is still prevalent today. For forced *mobility* is usually used to describe people being forced to use cars due to a lack of alternatives, but it actually refers to being forced to use a certain form of *transport* (cf. Wittwer 2014). Precision thus requires us to speak in terms of the forced use of cars as a means of transportation. Therefore, a conceptual distinction should be made between transport as physical movement, which is reflected in the use of space, and mobility as potential mobility, which is measured by the range of opportunities for social participation (cf. Schwedes et al. 2018). A person who is dependent on commuting a hundred kilometres to work every day in their own car is

then no more mobile than someone who walks to work in a town or city. The former could even be a low-income earner who sets out day after day for one or more mini-jobs and whose income permits only very limited participation in society. By contrast, the latter could possibly be a young, well-educated city dweller who has well-paid job nearby that in turn allows him to take full advantage of increasingly expensive urban life. In this juxtaposition, we see a significant divergence between transport and mobility: while the commuter generates a high volume of (car) traffic, but as a result achieves only a low level of social participation and is thus only marginally mobile, in the case of the *flâneur*, the volume of (foot)traffic remains extremely limited, while at the same time the person in question is very mobile because he or she has a wide range of potential opportunities for social participation. Between these two extremes, there is a multitude of very different configurations of the relationship between transport and mobility, culminating in the case where both are aligned and the degree of social participation correlates directly with the volume of traffic.

All of this can be adequately described in Luhmann's terms without, however, understanding why in modern, highly mobile societies social participation is increasingly bound to a growing volume of traffic. To do so, it is necessary to take into account the tight interconnections of the transportation system with the other social subsystems mentioned at the beginning, in which the coupling of the economy and transport plays an especially prominent role. Transport is the medium of capitalist socialisation – a mode of socialisation which, for the first time in human history, is characterised by constant change: "The bourgeoisie cannot exist without continually revolutionising the instruments of production, thereby the relations of production, and with them the whole relations of society. Conservation of the old modes of production in unaltered form was, on the contrary, the first condition of existence for all earlier industrial classes. Constant revolutionizing of production, the uninterrupted disruption of all social conditions, everlasting uncertainty and agitation distinguish the bourgeois epoch from all earlier ones" (Marx & Engels 1955 12f.).

Starting with transport, which sets all other social subsystems in oscillation, the specific developmental dynamics of capitalist societies become apparent. If Luhmann had turned his attention to the transportation system, it would inevitably have led him to consider modern capitalist society. However, the idea of a society as capitalist seemed to him overloaded with presuppositions. However, it is precisely these presuppositions that have to be understood by those who wish to be capable of political action.

The transportation system cannot be conceived as a social subsystem; rather, it constitutes the basic framework of capitalist societies. Transport permeates capitalist societies and is the lubricant of an increasingly volatile modernity (Baumann 2003). However, this does not explain the insight into the central importance of transport for capitalist socialisation, i.e. physical movement in space and time. As self-evident as transport and traffic may seem to us in everyday life, they cannot be explained on their own. Rather, the question arises as to why there has been a constantly increasing volume of traffic for around two hundred years of capitalist development. Why is social participation, i.e. individual mobility, increasingly tied to spatial movement? Transport is a passive medium that makes it possible to get from A to B. But what are the reasons why the distances to be covered between A and B are becoming ever greater? What are the driving forces that have led to an ever-increasing and ongoing growth in traffic?

The political forces that shape the development of transport presuppose an understanding of the functional significance of transport within the framework of capitalist socialisation. Due to the obviously tight interconnection between the capitalist mode of production and the development of transport – which is expressed in particular in the fact that economic growth has always gone hand in hand with growth in transport up to the present day – we will begin by retracing this complex interplay. Once that is done, the possibilities and limits of influencing transportation policy can be adequately assessed and, if required, appropriate strategies for action can be put forward.

The capitalist mode of production is characterised by five features, which are presented individually in the following section, after which

they are brought together and subjected to an examination in the light of integration: Division of labour, growth, competition, acceleration and alienation.

1.1 Division of Labour

The precondition of the capitalist mode of production is the division of labour (cf. Marx 1989c: 341ff.). The social phenomenon of the division of labour was first described by the Scottish economist Adam Smith in his 1776 work "The Wealth of Nations". There he shows how a huge increase in productivity is achieved by breaking down production into small individual steps, each of which is carried out by different workers. Smith demonstrates the amazing effects with the much-cited and still impressive example of pin production:

> "A workman not educated to this business (which the division of labour has rendered a distinct trade), nor acquainted with the use of the machinery employed in it (to the invention of which the same division of labour has probably given occasion), could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty. But in the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire; another straights it; a third cuts it; a fourth points it; a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on is a peculiar business; to whiten the pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them. I have seen a small manufactory of this kind, where ten men only were employed, and where some of them consequently performed two or three distinct operations. But though they were very poor, and there-

> fore but indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day… roughly forty-eight thousand pins… But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each of them have made twenty, perhaps not one pin in a day" (Smith 2000: 4f.).

What fascinated Smith and his contemporaries about the division of labour was the "immense accumulation of commodities" (Marx 2018: 27). that it enabled, which became possible to an unprecedented extent and by means of which societal wealth increased exponentially within a very short time. This material wealth before one's eyes still constitutes a key motivation for people to press ahead with differentiation in the division of labour, and its allure still grips ever larger parts of the world's population today, as it did on the first day.

