Chapter 5
How to Work a Great Mindshift for Sustainability Transformations

A transition to sustainability demands profound changes in understanding, interpretative frameworks and broader cultural values, just as it requires transformations in the practices, institutions and social structures that regulate and coordinate individual behaviour. In this context, it is essential to get to the position where people, industry and governments can easily distinguish between objective facts and opinions that are presented as facts to advance particular interests, and rely on the former to make informed decisions.

UNEP, *Geo 5* (2012: 447).

Magical leverage points are not easily accessible, even if we know where they are and which direction to push on them. There are no cheap tickets to mastery. You have to work at it, whether that means rigorously analyzing a system or rigorously casting off your own paradigms and throwing yourself into the humility of Not Knowing. In the end, it seems that power has less to do with pushing leverage points than it does with strategically, profoundly, madly letting go.

Donella Meadows, *Leverage Points: Places to Intervene in a System* (1999: 19).

By virtue of the authority with which they are endowed, i.e., as experts, they are able to influence the definition of social reality others hold … the authority of logic and, therefore, of the expert as a practitioner of logic, is what carries weight. This source of authority legitimizes the stories they tell. But the source also tends to subvert the storytellers' own recognition that they are telling stories.

Don Michael, *With Both Feet Planted Firmly in Mid-Air* (1985: 96).

By tying pioneer practice back to the scientific basis of Chaps. 2 and 3, we see how essential the role of worldviews or mind-sets are in the formation of individual identity, collective vision and strategies for systemic change that have a mobilizing effect. Thus, to really innovate a system, transformation strategies also need to include futures literacy and the acknowledgement of mental path dependencies. This means engaging with core human aspirations, beliefs or values and what they mean in the historical context of any activity.

Sociologists and neuroscientists cited earlier show how different stages of civilization have influenced the formation of personalities and even psychological needs (Elias 1982). Filters of how we perceive and thus feel in situations and habitualized circuits of interpretation are modeled in our brains in parallel to our experiences in the environments we happen (or choose) to live in (Hanson 2009).

The canonized knowledge that comes with education impacts rational search strategies for alternatives and becomes part of our mind-sets. These encompass basic assumptions about what we say exists, what its characteristics are and which development solutions seem possible or rational, including guiding values.

In scientific contexts this is what paradigms entail: epistemological questions surrounding what we can know and ontological ones on the state of the world will be combined into methodological approaches to capture reality or seek truthful answers. Some researchers explicitly add axiological value questions when presenting their research designs.

Worldviews or paradigms serve as central reference frameworks for epistemic communities in research but also for the pioneers or situated groups that transition researchers observe taking action on strategic change. The worldviews and paradigms inform the narratives of where this social system or economy is heading, what its purpose is and why a particular ordering of roles, technologies, remuneration structures, and infrastructures are promising, or at least acceptable for this destination. Reflexive theory sees them as the mediating 'glue' between actors and structures in a society.

We have seen that all the pioneering practitioners reviewed above started with principles, guidelines, indicators and measuring tools to express the purpose of their particular initiative and how it can be enacted. Gradually, such enacting is changing the productive processes and system setups that people encounter in their 'reality,' which will foster different experiences of how life 'is.' The imaginary space of possible human–human, human–nature and human–technology relations is widened and thus creativity and courage expand in the innovation of systems organizing economic activities. As a consequence of learning from such experimental test cases, it becomes easier to change regime rules and path dependencies, which all transition and transformation scientists agree is necessary for lasting changes. This potentially virtuous spin on the materiality of ideas (Fig. 2.5) is summarized in the UNEP *GEO-5* report:

> Coordinating deep and enduring system change is neither a single pathway nor a linear process. For example, the rules of a system often arise from a change in mindset, but in turn help support mindset shifts. At this level of system intervention the emphasis is on getting the signals right. Because rules and incentives can institute structural change, they represent the game changers that can catalyse and retain a strong influence on system behaviour over time (UNEP 2012: 422).

In democratic societies in particular, individual and collective sense-making and narratives are crucial for an understanding of which rules and incentives are put in place and accepted. They create the "discursive face of politics" (Fraser 2013) and influence the development of "consciousness-personality-structures" (Hahnel 2002), both of which will determine how policies and technologies are innovated and which solutions appear as economically sensible or normatively justified. Low leverage points that can accelerate or balance feedback in a system—and thus also existing development trajectories—involve tweaking technological solutions or economic incentives. But they will not be the source of any intentional bend of a trend. This requires a deeper repurposing on the levels of imaginary and sociocultural belief systems.

