Liberation from Excess

NIKO PAECH

THE ROAD TO A POST-GROWTH ECONOMY

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Bibliographic information concerning the German National Library:
The German National Library has recorded this publication
in the German National Bibliography:
Detailed bibliographic data are available online at http://dnb.d-nb.de.

2. Auflage 2016

Gesellschaft für ökologische Kommunikation mbH
Waltherstraße 29, 80337 Munich

Editor: Ursula Lindenberg
Cover design: Torge Stoffers, Leipzig
Cover illustration: shutterstock.com
Typeset by: Reihs Satzstudio, Lohmar

Printing: Bosch-Druck GmbH, Ergolding
This book was printed on FSC-certified recycled paper
from controlled sources. Circleoffset Premium White,
delivered by Igepagroup, a product by Arjo Wiggins.

ISBN 978-3-86581-324-4

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The road to a post-growth economy

Translated by Benjamin Liebelt

Introduction
The twilight of affluence – A chance for greater happiness?

This book has a modest aim. It is intended to ease the departure from an affluence model that has become irretrievably weakened due to its chronic dependence on growth. This is indicated by a number of developments that have long been suppressed. Current debt and finance crises, for which there seems to be no solution, pose the question: How much of our wealth could ever have been created if modern states had not permanently gone into debt at an increasing rate? Ever scarcer resources, which economic growth has consumed in its relentless exploitation, namely fossil raw materials, rare earths, metals and surfaces, are even starker constraints.

The immense level of consumption and mobility in the wake of globalisation has come hand in hand with rising dependence on global supply chains and market dynamics. Without their complex, de facto uncontrollable inter-

dependence, the expansion of such affluence would never have been possible, because it is the only way to exploit the potential of the industrial division of labour. On the other hand, it is also the source of many weaknesses. The dizzying heights of towering affluence are like a house of cards with a fatal incompatibility: an increasing drop height combined with increasing instability. The higher the level, the further the fall if everything collapses. And the foundations are already crumbling.

But is that actually bad news? After all, the ravaged ecosphere is already in urgent need of relief, which will not happen while the economy continues to grow. If one attempts to repair specific ecological damage within a growing economic system, new problems arise elsewhere. The glorious failure of efforts to date to solve ecological problems by means of technical innovation, rather than by dismantling the ruinous industrial model, is like a Hydra that grows two new heads for each one that is lopped off. For if measures to repair the damage are not permitted to endanger growth, they can only be added measures or objects capable of sufficiently increasing added value in monetary terms, the so-called gross domestic product (GDP).

The acknowledgment following decades of wearying debate that GDP is an unsuitable gauge for the welfare of modern societies, actually plays down the problem. In fact, GDP should instead be regarded as a measure of ecological destruction. It includes all performance achieved as a result

of the money-based division of labour. This basically consists of things that are produced to be passed on to someone else as cash-equivalent services. Precisely that transfer of productivity cannot be ecologically neutral. A CO_2-neutral Euro, Dollar or Yen is impossible simply because they embody the demand for material values.

From what can increased benefit and satisfaction ultimately be derived that is both resource and energy neutral, yet must still be produced, transported and acquired — indeed to an ever-increasing degree, since otherwise growth in gross domestic product would disappear? How can the origin of something that is perceived by an individual as an added value on the one hand be situated outside of itself, but on the other hand be disassociated from all material and energy flows?

If an increased sense of well-being were truly qualitative, its source could only lie in the subject itself. It would originate not from production based on the division of labour and the related need to overcome spatial distance, but from one's own performance and imagination, with which to independently derive additional satisfaction or to breathe new significance into what is materially existent. This process can neither be expressed as a monetary added value, nor is it compatible with what we understand by the term economy. Above all, its results can barely grow beyond a certain quantity. In economic terms, something can only grow by the addition of money and energy from external sources

and such growth can therefore never be achieved without destruction.

Instead of examining the relationship between growth and sustainability in its entirety, this book focuses on three main theses:

Firstly: Our affluence, which cannot be stabilized without growth, is the result of wholesale ecological plundering. Attempts to attribute the many material achievements to a series of advances in efficiency or other forms of human creativity are based on self-delusion. This will be represented using the example of three barrier-breaking processes that are hallmarks of modern society. These illustrate how people in modern consumer societies live beyond their means in three respects: They appropriate things that bear no relation to their own productive capabilities. Their demand breaks barriers firstly in terms of current possibilities, secondly regarding their own physical capabilities and thirdly related to locally or regionally available resources (Chapters I–III).

Secondly: All efforts to decouple economic growth from ecological damage by means of technical innovation are at best doomed to failure. In all other cases so-called improvement measures lead to a worsening of the environmental situation (Chapter IV).

Thirdly: Although the alternative programme of a post-growth economy would lead to a drastic reduction in industrial production, it would strengthen economic supply stability (resilience) and, rather than representing a form of

abstinence, could even offer the prospect of greater well-being (Chapter VI).

As things are, we are dissipating our energies in a world of consumer overload that is squandering our rarest resource, namely time. Jettisoning the ballast of affluence would give us the chance to focus on essentials, instead of routinely making ourselves dizzy on the treadmill of shopping for self-fulfilment. Using fewer things more intensively and to this end remaining unswayed by other options means less stress and therefore greater well-being. In general, the only remaining responsible principle for structuring societies and lifestyles in the 21st century is reduction — in the sense of liberating ourselves from an excess that not only clutters up our lives, but also makes our existence so vulnerable.

Chapter I
Living beyond one's means – A perceived human right

To understand the thesis that our affluence is based on comprehensive ecological plundering, it is worth taking a look at the EU debt crisis. Stylised as a make or break issue, the rescue of Greece — or more precisely the Greek and therefore indirectly the European model of consumption — is currently being negotiated on the basis of a remarkable premise. Whether in the neoliberal or the left-wing camp, the same logic pervades throughout: Although the "bail-out packages" that have ballooned to inconceivably monstrous dimensions may be expensive and their success is so uncertain that they can at best buy us time, the threatening alternative of the Euro's failure would be not only much more expensive but also socially damaging, especially for a country like Germany. If the Deutschmark were reintroduced, its value would rapidly increase, while other currencies would fall in value. As a result, German exports would suffer, leading to economic repercussions that would inevitably lower its gross domestic product and thus threaten the

ability to finance the current level of prosperity. In this case, Germans would have to content themselves with a material prosperity achieved by a less comprehensive and accelerated exchange of goods and services. How terrible! Judging by the gloomy lamentations of official EU lobbyists, Germany before the introduction of the Euro must have been an impoverished economy, languishing with pitiable levels of provision and cut off from all foreign relations.

The great mobilisation

What is not mentioned in the midst of the angst-ridden Euro rescue debate is how beneficial it would be for the ecosphere, especially climate protection, if the European economic region, with its merciless focus on expansion and mobility, were indeed decelerated. Nothing plagues the European environment more than this highly praised integration project, with its sole aim of a spatial penetration that is as unhindered as it is ruinous. The European development logic is remarkably simple: It advocates removing all obstacles to the expansion of industrial and agricultural production, building and infrastructural development, shipping and road transportation into the remotest corners, as well as an oil-soaked education-, party- and project-related nomadism. This process of breaking barriers increases both levels of freedom and the range of options available. Investors can thereby overcome every institutional and spatial constraint:

The international exploitation of economic efficiency potential, which exists as comparative cost differences, or the development of remote marketing opportunities, become all the easier when there are absolutely no borders, currency risks, transport costs, planning delays, restrictive authorisation procedures or legal disparities. "Harmonisation" is a common euphemism for this process.

The impact of this reciprocal quasi-imperialism in the sense of mutual spatial permeation is also felt at the individual level: Whatever I am not obliged to or cannot obtain locally, brings me no recognition, no longer answers my need for personal achievement, bores me or demands that I make an effort to adapt, can perhaps be acquired more easily elsewhere in the European (or global) coordinate system. Just as an expansive administration has outgrown its confines because the demands have extended beyond its own territory, the mobile subject must constantly expand its field of activity. Happiness is always just a change of location or a flight away — at least for those who constantly flee from the constricting "here" in search of the promising "there". However, modern subjects are perhaps only fleeing from their own inner constriction.

Like modern companies that fragment their value added chains into ever more specialised sub-processes, in order to shift them geographically to optimise the cost benefits, lifestyles have become a chain of events of spatially distributed venues for individual enhancement. That has long extended

beyond only holidays and now includes education, social networking, long-distance relationships, political engagement, artistic activities, everyday working life, shopping, sporting activities, all manner of leisure activities up to party and club tourism within Europe.

Spatially unlimited production chains and lifestyles are the result of intended "harmonisation" and "integration" measures, rather than a side-effect of European zeal. It is for the aim of maximum value creation growth and individual self-realisation option, that the way must be cleared, using ever new forms of destruction. The removal of all obstacles — for instance in the form of cultural or institutional diversity — combined with massive subsidies for requisite infrastructures, not only accelerates the interdependent, ecologically disastrous spatial penetration of goods and people but also creates an unavoidable pressure to pre-emptively conform to this unlimited fluidity. What used to be unachievable may now be possible, but nothing is certain anymore because on the levelled playing field, everything interacts not only with, but also against everything else. However small a business or remote village might be, it feels forced to prepare itself for European (and global) competition. Regardless of whether for defensive or offensive reasons, precautionary investment in additional transport connections, major projects and other mobilisation measures then become essential. The long-recognised effect is an arms race in material terms that nobody can win in the long run, because

every short-term advantage only induces an infrastructural upgrade by those left behind. One loser is already certain: the ecosphere.

Have now, pay later

The syndrome of indebtedness provides another indicator for the fact that modern affluence is only a small step away from institutionalised irresponsibility. When producers go into temporary debt in order to finance input factors for the next planning period, this can only happen in the expectation that those debts can be systematicall serviced. Otherwise the resulting insolvency would threaten the business's continued existence. Such regulatory factors do not seem to exist for states. There is in principle no limit to the distribution of debt-financed gifts, particularly when the aim is to protect the above-described dynamics of expansion from stagnation — a nemesis of so-called progress.

The "have now, pay later" principle epitomises the breaking of barriers of the temporal kind. In order not to be limited by what one can currently achieve by one's own means, the store of future possibilities is plundered in advance. It utilises services that have not yet been performed. The current syndrome of indebtedness is not only an indicator of greed and impatience, but also of organised ir*respons*ibility — and in its literal sense, since those who deserve a *response* to the question of the consequences of contemporary lifestyles are

not yet alive. The further debts are pushed into the future, the starker the constraints will be on the options and freedoms of future generations.

How do enlightened contemporaries protect themselves from the pangs of guilt that could arise from a moral deficit of such dimensions? By instrumentalising an audacious paradox: A quasi-religious superstructure is grafted on top of the de facto obliviousness to the future that current excesses represent, precisely in the form of a ritual invocation of the future. At the heart of the resulting belief system lie innovation and growth — naturally both in the official service of the welfare of future generations. The former is supposed to curtail consequential ecological damage and the latter to ease the later burden of debt. In this way, responsibility towards future generations can be compassionately simulated.

Even if it is possible to service these debts within an anticipated period of time, instead of burdening the future with it, doing so only makes sense if economic growth is expected. Who would go into debt if, after making the agreed repayments, one returned to the same level as before or was even forced to consume capital one had accrued in the meantime? Thus, aside from elementary emergencies that cannot be overcome by one's own means, debt is used to develop any kind of capital whose later exploitation promises a sufficient profit to achieve a higher level of material means, beyond that required to pay off the debt. The same applies

to the development of human capital, for instance in the case of studies financed through debt. This type of investment also serves no other purpose than the later demand for higher income.

Naturally, debt can also enable short-term consumption increases, for instance by financing an eight-week cruise to South America. It either implies faith in a sufficient growth in income or assumes that the debt will be serviced later on through restricting consumption or the sale of assets. But how attractive and accordingly likely is the latter alternative? Who enjoys current excesses in the knowledge that these will have to be balanced at a later date through painful privation? A zero-sum game such as this would starkly contradict the contemporary logic of progress. Even worse: a negative-sum game would come into play, since depending on the interest, the repayment would be higher than the loan. So without growth, debt calculations simply do not add up.

There is a clear tendency for consumer societies to continuously increase the level of debt. They are therefore increasingly exposed to the demands of the present, which cannot be satisfied by current means alone and which adversely affect the future. By breaking down the temporal barriers for current levels of demand, modern societies make themselves hostage to a merciless growth machine. Ultimately, no democratically electable politician can ever afford to question the level of affluence bought by credit, even by cau-

tiously pointing out that after seven years of plenty, seven lean years will inevitably follow. Any entrepreneur or consumer able to boast a clear conscience since their wealth has (apparently) been accrued without going into debt, is quickly seduced into branding state debt an isolated problem. According to them, politicians are to blame, since they cannot restrain themselves, or the monetary debt system combined with the compound interest effect.

Neither can be ignored. On the other hand, how much of the fantastical wealth of goods and mobility would be conceivable if the treasury did not constantly pour a subsidising stream over everything or fundamentally enable many elementary production and consumption patterns by providing tax breaks—at catastrophic ecological cost. If air travel, which is well known to cause the maximum climate damage that an individual can legally produce, were taxed according to its actual costs, only a very small number of people could fly at all or eat apples from New Zealand. Lower income would then be generated in the industries directly affected by this, which would in turn reduce demand in downstream industries, and would possibly again drag downstream industries into a downward spiral. That is the flip side of an economy based to a high degree on the division of labour, in which performance is the result of everything being connected to everything else.

So it is little wonder that the state protects at all costs even the worst climate killers from any form of taxation, and

even subsidises loss-making airports if necessary. Besides, even the gentlest threat to the usual freedom fetishes such as car driving, air travel, consumption, telecommunication or the arbitrary construction of single family homes is repaid with the drastic withdrawal of voter support or even demonstrations. The beneficiaries of living beyond one's means have long become the majority. That is precisely why the taxation of income and capital assets has failed as a logical way of limiting state debt.

Another aspect is the fact that the income relief effect of a specific subsidy can become a lever for increasing prosperity somewhere completely different. The old German saying that some things have to be financed by "saving on food" shows how the priority of basic needs can conflict with other consumer demands. From this perspective, European agricultural subsidies for instance by no means lead to an increase in an otherwise scarce food supply. Instead, the subsidies have the effect of marginalising the proportion of expenses for food and allow greater spending power for smartphones, holiday travel and financing one's own home. Without agricultural subsidies, nobody would die of hunger in Europe, indeed, quite the opposite: The quality of the environment and our health would presumably improve because firstly organic farming and secondly small-scale farming structures would have better opportunities. But one thing cannot be denied: The price level of the resulting foodstuffs, which would truly answer our living needs,

would be considerably higher, so that food expenses would use up a greater proportion of income.

The situation is similar for education, health, security, water, transport systems, energy, waste disposal, communication infrastructures, some cultural services and other services that are taken for granted. The generally-held view is that the costs of these are to be kept as low as possible by the treasury, taking the burden of financing and providing them away from modern citizens, who can thereby devote their income to the more attractive aspects of life. The various forms of concealed collective enrichment, which indirectly contribute to state debt, are inexhaustible. Almost all members of prosperous societies profit from them, although — as is the subject of heated debate — the direct benefits are distributed in a highly uneven way. Without wanting to question the necessity for fair distribution in the slightest, the focus here lies with the misappropriated question of where what is being fought over actually comes from. Can plundering be legitimised just because the spoils are distributed in a sufficiently fair way?

Chapter II
The illusion of progress – Affluence through plundering

The miraculous increase in material wealth is often celebrated as "progress". That term refers to the heroic achievement of the human species, which as Baron Münchhausen recounted, dragged itself by the scruff of the neck out of the primeval slime to go forward and construct a perfect world based on hard work, inventiveness and superior intelligence. How logical is that fairytale of progress?

The question of progress and wealth is the subject of many modern narratives. Their most important authors include Quesnay, Smith, Ricardo, Marx and Schumpeter. The first of those named above is a slight exception, since as a representative of the so-called "Physiocrats", he tried to show that all material wealth stems from finite physical resources (especially the land). Prospects for infinitely growing production volumes are therefore modest, unless the physical fundamentals are plundered in a very short time like a flash

in the pan. By contrast, the other authors can be regarded as early exponents of the hymn to progress to which we now turn our attention.