Since then, following the accelerated differentiation in the division of labour, a spatial differentiation has also taken place. The division of labour under one roof, in a factory, expanded further and further, initially across the large industrial sites, which required extensive inner-company forms of transport, to the global division of labour with worldwide production sites, which are now connected to each other by international logistics networks extending over several thousand kilometres. Until a few years ago the prevailing view was that production in the service sector would largely detach itself from spatial structures, since exchange would take place predominantly via communication networks, with global financial transactions being repeatedly cited as an example. Newer location theory, however, is referring back to the insights of the classics (cf. Beyers & Fowler 2013). The hope that the new information technologies would make transportation superfluous and thus help to prevent the negative effects of transport development has not been fulfilled since the invention of the telegraph in the 19th century. On the con-

trary, since then there has been an ostensibly unstoppable growth in traffic in all regions of the world. [1]

In the mid-19th century Marx and Engels had already prophetically foreseen this economically-driven development, which we have been calling globalisation only since the 1990s:

> "Modern industry has established the world-market, for which the discovery of America paved the way. This market has given an immense development to commerce, to navigation, to communication by land. This development has, in its time, reacted on the extension of industry; and in proportion as industry, commerce, navigation, railways extended, in the same proportion the bourgeoisie developed, increased its capital, and pushed into the background every class handed down from the Middle Ages. We see, therefore, how the modern bourgeoisie is itself the product of a long course of development, of a series of revolutions in the modes of production and of exchange. […]
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> The need of a constantly expanding market for its products chases the bourgeoisie over the whole surface of the globe. It must nestle everywhere, settle everywhere, establish connexions everywhere. […] The bourgeoisie, by the rapid improvement of all instruments of production, by the immensely facilitated means of communication, draws all, even the most barbarian, nations into civilisation. The cheap prices of its commodities are the heavy artillery with which it which it batters down all Chinese walls, with which it forces the barbarians' intensely obstinate hatred of foreigners to capitulate. It compels all nations, on pain of extinction, to adopt the bourgeois mode of production; it compels them to introduce what it calls civilisation into their midst, i.e., to become bourgeois themselves. In a word, it creates a world after its own image" (Marx and Engels 1955: 12ff.).

1 In light of this experience, the CORONA pandemic does not appear to be a guarantee for a disruptive change for the better. Rather, in this instance it also depends on what political consequences are drawn from it; on its own, working from home will not contribute to sustainable transport development.

In the meantime, countries such as China, India and the former Soviet Union, which for a long period had refused to be pressured by the world markets, have given in and are now considered the major 'emerging markets'.

In the course of differentiation in the division of labour, not only spatial but also functional differentiation occurred, a process described above all by the English sociologist Herbert Spencer (cf. Spencer 1876). Analogous to natural organisms, which, the larger they become, the more functions they develop (swimming, walking, seeing, hearing, etc.), Spencer regarded social development as an evolutionary process in the course of which ever more partial functions develop. Just as single-celled organisms have evolved into ever more complex living beings with multiple functions, Spencer understood the development of society as a steady, ongoing process of functional differentiation, starting with simple family groups and ending with ever more complex social structures. For our purposes here, the major social sub-areas of relevance are work, housing, leisure and finally transportation, which according to Spencer is synonymous with the blood circulation of the social body, with all the associated consequences:

> "If organisation consists in such a construction of the whole that its parts can carry on mutually dependent actions, then in proportion as organisation is slight, the parts must be comparatively independent of one another; while, conversely, along with high organisation must go a dependence of each part upon the rest that separation is fatal. This truth is equally well shown us in the individual organism and in the social organism. […] We cannot cut a mammal in two without causing immediate death. […] If in high societies the effect of mutilation is less, still it is great. […] Cut off the cotton district from Liverpool and other ports and there would come arrest of its industry followed by mortality of its people" (Spencer 1876: 504f.).

On this view, the transportation system is a functional component of modern societies and absolutely necessary, without any alternative, on pain of death. This lack of any alternative, based on evolutionary biology, remains the central point of criticism of Spencer's approach today.

As is the case with Luhmann, Spencer initially provided an adequate description of processes of social differentiation, but then summarily interpreted them as natural laws of motion without actually being able to explain them.

This was already recognised and heavily criticised by his contemporary, the French sociologist Émile Durkheim. Unlike Spencer, Durkheim did not understand the organisation of higher societies as a natural process of functional differentiation, but as a distinctly social, man-made phenomenon (cf. Durkheim 1984: 314ff.). With social differentiation, Durkheim identifies, in addition to spatial and functional differentiation, a further consequence of socialisation based on the division of labour, which is revealing for the understanding of transport in capitalist societies. For he describes in detail how people's socio-moral relationships change and he identifies the beginnings of individual emancipation in the demarcation from the traditional family unit:

> "In these conditions the individual is fixed to his native heath by bonds that attach him to it, and also because he is rejected elsewhere. [...] On the other hand, as the demarcation lines separating the different segments disappear, the equilibrium is inevitably broken. Since individuals are no longer restricted to their place of origin and free space is opened up, attracting them, they cannot fail to spread out over it. Children no longer remain irrevocably attached to the locality of their parents but set off in all directions to seek their fortune. Populations mingle together and it is this that finally causes their original differences to disappear. [...] The greater mobility of social units that these phenomena of migration assume effects a weakening of all traditions" (Durkheim 2013: 229f.).