5.1   The Role of Mind-Sets in Unlocking Path Dependencies: Antonio Gramsci's Heritage

One scholar I have found particularly insightful for an understanding of the governing role of a dominant paradigm or common sense is Gramsci (1891–1937). An Italian political economist of the twentieth century, he wrote most of his work while imprisoned by Benito Mussolini's fascist regime in the 1930s. His quest was to find an answer to the phenomenon of democratic orders whose citizenship rights were presumed to be democratic, but in which a small number of people enjoyed far more privilege than the majority (Gramsci 1971: 377).

For Gramsci, shaping or changing regime structurations or governing institutions requires a "collective will" that can mobilize sufficient support, either in numbers of people or in politico-economic power. This collective will is represented by a group of people whose political program "presupposes the attainment of a 'cultural-social' unity through which a multiplicity of dispersed wills with heterogeneous aims are welded together with a single aim, on the basis of an equal and common conception of the world" (Gramsci 1971: 349).

The essential ingredient is the common conception of the world, and from it springs the agreement that a particular program, its aim and its underpinning values and norms are of general interest for the given community—or at least the best possible solution for it. Of course here we find a resemblance to what I discussed as paradigms or worldviews, and the role of narratives in generating collective action.

Gramsci uses the term 'aim' for what I formerly described as the declared purpose of systems or strategies. Successful aims would have the quality of a "social myth," which is "a political ideology expressed neither in the form of a cold utopia nor as learned theorizing, but rather by a creation of concrete fantasy which acts on a dispersed and shattered people to arouse and organize its collective will" (Gramsci 1971: 126). This "concrete fantasy" is close to what I used the term 'imaginary' for in this book, and both are essential for the emergence of the will to act and change.

In successful transformation processes, slowly but surely, the originally new aim or purpose becomes the norm or basis of consent that I have called the 'default.' It is produced and reproduced through a set of institutions, social relations, and ideas that live in science or canonized knowledge as much as culture. Here we find the analogy to the changing yet objictified role of old ideas in today's path dependent systems, taking the shape of infrastructures, technologies, political regulation, market patterns, sociocultural norms, and mind-sets (Fig. 2.5).

Gramsci puts most emphasis on the sociocultural aspects when seeking to understand why capitalism, despite its clearly unequal distribution of benefits and power, was not leading to the revolution that Marxists had predicted. This is what he coined the term 'hegemony' for: it is the soft or invisible factors like values, ideas, knowledge, and norms about what is good and right that filter which solutions appear to be of general interest or acceptable. A successful collective will's narrative thus provides "not only a unison of economic and political aims, but also

intellectual and moral unity, posing all the questions around which the struggle rages not on a corporate but on a 'universal' plane, and thus creating the hegemony of a fundamental social group over a series of subordinate groups" (Gramsci 1971: 181–182).

This means that the governance of societies is anchored at very deep and informal levels (as highlighted in the s-curve presented here) and the groups whose particular interests are best served by the currently accepted social myth will benefit from an effect that Gramsci called "leadership with least resistance." Even in highly unequal societies control is maintained not so much by violence and political or economic coercion as through an ideology that expresses the idea that there is no valid or realistic alternative (Gramsci 1971: 242).

Gramsci's concept of hegemony is therefore very close to that of the uncontested paradigm of Meadows, who says: "The shared idea in the minds of society, the great big unstated assumptions—unstated because unnecessary to state; everyone already knows them—constitute that society's paradigm, or deepest set of beliefs about how the world works" (Meadows 1999: 17). While Meadows leans more to the camp of overcoming paradigms and path dependencies by learning, Gramsci highlights political interest and domination when thinking about the persistence of paradigms. He therefore argues against restricting the idea of coercive rule to official laws but to understand how the private context equally defines codes of conduct and shapes the way in which individuals fit in. He explained that the concept of the law

> will have to be extended to include those activities which are at present classified as "legally neutral," and which belong to the domain of civil society; the latter operates without 'sanctions' or compulsory 'obligations,' but nevertheless exerts a collective pressure and obtains objective results in the form of an evolution of customs, ways of thinking and acting, morality, etc. (Gramsci 1971: 242).