Efficiency myth I: Industrial division of labour and the market economy

While Adam Smith and David Ricardo already stressed the efficiency characteristics of the industrial division of labour in the late 18th and early 19th centuries, which can be unleashed using the coordination of a market economy, Joseph Schumpeter focused on the technological progress that had, among others, the effect of increasing productivity. The two processes are not mutually exclusive and their synergy forms the foundation of constant growth in goods production. The large-scale division of labour allows comparative cost benefits to be exploited and their transformation into additional output. Since Smith and Ricardo, such transformation has always been described according to the same formula: If a specific production process is dissected into as many isolated sub-processes as possible, on which individual market agents focus according to their strengths, the total output will be greater than it would be without specialisation.

This division of labour must be coordinated by markets. The role of money as a medium of exchange ensures that individual sub-processes and the transformation of resources are shifted to locations where costs are minimal.

Such specialisation benefits derive from learning effects, core competencies, locational advantages, the availability of special resources, or from the fact that the fixed costs of a production site can be spread over a high output quantity. This transition is generally described as increased efficiency. According to the definition, a specific production volume is achieved using fewer resources or a higher production volume is achieved using existing resources. The growth in wealth would therefore not be derived from a greater use of materials, but instead from using them more "cleverly", i.e. efficiently. Highly qualified employees, better organisational principles, technical know how and especially control through markets all contribute in a seemingly miraculous, apparently immaterial way to produce more from existing resources.

But is it really the same quantitative level of physical resources that has simply been used in a more "efficient" way in recent decades to create a permanently growing output of goods? In fact, output growth using the specialised division of labour requires much more than mere optimisation, namely the need to overcome space and time. If the benefits of specialisation had to be exploited within a limited spatial zone, the process would soon collapse. Firstly, the demand would not be sufficient to absorb the output volumes required to make the cost-reducing effects of specialised production sites possible in the first place. Secondly, in a limited system, all exploitable specialisation benefits would

quickly be exhausted. Both problems can only be overcome through continually and increasingly breaking down the spatial and temporal limits of interdependencies based on the division of labour and trade relations.

Let us presume the citizens of a small town initially provided for themselves, i.e. produced their own bread, textiles, shoes, furniture, etc. They would be able to increase their supply performance if each household specialised in one product. That would increase the competencies of each person, who could then focus on one task, thereby improving skills, saving time and reducing waste and refuse. Above all, the respectively required tools or machines would only need to be acquired once. The fixed costs of a shoe workshop or bakery would then be divided among the entire number of the shoes or loaves of bread required in the town. This leads to lower average costs, because each household previously required their own shoe repair tools and oven for their low requirements. Overall prosperity would increase because people could then afford more.

But how does this progress when all such efficiency potential has been exploited after the households in the town have all become specialised in a specific type of work? Naturally, further increased wealth is conceivable in two ways. If the bakery delivered to a neighbouring town, where grain is more expensive, it could increase its turnover and thereby achieve lower average costs. In return, the other town could specialise in shoes, perhaps because the price for leather is

lower there. Further cost reduction could be achieved if the shoe producer specialised further, for instance by no longer manufacturing the soles himself and instead ordering them from a company in a different location—such as China or India—that can produce them at a far lower cost. This makes the shoes cheaper and increases buying power. But what growth in physical facilities is required to enable that process?

The apparently efficiency-based production growth is purely the result of the penetration and compression of space and time. Whatever seems appropriate as a sphere of value creation in its widest sense is therefore continuously explored and surveyed in search of as yet unexploited specialisation advantages or market potential. This forward-looking search inevitably requires the constant extension of transport routes, logistics facilities, warehouse capacities, production sites, and energy and information systems. This breaking of barriers takes place in two dimensions. (1) Spatial compression: Where is there space for another production site, industrial estate or connection to global infrastructures? (2) The compression of time scales: To increase sales, how can additional consumer activities be integrated into the human life cycle, namely by means of acceleration, (human) multitasking or simply the short lifespan of products?

The apparent efficiency of the industrial division of labour clearly requires physical barriers to be broken down.

Production sites must constantly be expanded, changed, scrapped or relocated. The transactions between the fragmented production stages stretch out in all directions, and infrastructures and transportation undergo expansion.

Ever since the devastation caused by such barrier-breaking has become impossible to conceal, the vision of a barrier-free economy that is not subject to substantial wear and tear has been invoked. The belief in qualitatively or materially decoupled growth was strengthened by the assumed opportunities represented by digital added value. But these days, however, the attempt to outsmart the laws of physics raise no more than a weary smile, since it is precisely IT innovations that have become the pace setter of material expansion. They provide the perfect instrument for encroaching upon previously unexploited (physical) spaces and time scales. Even in places where apparently "only" virtual worlds are created (e.g. "Second Life") or already exploited space is digitally re-concentrated through the addition of information networks (e.g. mobile telecommunications networks), they are accompanied by a mountain of hardware requirements, energy consumption and enormous quantities of electronic waste, and also induce additional mobility.

It is clear that economic theory has a tendency to confuse efficiency with increased spatial and material domination. In line with this concealment, gigantic infrastructures are often spared economic scrutiny in the name of effectively overcoming spatial and temporal boundaries. They are

classified as public responsibilities, i.e. allocated to a separate section that is cleanly separated from actual economic activity. The concealed production factors (degraded and worn-out space between the nodes of a supposedly efficient value added chain) can thereby be minimized as public infrastructure investment or hidden behind the veil of an obsession with subsidies, disguised as "boosting the economy".

Efficiency myth II: Innovation and productivity advancement

Technical innovations, especially when they contribute to increased production, are also regarded as the source of growing prosperity. The idea is plausible: If technical advances lead to falling unit costs or more productive combinations of factors, prices can be lowered. The purchasing power of income is increased as a result. However, exploiting technical efficiency also requires different, usually larger production sites. In so far as this involves increasing capacities, this can consist of developing new locations or investing in extensions to already existing facilities. But this also means that once again, the process involves more than simply using the same resources more efficiently and requires other, *additional* resources, namely at least to develop the increased capacities (as well as any additionally required infrastructures) and to use higher input volumes

under plausible conditions. The latter would occur if the output exceeded the amount resulting solely from increased factor productivity with which the same input volume is used. This may be seen as generally applicable, since the reduction of average costs enables lower market prices, which in turn lead to increased demand.

Although it is theoretically conceivable to convert existing production sites to use new technology or, where that is impossible, at least to disassemble old facilities while simultaneously building new ones, so that instead of expanding capacity, only exactly the previous resource input is used more efficiently at a different location. But such a process of coordinated restructuring or replacement completely contradicts the logic of the market. After all, it is mostly new competitors that move into established markets in order to compete with old structures on the basis of cheaper factor combinations or technologies.

But this only consists of purely adding to production capacities and therefore increasing the flow rate of resources — at least in cases where the operators of existing production facilities have no thought of simply giving up and instead seek ways of remaining on the market. This can involve specialising in services that are sufficiently distinct enough from the new competition. Furthermore, companies falling behind may also attempt to overcome the confines of the current market to access potential markets through a higher level of globalisation.

If it were really possible to close down and scrap old production capacities, structural transformation would take place in the form described by Schumpeter as "creative destruction". But what is so "creative" about destroying previously developed structures and thereby also the resources invested in them, producing almost unmanageable waste disposal problems and industrial wastelands in the process? Regardless of how one looks at it, increased technical efficiency cannot be systematically achieved without the increased consumption of materials, because the required transition either devalues old structures or creates new facilities that, unless they replace the old ones, purely consume more resources.

This dilemma is not even the main problem. Contemplating the secret of the productivity growth that has developed over the last hundred and fifty years reveals the following: The yield of a production factor cannot in any way be increased simply out of nowhere, i.e. purely through inventive genius. Regardless of whether it is the steam engine, electrification or digitisation, it is always one and the same substance that must surreptitiously bear the burden of making another factor "more productive": energy! Let us consider the enormous increase in the productivity of human work. What lies behind it is nothing other than an enormous arsenal of apparatus and processes to transform energy, making the required human work input ever smaller compared to the output level. By how much has this

increased our energy consumption? The story of technical advances never been any other than a series of transitions to higher levels of energy consumption. However, this will be discussed in greater detail at a later point in this volume (see Chapter IV).

Naturally, both efficiency types I and II are closely interwoven: Without targeted productivity advances, there would come a time when all over the world, no more specialisation advantages could be achieved through competence and cost differences. Technical innovation prevents such stagnation. These "new combinations", as Schumpeter called them, help the exploition of previously untapped resources, which are then productively integrated into manufacturing processes. In this way, for instance, many land areas and offshore regions have been activated as new resources through wind, solar and bio-energy use. These areas were previously merely "unproductive" components of the natural world. In a similar way, digitisation leads to a situation where rare raw materials, such as African coltan, which was previously of interest to noone, become an input factor for new or extended global exchange relationships. The colossal amount of electronic waste in turn provides potential as an "economic asset" for a global waste disposal industry based on the division of labour.

It is therefore logical that both important types of efficiency (specialisation and technical progress) are based entirely on the intensified plundering of resources. What would

happen, however, if we were serious about all the promises of "increased efficiency" and, at a given point in time, stopped all further growth in the consumption of resources or in the use of space, to ensure that the economy developed only on the basis of "real" efficiency? Let us assume that such a cap for ecological plundering had been implemented in 1970, 1980 or 1990. Would the wealth of goods having been achieved through efficiency alone be anywhere near the level it is today? Hardly. Incidentally, the oft-hailed concept of efficiency is not the only myth that needs debunking.

Labour as the source of prosperity?

If you work hard, you earn money and can buy things as a result. This is how affluence in terms of consumption and mobility is seen as "deserved" or "earned". Yet is that really the case?

Let us first take a look at the logic of consumption. Consumer goods require the industrial division of labour. All production is divided into specialised sub-tasks, which are either allocated to other production locations that are often far away, or are carried out by machines. The latter creates processes of material transformation. Thus there is a cascade-like system that begins with the extraction of resources. Raw materials are then sent on a long journey and pass through manufacturing stages stationed around the globe. At the end of this so-called value added chain, the

many products and services may be received and consumed, thereby contributing to the gross national product.

Through consumption, individuals draw on goods the production and consumption of which are two separate spheres. Consumers essentially consume things they could never produce themselves, nor would wish to — otherwise they would be producers or self-providers. Furthermore: With increasing consumer prosperity, the spatial radius and complexity of the production system from which the consumed services originate continuously grows. The essential principle of consumption lies in utilising the work that has been carried out in other places by other people and especially the material yield of resources and spaces used elsewhere. This form of dominion is ignored even by critical social theories or is seen as justified because it is regarded as having the legitimate equivalent value of one's own work. In so far as anti-capitalist critique only brands the corporate appropriation of a so-called "added value", which is supposedly the result of human work, as "exploitation", it falls far short of the mark.

During the lifetime of Karl Marx, it may still have been easy to distinguish between exploiters and exploited. But with the increasing prevalence of material wealth and a steadily growing distance between consumption and production, these distinctions are blurred. Besides this, without a sufficient number of people appropriating an increasing industrial output through consumption, which is the result of

the spatially unlimited division of labour, everything at the heart of Marxist criticism would be unthinkable. Blinded by precisely the same illusions of progress, Neoliberals and Marxists argue about the fair distribution of an assumed yield from human performance, but one that in reality represents the consumption of capital. Depending on the idea of justice being propagated — alternatively praising hard-working employees and ingenious entrepreneurs — both positions legitimise the appropriation of spoils that, from an ecological perspective, should never have been created in the first place and are certainly not "deserved" or "earned".

For if the latter were true, given today's level of material consumption and mobility, the productive performance of human individuals must have increased by an incredible amount since the late Stone Age. In fact however, the physical qualities of *homo sapiens* have hardly changed. Each individual still has two arms, two legs and one head. Indeed there are increasing signs that the productive ability resulting from those physical features may even be in decline. After all, the advance of convenience in professional and private daily life has left unmistakeable marks: a lack of physical activity, obesity, decreasing physical capacity and above all the loss of craftsmanship skills.

Today, many people feel they are unable to buy food without using a car, sweep the path, write letters by hand, make simple repairs or share consumer goods with neighbours — indeed, why should they? Convenient technologies,

services and enough money for constant new acquisitions are taken for granted. Replacing one's own physical performance with mechanical work or services that are available round the clock lies at the core of the contemporary understanding of progress. The aim is therefore to free oneself from everything that takes time, or is arduous, painful or unhygienic. With the constant shift in limits of what is seen as reasonable, a monstrous machinery of delegation has been set in motion. However, even in such a "convenientocracy", the laws of physics cannot be overturned. In other words: Ultimately, someone or something has to do the dirty work. The opportunities exploited for this purpose are limitless in the literal sense of the word. Sweat shops in Asia, Latin America and soon in Africa have become a symbol of the worldwide outsourcing of the "dirty" part of the production chain.

Surrounded by energy slaves

"Energy slaves" are elementary pillars of modern life. They turn previously physical work into mechanical, electrified, automated, digitised and therefore all the more energy-dependent processes. New options and extended spheres of activity are also utilised for self-fulfilment. Cordless screwdrivers, electric toothbrushes, leaf blowers, ride-on mowers, bread-baking machines, smartphones, e-commerce, low budget airlines etc. all speak volumes. Old-fashioned people

who still write letters with a pen instead of simply using a touch-screen to build text modules are no doubt a dying breed. That same touch-screen symbolises the universal, effortless user interface of an automated environment. One digital click is all that is needed for an individual to exercise maximum control over energy transformation and material flows, without any delay or effort. After the major task of exercising control over nature, as foreseen by René Descartes and Francis Bacon, the "Internet of Things" and other fundamental innovations now threaten to break down the last remaining spatial, temporal and material barriers that might stand in the way of an effortless dominion over consumer and mobility services used at will.

The model of a life relieved of the burden of physical effort and retracted demands, calls not only for technical innovation, but also for its constant multiplication reaching even into the most remote niches. Every room might be equipped with a flat screen, computer and Internet access. Each family member might possess their own digital camera, cordless screwdriver, espresso machine and car. This would eradicate the uncomfortable burden of waiting, asking, negotiating, arranging, requesting, sharing or even temporarily foregoing.

Even the hedonistic ideal of an aesthetically optimised body is no longer a question of an individual's exercise or discipline. Instead, cosmetic surgery, treatment, "wellness" therapy and a range of complicated fitness machines take

over. Is there any burden at all that cannot be delegated to a specially designed machine or competence? The road from an individual convenience product to a complete convenience existence does not even stop at convenience responsibility: Even socio-political responsibility can be conveniently passed on. Direct debit instructions to pay Greenpeace, or clicking on www.avaaz.org or www.campact.de as a vote for more climate protection make it all possible—and will no doubt soon be easily available to carry out while flying in an aeroplane.

What systematically withers away is not only manual skill, but also the power of frugality. Instead of human self-confidence arising from one's own achievements and, if required, self-control, what dominates is dependency and a diffuse anxiety that someone might pull the plug and thereby cause the system to collapse. For even the smallest facet of daily life hangs on the thread of energy-intensive services and gadgets. No-one is more helpless than a patient on a drip.

The entry ticket to this modern land of milk and honey is money. It creates the connection between the right of access and one's own supposed equivalent performance. But this exchange relationship is arbitrary because it in no sense depends on one's own gainful employment alone, but also on market dynamics and unproductive money-making (speculative profit, interest, inheritance, dividends, pay rises, etc.). It expresses the relationship between one's own work and the demand for consumption of products and services,

which cannot be compared in physical terms. How can the performance of a top manager whose working day exclusively consists of making phone calls, editing documents, attending meetings and sending emails be converted into detached family homes and holiday travel? How justified or "deserved" is the material value of a speculative profit of € 50,000, for instance in the form of cars, flat screens televisions and restaurant meals? How can an individual who uses air travel five times a year, together with a proportion of all material prerequisites associated with this have "earned" or "deserved" the energy required to do so?

The more comprehensive extent to which physical work is taken over by energy slaves, the more bizarre the relationship between one's own substantial performance and the exponential increase in substantial demands becomes. Fatally, the same technological development allows people to use machines for doing physical work and at the same time increases their ability to draw on physical performance. This imbalance highlights the extent to which our affluence is based on ecological plundering and is constantly further perfected through work-saving technical advances.