The dissolution of traditional family ties, which Durkheim identified early on, has now progressed so far that we no longer speak of *the* family, neither in the sense of the extended family comprising several generations in Durkheim's time nor the classic nuclear family of the post-war period, consisting of mother, father and child. Rather, today we experience a majority of very different forms of cohabitation, including single parents, people who live alone, and singles. These outcomes of social

differentiation have far-reaching consequences for the development of transport. While the extended family was still able to 'pool' transport by, for example, making one shopping trip for all family members, today every individual household makes the same trip alone. The growing importance of transport for modern capitalist societies becomes even clearer in the case of people living alone who, like singles, find it important to have their own household, but at the same time enter into a close relationship with another person ('living together apart'). In addition to maintaining their own household, single people in a relationship thus have to make additional trips in order to meet up. Depending on whether one lives in the same city, in another city or even in another country, this can mean covering very long distances, necessarily entailing a large amount of traffic. Finally, there are divorced families with children, where, unlike in the past, both parents want to assume care of the children. In this case, more and more often the children commute by train or by plane between the two parental households, accompanied by an escort. If we view it as a social achievement that divorced couples can now maintain social contact with their children even over great distances, this simultaneously makes clear the profound changes in the organisation of society that would be required in order to achieve sustainable transport development, the goal of which is to reduce traffic.

With his study of the social division of labour, Emile Durkheim explicitly opposed the economists of his time who, since Adam Smith, had identified increase in productivity as the essential driving force behind the division of labour (Durkheim: 2013). In contrast, Durkheim argues exactly the opposite and locates the cause of the division of labour not in the sphere of production, but in reproduction. He argues that the growing population density forces the division of labour in order to ensure survival and that the associated increase in productivity is only a consequence, but not a cause. At the outset, we find the desire of more and more people to live together: "We co-operate because we have wished to do so, but our voluntary co-operation creates for us duties that we have not desired (ibid.: 161)."

Durkheim is concerned with understanding human actions not as a reaction to economic demands, but as an expression of proactive social-

isation. He wants to show that people consciously decide in favour of the way they live together and organise themselves accordingly. Increased productivity helps them to accomplish this.

> "We see how different our view of the division of labour appears from that of the economists. For them it consists essentially in producing more. For us this greater productivity is merely a necessary consequence, an aftereffect of the phenomenon. If we specialize it is not so as to produce more, but to enable us to live in the new conditions of existence created for us (ibid.: 215)".

With his brusque rejection of economic insights, Durkheim wanted to show that people are free to shape their social coexistence. In the process, however, the dynamics of economic development of capitalist socialisation were largely lost from view. This perspective, which is sociological in the narrower sense, has been pursued by more recent social science research on mobility since the 1990s (cf. Scheiner 2009). As a result, systematic research has been conducted into the supposedly individual causes of transport behaviour. Following on from this, strategies were developed to reach people on a personal level, in order to influence individual behaviour in a direction conducive to sustainable transport development (cf. Schwedes et al. 2017). A system-theoretical variant of sociological observation of transport comes to the conclusion that transport is a self-referential system that creates the conditions of its own successful growth (cf. Rammler 2001: 179ff.).

The current sociology of transport largely ignores the political conditions of transport (cf. Urry 2007). In contrast to this one-sided narrowing of sociological description, restricted to supposedly free human behaviour, interpreted as self-regulated modes of action, what follows here is intended to reintroduce the political-economic dimension of capitalist socialisation. As Durkheim correctly sensed, this introduces an aspect of coercion – the coercion of growth.

1.2 Growth

The fascination with differentiation in the division of labour resulted from the increase in productivity and the resulting dynamics of economic growth, initiated on this scale for the first time. Never before in human history had growth rates of more than one percent been achieved; only the relentless pursuit of the division of labour in capitalist production opened up new potential for growth (cf. Maddison 2001, Piketty 2017).

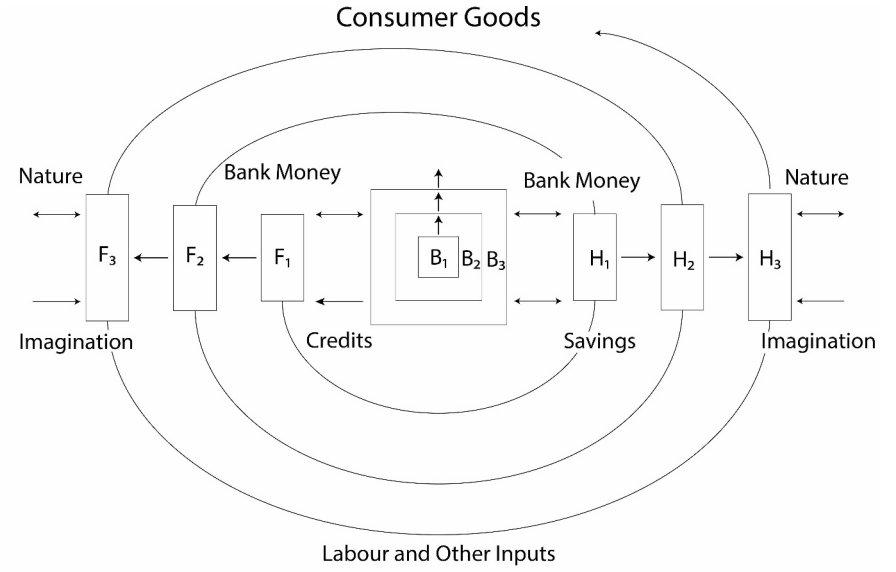
As a result, material wealth in capitalist societies increased enormously within a very short period, from which all social strata benefited, albeit to varying degrees. The qualitative change through the constant expansion of the social division of labour and the associated social reorganisation resulted in the quantitative phenomenon of ever-increasing economic growth. However, within the framework of the capitalist mode of production, the end-means relationship was reversed: economic production was increasingly transformed from a means for the satisfaction of needs to an end in itself. To the extent that private corporate decisions are oriented towards increasing profits, the growth paradigm becomes the overriding principle. In this process, individual capitalists feel compelled to expand production with the aim of increasing profit and, in this way, to increase the value of their own capital stock in order to win out against competitors in the market. The subjective compulsion to grow is an objective compulsion to grow – the capital embodied by the capitalist becomes an "automatic subject" (Marx 2004: 255).