Contemporary political economists like Stephen Gill from York University in Canada have used Gramsci's work to track manifestations of the mainstream economic paradigm in contemporary societies. Gill's concepts dovetail nicely with the original three levels of the MLP, and help us sharpen our understanding of the degree to which the mainstream economic mind-set has been encoded into our societal systems. They also show why I think that changing this paradigm would be one of the most powerful leverage points for transformational changes in development. In his analysis, the mind-sets component is inherent in all three levels, but given their important role in understanding system perpetuation and change, I decided to single them out into the meta- and mini-levels as well as cutting across them (Fig. 2.6).

On the landscape level, Gill's "market civilization" resembles Polanyi's stark utopia of a market system. It describes the ongoing structuration in which social relationships, and relationships with nature, are commodity-shaped, fitting everything into the pathway of price-governed exchange value growth. According to Gill, this institutional setup and with it the personality-shaping effects nurture an

ahistorical, economistic and materialistic, me-oriented, short-term and ecologically myopic perspective on how the world works (Gill 2003: 119).

In this setup the regime level is marked by what Gill calls "new constitutionalism," referring to the reifying establishment of laws and regulations necessary to create fictitious commodities or market patterns in ever more areas of life. These rules and norms armor the market civilization's imaginary with legitimized options of coercion against those unconvinced by its promises and unwilling to conform. As a consequence, these institutions protect not only the interests of those groups and individuals benefiting most from a market civilization, but also, slowly but surely, turn the experienced reality of humans into what the theory foresees: ubiquitous market patterns in which everyone has to possess and sell capital, labor or nature in order to make a life (ibid.: 120–124).

The effect that this has on individual identities was described as psychogenesis in Sect. 2.1 and dubbed "disciplinary neoliberalism" by Gill. He refers to Weber (1864–1920) instead of Norbert Elias. Weber, the famous German sociologist, analyzed how classes, status groups, political parties, etc., are all social phenomena expressing the distribution of power in society and embodying typical customs. They discipline without employing coercion those who wish to be part of them, something that Gramsci also pointed out when arguing for the expansion of the law into the private realm. In the words of Weber: "What is decisive for discipline is that obedience of a plurality of men is rationally uniform" (Weber/Eisenstadt 1968: 28). In effect this means that everyone seeking to fit in with the standard groups of society will, in a self-governing way, seek to master ideas, habits and social practices in line with market society and new constitutionalism patterns (Gill 2003: 128–130).

Gill's neo-Gramscian concepts offer a particular political-economist-style interpretation of current path dependencies from mental to regime infrastructures commensurate with the general MLP concept of transition studies. They show how expressions of the mainstream paradigm and mind-set cut across the different levels of structuration. Some present-day examples of the hegemony of market civilization and disciplinary neoliberalism come to mind. You may not even have found anything awkward about some contemporary instances of fictitious commodification—not even when someone talked about making the labor market more flexible, improving the return on investment on financial products or expanding the Emissions Trading System. And great examples of new constitutionalism can be found everywhere. One of my favorites is the 2013 coalition agreement of the parties making up the current German government. It refers unabashedly to a health 'economy,' a culture 'economy' and a 'bioeconomy' as if this was the natural way of viewing and organizing what were formerly public goods, human rights, the arts, or nature and agriculture.

After fictitious commodities, Polanyi of course also singled out the importance of the idea or social myth of endless gain and growth for the democratic governance of highly unequal societies: eventually, everyone should benefit from the expanding cake, and as a consequence everyone contributing to growth is serving the common good, regardless of what is hiding behind the numbers.

So how does Gramsci say we can escape hegemonic rule? As a political economist he of course refers to structural problems within the production processes. Resource constraints or too high levels of inequality might challenge their smooth continuation and therefore the acceptance of the division of labor and revenues within them. But, most relevant for this book, he also suggests the weakening of the cultural and ideational consensus or dominant paradigm that helps to justify the unequal distribution patterns and provide moral hazard on a sociocultural rather than structural level.