No wonder then, that the term "production" has long been replaced by the more general term "value added". After all, economic values — in this case everything by which money can be made — have long ceased to be created by human effort in the physical sense, and are instead the result of symbolic actions that are assigned a monetary value

by markets, institutions and the power of definition. In the same vein, the ritualised conflicts about distribution between unions and employer associations conceal their complicity in the appropriation of growth that results from the increased appropriation of resources.

Simulating one's own performance

In his classic book "Small is Beautiful" (1973), Ernst Friedrich Schumacher complains that modern technology robs people of their manual skills. He very pointedly distinguishes between people who "really produce" and those who, "tell others what to do […] or distribute what others have produced". An ever increasing number of tasks that are regarded as work clearly consist of nothing but purely processing information or coordination. That is the result of a combination of technical advances, increased energy supplies and transforming organisational structures in the course of the last 150 years. It is striking that the form in which human work contributes to producing goods is often barely distinguishable any more from consumer behaviour.

In the past, a screwdriver was used if two parts of a manufactured product had to be attached to each other. Its use required physical effort, although it became possible to reduce this due to the invention of the mechanical drill screwdriver, which still worked without needing additional energy carriers. In the next development step, elec-

tric screwdrivers were introduced, i.e. fully fledged energy slaves, which however still needed to be operated manually and required manual skill. Next, production facilities were designed to make the process of screwdriving fully mechanical. All that remained for humans to do was to monitor and control the work. But even controlling such work can now often be automated, for instance in that the output of one workstation is electronically coupled with the demands of the next workstation in line.

Naturally, the human being as production factor does not disappear completely in such cases: They plan, control, design, coordinate, communicate or manage the flows of information and money. But overall, any performance that can be attributed to humans consists of nothing other than themselves calling upon services. Controlling electronic screwdrivers or automated work stations means activating energy-intensive processes and utilising "congealed" energy that was used to produce the relevant technical aids. In other cases, the tasks allocated to an individual or team are processed by dividing them further into sub-tasks and delegating them to other workstations or production locations. In this way, the preliminary product in the above example could simply be procured from a producer in China that is precisely specialised in that task.

In extreme cases, that means human work itself no longer represents a physical resource, but instead appropriates resource flows with enormous effect. To be precise, modern

production resembles an amplifier that converts a minimal human signal into a thundering symphony of energy and material transformation. Along a cascading succession of processing stages, everything that is potentially arduous, troublesome or dirty is delegated either to technology or to distant locations. This is possible due to a profound specialisation, permeating spatial scales. The longer and more spread out the chain is between resource extraction and the finished consumer product, the more abundant the possibilities are to unburden oneself of physical effort by means of a global marshalling yard. It turns the grind of work into a "humanised working life" — at least in prospering industrial societies.

Thus since human work is progressively dissolving into pure symbolism, its value is becoming correspondingly abstract. According to economics and especially the contemporary logic of salaries, it is measured in terms of working productivity. The latter rises when the required work effort per output unit falls as a result of technical advances. If one divides the overall output by the number of working hours required for it, the value naturally increases and consequently the salary. In other words: The many energy slaves not only tend to free one from physical work, but also increase the monetary value calculated for the virtual working performance that remains.

Ironically therefore, those who do mainly immaterial work have access to the greatest material wealth. Those who

manage to succeed in this system are surrounded by energy slaves and global supply chains, both in their daily working and private lives. Both factors give modern consumers leverage with which to break down all barriers that could otherwise regulate the repertoire of material self-fulfilment. For without such "progress", material demands would be tied to local and regional resources that cannot easily be increased. They would also be limited by one's own production capacity, which is also not infinitely expandable.

By contrast, the removal of barriers to consumption and mobility demands mean there can be no upper limit to whatever is available through the intensive use of energy from all corners of the world, or through one's own mobility.

All this no longer has a relationship with one's own substantial performance. Instead, human "work" is increasingly restricted to the pure processing of information, controlling mechanical processes and merely being present at meetings and in decision-making situations.

The creation of new demand for immaterial activities, which can be assigned a monetary value as "services", is only a matter of imagination. The elegant trick of modern services lies in the fact that their abstract character allows them to be invented at will and arbitrarily integrated into any context. No facility, enterprise or person is immune to the seduction of some service or other. Consulting, advertising, education, training and further qualifications, network-

ing, insurance, presentation, mediation, coaching, lectures, discussions, publications, appraisal, evaluation, research, wellness, speculation, etc. are just some of the fields in which almost insubstantial performance is conceived and generates high income levels, thereby manifesting demand for ever more substantial equivalent values. The transitions between completely performance-free income, simulated performance and the miraculous expansion of creative, mostly "knowledge-intensive" performance which no-one would ever have missed had they not been invented, are fluid.

The extended reach of our prosperity model

Effortlessly accessible prosperity and a hardly less comfortable working world are clearly not to be had at no material cost. Technical advances and global supply chains do not solve shortage problems, indeed they execute two utterly ruinous strategies. Firstly, the availability of new options is bought through increased energy, spatial and material consumption, as ever more technical equipment is deployed. So current shortages are simply postponed through more intensive plundering, i.e. transformed into even greater shortages in the future.

The other strategy consists of reducing shortages at one particular location by using resources and labour all the more intensively at others. The supply chains created through global infrastructures are the invisible tentacles of the north-

ern prosperity model. They provide direct access to coltan in the Congo, coal in Columbia (in 2010 alone, eight million tons were delivered to Germany), natural gas in Siberia, crude oil beneath the melting polar caps, fruit from New Zealand, lithium from Bolivia (rechargeable batteries for electric vehicles), the land of North Africa (Desertec), and the rain forests of the Amazon basin (cleared to grow soya, which feeds European livestock) and in Indonesia (palm oil for the chemical industry and bio-fuels). The current increase in land grabbing needs no military might, since the daily madness of rising consumer and mobility demand is perfectly sufficient already.

An interesting situation arose in the German federal province of Lower Saxony in early 2012: For the first time, the surface of that state was no longer sufficient to cover its own grain requirements. Why? Because more and more farmers are switching from their previous grain production to maize as an energy crop, as thanks to EU food subsidies, this creates higher profits. So where will the missing grain come from?

Not only land areas and resources with which our local energy slaves are fed, but also the work performed at distant production sites, mainly in Asia, can be consumed. Who in Europe would be willing to work twelve hours a day sewing blue jeans, assembling iPads or wading in the toxic sewage of Indian electronic recycling companies? The dirty intermediate services on which our own prosperity is based is therefore not only carried out by energy slaves, but also by

"real" workers. In addition to the direct appropriation of resources, more energy, other resources and land areas are indirectly consumed by outsourced production sites.

Moving in the other direction, resources on the other side of the world become perfectly accessible. A booming transport and tourism industry paves the way to the most remote remnants of attractive landscapes. Gaining access to them in the form of physical presence requires not only the creation of convenient infrastructures in the target areas but also unhindered mobility. Air travel and luxury cruises are becoming affordable for more and more people. No other (at least legal) means gives an individual such leverage with respect to consuming energy per invested unit of time and money. On average, a (return) flight to New York creates around 4 tonnes of CO_2 per person. This figure increases to 14.5 tonnes for a flight to Australia. The unprecedented increase of such maximised ecological damage is caused by a situation in which both private and professional habits are based on the progressive removal of all spatial limits. In working life, global mobility is increasingly replacing substantial work: Today a meeting in Los Angeles, in two days' time an important appointment in Paris, followed by an experts' workshop in New York, and not forgetting the development project in Nairobi this coming Monday.

The democratisation of prosperity has created a population of consumption and mobility addicts. Opponents of globalisation who commute between Seattle, Heiligendamm,

Davos and the next World Social Forum to demonstrate for a good cause, are so globalised themselves, that many of them have earned air-mile price reductions. The creators of the Bologna Process too seem to have good relations with the air travel industry. Practices such as study semesters abroad, overseas internships, urgently required field research in South Africa for a final paper, etc. are step-by-step transforming the education system into an education industry, at least judging by its jet fuel input.

In his entertaining essay "Lost and Sound — Berlin, Techno and the Easyjetset", a journalist with the Berlin-based newspaper *die tageszeitung* (taz), Tobias Rapp, reports how the European party metropolis of Berlin is visited by an estimated 10,000 low-budget airline passengers every weekend. And why? Merely because a supposedly better DJ is performing here than in Madrid, Tel Aviv, New York, Stockholm or wherever the hedonistic international set is currently migrating towards. Carefree flying from party to party used to be the reserve of an elite, but now this form of individual CO_2 damage maximisation has "matured" into an unchallenged normality. The barrier-free Easyjet generation of cosmopolitans finds many aims and motives for not taking individual CO_2 footprints too seriously. It might be a cool party, or cheap sex, or the allure of an afternoon's shopping. Sometimes it is even an urge to save the world: Where is the next World Social Forum or the next sustainability summit about to take place?

Plundering lifestyles are also contagious. Sweatshop workers in newly industrialising countries are increasingly developing the same prosperity expectations as those who are enjoying themselves at the other end of the production chain. Working productivity is also increasing in China and India, thereby not only increasing energy consumption, but also the demand for an appropriate proportion of the value added. Thus the transition from physical to symbolic work and the explosion in demand it entails are being globalised. This trend is onomatopoeically supported by a digital humanism calling for every African child to be equipped with a so-called "100-dollar notebook" and Internet access. This provides a view into the shop window of a diverse world of goods, a comfortable way of life, prestigious careers, and attractive travel destinations together with the online means to book the plane tickets to get there.

If such a prosperity model based on breaking down all barriers, were sufficiently widespread everywhere (as the imperative of global equality surely demands), the world would at some point be exclusively populated by prosperous consumers, who, however, would have nobody to whom they could delegate the dirty work of physical production, other than a gigantic technical infrastructure whose resource consumption could presumably only be satisfied by accessing another planet. Tangible prosperity — without any limit of scale or boundaries — is no longer linked to one's own tangible contribution, but to one's integration into the in-

dustrial supply system. As stated above, to ensure access, one needs money, as "payment" for more or less symbolic activity. How does one rise as high as possible in the hierarchy of symbol production? Through education!

Knowledge as the source of wealth?

Does not the source and consequently the justification of the miraculous increase in prosperity lie in an increased level of education, representing the decisive human input factor, namely "intellectual work"? Although the assiduously cultivated myth of a knowledge society invites such associations, one thing can hardly be denied: To date, no car or aeroplane in the world runs on liquid knowledge instead of petrol or jet fuel. Equally, shopping centres, coal power stations, wind power generators, mobile phones, cruises, hotel accommodation, etc. are not congealed knowledge, but material output. In fact, one could instead postulate that increased knowledge has simply helped to plunder ecological resources, especially energy and land, even more effectively and transform them into still greater mobility and consumption.

In spite of, or perhaps because of this, an unprecedented mobilisation has long been propagated in the education and research sectors. The panicked invocation of international competitiveness suggests that the well-being and needs of modern societies apparently depend on providing as many

people as possible with an academic qualification. Whether it be all-day schooling, the Bologna Process, educational trips to the most remote places or the computerised classroom — educational zeal for progress seems to stop at nothing. And it doesn't need to, because in a climate of political outbidding, a common perspective emerges, as education and research are regarded as the universal solution for all current problems.

But what, how and for what reasons do young people learn today? Implementing the ideal of modern education is conditioning individuals for complete integration into the limitless division of labour and mobility. Young people are equipped with highly developed reflection and communication skills, but have a manual competence that is increasingly restricted to operating a touch screen. This practical and manual deskilling is the price for a comfortable existence, the material basis for which derives entirely from delegation. Education policy is essentially driven by a single aim: providing every person if possible with a certificate that allows them to participate in the abstract division of labour and a comfortable, effortless life.

That promise triggers a further demand dynamic. Those who have passed through enough accepted stages of the educational system see this as connected with the right to a job that precisely matches their acquired qualifications. It is also expected that a specific minimum income goes hand in hand with the position achieved within the educational

hierarchy. What could be more humiliating for a philosopher or mathematician with a PhD to end up working at a supermarket till? While the drastic bloating of the education sector has been justified as bringing the promise of fairer access opportunities, instead it merely confirms its hierarchic character. Other ways of life based on more practical or more modest lifestyles, let alone those requiring craftsman's skills, are discredited as "educationally disadvantaged".

Preliminary conclusion: The return to a settled lifestyle and a human scale

The matters outlined above are primarily aimed at underpinning the following thesis: The enormous increases in material wealth since the beginning of industrialisation are based solely on ecological plundering. The myth of efficiency advances and other manifestations of human creative power, with which the growth of goods, mobility and convenience has been apparently "earned" and legitimised as the "deserved" reward for one's own performance, are absurd. Technical innovation and new knowledge are supposed to have had a decisive effect on the development of prosperity. But on closer inspection, that "progress" is revealed as an effective lever that allows one to appropriate an increasing quantum of physical performance with minimal effort of one's own. This growing imbalance reflects a three-fold breaking of barriers limiting material demands, relating to

one's own physical ability (with the help of a whole army of energy slaves), to the resources that are within direct reach (with the help of global value added chains) and to the possibilities presently available (with the help of debt).

The logical consequence would be to return to the "human scale" — as Leopold Kohr and Friedrich Schumacher have described it in the past — as a synonym for containing the removal of physical, spatial and temporal boundaries. This inevitably raises the question of within what material limits individual self-realisation could responsibly be expressed. The logical criterion of the physical and temporal transferability of a lifestyle recalls the categorical imperative of Immanuel Kant. According to this, every person could consume the quantum of ecological resources of which it could be said that if all other members of the world population behaved in a similar way, the earth's sustainability could be permanently maintained. As contestable as this idea of equality may be, all alternatives would be even harder to justify, let alone to communicate to people in Asia, Africa or Latin America. If that logic were applied to climate protection, the German Advisory Council on Global Change (Wissenschaftlicher Beirat für Globale Umweltveränderungen, WBGU) calculates a resulting per capita CO_2 volume of around 2.7 tonnes per year, at least for a population of seven billion people. This is the only way, if at all, that the EU climate protection target of two degrees could be achieved.

Orientation towards a human scale as the answer to the unlimited scope of activity also means returning to a settled way of life. A CO_2 budget of 2.7 tonnes does not allow for any great strides to be made. The prevailing current global mobility would thereby be as incompatible as an appropriation of goods that require the exploitation of distant resources and land areas for their production. The ecological re-embedding of goods production not only requires shortened value added chains (i.e. shorter distances between consumption and production), but also technologies with shorter ranges. Friedrich Schumacher and Leopold Kohr coined the phrase "intermediate technology".

Ivan Illich proposed the concept of "convivial technology". In simplified terms, these are tools that increase the productivity of human work, but do not replace them. Bicycles, mechanical sewing machines, organic farming, fishing rods, mechanical lawnmowers, handheld tools, reusable packaging, sailing ships, repairable wooden and metal products, etc. are just some examples of technologies and designs that are relatively labour-intensive, but that therefore require less energy carriers, land area and capital. Naturally, industrial products and conventional modes of transport would continue to be necessary, but as a supplement employed sparingly, i.e. in considerably reduced quantities and within the above-stated material limits.

There is also another significance to turning our backs on the omnipresent mania of increasing productivity at all

costs by means of energy-transforming technologies. As the productivity of labour rises, so also does the minimum growth in the gross national product required to be able to sustain a certain number of jobs into the future to produce the same output level. Labour-saving technical advances therefore become a social driver of growth, unless the average working time is reduced so that all employees work only 30 or in the long term 20 hours a week instead of the current 40 hours. Under these conditions, the same number of employees could remain employed even without growth.

The other way of solving the dilemma is to stop increasing productivity and even to lower it in specific areas. This could be achieved by a low level of specialisation and the aforementioned intermediate technologies, so that instead of energy slaves, more craftsmanship and manual work would be used. That would be accompanied by shorter value added chains. Regardless of how the two solutions are combined to ensure a supply that is free of plundering: The nature and scope of current affluence could not be maintained.