The economist Hans Christoph Binswanger (2006) has vividly described this mechanism with regard to current production and consumption processes as a growth spiral (cf. Fig. 1). On this view, companies (U1) increase their capital input with the help of growing investments. To do so, they make use of loans from banks (B1), which in turn increase their credit and money supply. Households (H1) are paid for their work and in turn use their rising incomes for increased consumption expenditure or deposit them as savings in the bank.

On the one hand, there is an exchange with nature on the part of companies (production) as well as on the part of households (consump-

tion), in that natural resources are exchanged in production as well as in consumption. The capitalist mode of production is thus always part of the natural metabolism. In addition, production and consumption are fed by the human imagination, where companies come up with new products and households constantly develop new needs. Thus, the capitalist mode of production is also always an expression of the powers of the human imagination.

Figure 1. The Spiral of Growth in Capitalism



H = Households
F = Firms
B = Banks (Central & Commercial)

F_1 --> F_2 --> F_3 = Increase in Capital (investments)
H_1 --> H_2 --> H_3 = Increase in Purchasing Power (increase in income)
B_1 --> B_2 --> B_3 = Increase in the Credit and Money Supply

Source: Own presentation, based on Binswanger 2006: 306

This process continues steadily up an ever higher stepladder:

> "The process of investment and capitalisation, and with it the growth of production, must continue if the process of growth is not to turn into a process of contraction, because the goods that are produced today will come onto the market tomorrow. However, they can only be sold at a profit if investments are made again today, i.e. the capital input continues to increase. Growth requires further growth. There is no end to the growth spiral".

Growth in transport and traffic is tightly linked to economic growth: the more goods are produced, the more goods have to be transported. In addition, the ongoing differentiation in the division of labour leads companies to outsource ever more steps in the production process and transfer them to companies at other locations. The spatial expansion associated with this in turn requires an ever-increasing volume of transport and traffic in order to reintegrate the individual production locations. Ultimately, individual patterns of consumption combined with the new information and communication technologies mean that there is less and less pooling of forms of transport. Thus, contrary to expectations, shopping on the Internet does not reduce traffic, but rather each product is now delivered individually, so that it is not uncommon for the same residence to receive several deliveries from different postal service providers in the course of a day. Here the circle of production and consumption growth closes and the growth spiral begins, resulting in persistently increasing traffic caused by economic activity. The tight coupling of economic and transport growth means that the efficiency gains in the transport sector achieved through technical innovations, for example through fuel-efficient engines, have been repeatedly eroded by growth in traffic and to a degree even cancelled out. This is why transport is the only sector today in which CO_2 emissions continue to rise (cf. EEA 2017). To the extent that transport growth is necessarily coupled to economic growth, the structural interplay of economic and transport growth continually feeds on itself; it knows no immanent limits. Only external barriers can lead to a questioning of the capitalist production system, which is geared towards limitless growth. Karl Marx had already identified the two fun-

damental limits of the capitalist economy – nature and man (cf. Marx 2004: 648ff..

With a transport system that is more than 90 percent dependent on oil, the finite nature of fossil fuels constitutes a natural limit. In addition, changing human needs could contribute to questioning the 'growth mania' and to encouragement of sustainable transport development (cf. Altvater 2016). In both cases, in light of the natural as well as the social limits, a political decision has to be made – one way or the other.

1.3 Competition

The primary goal of the capitalist mode of production is capital accumulation. The exploitation of value as an end in itself, economic growth for growth's sake, which necessarily goes hand in hand with growth in transport. The modus operandi of capitalist market integration is competition, of which the essential function consists in permanent dynamisation of the market. In this process, individual, private capital owners are in constant competition with each other and seek to prevail in the market by driving out competitors. Due to the unrestricted nature of the capitalist mode of production, private actors in the market are relentlessly driven to make new profitable investments in order to expand their own position of power in the market. Faced with the threat of being squeezed out of the market, humbly taking a back seat is not an option!

Boundless competition is inherently contradictory. On the one hand, by forcing the players in the market to increase their competitive advantage over their rivals through new product ideas, potential for innovation is repeatedly unleashed. On the other hand, dynamic competition repeatedly provokes crises, for example through competitors driving each other into a ruinous competitive struggle. These two dimensions – innovation and crisis – seem to be constitutive of competition in capitalism and were canonised by the economist Josef Alois Schumpeter as a process of creative destruction (cf. Schumpeter 2003: 81ff.).