Public discourse after the financial crisis, at least in Germany, was full of statements—for example, that human nature is simply greedy and that it was not the fault of individual bankers but of regulatory loopholes that they basically had to use. The question these articles never answer is which of these implacably greedy humans should then suddenly be enlightened enough to write laws without loopholes. Nor do these articles suggest how it might be possible to find laws without loopholes for globalized systems. The moral hazard discussion so far points out that systems too big to fail and contracts with golden parachutes are not very conducive to good governance.

But there is also a sociocultural moral hazard perpetuated by a narrative and proclaimed common sense in which people are innately greedy. The ethical default changes from one of 'intending no harm' to one of 'do everything that is not explicitly forbidden because this is legitimate.' Even regulatory and judicial consequences will differ from those of a society in which egoistical behavior to the detriment of the great majority is considered an individual and civilizational failure. Different sentences for corruption or rape in different cultural settings are just one example of this hazard effect.

German philosopher Richard David Precht offers a forthright view on the effects of the widespread adoption of mainstream economic ideas and the commodification of human relationships: "Strict and tough calculation of utility, ruthlessness and greed are not man's main driving forces, but the result of targeted breeding. One could call this process 'the origin of egoism by capitalist selection', following Charles Darwin's famous principal work" (ibid., here cited by Habermann 2012: 15).

More subtly, Gill writes: "a change in thinking is a change in the social totality and thus has an impact on other social processes; a change in the social totality will provoke change in the process of thought. Hence the process of thinking is part of a ceaseless dialectic of social being" (Gill 2003: 22). This means that many of the ultimate drivers of societal change are located within each one of us. Here, as indicated in purple and blue arrows in Fig. 2.6, we find the connection between the big picture of meta-level paradigms and hegemonic narratives on the meso-level and the mini-level of individual thinking and acting: everyone can challenge the declared system-purpose and the ideas and assumptions it needs to appear as beneficial or legitimate. By questioning the standard answers and ways of doing things we can drive change from below, within and above, at the same time.

5.2 Transformative Literacy: Hacking Systems and Their Purpose

We saw from Meadows' list of leverage points that shifting the paradigm is the most difficult and yet most effective or radical leverage point for system innovations. She paraphrases Kuhn when describing it as long and tedious work:

> In a nutshell, you keep pointing at the anomalies and failures in the old paradigm, you keep speaking louder and with assurance from the new one, you insert people with the new paradigm in places of public visibility and power. You don't waste time with reactionaries, rather you work with active change agents and with the vast middle ground of people who are open-minded (ibid.: 18).

The good news is that even if there might not be visible changes for a long time, this work is not undertaken for nothing. Think back to the development and also ignition phase in the s-curve. Each choice to do differently, each questioning of the stated purpose or reasons, impacts the former reference frameworks, mind-sets and knowledge reservoirs. It offers alternative meaning, delegitimizes the notion that there are no alternative claims, and offers ideas about other ways of acting or doing things. Of course much structural power rests with those who benefit from the status quo and its hegemonic paradigm. But as Meadows wrote, many individuals—change research suggests about 60 % of people in a system—are open minded and willing to learn.

This is where *radical incremental transformation* begins, as illustrated nicely in Fig. 5.1. It stems from Ray Ison, professor of the Systems for Sustainability program at the Monash Sustainability Institute in Australia. I was fortunate enough to sit next to him at a conference on decoupling human well-being from resource use and after my presentation he told me he had just finished an article that he felt was relevant to my thinking. The following illustration (Fig. 5.1) is indeed spot on, even though his terminology is of course different:
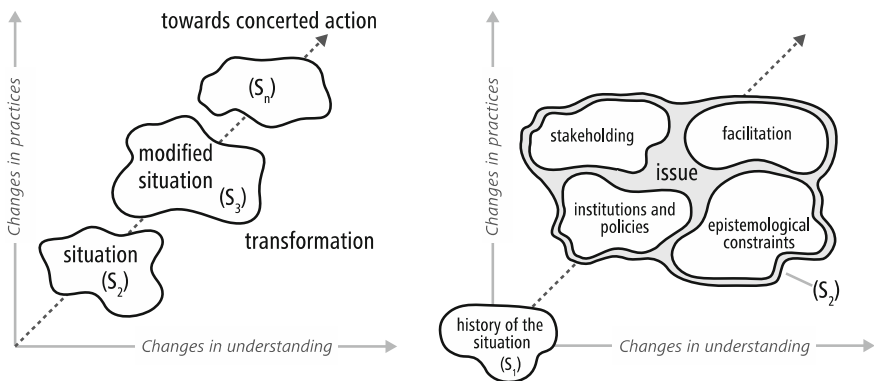