Is it conceivable to combine considerably reduced industrial production with labour-intensive performance in a way that would prevent a "relapse into the middle ages" and instead allow the continued availability of complex goods? It could be achieved as follows: Craftsmanship and manual activities need not be used within industrial processes or (partially) replace them. Instead, they could, in connection with the actual production, contribute to ensuring that the

goods are used and exploited for longer periods. The useful life of products could be extended by means of individual maintenance, care and repair measures. In this way, a lower production volume could be "stretched" through complementary craftsmanship carried out by the users themselves (see Chapter VI for details on this and the following).

Furthermore, increased communal use could ensure that the lower number of consumer products fulfilled the needs of as many people as possible. Why should one lawnmower not suffice for ten households? This approach to fulfilling needs without recourse to production could also be organised by the users themselves—instead of inventing yet another kind of marketable service to do so. Supplementing this, the settled lifestyle mentioned above could also be anchored as an economic concept in that the supply of goods is mainly local and regional. This would be a first step towards restricting excessive, limitless demands to one's own performance and to a quantum of currently available resources that cannot be infinitely multiplied at will. Naturally, further provisions would have to be made to regulate the expansion of non-performance demands and income.

On a finite planet, all practices that contribute to living beyond one's means in material terms reduce the opportunities for people living elsewhere or in the future. If "exploitation" consists of appropriating material values that have no reciprocal relationship with one's own performance, then it is by no means exclusive to companies, as Marxism

suggests. Consumption is at least as good an instrument of exploitation, especially since unrestricted material wealth can only be created by ecological plundering. But this is not the only reason why it is worth taking a closer look at this specific supply practice.

Chapter III
The illusion of freedom – New dependencies

The perfect synthesis of broken down temporal, spatial and physical barriers consists of providing for oneself in an exclusively consumptive way. On the supply side, that requires an appropriately powerful industrial division of labour. Consuming individuals must integrate themselves into this system by specialising in performance that does not serve their own provision, but through the income from which they can finance the external acquisition of goods. They must therefore apply their skills and time to production based on the division of labour. The supply and demand specialisations that are intertwined in such a way complement each other to form what in the text below is termed the "external supply system".

The higher you fly, the farther you fall

The external supply system causes not only the process already outlined by which barriers are broken down, but also something else. Where needs that were formerly met by means of craftsmanship, one's own work, subsistence, local supply and social networks, or which simply could (or had to) be renounced, are now gradually being supplied by consumer products, services and convenience-generating automation/mechanisation, our livelihood is dependent on external circumstances in a fatal way.

Such consequences of a external supply system are revealed when attention is focused on the structural transformation that is necessarily entailed on the demand side. When households turn their backs on any form of self-sufficiency in favour of specialised work promising monetary income and greater purchasing power — and that is the omnipresent lure of an effortless, prosperous life — they enter into multiple dependencies. The completely externally supplied individual requires access to endless sources of money that are fed by employment in the industrial and service sectors and through corporate profit or state transfer payments. This "homo consumens" so dependent on external supplies would be condemned to extinction if all supermarkets in the world remained closed for four weeks. For as a consequence of attaining ever higher levels of supply, which in turn require specialised work in a valua added process

based on the division of labour, he has lost all ability to directly use his own substantial, manual and craftsmanship skills or local resources to maintain the basic functions of human existence.

Dependence on money grows with the culturally induced demand for material self-fulfilment. This goes hand in hand with a constant increase in the monetary sufficiency minimum, i.e. what is declared to be the poverty line or "reasonable limit". In so far as every facet of human existence, down to the most insignificant structuring of time, is connected to accessing some kind of consumer object or convenience-related infrastructure, social aspects inevitably and completely dissolve into economics. After all, according to this logic, individual freedom and appropriate participation in society means being able to afford as much as other people. Consequently, social advancement can only be articulated as economic expansion (entailing further external supply services), regardless of whether externally provided services have been accessed from the market or the state.

Yet the higher you fly, the farther you fall. Convenient external supplies are bought at the cost of enormous vulnerability. It is no wonder that this kind of wealth inevitably comes with growing anxiety, or more precisely: the fear of loss. The higher the attained level of comfort, mobility and consumption, the more catastrophic the fall if everything were suddenly to be taken away. Helplessness is also driven further by the fact that the path to excess means di-

vesting oneself of one's non-consumptive skills. Those who make themselves at home in the cushioned world of non-stop all-inclusive supply cannot also retain their sovereignty as individuals that consists of their requirements being linked only to those options that, if necessary, can be reproduced by their own efforts. Those who take the first path live in constant fear of "the less". Thus external supply is not only both consequence and cause of mixed expectations about the future, but also shapes a culture of angst and is therefore the source of shared pessimism for the future. Just as a heroin addict protects the dealer despite his better judgment, the money addict is faced with growing panic, in accordance with his increasing consumption level, that the money-spewing growth machine may merely stagnate. This material urge dominates and marginalises the room to manoeuvre for sustainable development, which is always confronted with the proviso of not touching the monetary-based prosperity model.

Typical critiques of capitalism are unable to comprehend this phenomenon, since the same ideal of freedom and progress depending on convenient external supplies is inherent in Marxist-based models for the future. Neither the danger of falling from an enormous height in social terms nor the ruinous trend towards breaking down barriers can be overcome by simply distributing the output created by plundering resources in a more equitable way, or by changing the conditions of ownership. Its existence *per se* should be

questioned, at least its quantitative scale. If we do not undertake to reduce excessive demand ourselves, consequently inevitable conditions will do the job for us — but the experience will not be a gentle one.

"Peak Everything": Consumer societies lose their material basis

The economy of modern societies, which is based on permanently increasing consumption and mobility, has an Achilles heel. This concerns the scale of the required input, namely fossil energy carriers — predominantly crude oil — and many other resources.

Meanwhile, a "consumer revolution" is taking place in countless formerly developing countries. The creation of a global middle class, which is extended by more than 1.1 billion "new consumers", is driving raw material prices upwards due to the additionally induced demand for goods. Precisely because their provision is based on ever longer supply chains, the northern consumer model is inevitably left hanging by the single thread of a cheap oil supply. But the world's maximum oil output is approaching and will be reached in the foreseeable future; in fact it may be that this "peak oil" phase has already been reached. Recently, Fatih Birol, the Chief Economist of the International Energy Agency (IEA), which is chronically optimistic in this respect, stated that we would have to discover four new

Saudi Arabias in terms of oil sources to maintain the current crude oil supply.

The decisive factor is not whether absolute oil output volumes sink, but how much higher the demand is. As a result of the catch-up development in emerging economies, an exploding demand is colliding with a stagnating supply. This unleashes a predictable pricing dynamic that will contribute to the erosion of the economic basis of further growth. Meanwhile, the possibility that the price for a barrel of crude oil may soon cost over 200 US Dollars is no longer ruled out even by the IEA. And what then?

In 2010, a study by the German armed forces caused a furore by discussing what economic consequences the Peak Oil phenomenon would have. It mentions "economic tipping points" and "chain reactions" that destabilise the global economic system. In the medium term, the global economic system and every market-organised national economy would be affected. A system collapse is seen as inevitable. In view of its globalisation, this would pose a high risk for Germany, regardless of the country's own energy policy. No wonder: If the physical production of an ever greater portion of our consumer goods is carried out in China, India, etc., the precarious dependency on crude oil would not be overcome even if the hopes of a national "energy turnaround" were realised.

In the mean time, "Peak Oil" has long since become "Peak Everything". In addition to scarce resources such as

lithium for rechargeable batteries and coltan for mobile phones, rare earths are appearing in ever more products that we seem no longer to be able to do without and upon the mass marketing of which modern economies have long been dependent. The growth in demand can be traced back to innovative, sometimes even "green" technologies. Mobile phones, computers and flat screens cannot be produced without rare earths, and the same applies to LED lamps, and electronic and hybrid cars. Such vehicles are like some wind farms, which depend on neodymium, for instance for the production of permanent magnets. One hybrid vehicle contains up to twelve kilograms of rare earths. With a sufficient degree of external supply, there can be no social sub-system, product or infrastructural element that is not at least indirectly dependent on fossil energy carriers, rare earths and scarce metals.

Consequently, unleashing incredible growth in purchasing power by means of worldwide networked production chains that exploit cost differences is bought at the price of unprecedented instability. External supply dependency maximises the risk of social decline, for instance if jobs are lost, high prices reduce purchasing power or the external provision of essential or critical input is interrupted. The forthcoming financial and debt crises take care of the rest. Therefore the term sustainability can clearly be interpreted as a call for increased "resilience". This represents precautions that could soften the expected fall. This perspective

also shows that reducing the currently exorbitant level of external supply is our last chance. Only in this way can the height of the fall we face in social terms be reduced.

Chapter IV
The myth of decoupling – The fairy tale of "green growth"

The vast majority of mankind is not yet prepared to draw the logical conclusions from the upheavals of the industrial external supply system. Naturally it is difficult to part from those cherished "achievements" whose irresponsibility has for decades been concealed by ideas of progress and freedom, and we are now dependent because we are completely unaccustomed to doing things differently. If an unaffected observer were to observe this drama from space, he would pose the question whether modern consumer societies are at all reformable or whether they have not long been in need of therapy. Unfortunately, we have no therapists, indeed on the contrary, we are faced with a barrage of calls for us to hold out, the tenor of which is the enticing promise that we could have the best of all possible worlds.

Thus representatives from politics, the economy and science unswervingly repeat the fairy tale of "qualitative", "de-

coupled" or "dematerialised" growth. Some call the magic trick "green growth", the "green new deal" or the "third industrial revolution". Innovation in the form of sustainable products, technologies and infrastructures can supposedly kill two birds with one stone: Firstly, they protect the environment and secondly, no-one needs to endure any reduction in his/her demands for self-fulfilment or prospects of profit. It all resembles a magical diet for the obese. "Eat twice as much — and lose weight!" As long as the hope that economic growth can be decoupled from the consumption of resources and environmental damage by means of sufficiently innovative technological developments is not revealed as a mirage, there is not even the slightest hope of accepting, let alone enforcing positions that are critical to growth.

The concept of uniting environmental protection and permanent economic expansion on the basis of smart innovation takes two forms. Firstly, the material decoupling of our prosperity should be achieved by greater resource productivity and *efficiency*. This involves reducing the input we insert into the front of the prosperity machine in order to receive a specific result. For instance a car that consumes three litres of petrol per 100 km is twice as efficient as one that needs six litres. Similarly a "passive house" is five to seven times more efficient than a normal single family home. In both cases, neither the users nor the industry is required to make any sacrifices, because consumption, mobility and

production can continue to grow unhindered. Only the objects are replaced.

The other form of decoupling consists of closed material cycles and renewable energy. This principle is described as ecological *consistency*. It is based on mimicking the way the ecosphere works, i.e. adapting the quality of the materials and energy carriers used so that they never cause damage and are instead completely integrated into ecological cycles. This includes bio-degradable T-shirts and packaging, edible aircraft seats and computers that never become waste since all of their parts are reusable.

Another flagship for this version of ecological modernisation takes the form of renewable energies. According to official interpretation, these are considered able to completely sustain our energy-saturated prosperity model while also easing the burden on the environment, especially the climate.

However this all-round carefree promise has not only spectacularly failed despite intensive progress efforts, but specifically in the energy sector has also led to "disimprovement", which is not due to coincidental mistakes that would have been avoidable in principle, but instead has systematic causes. The theory stubbornly espoused in the face of all evidence to the contrary that the ecological neutralisation of value added on the basis of the industrial division of labour is possible in principle, diverts all efforts towards removing apparent political inadequacies, as if a theoretically

error-free concept is failing due to an imperfect reality. The protagonists of ecological efficiency and consistency have walled themselves in to escape from one troublesome insight: How can something ever become true in practice that does not even work in theory?

First we have to distinguish between relative and absolute decoupling. The former leads to a lowering trend in ecological damage per unit of gross national product (approximately the average CO_2 volume per unit of added value, measured in monetary terms), while the latter, according to the dominant interpretation, aims at achieving an absolute reduction in the ecological burden while simultaneously increasing gross national product.

The apparent good news at first glance is as follows: There is substantial evidence over a long period in many fields of activity of relative decoupling and this has matured to become accepted practice in all forms of environmental protection—though it should be noted that this relates to the isolated calculation of gross national product for individual countries. The bad news is that this phenomenon is not a solution, but simply acts to intensify the problem. Over the following pages, I will demonstrate how even relative decoupling systematically fails. The focus thereafter falls on the still more unlikely undertaking of absolute decoupling.

Material rebound effects

Decoupling is based on *additional* efficiency and consistency measures that can themselves never be immaterial, but at best—although even this is in most cases not guaranteed, but will be assumed for this context—require relatively lower material and energy flows than the previously used technologies or products. This already only gradual benefit can be overcompensated by the necessary growth in material requirements (consumer and capital goods, infrastructures, production facilities, etc.). Paradoxically, this is all the more probable, the more innovative the solutions in question are. This is because, with an increasing level of innovation, the latter cannot be put into practice by converting existing production facilities. Instead, new capacities and infrastructures must be constructed for their production. This applies for example to passive houses: Most of the value added stages in the construction industry that have to be passed through are still unable to fulfil the special requirements of this type of building. So it is hardly surprising that in *addition* to the conventional field of construction, a new market structure is being created that is specialised in sustainable building and living.

Estimating this additional material effect becomes a brain teaser when one looks at the euphorically envisioned combination of electromobility and renewable energy: How many *additional* production sites, power lines, industries for

storage media, IT terminal devices for automation and smart metering, supply stations for electric vehicles, and waste management industries for used rechargeable batteries form the basis or consequence of such solutions?

Uncontrollable risks of innovation

Ecological decoupling implies technical advances that occur in leaps and bounds, i.e. innovative reforms. But the increasing level of innovation brings with it an increasing risk of unknown side- and long-term effects. Who could have foreseen at the end of the 1980s that the ecological footprint of a catalytic converter adds up to one tonne of material due to its platinum requirements alone. Furthermore, as a result of mass distribution and according delays, catalytic converters in cars have been shown to produce emissions of precious metals, ceramic fibres, nitrous oxide and ammonia. The latter emissions are especially linked to a significant change in the moss and lichen vegetation at the verges of busy roads.

Another example: Many of the decoupling strategies discussed today require innovative solutions in the field of digitisation, micro- and semi-conductor electronics particularly in wireless communication. No reliable studies exist yet concerning the future effects of constantly growing radiation levels — to mention just one of the unsolved problems of this technology paradigm. Epidemiological long-term

studies would be necessary, which, however, have not been taken place for a very good reason. If it were at all realistic, what shape would the "experimental design" have to take in order to assess a phenomenon the spatio-temporal effectiveness of which interacts in such a complex system context? The mass distribution of radiating terminal devices and mobile base stations represents both an experiment and a serious situation, in which we are all the guinea pigs. That inevitably leads to a situation whereby effects we cannot even begin to guess at will be discovered at the earliest only after they have taken place. Then, however, it will be too late for corrections: *firstly,* because the damage to the ecology and to health cannot be undone, *secondly,* because exploitation interests have long since emerged on this basis, and *thirdly*, because modern IT terminal devices have developed into indispensible symbols of individual self-expression. It would simply be unthinkable to recall all mobile phones if it were discovered that the radiation levels did indeed increase the probability of brain tumours and hereditary defects.

Another example of the uncontrollable ambivalences of technical innovation can currently be seen in especially cheap solutions for retrofitting heat insulation using insulating foam. It may emerge that resulting formaldehyde emissions have serious health repercussions. But by the time this were to become an empirically tenable conclusion, so many double-walled façades would have been covered in foam that

the damage to health would long have been caused and removing the insulation material would either be barely possible or only at a prohibitive cost. Furthermore, the industry profiting from this product might also have developed into a force too powerful to be overcome.

An even better example of how the side-effects of innovative decoupling solutions often cannot be controlled, let alone decelerated, is the case of bio-energy. The speed with which a technological beacon of hope revealed itself to be an ecological and social disaster is unprecedented. Yet it is already too late for effective correction measures: The quickly established commercial interests and investments that are evident as a fait accompli on the landscape have long induced a dynamic that can hardly be slowed down any more. The next wave of similar, barely foreseeable worsening problems and increased potential risks is already emerging: electromobility, surface photovoltaics, Desertec, carbon capture storage (CCS), pump-storage plants, smart homes, etc.