In addition to the positive force released by competition when weak competitors are forced out of the market, Friedrich Engels had already

recognised the tendency towards monopoly formation as a further development. For when companies, due to their economic success, force out or even take over competitors through economies of scale, "freedom of competition changes into its very opposite, into monopoly" (Marx 1889a: 317f.).

In the transport markets, this concentration process can be observed equally well in all modes of transport. In rail transport there are now only three suppliers worldwide: Alstom, Bombardier and Siemens.[2] In the automotive industry, too, only three companies are fighting for market leadership (Volkswagen, Toyota and Renault-Nissan[3]). In the premium brand segment, there are only three German companies (BMW, Daimler and Audi). As has recently become clear in the case of the German automotive industry, and in particular the Volkswagen group, this leads to the formation of power cartels, consisting of policy-makers, business and – what is often overlooked – trade unions. Due to the concentrated market power and the resulting economic importance for Germany as a business location, policy-makers and trade unions have for many years formed a phalanx with the automotive industry in order to defend it against its global competitors (cf. Schwedes et al. 2015).

Due to the special structural interplay between the economy and transport, transport policy is influenced to a considerable degree by the interests of the transport industry. In the process, the common good, which politicians are supposed to represent, competes with the interests of economic growth and regularly takes a back seat. This results in a radical discrepancy between political aspirations and real transport development, a discrepancy more pronounced in transport policy than in most other policy fields.

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2 Bombardier and Siemens sought to merge. At the same time, the two Chinese state-owned railway companies recently merged to form the *China Railway Rolling Stock Corporation* (CRRC), thus creating the world's largest rail provider, by far.

3 In order to keep up, the French parent company Peugeot (PSA) and Fiat Chrysler (FCA) merged in early 2021, forming the major group Stellantis.

1.4 Acceleration

The capitalist economy, organised on the basis of the division of labour, is oriented towards permanent growth, whereby production and consumption are bound together, circulating in a close, reciprocally-fuelled exchange relationship (cf. Figure 1). Karl Marx treats the sphere of circulation in the second volume of *Capital*, dealing mainly with the abstract exchange of commodities, paying scant attention to the concrete details of transport (cf. Marx 2010). Marx shows there that the value of a commodity is only realised at the moment of its consumption, when it guarantees profit. By accelerating circulation from production to consumption, the result is an accelerated accumulation of profit. Under the conditions of competition, where the private owners of capital encounter each other as competitors for shares of the market, everyone therefore strives to accelerate circulation in order to increase the rate of turnover of capital and thus their own rate of profit (cf. Rosdolsky 1977: 334ff.). The goal is the ever-faster turnover of production to maximise profit. Those who manage to speed up production and thus profit faster than their competitors have a market advantage – they can reinvest faster and increase the scale of production.

In order to achieve the desired goal of expanded production, the circulation of the entire process of production – starting with production and continuing through distribution and exchange to consumption – must be constantly optimised. The transportation system plays a central role in this:

> "Within each process of production, a great role is played by the change of location of the subject of labour and the required instruments of labour and labour power […] The transition of the finished product as finished goods from one independent place of production to another located at a distance shows the same phenomenon, only on a larger scale. The transport of the products from one productive establishment to another is furthermore followed by the passage of the finished products from the sphere of production to that of

> consumption. The product is not ready for consumption until it has completed these movements." (Marx 1889d: 154).

The subjective drive of individual actors in the market to constantly accelerate circulation through the further development of transportation systems with the aim of maximising profit in order to survive against competitors has its basis in the compulsion to growth immanent in the capitalist production system. Given that the mode of competition encourages competitors to accelerate the circulation of goods by developing innovative transportation systems (in Binswanger's case, this is achieved by the human imagination, see Fig. 1), the development leads to accelerated economic growth. Economic growth in turn leads to the need to develop more efficient transportation systems able to move more goods in the same amount of time. Ultimately, the social division of labour and the various processes of differentiation outlined above result in ever longer distances, which must be covered ever more rapidly if no time is to be lost and the growth dynamic thus not allowed to slacken. In this way, the growth spiral creates a gravitational field that draws in more and more objects.

1.5 Alienation

Under the conditions of capitalist socialisation, the relationship between the economy and transport turns out to be a self-referential, structural interplay (*Wirkgefüge*), the primary goal of which consists in endlessly increasing the material wealth of society. For this purpose, two external systems are incorporated into the capitalist process of valorisation: nature and man. This constellation is characterised by two fundamental lines of conflict. Firstly, a limitless growth process encounters the finiteness of natural resources. The inherent logic of natural conditions is thereby negated and natural resources are exploited far beyond their capacity to regenerate. Secondly, the capitalist logic of exploitation encounters human specificity – or in the words of Marx, the generic nature of man: "The human being is in the most

literal sense a *zôon politikon*: not merely a social animal, but an animal that can individuate itself only in the midst of society" (Marx 1989b: 18). Humans are the only living beings that have the ability, and now also the material basis, to organise their coexistence in a self-determined way. However, to the extent that the capitalist system of valorisation subjects people to the paradigm of growth, they become disempowered. Under the conditions of capitalist socialisation, people determine neither the degree nor the purpose of growth – growth is an end in itself. People no longer produce in order to live, they live in order to produce, without being able to influence the goals of the privately organised production process.