Fig. 5.1 Processes of radical incremental transformations. *Source* Ison 2016 forthcoming, Fig. 2.4

Ison's article summarizes 14 years of experience in transdisciplinary research on system innovation processes. As a result, he and his colleagues put "social learning" at the heart of their framework: humans engage in making sense of a situation by socially constructing the issue at stake. Through this process they either reify or change both their understanding of a situation and the practices in which they engage. Sometimes this entails amending the institutional setup (made visible as elements of a situation in the right hand graph). Change and dynamic adaptation is the normal state of being in a complex living system. So each alternative viewpoint, each act done differently, amends the framework for action in the future.

So, in essence, we cannot *not* be part of changing the world. The decision that lies with us concerns our choice to become aware of this and use it intentionally— even if cause and effect are not always visible or impressive. Over time and through collective or concerted action, the situational amendments transform the system in question even if each shifting from one dynamic stage to another is in itself not very radical or disruptive (here indicated as S_1 to S_n in the left hand graph). As part of this process, the boundaries of one system may also be adjusted and thence the scope of what a particular transformation process involves.

So each questioning sparks thought processes in others—an inspiration or irritation that influences the dynamics. Each silence might be interpreted as others please. And we never know when exactly that last incremental activity necessary to prompt a social or ecological tipping point for wider and deeper—radical—regime changes occurs. Social scientists' research findings suggest that 10 percent of the people in any given system provides the critical mass where new ideas or opinions start spreading rapidly (SCNARC 2011).

In order to strategically influence these permanently ongoing processes of learning and adaptation, it is important to open up a target system: to assess and understand the crucial path dependencies and which purpose or generative imaginary they are serving. This involves infrastructures and technologies, as STS research would point out, the ecological embeddedness that SES approaches highlight, and the enforceable laws, role definitions, and mind-sets that political economist emphasize.

To capture this holistic view I created an image with 5 P's that are important to bear in mind when opening up a system in order to repurpose it (Fig. 5.2). It is supposed to serve what Uwe Schneidewind, president of the Wuppertal Institute in Germany, called "transformative literacy": "the ability to read and utilize information about societal transformation processes, to accordingly interpret and get actively involved in these processes" (Schneidewind 2013: 83). He argues that those seeking to understand and plan sustainable development need to consider not only economic and technological solutions but also put more emphasis on the cultural and institutional dimensions of societal development. These will eventually determine if and how technologies are used and how many material goods people aspire to in the first place.

Schneidewind's four-dimensional perspective fits that of the STS camp of transformation research and was meant to complement what Roland Scholz, former ETH Zurich professor called "environmental literacy" in a book with the same title
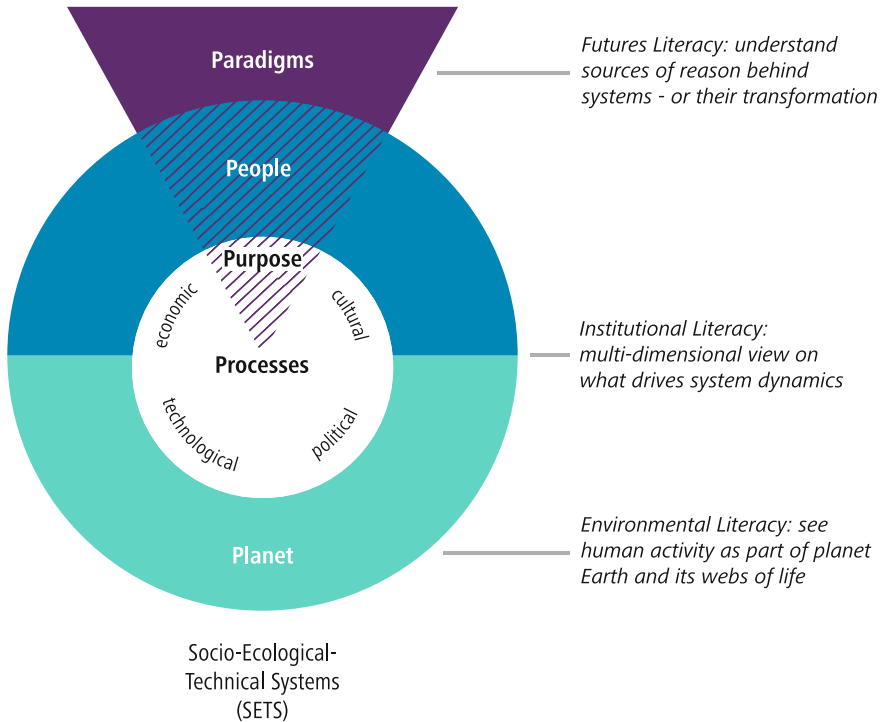
Fig. 5.2 Transformative Literacy—5 P's to map SETSs. *Source* Own illustration