The tragedy of innovative decoupling measures lies not least in the fact that their always merely theoretical problem-solving potential is based on the very same logic of progress that caused the problems in the first place. The modern interpretation of progress is defined not only as overcoming a current situation in favour of one that is "better", but also as locating that new situation in the terra incognita of as yet unaccessed and therefore untested possi-

bilities. That is precisely why in modern, innovation-driven society, no progress is possible without risk. If one wished to avoid far-reaching modernisation risks, this would come at the price of maintaining the current situation or returning to a former situation, that is, one which we have already experienced. Yet precisely these two options — standstill or regression — embody the scorned antithesis of the contemporary dogma of progress.

The outlined path leads to an increasingly complex maze of overlapping, mutually heightening modernisation risks. Of course the latter are associated with promising advancement opportunities — who would otherwise take on such risks? These are directly materialised as access to new or defence of prized symbols of freedom and prosperity, while the ever-growing risk aspect remains concealed. But it too is materialising, as an accumulation of side effects that are distant, delayed and take different form. It is precisely their unpredictability that makes it so easy to cleanly separate innovation risks from prosperity, as if it were a coincidental flaw that can be optimised and eliminated during the next wave of progress.

The attempt to control this innovation mechanism, which systematically buys each solution with its risk of new problems, through a by now reformed direction based on decoupling, is a contradiction in itself: The side-effects of one innovation wave make the next wave necessary, with further side-effects that require a third wave of innovation,

and so on. The ever higher background risks throw modern societies back into the condition that we wished to overcome as we entered the modern age: being unable to control our fate.

Displacing ecological problems

Many supposed decoupling advances were and are never anything but the result of displacing ecological problems elsewhere. A few categories of such problem displacement are described below.

Temporal displacement: What will happen for instance when the first generation of photovoltaic panels and heat insulation systems require disposal as waste? This factor was not considered for a moment at the time of their installation, because average use periods were quoted as being at least two decades.

Medium and systemic displacement: Even if it leads to a net decline in CO_2 emissions, the climate protection potential attributed to renewable energy carriers is, on closer inspection, merely based on transferring damage occurring within a specific ecological medium (gaseous aggregate state: emissions) to a no less ecologically relevant medium (solid aggregate state: land area). So the comparatively less CO_2-intensive electricity production from renewable energy supplies

is bought through the consumption of land, intervention in biodiversity and the loss of landscape aesthetics. In view of the dramatic shrinkage of land surfaces ("Peak Soil"), the question is how we can assess or estimate such contrasting damage dimensions.

Material displacement: Electromobility is aimed at reducing dependence on fossil fuels. Yet it increases demand for rare earths such as lithium, and the facilities to produce renewable energy also need rare earths. The same applies to the many terminal devices for digital innovations on which a large proportion of the decoupling visions are based. They include the exorbitant increase in the use of coltan for mobile phone production. In some cases, one shortage scenario is substituted by another that may be even more acute.

An even greater worsening of a problem can occur where an existent shortage problem is simply added to another: Fossil fuel energy continues to flow into the production of photovoltaic systems because the processing of the required silicon requires temperatures of between 1,200 and 1,400 degrees Celsius, which is unlikely to be produced by renewable energies in the foreseeable future. Similar questions arise with respect to wind power: Does the processing of required materials exclusively use renewable energy carriers? If this condition is not fulfilled, renewable energy fails according to the criterium of self-reproducibility.

Such criticism is sometimes answered by pointing out that the energy balance of the facilities is still positive overall, because the fossil input required for production only represents a fraction of the later output from renewable energy. But can the damage of additionally consumed fossil fuel energy be undone by such an abundant growth in renewable energy? One possibility would at best be if additional renewable energy could substitute fossil fuel energy in other processes (e.g. lighting). But this would in turn mean a reduction in fossil fuel value added, leading to the question of whether the balance would cause an increase in gross national product. If not, there would be no growth and we could hardly speak of decoupling.

Spatial displacement: A study by the Swiss Federal Office for the Environment in 2011 revealed that 60% of all environmental damage created by Swiss citizens can be located outside the country. We can assume that those findings would be no less applicable to other consumer societies. Spatial shifting especially of eco-intensive elements of the production chain is a characteristic of globalised supply structures. Furthermore, in recent years, demand patterns have crystallised with a special emphasis on electronic and IT terminal devices that did not need to be shifted, since their production already took place in Asia.

Technical displacement: Increased efficiency through digitisation is an example where energy savings can often only be achieved at the expense of new environmental damage. The enormous amount of electronic waste as a result of IT innovation that is deemed especially energy-saving is growing into unheard of quantitative and qualitative dimensions. Energy-saving lighting provides a further example: In addition to the difficulty of discarding the light bulbs in an eco-friendly way, there are also health concerns regarding their use.

Financial rebound effects

Rebound effects created by efficiency

As early as in 1866, the English economist William Stanley Jevons found that the consumption of a resource need not necessarily fall if efficiency increases. The "rebound effect" he discovered is explained by the fact that increased efficiency also lowers production costs. If companies use such cost savings to achieve a competitive advantage through price reductions, that tends to increase demand. So it cannot be ruled out that the consumption of efficiently used input will actually increase. Similar effects are imaginable if efficiency advantages in the form of economic products (passive houses, cars consuming three litres of fuel per 100 km, energy-saving household appliances, etc.) benefit consum-

ers, since the lower energy costs give them greater purchasing power for other goods. That means that the already indirect decoupling effect can even be inverted to become the opposite.

To avoid this, Ernst Ulrich von Weizsäcker, for instance, proposes a targeted increase in the price of resources affected by increased productivity. But it is hard to imagine that a tax solution, which has been blocked to date and would have to far exceed the homeopathic level of the German "eco-tax", would suddenly be enforceable using the justification of exploiting efficiency gains. How would it be possible to achieve targeted environmental policy fine-tuning to skim off the increased purchasing power resulting from increased efficiency in a specific industry or a specific provider? It would inevitably lead to discrimination against those who encourage increased efficiency, namely innovators and consumers. If there were a uniform energy tax, however, the reactions of the overall system would by no means be limited to technical innovation. One could also react by reducing output, which would naturally affect economic growth. And this in turn would contradict the logic of decoupling.

It is also important to note that income growth created by increased efficiency can lead to increased expenditure in every economic sector and in any place in the world. A person who lives in a passive house, has a car that consumes only 1.5 litres of diesel per 100 km and also regularly buys

second-hand rather than new consumer goods could use the monetary savings to fly to India. And it is likely that he will spend more money at his holiday destination, leading to additional energy consumption.

Such effects can only be avoided if each financial cost advantage due to efficiency measures, both on the corporate and the consumer side, were prevented or skimmed off. But that would have two consequences: Firstly, the question would arise of whether all incentives to invest in efficiency measures would thereby be lost. Secondly, the following conflict would occur: The more comprehensively we manage to prevent counteracting income growth, the less likely we are to achieve growth in gross national product.

The capacity and income effect of ecological investment

Generally, each investment in new production facilities causes both a capacity and an income effect. While the former increases the overall output by creating additional production capacities, the latter generates additional income, even if the rebound effect caused by cost savings does not occur.

The interaction between the two effects can be illustrated using the example of eco-power: The facilities required to supply power from renewable energy carriers do not contribute to cost savings for either providers or consumers. They merely make the quality of the power more ecological.

Nevertheless, the investments in wind, solar and bio-energy facilities, etc. increase the available income and therefore the economy's purchasing power. This can serve to create demand for additional electricity (so there would be no replacement of the fossil fuel or nuclear power consumption, and only the addition of "green" power), or it can finance increased demand for any other goods.

Let us look at the latter possibility of using income. It is often argued that under certain framework conditions, additional purchasing power could be used to finance less material- and energy-intensive services, e.g. education, health, social services, entertainment experiences, wellness, consulting services, culture services, media design, the "creative economy" and many other projections of a supposedly "qualitative growth". But aside from the fact that behind the material façade such services are revealed to be nothing other than a vehicle for especially energy-intensive lifestyles, the idea of sustaining green growth is impossible to realise.

Let us assume it were possible to invest all of the induced income growth from investment in wind power and photovoltaics into the education system. Purely to increase the quality of the system, it could only be used as funding for more personnel, for instance teachers. The alternative would be to invest in material structures in the education sector, such as buildings, media, hardware and jet fuel (for study trips and internships abroad), which rules out eco-

logical neutrality *per se*. To ensure ecological neutrality, the additionally employed teachers would themselves only be able to create a demand for teachers, who themselves could only create a demand for teachers … Presumably however, teachers could not be prevented from demanding the same material goods as any other consumer. According to new studies, the average amount of CO_2 produced by a single Euro that is available as additional income is between one and several kilos.

The above example of eco-power is further complicated by the fact that the expansion of the overall supply of power reduces its price as a result of the capacity effect, so that advancing prosperity in private and professional environments with convenience-enhancing energy slaves, power-hungry IT hardware, etc. adds further impetus, independently of the income effects described above. Counteractive demand growth is therefore fed by three sources: *firstly*, the cost-reducing effect of efficiency measures; *secondly*, the income growth induced by investment; and *thirdly*, the reduction in the price of goods for which additional (albeit more sustainable) production capacities have been built up.

To avoid that effect, a multi-phase strategy is sometimes discussed, involving an initial phase of developing sustainable production capacities and products, which in a second phase should replace the older, less sustainable provision structures, which would in turn be dismantled. In this way, a merely temporary parallelism of both capacities would

return to a quantitatively original, but qualitatively more sustainable supply level. But in view of the dynamic with which energy-intensive lifestyles are spreading, especially when the many large and small energy-guzzlers serve our self-expression or when we have become accustomed to the convenience they provide, an attempt to steer the level of affluence we have attained back to a previous level seems completely impossible. It would mean no less than a reductive performance, i.e. requiring the very imposition that "green" growth promises are intended to prevent.

Psychological and political rebound effects

Despite the problem outlined above, it is part of everyday life in modern democracies to praise relative decoupling as an environmental success, be it in the production of passive houses or wind power generators, etc., regardless of their additive character. This can lead to a situation where additional ecological damage is justified because it would otherwise not be politically tenable. The introduction of the 3-way catalytic converter was an early indication of how an at best gradual alleviation facilitated accelerating environmental damage. All call for the necessary disarmament of motorised fossil fuel consumption could be immediately stifled by referring to the apparently beneficial catalytic converter technology, clearing the way for a further expansion in motorised personal transport. So it is counterproductive

to optimise details where this contributes to justifying an overall system that can never comply with sustainability. Such "psychological rebound effects" can mainly be seen on two decision-making levels, described below.

The political level: Just as the catalytic converter protected motorised individual transport from growth limitation, the passive house construction method has eased the expansion of designated construction areas for single family homes, leading to material production, the expansion of living space used per person and the settlement of entire stretches of land. The same applies to the expansion of facilities for the use of renewable energies. Since neither cars with catalytic converters nor passive houses nor photovoltaic facilities can be acquired at no cost to the environment, an additional burden can be the result, which would not have come about without the legitimising effect of relative decoupling.

Individual level: The consciousness that specific objects cause relatively low environmental damage can also justify their increased use, from an individual perspective. Just as a natural gas, fuel cell, or electric motor can serve as the perfect alibi for acquiring a car and thereby create additional car travel, the passive house construction method makes it easier to take individual decisions in favour of a detached family home, instead of being satisfied with an apartment.

Those who buy eco-power have a good excuse for not taking energy-saving so seriously.

In most cases, the alibi effect is already working before the supposedly more efficient or consistent solution is even available, often without any actual proof that the (at best relative) relief effect will ever occur. It is often enough for visionary scientists or global missionaries to make high-profile statements for decoupling visions to become conceivable. If such statements are considered plausible by enough media outlets, they come to form the rarely questioned backdrop for decisions concerning the future. Political entities and companies, whose prospects of votes and demand for goods are not least based on announcing to their clientele the near arrival of decoupling advances that legitimise current prosperity practices, have enough incentive to make use of such scenarios.

In fact, ecological relief effects due to theoretically conceivable innovations are connected to so many economic, administrative and cultural imponderables that the likelihood of their actual occurrence in the future cannot be proven. In other words, since the blessing of progress cannot be calculated, it must be believed in. Accepting the theoretically possible as truth is a simple exercise, not only because it is *per se* easier to believe than to know, but also because voters and consumers are grateful recipients of offers to believe in maintaining the status quo. In return,

they reward the conveniently delivered range of alibis for not questioning consumption and mobility routines with votes and purchases. The guiding principle that results is so simple and powerful that it can serve as the basis for holding together entire societies: Carry on without concern and leave all the problems to the collective vision of progress!

Absolute decoupling

Relative decoupling *per se* makes no contribution to reducing the burden on the ecosphere, because even in the most ideal case, it is only able to reduce the actually unavoidable damage per additional unit of gross domestic product. But additional damage remains. And even that only theoretically occurring deceleration in the rate at which damage increases systematically fails because it is caught in an impenetrable network of numerous rebound and shifting effects. How implausible must the absolute relief of environmental burdens combined with a growing gross national product then be? It would require more than merely adding somewhat less damaging products (such as additional eco-power or additional passive houses), but consistently replacing the previous output. It would also be impossible to burden the ecosphere with additional factors (such as production facilities). In the case of renewable energies, this would mean that nuclear and fossil fuel power plants would have to be deconstructed in relation to the expansion of renewable en-

ergies, which is the only way to prevent the addition of further material flows and existing stock, instead of reducing the burden on the environment. This in turn confronts us with simply impossible waste management problems.

The same applies to the field of housing: If passive homes are added to existing housing stock, they increase the ecologically relevant levels of flows and stocks. If on the other hand they replace old buildings, the question arises of how they can be disposed of in an ecologically neutral way and whether energy-related renovation is at all sensible. New locations for producing electric vehicles pose the same problem: What do we do with the old production facilities and cars? The countless other machines, engines, production facilities, devices and active consumer goods for which more efficient alternatives are constantly being developed pose the question: Where do the discarded objects go?

So absolute decoupling fails due to a striking contradiction. On the one hand there must be a complete exchange of old for new hardware, since otherwise it would only have an additive effect. On the other hand, this structural transformation in the sense of Schumpeter's "creative destruction" would shift the problem in an even more powerful way than described above: Instead of a growth in new material flows and stock sizes, there would simply be a growth in refuse volume, devalued materials and energy. This transformation process, if it should feed constant economic growth, would also have to affect objects that would achieve a far

more sustainable effect by optimising and rationalising their continued use, than is achieved by replacing them (too soon). In other words: Based on the ecologically necessary condition of keeping material flows and stock sizes constant, a growth in gross national product would lead to an all-encompassing disposal mechanism. Existing things would constantly have to be replaced by new objects, i.e. destroyed and devalued. Should wind and solar power facilities be conceived in the name of constant growth in such a way that they wear out as soon as possible?

Absolute decoupling also fails due to another paradox. Assuming it were possible to permanently exchange the volumes of material stock and flows instead of gradually adding to more sustainable output, how could the gross domestic product then grow? For instance, if the expansion of the renewable energy sector were linked to deconstruct the same amount of fossil fuel and nuclear capacity, the gross national product increase from renewable energies would result in a reduction in the value added in the nuclear and coal sector, so that the sum would probably be negative growth. Why? Unlike wind and solar facilities, coal and nuclear power plants require a constant supply of resources (coal and uranium extraction), which generates value added along the entire supply chain. By comparison, the value added for renewable energy facilities is almost exclusively based on the extent of the capacity. So the power can only be sold until the end of their periods of use. That

is why the much-vaunted green employment miracle is no more than a flash in the pan.

If one attempted to ensure growth in the energy sector through waste disposal services as a result of the dismantling of old power plants, apart from the material and financial rebound effects it would cause, the question would remain of how this source of value added would be maintained after all coal and nuclear power plants had been dismantled. So for the sake of further growth in gross national product, only the constant growth of renewable energy would be possible, but this would imply not only material and financial side-effects, but would also reach spatial limits within the foreseeable future. Where would the space come from?

The same applies to the field of housing. An absolute reduction in the ecological burden would mean that the total number of buildings could never increase. Existing buildings could only be maintained and if necessary renovated. But a renovation campaign would inevitably run out of buildings. So the only source of value added would be maintenance and the rather rare replacement of buildings that are no longer usable after fully exploiting all ecological optimisation measures. Such an economy of stock optimisation, which would have to be applied to all fields, would entail no growth potential and only generate a constant flow of value added at a relatively low level.