Through the incorporation of nature and people into the capitalist valorisation process, a double alienation thus takes place. The relationship of alienation is then directly transferred to the transport system due to the tight coupling of economic and transport growth. All forecasts assume that the volume of traffic will continue to grow in the coming years and that this will involve a corresponding increase in the consumption of natural resources. While the development of transport is oriented towards the requirements of a highly differentiated process of production that is increasingly dependent on global value chains, people's mobility needs are largely disregarded or even hampered. For example, people, especially those in the lower income brackets, are increasingly forced to commute ever greater distances to get to work (cf. Haas 2013).[4] Health insurance companies have been reporting on the negative health consequences of years of commuting and the associated social costs for many years. In addition, the lower income groups in particular have to spend

4 The commuter study by the Federal Institute for Research on Building, Urban Affairs and Spatial Development concludes that in 2015, for the first time, 60% of employed persons subject to social insurance contributions were forced to commute to work beyond the boundaries of their own municipality, compared to 53% in 2000. The average length of the one-way commute has also increased in recent years: from 14.6 kilometres in 2015 to 16.8 kilometres in 2020. Lastly, the number of long-distance commuters with a one-way commute of more than 150 kilometres has also increased since the turn of the millennium: from 1 million to 1.3 million (cf. BBSR 2017).

a relatively large proportion of their household income on mobility in order to ensure social participation. More and more often, they are dependent on a private car, the upkeep of which constitutes an additional financial burden (cf. Daubitz & Schwedes 2021). The individual decision to work fifty kilometres from home appears to be a free choice, just like the decision to use a private car, but is in fact imposed on them within the framework of capitalist socialisation. People's alienation manifests itself in the fact that they are caught up in a peculiar conflict of priorities between freedom and coercion in their choice of location and transportation behaviour (cf. Schwedes 2013a).

The descriptions of individual behavioural motives apply in equal measure to collective strategies for action in the field of transport policy. Here, too, the historical retrospective reveals a genealogy of failure that can be traced back to the beginnings of the claims to validity made by transport policy in the 1920s and continues to this day (cf. Schwedes 2019). This discrepancy between the aspirations of transport policy and actual transport development can be understood as an expression of the degree of alienation in this policy field, since it shows that self-determined socialisation in fact plays a minor role and thus fails to accord with our generic nature as political beings. Instead, the political goals of an integrated transport system in which all actors cooperate with each other in order to link the various means of transportation in a sensible fashion are regularly thwarted by competition-based negative market integration.

The social phenomenon of alienation in the Marxian sense constitutes the starting point of the present study of transportation policy. In what follows, alienation serves as a key concept of a critical theory of politics (cf. Sörensen 2016). Its concern is to clarify the relations of power and domination in the field of transport policy and thus to expand the possibilities for political action.

1.6 The Consequences of Alienation in Transport Policy

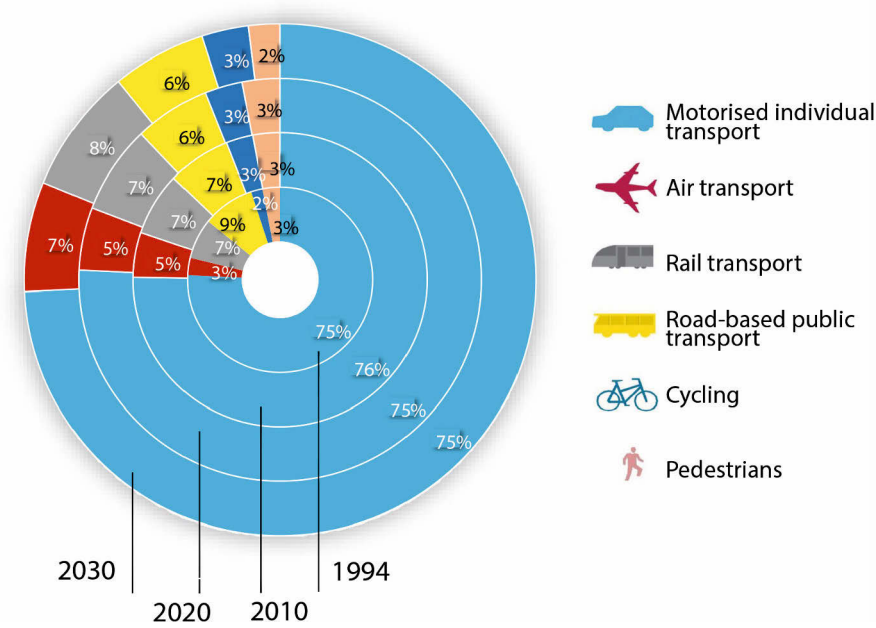
An alienated transport policy is characterised by the fact that it is not designed by people for people, but is instead implemented in accordance with systemic imperatives. This can be demonstrated concretely by the financing of public transport. Here, there has long been a consensus in transport policy that public transport should be placed on an equal financial footing with private automobile transport, albeit at different starting levels; if one gets something, the other should also get something – so-called parallel financing. All actors in transport policy have been able to agree on this to date, because they all benefit from it. Even the ADAC (German Automobile Club) has always spoken out in favour of financial support for public transport, because this would relieve congestion on the roads for its own clientele. Only recently, it again noted with satisfaction that the Federal government is investing both in the expansion of congested motorway routes and, in parallel, in the expansion or new construction of important axes of the rail network: both said to be in the interest of consumers (cf. Mortsiefer 2019).