The absurdity of absolute decoupling can therefore be seen from two opposing perspectives. Under conditions of

constant economic growth, it is impossible to achieve an absolute reduction in the ecological burden. Under the condition of absolute ecological unburdening, it is impossible to maintain constant economic growth.

Shifting orientation from the object to the subject

Those who study the spectacular failure of decoupling strategy encounter not only diverse rebound effect problems, but also a phenomenon that can be described as the object-orientation of the sustainability debate. It describes the deep-rooted perspective of being able to ascribe sustainability properties to products, technologies, services or other objects derived from human creative power. But the increased turnover on markets for "sustainable" products means nothing if it is a simple addition or a metaphorical compensation for rampant non-sustainability.

Why is a car that consumes 3 litres per 100 km more eco-friendly than a 20-litre guzzling Opel Admiral, if the owner of the former travels 200 km back and forth to work every day, while the Admiral owner, otherwise a proud rail-pass holder, takes a trip to a regional location five times a year because there is no railway station there? To what extent does a passive house contribute to sustainable development if its owner uses air travel every week and has chosen this type of house precisely for the effect upon reputation that comes with it? The same applies to SUV-driving regular cus-

tomers of an organic supermarket or an eco-power consuming household with as many flat screens, computers and stereo systems as there are rooms.

It is because products have long become a communication instrument that creates identities that we come to a sobering conclusion: The radiant appeal of sustainable consumer symbolism is intended to hide or compensate for the other, less sustainable, practices of the same individual. This much debated "greenwashing" is therefore not primarily aimed at improving the reputation of the company. It is far more a marketing idea to serve customers with a consumer symbolism that suits an ecologically clean slate. This extends from Bionade to passive house aesthetics and on to Atmosfair.

Yet the logic of the moral compensation business is by no means limited to market goods, but instead includes symbolic actions of all kind. Even the demonstratively shabbily dressed subsistence activist from Berlin's alternative scene is no exception: Today we dig in our communal garden, tomorrow we can stretch our legs and relax in a New York jazz bar, and then come back to Berlin — nothing is impossible in the global village. The hypermobile, multi-optional society courtesy of Ryanair, etc. turns individuals into a carrier medium of multiple identities, lifestyles and social practices. In the midst of the wealth of perpetually available self-realisation applications, there is always space for a presentable sustainability attitude — naturally one that is additive and only part-time.

Most of the available bio-certified symbols of an apparent sustainability orientation are aimed at immunising current behavioural patterns against necessary change. But it is no use: Technologies and objects that are sustainable *per se* are simply unthinkable. Only *lifestyles* can be sustainable. Only the sum of the ecological effects of all the activities by a single subject provide insight into his or her sustainability performance. So sustainability effects can only be presented on the basis of individual eco-balances. According to the previously described budget approach, each inhabitant on the planet should only have an annual emissions quantum of 2.7 tonnes of CO_2 by 2050. Those who reject that demand either want no climate protection or no global justice. The average CO_2 balance of a German citizen is currently estimated at a disastrous eleven tonnes per year.

The subject-orientation addressed here could be developed in different ways. Orientation by CO_2 alone could be criticised for ignoring other environmental effects. An alternative to the individual carbon footprint would be the ecological footprint. It is aimed at presenting the overall ecological effects in area units. This indicator can be applied on an individual level. All eco-balancing faces problems of gathering information, limitation, allocation and weighting individual effects. But there is no alternative. Meanwhile, the life-cycle analysis (LCA) required for this has undergone continuous further development. The number of projects and companies that use the process to calculate the cumu-

lative environmental effects along the entire production chain — from the initial extraction of resources through to disposal by the end user — has risen.

Companies could be obliged to provide the necessary information to their customers. Each value added stage could use the cumulated data of the previous stage and thereby complete them with the results of their own eco-balance, before forwarding them to the next processing stage. Retailers could act as an interface with consumers and provide information with a second price tag or data on the Internet. Each consumer would be able to at least roughly assess his eco-balance. As long as companies are not required by law to do so in this country, pioneering companies that provide such information to anyone interested can achieve competitive advantages and thereby set standards. There are already (at least with respect to CO_2 emissions) very easy ways to discover one's individual CO_2 or eco-balance based on average values for all consumer and mobility activities. They include the increasingly widespread online CO_2 calculators and the German-language Pendos CO_2-counter, which deserves a special mention here. It is a kind of "climate protection handbook" that can be easily ordered from bookshops or directly from the Project CO_2 Web site. It allocates to all important products and actions roughly corresponding CO_2 values.

Even if the target CO_2 value of approximately 2.7 tonnes cannot be achieved from one day to the next, it is an unde-

niable yardstick for any sustainable development worthy of the name. It requires no world government or eco-dictatorship, but instead just a little more honesty. Certainly, sustainability efforts that cheat their way around subject-orientation are not only superfluous, but also damaging. They reproduce the schizophrenia of a society with sustainability targets that have never been more ardently expressed, but from which its lifestyle has never been further apart.

Chapter V
Enough is never enough – Growth pressures and growth drivers

Growth pressures, drivers and imperatives should not be confused with growth theories. The former provide explanations as to why modern supply systems cannot be economically or socially stabilised without growth. The latter study how and on the basis of which influencing factors economic growth occurs.

Structural growth pressures

External supply systems are based on steadily increasing the distance between consumption and production. If production processes that were formerly bound to one location are divided into many specialised production stages, their locations can be flexibly shifted, depending on cost and quality advantages.

But every stage of specialisation must finance the required input factors in advance, i.e. investment is needed. The loan capital required for this must be repaid with interest; equity capital investment demands a sufficient yield. The removal of spatial restrictions also leads to a greater demand for physical infrastructures and facilities that are subject to constant wear.

So for each period in each company, a surplus (after subtracting the "pure" production costs) must be achieved that is no lower than the sum of loan capital interest, return on equity and the costs of maintaining and reproducing physical assets. Therefore the minimum growth in value added required to stabilise the overall process tends to increase with every specialisation, i.e. the number of separate companies and their respective requirements for surplus.

The economist and monetary theorist Hans Christoph Binswanger has analysed structural growth pressures in connection with the income and capacity effect of an investment. It should be noted that the income effect begins before the capacity effect, because the capital is initially invested and only afterwards is it possible to sell the production volume. Investments made today immediately increase household income. But the production volume resulting from the investment can only be sold later, in the period that follows. Households therefore buy today what was produced yesterday. In this way, increased demand precedes increased supply.

If on the one hand expenses precede income, but on the other hand both are expressed in the form of monetary payments, the difference between the two being the profit, then how can the latter ever be positive within a single period? This is only possible if the payment gap on the demand side is balanced out by additional net investment to generate the appropriate income. An extremely simple sample calculation can be used to illustrate this: Let us take a mini-economy consisting of one consumer goods producer and an unspecified number of employees, as well as suppliers of other input factors. These are also the consumers, i.e. the amount spent on the goods consumed within one period can only be as much as that which is paid out in the form of salaries and resource remuneration.

Period 1: The company starts operations; it invests € 1,000 to finance € 750 in salary payments and € 250 for other input factors.

Period 2: The output must be sold for € 1,000 plus X, otherwise there would be no profit. Assuming X = € 100 (the following argument applies to any X > 0), then the demand side would require an additional € 100 to finance the output. Where must that money come from if the demand in Period 2 only has a total of € 1,000 available? If the company only invested € 1,000 at the start of the second period and continued to produce at the same level, the following

situation would arise: The consumers could draw the missing € 100 from their renewed income. But that would mean an even larger funding gap in the third period. By inversion, that means: Only if the company invests more than just € 1,000, namely € 1,100 in salaries and material input can the additionally required income be generated during that period. Therefore target production and sales in Period 3 must also rise accordingly. The consumers have a remaining income of € 1,000 to fund the demand for consumer goods in Period 3.

Period 3: Production in the previous period, with costs at € 1,100, is intended for sale at € 1,200. Now there is a funding gap of € 200. To close this, the company buys input for production in this period worth € 1,000 plus € 200. This generates the required income to sell the production of the previous period. Once again, the available income for consumption in Period 4 remains € 1,000.

Period 4: The output must now achieve sales revenues of € 1300 (= costs of € 1,200 plus a € 100 profit). Now € 300 must be invested to prevent a sales crisis. Due to the further increase in output, the costs of which together with the additional profit must be covered, investment in Period 5 and therefore the required output level to be sold in Period 6 must be increased once again …

If, as the above example assumes, merely the same absolute profit is achieved every year, there is already a linear growth in goods production. Otherwise the production cannot be maintained in the long term. If it is realistically assumed that the increased investment that is periodically required is financed by loan capital, for which interest must be paid, the profit cannot remain constant in the long term. At some point, the € 100 profit would not be sufficient to pay off the periodically growing burden of interest. *Exponential* growth is therefore required. Increased investment must then, in addition to the income to finance increased production, also cover the successively increasing amount of interest.

The additional growth pressure induced by interest cannot be eased by funding from equity capital. To finance the investment through self-generated equity capital, the period's profit would also have to be increased. It would already have to be € 200 in the second period, of which € 100 would have to be ploughed back for the purpose of investment. However, the payment gap would increase by exactly this amount. If funding were achieved using equity capital providers, they would demand a return at least as high as the capital market interest rate, so the interest would indirectly maintain its effect.

Since this logic applies to every specialised company that requires capital to produce, approaches to easing structural growth pressures can be derived accordingly: Although having fewer specialisation steps between production and con-

sumption reduces the economic cost advantage of the division of labour, it can also reduce the pressure for growth by lowering the capital intensity of production and therefore the sum of the minimum profits required to cover capital demands. Short value added chains, for instance in local and regional economies, also create closeness and therefore trust, which in turn allows for less high-interest and high-yielding capital procurement. Why? Both equity capital investors and loan capital investors carry a risk that grows with increasing complexity, i.e. the number, distance and anonymity of production sites and capital allocation. This risk increases the financial compensation required by capital investors in the form of interest or equity capital return.

In this context, the elementary role of cash generation should not be overlooked: The process described by Binswanger as a "growth spiral" would not be conceivable, or at least only in a much milder form, if commercial banks were unable to constantly generate new money to provide companies with loans for investment. This cash generation is practically created out of nothing, because bank loans do not simply pass on savings one-to-one, but can instead involve transforming debt into money. This "debt-based monetary system" allows for unrestricted, miraculous increases in money generation and transforms money into real growth.

Another structural growth driver has also been discussed above, namely the increase in labour productivity. The smaller the amount of work that is necessary to create a specific

output, the greater the output must consequently be to ensure that all current employees are required to the same extent, at least under the current ownership conditions. Interestingly, this leads to the same conclusion: Reducing the structural growth pressure means producing with less capital.

Cultural growth drivers

Under which conditions does consumption create happiness? An undifferentiated answer to this key question cannot be given, not least in view of Gossen's famous First Law: According to this, the benefit provided by an additional item of consumer goods decreases as its quantity increases. This provides a constant spur to new increases in consumptive self-development options through qualitative changes. The permanent reinvention of the consumer society protects it from saturation symptoms and ennui. Thus the horizontal and vertical expansion of the wealth of variety covers products, services, experiences, travel destinations, virtual worlds, wellness concepts, optimising one's own body and — should the flood of innovative ideas cease — the stage-managed recharging of symbols, with which old wine can be repackaged in new bottles, and thus culturally revalued. Nevertheless, there is much to be said against the truism that a consumption-induced increase in individual happiness is only a question of design, but otherwise knows no upper limit.

"Happiness research", which has recently also attracted great attention among economic researchers, leads to the realisation that from a certain level onwards, increased per capita income does not produce any further increase in happiness. One possible reason for this is suggested by the American economist Fred Hirsch. He believes that the use of many goods is symbolic or demonstrative, i.e. based on distinction, social prestige or membership of a specific social group. Consumption is therefore characterised by competition, whereby the aim is to attain a higher place in the social hierarchy. One person's gain can only be achieved through another person's loss. An initially achieved advantage erodes with the number of people who, although initially overtaken, catch up as a result of further growth. Even defending and certainly regaining or enhancing one's social position requires constant acquisition, without being able to increase one's own happiness. So it is not a contradiction to say that on the one hand permanent consumption increases are adhered to, but that on the other, it is retrospectively apparent that this has not led to increased happiness.

The resulting dynamic resembles an arms race, as ever higher consumption expenditure is required to maintain or regain a particular and insurpassable level of happiness. With each growth spurt, some consumers are able to improve their position, which has a negative effect on the relative position of others. The latter therefore become promot-

ers and political proponents of the further growth needed to finance their demand for a catch-up increase in external supply. Physical restrictions aside, this is the basis for an endless rebound dynamic , with economic growth as both its cause and effect. It is based on a specific socio-political concept, namely that a social adjustment that is considered desirable should be aspired to by expanding one's available means. Redistribution problems are conspicuously avoided according to that logic. Instead, economic growth should generate a distribution amount with which the demands of those left behind can be satisfied, without needing to take anything away from the winners. Thus, social concerns are transformed into a growth imperative.

From an abstract perspective, this logic of growth can be described as the dominant development principle of modern consumer societies. The never-ending source of a demand for socio-political action derives from uncovering social differences, which are then transformed into the imperative of their removal through additional action and growth. In this way, all political and economic activities achieve a perpetual, self-strengthening legitimation. Enough is precisely never enough: Growth creates differences the removal of which — regardless of at which level — makes further growth necessary.

Chapter VI
Less is more – Outline of a post-growth economy

What is the alternative to a form of existence that is based on economic growth? To develop a post-growth economy systematically and as a self-contained concept, it must be based on eliminating the structural and cultural growth drivers outlined earlier in this book as far as possible. The first of those mentioned can only be alleviated by a trend towards shortening or simplifying complex production chains. The resulting reduction in external supply can range from regional to local supply and even self-supply, in other words subsistence. Subsistence is not a question of either or, but of more or less, so it can be used as an element of combined supply services with different levels of external supply.

By contrast, cultural growth drivers can only be relieved through sufficiently shaping our own demands — as trivial and simultaneously strenuous as that may seem. Consequently, the foundation of a post-growth economy rests on

a theory of subsistence and sufficiency, the outlines and main characteristics of which will be presented in this final chapter.

Economy of proximity: Relieving structural growth compulsion

Cutting production chains down to local or regional supply can reduce the monetary demands of the capital input if the potential of the shorter distances it entails between the capital investors and acquirers is utilised. Such an "economy of proximity" is distinguished by the following characteristics:

Transparency: If, given a sufficiently short distance between both sides of the market, the product consumers are also the capital investors for their regional producers, trust can develop based on the transparency this creates. A direct relationship between capital acquirers and investors reduces the insecurity used to justify high monetary risk compensation.

Empathy: If the interaction between regional market actors includes both the products and the capital, this enhances the social embedding of the economy. Direct relationships that go beyond anonymous market interaction increase the likelihood of the logic of pure profit and capital maximisation being broken down by informal social norms and relationships between those meeting each other in the framework

of economic transactions. Such effects are strengthened by the fact that the actors identify with their region and therefore with its economy.

Congruent interests: In a sufficiently small-scale economy, if the capital investors, who are simultaneously the consumers of the products created by the capital acquirers, were to increase their yield or interest demands, they would inevitably damage their own position. This is because the capital acquirers would have no option in the long term but to respond to the increased interest and yield obligation by raising prices.

Usage control: If capital investors themselves have the chance to determine and control in which fields of activity their capital is used, they would not be "forgoing" anything if they were to reduce their yield and interest demands. This is because they thereby act in support of their own ethical orientation, for instance by investing their savings in regional, ecological, social and artistic projects or businesses that harmonise with their political convictions. This principle will and has already been put into practice by the funding programme of the German GLS-Bank and the former Ökobank.

There are other positive effects of small-scale economies. These consist of shorter transport routes and improved opportunities for closed cycles. Far more important in this

context however are the two further structural effects of deglobalisation. Gradually turning away from spatially unrestricted value added structures would necessarily involve more decentralised and smaller average production capacities, because the output volumes corresponding to the absorption of increasing economies of scale could not be sold within a spatially restricted market. That transformation would make many capital-intensive value added stages unnecessary, which only serve supra-regional logistics and distribution. In the case of lower output quantities, capital-intensive technologies would be relatively less attractive.

The "intermediate" or "convivial" technologies recommended by Leopold Kohr, Ernst Friedrich Schumacher and Ivan Illich as a counterpoint to industrial mass production are characterised by lower degree of spatial reach and labour productivity, because they go hand in hand with a reactivation of craftsmanship, i.e. less capital-intensive value added. If one could invert the universal principle of maximising labour productivity, a reduction in the gross national product growth rates would in any case be necessary to maintain a certain level of employment. Thus shorter value added chains in the sense of less specialisation and consequently lower capital requirements reduce growth pressures in many ways!

Regional complementary currencies, such as the "Chiemgauer" or the "Bremer Roland" could support decentralised spatial relationships. Being only valid within a limited radius,

they shorten value added chains. An additional effect that also reduces growth pressures would be achieved if such "Regios" were given interest-free circulation guarantees. The money would then not only be interest-free, but would even lose value if it were not spent within a certain period. That would remove all incentive for hoarding and speculation. A fee would also be charged for converting Regios back into the main currency, which would not be abolished, but only partially replaced. This would increase the motivation for retaining the money in regional cycles.

Such de-globalisation leads to a situation where a businessman who earns Regios then seeks regional suppliers who will accept that money. Those companies in turn seek suppliers from the region to pay for their purchases with Regios. If employees were then prepared to receive part of their wages in Regios and municipal and financial authorities were even willing to accept the currency, the regional value added chain would have a real opportunity to develop. Naturally this would only affect goods that were appropriate for this purpose. The remaining value of all things that cannot be produced regionally could continue to be paid for in Euros: As regional as possible, as global as necessary.

And that is not all: By designing Regios as a "shrinking currency", i.e. without any interest, an added effect is created that can ease the interest-related tendency towards excess whenever Regios are available as foreign currency. Regional economies correspond with small businesses, which

can inherently be controlled in a more transparent and democratic way, especially if it is not a public limited company — which would be out of place anyway in a post-growth economy — and take the form of a cooperative. Business forms with an institutional structure, spatial proximity and manageable size that allow them to be developed with an orientation towards directly supplying demand, rather than achieving maximum yields, are rarely compatible with global networks.

Deconstructing the industrial complex in such a way that distances between consumption and production become smaller is on one hand only practical in specific cases and in a gradual process. Yet some demands can be satisfied through even shorter supply chains, namely by one's own local work and subsistence, making no money necessary at all.

Put very simply, three categories of supply systems can be defined, which are characterised by a different length of value added chain and the role of money as means of payment. Demonetarised local provision, regional economic systems based on non-interest, complementary currency and — a remainder that should be minimised as far as possible — performance from the global division of labour, could all be combined to satisfy demand as growth-neutrally as possible, after exhausting the maximum possible sufficiency potential.

However, the partial deglobalisation this involves can only be had at the price of lower purchasing power and

fewer options. This reduction would be partly compensated as sufficiency performance and also through modern subsistence practices. But precisely the same result would come about if all products based on the industrial division of labour were burdened with external costs along their entire value added chain: a significantly reduced purchasing power and a change in the relative prices in favour of goods produced regionally and locally.

Creative subsistence as a replacement for industrial output

The shortest value added chain represents complete or "pure" subsistence. For instance anyone who jointly manages a garden with other users contributes to a provision pattern that knows no money, hardly any capital, no profit, no interest and therefore no pressure to expand. By shortening the hours of paid work, subsistence and third party supplies could be combined so that the dependence on monetary income fell. In addition to voluntary, community-oriented, educational and artistic activities, urban subsistence can generate three output categories through which industrial production can be partially replaced.

1. Use intensification through communal use: Anyone borrowing a consumer item from a neighbour, baking him bread in return or installing the latest Linux update, contributes

to substituting material products through social relationships. Objects such as cars, washing machines, communal rooms, gardens, angle grinders, digital cameras, etc. can be appropriate for use intensification in different ways. They may be communally acquired or belong to an individual who makes them available to others in exchange for a different subsistence service. Communal goods can also prove suitable for this purpose.

2. Extended use periods: Particular value is placed on the care, maintenance and repairs of all kinds of goods. People using craftsmanship or manual skills for improvising solutions that extend the useful life of consumer objects (including careful handling to prevent early wear) replace material production with productive performance, without having to forego previous exercised consumption functions. Let us assume it were possible to double the average useful life of goods in enough consumer goods categories through one's own or exchanged manual maintenance measures. The production of new objects could be halved accordingly. In this way, a reduction in industrial capacity would not entail a loss of consumption functions for the affected goods.

3. Subsistence production: Precisely the field of demand that would threaten our very survival if it collapsed, i.e. food production, embodies the absolute opposite of resilience, due to its exorbitantly high dependency on oil. Where food

is concerned, household gardens, rooftop terraces and especially communal gardens and other forms of urban agriculture represent a dynamic trend. This field should not be underestimated for one thing because conventional value added chains in the agricultural and food sector cause such serious ecological damage that any even partial substitution creates appropriate relieving effects.

In addition to the food sector, subsistence practices in many other fields are possible, for instance in artistic and craftmanship services ranging from the creative re-use of discarded objects, to individually-produced wooden and metal objects and semi-professional "home-made" brands. Exchange networks, neighbourhood help networks and the "transition towns" movement are only some examples of locally produced services allowing an exchange of services at local level extending beyond individual consumption. This especially applies to locally produced goods in the form of services such as lectures, teaching, training, consulting, artistic performance, care services, etc.

If these three output categories (communal use, extension to useful life of goods and subsistence production) are combined according to one's own affinities, abilities and local conditions, they can create a rich source from which to draw complementary services in a post-growth economy involving significantly lower monetary income. The effect they have means for instance that halving industrial pro-

duction and therefore waged labour would not necessarily involve halving material prosperity: If consumer objects are used for twice as long and/or twice as intensively, half as much industrial production is sufficient to extract the same quantum of consumer functions or "services" from the same goods. Despite superficial similarities with the efficiency debate, this interpretation of urban subsistence, which is aimed at service markets, is actually its counterpart. Why?

Firstly the unburdening effects of the subsistence forms above described are not based on ecologically decoupling the industrial division of labour, and instead require its reduction. Secondly, these are not commercial businesses that, as providers of property-replacing services (e.g. car sharing, leasing models, commercial rental systems), ultimately maintain the external supply regime—albeit on the basis of increased usage efficiency. Instead, the users themselves gradually transform from consumers into "prosumers" or "coproducers" and thereby gain economic sovereignty by means of their own substantial, manual and social competence in replacing industrial production. In as far as the resulting decommercialisation would make money as a means of exchange unnecessary, because subsistence services are produced locally, value added chains would not exceed a certain complexity. Such processes require no or only negligible investment, i.e. no loan or equity capital, and would therefore induce no structural growth pressures in general.

The three basic forms of urban subsistence may be described as complementing a significantly reduced industrial system and partially substituting its former output, but they also create a synergetic link to industrial artefacts. After all, it is objects originating from industrial production based on the division of labour, the useful life of which is extended and/or intensified through the addition of one's own subsistence input. Such subsistence inputs represent market-free goods. They can be divided into three categories:

1. The individual's own time, required to carry out craftsmanship, substantial, manual or artistic activities.
2. Craftsmanship competence and skill at improvisation to practice the options for subsistence and extending the useful life of products *single-handedly*.
3. Social relationships, without which subsistence-related communal usage is unthinkable.

Creative subsistence can combine several input and output categories. Let's assume that Prosumer A has his broken laptop repaired by Prosumer B, who is sufficiently skilled to do so, in exchange for organic carrots from the communal garden. This transaction is firstly based on social relationships, which person A maintains both with person B and the communal garden. Secondly, it is based on manual skills (A: vegetable growing; B: repairing a broken hard drive and installing a new operating system) and thirdly, it is based

on one's own time, without which both manual activities would be impossible. In this example, the outputs include subsistence production (vegetables), extending usage (repairing the notebook) and communal usage (communal garden).

Naturally subsistence practices that do not involve the whole range of possible subsistence inputs and outputs are also practicable. Those who cultivate their own garden, extend the useful life of their clothing and textiles by repairing them themselves or care for their children themselves instead of consuming day-care services, use no social networks, but do use time and "manual" skill. In this example, the outputs involve extending usage and subsistence production.

In as far as subsistence combinations replace industrial output in the above sense, we require less money. So a prerequisite for a lower level of external supply is a balanced process of dismantling industry and building subsistence. In this way, the reduced monetary income and industrial output could be managed in social terms.

Sufficiency and time

The cultural rebound described in Chapter V, whereby growth creates the need for further growth, has other negative effects, since contentment is also based on human relationships, the integrity of the social environment, recognition of abilities, self-efficacy, health, security and the perceived intactness of the environment. Exploiting such potential en-

courages happiness and requires time instead of money. On the other hand, financing an ever-higher material standard of living means maximising waged labour. That leaves less time for market-free tasks that were formerly performed by people themselves, such as bringing up children, social commitment, maintaining the household or the garden, which now also have to be transformed into acts of consumption or services, and which in turn increase the demand for waged labour and therefore cost time.

In as far as the range of buying options is practically exploding, yet the day continues to contain only 24 hours, this conflict is worsening because ultimately even the time available for consumption becomes too short. This is the key to a new understanding of sufficiency, namely going beyond abstinence. Often, reduction or a return to a manageable or controllable measure is the right way to optimise the benefits of an object or activity. What is a well known fact in medicine applies equally to consumption and mobility: A substance that has a healing effect when taken in small doses can in a higher dose become a life-threatening poison.

For consumer activities to provide any benefits at all, a minimum of one's own time and attention must be invested in them. Since from a personal perspective available time cannot be increased, there is the risk of escalation: A limited, not increasable quantum of time must be distributed between an ever-larger number of consumer objects. Each of these is allocated an ever-decreasing quantum of time.

We have by now lost ourselves in an over-stimulated atmosphere of consumer choice. The amount of time-consuming innovations, choices and information related to these is increasing steadily. Modern societies have therefore reached a point at which not purchasing power, but time represents the bottle-neck factor in our search for happiness. Sooner or later, a point is reached whereby there is just about enough time to seek, identify, compare, check, purchase, receive and accommodate consumer goods — and then perhaps not to use them, simply because the necessary time has been used up by the countless selection and purchasing activities. The waves of innovation, choices and associated information, which require time to perceive and process, effortlessly overtake us via an omnipresent digital infrastructure.

We no longer find any peace because wherever we stand, walk or look at a display, we are bombarded with new opportunities for self-expression that must be perceived and made use of. Under the regime of time pressure, the growth of individual options is bought at a terrible price, namely superficiality — which makes no-one happy and instead encourages burnout. Many promises of the modern age have come true: We are free, have money and can constantly decide how we can make the best of our lives. And it is precisely all these things that have now become stress factors — what an irony! The French sociologist Alain Ehrenberg speaks of the "exhausted self" (1998/2009). He characterises depression as

the result of failing to fulfil a compulsion to exercise liberated self-expression. If it is impossible to make the most of all the many options and chances in order to attain maximum happiness, this threatens to create a "tragedy of insufficiency".

Elisabeth von Thadden stated the following on the subject in an issue of the German weekly publication, *Die Zeit* (2004): "One can detect how unhappy people are from the side effects of a medicine that is supposed to make you happy: Prozac has been found in British drinking water. The antidepressant has seen a consumption increase over the last decade from nine million to 24 million prescriptions in England alone. The excreted remains of the psychotropic drug, which are not filtered out by water treatment plants, are flushed out by waste water systems and make their way into the ground water. What was intended as a way of aiding well-being has become a health risk for all."

In his book "L'Euphorie perpétuelle : Essai sur le devoir de bonheur" (2002) published in English as "Perpetual Euphoria: On the Duty to be Happy" (2011), French writer Pascal Bruckner describes the excessive demands of today as a "curse of the modern age" and asks: "How can one know if one is happy? Who sets the standards? And what should one answer to those who miserably confess: I can't cope?" By now there are well-established therapy proposals ranging from optimised time management to human multitasking. Self-help literature is also experiencing a boom—yet helplessness is growing at an even faster rate. No wonder,

since the one possible solution can only be found outside the consumer logic of growth.

Help can be provided by focusing on a manageable number of options, so that enough time and attention are available to truly relish these things. Those who elegantly jettison the burden of escalating consumption and mobility are protected against losing their way in the rat race of acquisitive self-expression. According to the Federal Environment Ministry, every German citizen owns an average of 10,000 possessions. The ability to elegantly consume in a way that would make us happy is therefore based on unburdening ourselves from the trash of affluence that clutters up our lives. Sufficiency confronts the desperate search for further increases in possessions and convenience with a simple counter-question: From which energy slaves and consumer and convenience crutches could our excessive lifestyles and ultimately our entire society free themselves? Self-determination does not depend on having much, but on needing little.

Reduction, for those who are in danger of drowning in the diversity of material options, is not an act of renunciation, but instead of liberating oneself from excess. Furthermore, cleverly freeing oneself of burdens that consume a great deal of time, but are only of minimal benefit, also leads to greater independence from volatile market events, from money and waged labour. The art of reduction also means freedom from fear. Those who need less are also less vulner-

able to attack. Wherever sufficiency and modern subsistence complement each other, lifestyles become robust. Those who practice this kind of self-protection are not only able to smile unperturbed about Peak Oil and the next financial crisis, but are also equipped for a post-growth economy, since this would only be achievable though an effective and meaningful reduction in the external supply system.

The role of businesses

Reduction is followed by conversion. The remainder of the industrial system would have to be transformed so that the production of new goods, which would have to be much more durable and repair-friendly, would play a far less important role. The focus would be on maintaining, revaluating and enhancing existing stocks of goods, for instance through renovation, optimisation, the extension of useful life and usage intensification. Producer companies (in the physical sense) would increasingly be replaced by providers that are less oriented towards a further expansion of material objects and would instead focus on optimising and refurbishing. This would affect those aspects of stock maintenance, with which prosumers would be overstretched. Creative subsistence and business performance could complement each other to jointly enable a constant scale of economic flow and stock levels. This conforms to a condition Herman Daly describes as "Steady State Economy" (1992).

Many of the issues elaborated above allow the following conclusions regarding how companies could contribute to a post-growth economy:

- Shortening value added chains and strengthening creative subsistence
- Working time models: Measures that facilitate the reduction and redistribution of working time feed the subsistence input of "one's own time"
- Local and regional acquisition, to disentangle supply chains
- Support for and participation in regional currency systems
- Direct and regional marketing
- Developing modular, repairable product designs oriented towards reuse and physical and aesthetic durability, to facilitate urban subsistence
- Prosumer management: Beyond manufacturing products and services, companies could provide courses or training to enable users to care for, maintain and repair products.

Through renewal strategies in the spirit of "conversion, not construction", further uses would be extracted from existing goods and infrastructures by adapting them both functionally and aesthetically to current requirements, therefore retaining them within the cycle of efficient use for as long as possible. Markets for used, refurbished and overhauled goods would also contribute to reducing new production. Such "material zero sum games" represent the physical-

material dimension of growth neutrality. They involve two perspectives:

- Changes focus on converted usage, refurbishing and recombining already used ecological resources and manufactured objects. Material additions are minimised.
- If there is an addition of material objects or consumption of ecological capacities, it must be combined with a subtraction, through which resources and spaces are freed to the same extent elsewhere.

Businesses that are oriented towards material zero sum games would be recognisable as:

Maintainers, who by means of preservation, maintenance, preventive wear minimisation and advice ensure the durability and functioning of a hardware stock that is to be expanded as little as possible;

Repair service providers, who prevent goods from being discarded prematurely;

Renovators, who extract further uses from existing goods by adapting them functionally and aesthetically to current requirements;

Converters, who recombine, change or reallocate existing infrastructures and hardware to create new usage possibilities;

Providers of services that substitute formerly ownership-related consumption forms through services in appropriate situations;

Intermediaries, who ensure that consumer and investment goods remain in the cycle of efficient use as long as possible by lowering transaction costs of consumer goods retailing; and finally

Designers, who orientate the reduced future quantum of newly produced material objects towards durability and multifunctionality.

What would post-growth politics look like?