With this in mind, in the mid-1990s there was another major political effort to save public transport, which was once again in crisis. While the Federal government carried out a reform of the railways, responsibility for local public transport was transferred to the individual Federal states. This involved enormous funding agreements to upgrade the aging regional public transport system. Between 1994 and 2018, around 172 billion euros were spent on this. In the same period, the performance of the system increased by 36 percent and passenger numbers rose by as much as 56 percent. A success story!

But this is only half the truth: as soon as one looks beyond the horizon of public transport and examines the entire transportation system, public transport appears in a different light (cf. Figure 2). According to these figures, the ratio of transport performance between private automobile transport and public transport has been stagnating for twenty-five years. And, according to the Federal government's forecasts, up to the year 2030 no change is expected. It follows that, measured against the government's own political claims to promote public transport with

billions in subsidies in order to support economically efficient, socially equitable and ecologically viable transport development, this cannot be described as a success story.

Figure 2. Proportionate Transport Performance of Modes of Transport According to Passenger Kilometres Travelled



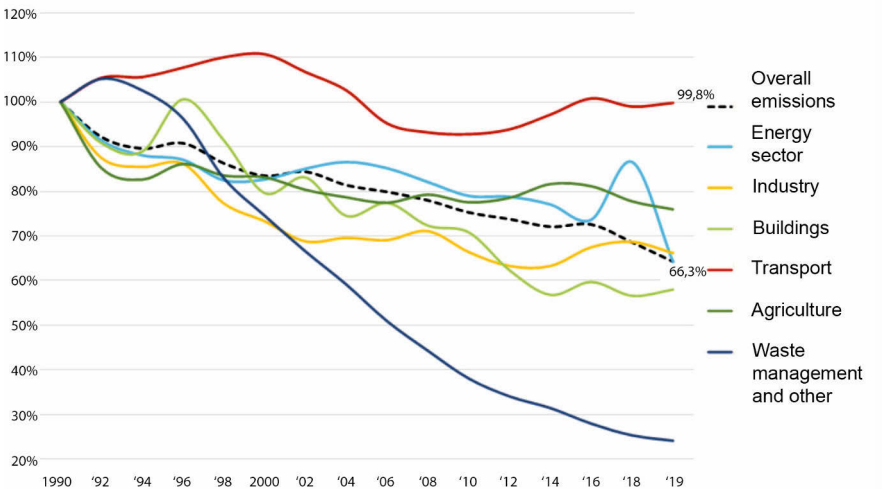
The unit of measurement passenger-kilometre (pkm) is calculated by multiplying the number of persons transported by the distance travelled in kilometres. *Source*: My own calculations, based on: Federal Ministry of Transport and Digital Infrastructure (BMVI), Verkehrsverflechtungsprognose 2030, Schlussbericht, 11.06.2014, www.bmvi.de/SharedDocs/DE/Anlage/G/ verkehrsverfechtungsprognose-2030-schlussbericht-los-3.pdf (16.11.2020); BMVI, Verkehr in Zahlen 2019/2020, September 2019, www.bmvi.de/ShareDocs/DE/Artikel/G/verkehr-in-zahlen_2020.html (15.05.2021).

The reason for this unsatisfactory situation is that the absolute volumes of traffic have grown continuously overall in recent decades, not only in public transport – and the trend is upwards. This, in turn, is due to the fact that not only public transport has received financial support, but also motorised private transport, again in the name of parallel financing. According to an analysis by the Network of European Railways (NEE) based on public data, around 150 times more road kilometres have been constructed than rail kilometres since the railway reform in 1994 (cf. NEE 2019). While the German State invested 69 euros per capita in rail infrastructure in 2017, the figure was 362 euros in Switzerland, 187 euros in Austria and 183 euros in Sweden. As a result, transport performance has increased in absolute terms but without the shift in favour of public transport that has been a political goal for decades.

The absolute growth in traffic is also the reason why CO_2 emissions in the transport sector continue to rise. The German government's "2019 Projection Report" on CO_2 emissions confirmed that Germany would not only fall well short of its climate targets in 2020, but was also expected to exceed the agreed targets by ten percent in 2030 (cf. BMU 2019). The transport sector stands out in particular, as it is the only sector that is not expected to make a contribution to reductions by then (cf. Figure 3). Public transport contributes to the described growth spiral of transporting more and more people, faster and faster, over longer and longer distances, thus producing more and more traffic.

Measured against the political goal of sustainable transport development, public transport is not part of the solution as long as it remains within the framework of the growth spiral. On the contrary, it is forced to compete with private motorised transport and must compete for billions doled out via transport policy so that it can keep pace with the general growth in traffic. Public transport is like the hamster in its wheel, in constant motion without realising that it is not making any progress. Like the hamster, public transport itself is part of the problem!

Figure 3. Greenhouse Gas Emissions in Germany by Sector overall emissions/energy sector/industry/buildings/transport/agriculture/waste management and other



Source: My own calculations, based on: UBA (2020a): Greenhouse gas emissions since 1990 by gas. https://www.umweltbundesamt.de/sites/default/files/media/384/images/files/2_abb_thg-emissions-since-1990-by-gas_2020.pdf (16.11.2020); UBA (2020b): National trend tables for greenhouse gas emissions by sector of the Climate Protection Act 1990 to 2018. https://www.umweltbundesamt.de/data/climate/greenhouse-gas-emissions-in-germany#emissions-development-1990-to-2018 (15.05.2021).

The basic insight of transport research is that it is not enough to invest more and more money in public transport in order to establish it as an attractive alternative to the car. Rather, transport policy must do its job and make a political decision in *favour* of public transport and at the same time *against* automobile traffic. For example, perverse tax incentives worth billions, such as the commuter allowance, the company car privilege and the tax on diesel fuel – to name only the most important ones – could be withheld from private car transport and transferred to public transport (cf. UBA 2016a). With these three measures alone, transport policy would have around fifteen billion euros available every year

to invest in public transport and, of course, in cycling. In other words, a rail line between Berlin and Munich could be built, every year, with five billion euros left over for bicycle traffic. After ten years, Germany would have a railway system like Switzerland's and cycling infrastructure similar to the Netherlands.

By abandoning parallel financing, transport policy would break with the growth spiral, which we can no longer afford if the goal is sustainable transport development. Readjusting the systems of financial incentives is likely to bring about a change in people's mobility behaviour. Only in this new regulatory environment of a transport policy that is no longer alienated and, instead, people-oriented, could public transport also change from being part of the problem to part of the solution and make a positive contribution to a strategy of sustainable transport development.

1.7 The Structural Interplay between the Economy and Transport

The genesis of transport is intimately linked to the capitalist mode of production. An investigation of the transport system must therefore begin with the structural interplay of the economy and transport. The unique selling point of the transport system compared to all other social subsystems is undoubtedly its central importance in linking production and consumption, which in the course of the differentiation in the division of labour move ever further apart, spatially, and are reconnected via the sphere of circulation. In this process, the capitalist mode of production aimed at unlimited growth is dependent on an ever more efficient transport system that ensures the circulation of ever more goods, over ever greater distances, in an ever shorter time span. In this way, on the one hand, transport provides support for expansive development on a global scale, which translates into fragmented structures of production and consumption worldwide. On the other hand, it is transport that reconnects the individual parts into a functioning, integral system. Or in the words of transport sociologist Stephan Rammler: "Transport is

what holds modern society together and at the same time drives it apart" (Rammler 2014: 29).

Political-economic analysis has shown, however, that only the first part of the statement is correct: as a medium of the sphere of circulation, transport keeps the finely woven network of the global production regime alive. However, transport seems to run after the dynamics of economic development; it is not the driver, but is itself driven by the logic of capitalist production. This insight has been lost in the course of the sociologisation of transport studies in the last twenty years, as a reaction to the – rightly criticised – one-sided economic orientation. Since then, people's behaviour in modern, highly mobile societies has been studied with particular attention devoted to the individual fascination with the automobile (cf. Canzler 2016). By largely ignoring social power relations, this narrow sociological focus has contributed to a de-politicisation of transport policy (cf. Schwedes 2013b). By contrast, Max Horkheimer's (1939) modified dictum applies in this field: if you don't want to discuss capitalism, you should keep quiet about transport! Conversely, this means: those who condemn the negative consequences of transport development must deal with capitalism!

The transportation system follows the Olympic ideals of 'higher, further, faster' and translates them into more traffic over ever greater distances in ever less time. Our everyday mobility behaviour is thus the product of a lifestyle that is imposed on us by a supposedly natural process of market integration based on the division of labour, oriented towards economic growth and mediated by competition. At this point I am deliberately talking in terms of *imposed* transport because the question arises as to who, for example, wants to travel ever greater distances as a commuter? Who still wants to *have* to afford a private car? Who still wants most public urban space to be occupied by stationary vehicles, which exclude other uses? After all, these and other questions concerning our everyday lifestyle are being raised more and more frequently.

The crisis affecting the Olympic Games, which has been latent for many years and has manifested itself in the recent doping incidents, can also be seen as symptomatic of the transport system. However, just as

in the case of the crisis of the Olympic ideals, it has not yet been understood that there is an underlying systemic cause and not a scandal, as is always claimed. Doping is only the expression of the fact that the Olympic ideals have lost all sense of human scale. For it is well known that we have reached physiological limits that prevent a further increase in physical performance through training alone. And the tragic thing, in the Greek sense, is human scale cannot be restored if we continue to instrumentalise people in the service of ideals that are increasingly alien to them (health, etc.). This strategy would require further technical refinement and would result in increasing alienation – self-optimisation as alienation. For with doping, one is no longer self-determined; rather, one transforms one's body into a powerful catapult whose range far exceeds its natural limits.

In this respect, I see a direct analogy with the transport system: here, too, we can continue to drive the current spiral of growth and acceleration through technical innovations. Integrated transport systems as the anabolic agents of a lifestyle of ever higher, further and faster! Is this the goal and if not, what is the alternative?

This question is taken up again in the final chapter. How can we put an end to alienation in the field of transport policy – which takes the form of a profound discrepancy between the aspirations of sustainable transport development in transport policy on the one hand and the real transport development on the other -, in order to (re)gain the power to shape transport policy? To be able to answer this question, however, it is necessary to have an adequate understanding of the field of transport policy and its specific constitution. Accordingly, the field of transport policy will first be explored from different perspectives.