Since a post-growth economy would emerge from the gradual reduction in supply systems and infrastructures based on the industrial division of labour, this transformation could be supported by a range of framework conditions. Monetary and financial market reforms could ease growth pressuress inherent in the system, to prevent a situation whereby, after achieving an ecologically stable level of supply, an uncontrollable growth dynamic would re-emerge. In addition to the financial transaction tax demanded by Attac, other regulating measures also seem sensible. A further developed version of the so-called "100% money approach" by Irving Fisher (1935) would also be appropriate to contain the almost unlimited generation of money by commercial banks. Building on this, the "plain money" concept put forward by Joseph Huber and James Robertson (2008) envisages in particular the reinstatement of the state's prerogative to cre-

ate money, the debt-free circulation of newly created money through public spending and the ending of all money creation by commercial banks.

This approach does not exclude simultaneously strengthening the already mentioned regional currencies. Further to this, cooperative banks would be required that could to support the generation of capital based on lower interest and yield levels through transparency, opportunities for democratic participation in decision-making and a socioecological orientation. In general, modified corporate forms, such as cooperatives, foundations, non-profit companies and approaches based on inclusive economics can play an important role in tempering structural profit expectations.

Another important element of this political strategy would comprise approaches to land reform. Land is not a commodity produced by an individual actor, and is instead a finite resource that is passed on to one generation of users by the preceding generation. Land should therefore be available to everyone as a matter of principle, which is impossible if private property is concentrated in the hands of a few. Private investors would not be prevented from exercising usage, but they could only become leaseholders rather than owners of the resource. This would prevent speculative profit. Users could not profit from the increased value of the resource, in which case all or part of what is known as "ground rent" would be skimmed off and could be redistributed to the wider society. Naturally, the allocation of

usage rights would be restricted to an ecologically adequate upper limit.

The "Sky Trust" (2001) proposed by Peter Barnes appears especially interesting in this respect as an environmental policy alternative. The proposal suggests that companies should purchase carbon emission permits from society or local communities.

The scandalous jungle of subsidies (construction, transport, industry, agriculture, etc.) would have to be carefully looked through with the aim of reducing both ecological damage and public debt. This would free up financial resources that could compensate for decreased state income as a result of reductions in industrial output, so that in total sufficient funds to fulfill governmental responsibilities, especially in the social, health and education fields remain.

The extremely damaging subsidies are mostly revealed to be desperate attempts to keep a growth machine in motion that would otherwise not be able to function. Thus political strategy must first ease off the accelerator, rather than using the emergency brake, if it is aiming for a post-growth economy. Incidentally, the problem of debt could also be solved without economic growth, if this occurred within the framework of burden sharing as proposed by Harald Spehl.

Both a strict moratorium on all projects resulting in further land areas being sealed off land or affecting landscapes, and programmes to dismantle infrastructures would be ab-

solutely essential. Naturally, atomic and fossil fuel power plants would be the first affected. The current expansion of coal power stations that is going more or less unnoticed would certainly need to be halted. A significant proportion of industrial facilities, motorways, vehicle parking and airports (the greatest climate killers in the foreseeable future) would have to be closed, dismantled or renaturalised as far as possible. Alternatively, facilities for generating renewable energy could be installed at these locations to ease the catastrophic consumption by these technologies of land and landscapes. In accordance with the material zero sum game, the further extension of capacities for energy production or storage would be coupled in a way that provided the required space exclusively through closing and dismantling other infrastructures. A resource strategy setting upper limits for ecological consumption would represent a further support measure.

The education sector would also need to be reformed to match the conditions of a post-growth economy. In affluent middle-class families, and even more so in all educational institutions, we train young people in the practises of excess and global mobility that are more ecologically ruinous than anything that former generations could ever allow themselves. At the same time, the potential for disappointment, pain and violence is maximised: What if this lifestyle, based as it is on an unbridled optimism about progress, were suddenly no longer possible to maintain? How would the hosts

of young hedonists react if, apart from abstract knowledge, they have been taught nothing more than iPad compatibility and unrestricted globalism as a way of life?

It may be sensible to shift the focus from abstract to manual skills, as well as towards a more settled lifestyle. Children and young people require the tools with which to shape a responsible life within ecological limits. In terms of policy measures, establishing sustainability as a compulsory subject in education, namely on the basis of the subject orientation mentioned above, would be the minimum. In the 21st century, anyone who is not even able to reflect upon their own lifestyle from the viewpoint of global transferability will never be able to contribute to sustainable development, let alone to a post-growth economy.

Not only building upon that, but in the spirit of lifestyle politics, companies could be obliged to label all products and services with a CO_2 or ecological footprint along their entire life cycle. Restrictions or the (targeted) banning of advertising could be considered, especially in public spaces and where children and young people are affected.

Distribution and taxation policy could include upper limits for income and wealth acquisition. Measures that facilitate shorter working hours and the redistribution of working time, both in the private and public sectors, are essential. During the phase of transition towards a post-growth economy, it may become necessary for social policy to develop suitable forms of Citizen's Income or basic in-

come guarantee. This would however be linked to community/non-profit work and financial need.

Listing all appropriate measures of a post-growth politics would go beyond the scope of this book. In recognition of this, only the most important approaches have been mentioned here.

Beyond this, a post-growth economy would overstretch any political actor, as long as the system logic of contemporary consumer democracies is characterised by political attempts to outdo one another with respect to further promises of freedom and prosperity. That is why attempts to focus on questions relating to power or systems issues have so far gone nowhere.

An excess of trite political demands that will save the world, improve it or make it fairer is confronted with still more blatant deficits in terms of the social behaviour compatible with the situation that would result should the change being demanded come about. If we take the thesis described in Chapter IV seriously, according to which no technical solution to the problem of growth is in sight, there remains no alternative to reduction strategies. These would inevitably affect our lifestyles. But who would choose a policy that calls into question the continued exercise of a lifestyle that one does not wish to give up? It follows that: firstly, viable social criticism — at least in the context of a post-growth economy — must initially address the lifestyle issue, without obscuring political demands in the process. Secondly, future

scenarios critical of growth that are completely at the mercy on political agendas for their implementation are simply a waste of time. No democratically elected government is a pioneer of social change, but instead always lags behind in order to avoid risk. So we cannot keep the consequences of necessary change at arm's length by conveniently delegating to either politics or technology. Political decision-makers will only be encouraged to move towards a post-growth politics if they receive enough convincing signals of the readiness and ability of society to cope with that change.

Conclusion
We (still) have a choice!

It goes without saying that the post-growth economy outlined in this book is currently acceptable to a minority at best. The transition town, urban gardening and repair movements are examples of pioneering work that at least foresees some of what the rest of society will experience in future. The transformation of consciousness and culture that has been discussed for four decades, without which a transition to the more modest formation of prosperity expectations would be impossible, points to a phantom debate — as if we had an alternative. The enormously increased vulnerability of an externally supplied and growth-dependent form of existence suggests that its future breakdown is so likely that the only remaining question concerns whether this will be "by design or by disaster".

A lifestyle of consumption and mobility based on the multiplicitous removal of restrictions can neither be economically stabilised nor ecologically legitimised. Those who propagate growth today must believe in no less than two decoupling miracles, namely with respect to scarce resources and ecological damage. Behind the comfortable vision of

"green growth" lies not only a distance from reality that is intoxicated by the belief in progress, but also a moral problem: How can we seriously make the fate of mankind dependent on waves of technological advances that have not yet taken place and which we cannot even be sure will ever occur, let alone provide the required problem solutions, given that they may also emerge as "disimprovements"?

By contrast, the post-growth economy outlined in this book is aimed at returning to responsible economic behaviour. This requires the dismantling of a prosperity model that is based on nothing but the ruinous removal of restrictions and cannot therefore be justified by the claim that it is the "deserved" result of human creative power. Consequently the aim must be to rehabilitate the art of reduction as a veritable design principle—with respect to both society as a whole and one's own lifestyle. Accordingly, post-growth economics is essentially an undertaking of creative forbearance rather than additional activity.

We are so fixed on problem solutions that consist of *adding* more things to the world that we overlook a simple fact: Reduction and self-limiting behavioural patterns have the charm of requiring neither capital nor innovations nor political agenda. They generally need no preconditions and cost nothing—and what is more: They even save money. The cheapest and most ecological plane flight remains one that does not take place. The same applies to mobile phones, flat screens, houses, motorways and agricultural subsidies.

The simple practice of omission can be implemented everywhere, unilaterally and quickly. This strategy type is so simple and logical that it is presumably the reason why we have so much difficulty with it. Measures that cost nothing, are not innovative, require no new laws and for which nobody needs a university degree seem suspicious to us. They undermine a cramped view of the world that knows only progress and the conquest of further freedoms, so that the response to the consequences of removing restrictions is the removal of further restrictions.

Another element of the post-growth economy consists of precautions that reduce the impact of dismantling an industrial society based on the division of labour. The resilience described in this book includes alongside unburdening ourselves of everything that makes us dependent and vulnerable, building independence and self-determination and the fair distribution of what paid labour remains. Supply patterns become stable when they are measured, decentralised and diverse and are based on the shortest possible distance between resource extraction and consumption. The shortest distance is equivalent to modern subsistence.

Could such an existence, freed from excess, consisting of a monetarily compensated 20-hour job, complemented by a wealth of subsistence practices, make us happy—so that it is worth making a start for precautionary reasons? Any answer must assume that perceived happiness is also a matter of interpretation. It feeds firstly on expectation per-

spectives, based on subjective experiences, and secondly on differing attributed meanings within a relevant social environment. If we leave that aside, there are countless reasons for answering the question positively.

- Relieving as far as possible the external supply burden, which creates need and the threat of control, frees us from the fear of an increasingly insecure future. Needing little and being able to shape as much as possible by one's own efforts, or together with others, is an expression of strength and economic independence.
- The almost unmanageable over-stimulation to we are exposed from all communication channels could be reduced in a simpler, more easily manageable world. This allows focused enjoyment instead of unsatisfying superficiality.
- Modern subsistence creates experiences of success and self-efficacy, particularly through individual production, repairing objects or works of art. The completed product of handiwork, which can be tangibly perceived as such, are positively distinct from the transience of abstract services in the sphere of labour division.
- Buying less and instead organising more together with others, exchanging, using or producing, means reintegrating the social aspect into the economic sphere. Reliability and stable social coherence can replace individualisation. If simple, manual activities regain their status, it will be

possible to integrate those who are currently ostracised due to a lack of money, education or communicative abilities. This accords greater respect to those whose contributions are no longer in demand in a specialised, competitive environment.

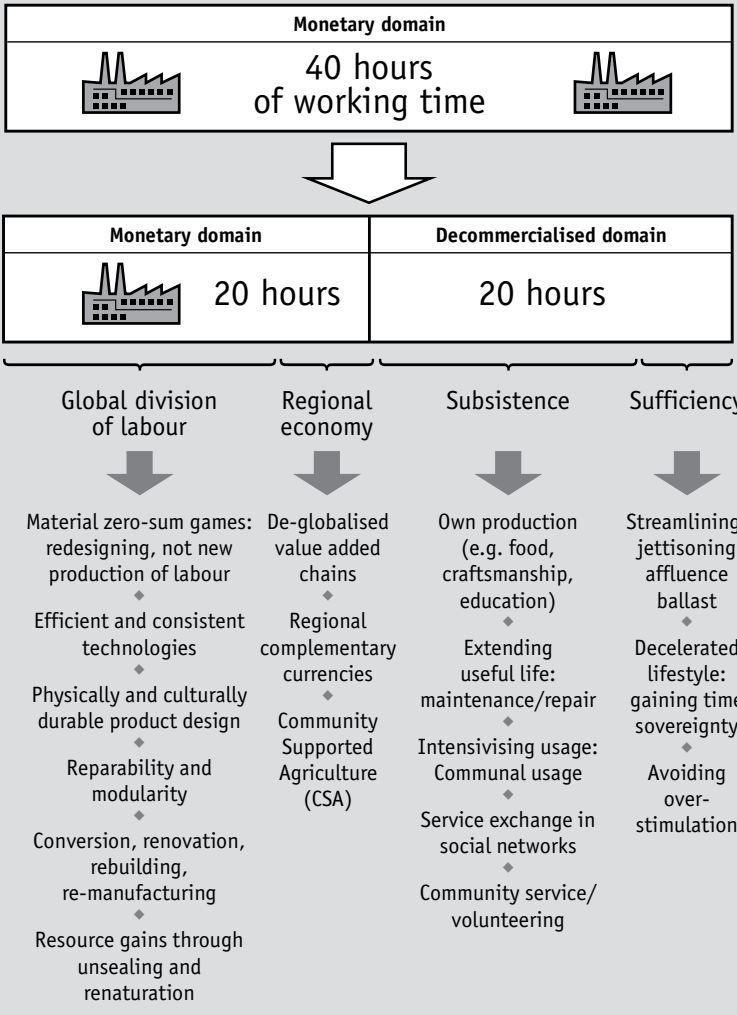
- Extreme forms of social imbalance are a logical consequence of the external supply model. Since only monetarily-valued services can be infinitely increased, differences in income and wealth can grow accordingly. A high degree of wealth that is no longer based on money, but instead on one's own ability to produce, levels out differences in material affluence. And we have long known that unfair distribution is detrimental to the happiness of all.

But the happiness that is currently so greatly prized as the highest aim of all economic activity leaves one crucial question unanswered, namely that of responsibility. Can we really rely on a single justification based on human happiness—since things or entire societies can hardly be regarded as subjects that feel happiness? Or does this stipulation entail the risk that the pursuit of happiness, for which all means are sanctioned, might creep back in through the back door, thereby returning us back to the problem we started with?

It may be helpful to introduce the category of enlightened happiness. This would be inseparable from the conscious-

ness of practising a lifestyle that leads to happiness within a responsible, i.e. not unrestricted, operational framework. Those who do not live beyond their ecological means and instead enjoy a happiness not associated with jet fuel and plundering are not obliged to continually find new excuses for their way of life. How much self-deception is necessary to be happy with things which — in view of my awareness of global well-being — I would never be able to justify? Is happiness that is not honest because it requires the tolerance or suppression of contradictions, not ultimately an absurdity? Enlightened happiness would mean not only enjoying, but also having a clear conscience. The post-growth economiy would offer an ideal foundation for this, in addition to its other potential benefits. So what are we waiting for?

An overview of the post-growth economy (diagram)



Political support through institutional innovations

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Acknowledgements

No book is ever written by one person alone. For this reason I would like to thank all those who have contributed to the success of this volume. My particular thanks go to Prof. Uwe Schneidewind from the Wuppertal Institute, who inspired and encouraged me to take on this project. I am grateful to the Friends of the Wuppertal Institute for providing the financial support for this English edition published by oekom. My special thanks also go to my editor Dr. Manuel Schneider for his constructive comments and to Ursula Lindenberg for her brilliant editing work for the English translation; further thanks go to my brother, Björn Paech, for the countless corrections undertaken and, last but by no means least, to all the staff at oekom verlag.

About the Author

Niko Paech

is one of the most important German growth critics. He is also authentic in the sense that he lives out his vision of a "decelerated, decluttered world". The economist has been Professor for Production and the Environment at the University of Oldenburg since 2010. He has a high profile and attracts wide public interest as Chairman of the Vereinigung für Ökologische Ökonomie (VÖÖ) and a member of the scientific advisory board of Attac.

“Self-determination depends not on having much but on needing little.” *Niko Paech*

After a stressful week at work, we all feel we sometimes deserve a treat too: perhaps the latest smartphone, an iPad, or a flatscreen television. Before we know it, we are stuck in the vicious circle of consumer desire and time poverty. And that is not all: the constant demand for “more” is causing raw materials to disappear and driving environmental destruction forward.

The world is still not ready to abandon the drug of “growth”. However, the debate about the end of excessiveness is gathering momentum. Sustainability researcher Niko Paech provides a timely polemic that unmasks “green” growth as a myth. Yet “green” growth and “sustainable” consumption are seen as the new and best ways forward. Despite this, the subtle distinction — here “good”, there “bad” growth — is held by Paech to be nothing more than a sham.

In his counter model of a post-growth economy, he calls for restrictions upon industrial value added processes and for patterns of self-sufficiency to be strengthened. This form of economic activity would not only be more frugal but also more stable and environmentally friendly.
And it would also provide a release for the many people who already find life in the rat race of material self-realisation very uncomfortable.

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