(2011). Scholz discusses what has been introduced here as the SES camp's view of embedded systems, and provides analytical tools for a better understanding of the inseparable systemic relationships between humans and their natural environment.

His definition of 'environmental literacy' captures "the ability to read and utilize environmental information appropriately, to anticipate rebound effects, and to adapt to changes in environmental resources and systems, and their dynamics" (Scholz 2011: 540).

In line with my ambition to integrate relevant SES and STS concepts and combine them with political economy, I also introduced futures literacy, as defined in the 2013 WSSR: "people's capacity to imagine futures that are not based on hidden, unexamined and sometimes flawed assumptions about present and past systems" (ISSC/UNESCO 2013: 8). With reference to the Global Scenario Group report (2002) I discussed this view as SETS camp: without checking for biases and differences in these assumptions, no change agent will understand how and why people expressing the same goals can so utterly disagree on the best ways forward.

Although my intention is to bring all of these perspectives together, I refrained from adding a fourth literacy concept. The definition of transformative literacy captures exactly what I am after and I am thus suggesting that the realm of what is required to attain it should be amended with the key points of the other two

literacies—understanding ecological embeddedness and differences in mind-sets. These are essential for active involvement in transformational activities for sustainable development. So Fig. 5.2 integrates Schneidewind's approach as 'institutional literacy' into an amended understanding of what transformative literacy for sustainability involves.

The bottom half-circle (Planet) is the home of environmental literacy. It represents the fact that humans need to interact with their environment for survival and well-being. No system innovation for sustainable development can ignore these relations. A system innovator would be interested in understanding the actual physical ties in the problem that she is tackling as well as the paradigm with which nature's reproductive capacities and role is captured by influential evidence or people in the system she seeks to change.

The top half-circle (People) illustrates my conviction that system innovation theory is well advised to recognize the role of humans as social beings when wishing to capture agency behind the nouns that dominate the explanation of change there, for example: "innovation cascades," "knock-on effects," "diffusion of new technologies" and "(re)alignments between multiple elements and interactions between multiple actors" (Geels et al. 2015: 2). It captures the fact that humans make history and in doing so influence the future development of people and the planet. Actors reason and struggle with each other over how to organize people–people–planet relations, and create and apply technologies, infrastructures and institutions intended for particular purposes.

The results are the self-stabilizing path dependencies that can afford continuity, but can also lead to crises (Processes). Schneidewind's institutional literacy approach is a reminder that not only technological and economic dimensions are important to consider, but also political and sociocultural ones.

Since there are always many possible ways to organize such processes, opening up a system also entails a historical perspective that seeks to deconstruct which goals and imaginary are wired into the processes in question (Purpose). Futures literacy thus entails—as the first step—becoming sensitive to the existence of different mind-sets and thus different rationalities. The second step is to understand how each point of view leads to different interpretations of what is at stake, and how a purpose might best be served—and the link with the overarching Paradigm.

This is why Fig. 5.2, in line with Meadow's work on leverage points, lists paradigms as both the sources and stabilizers of systems and peoples' mind-sets, but also as drivers of transformative engagement toward innovating them.

Transformative literacy can inform both types of analyses, those mapping a given organization or society from a systemic point of view, and the problem-driven approaches in which scholars define system boundaries according to the challenge they seek to address. It is equivalent to hacking the system: hackers take systems apart to understand their inner workings and see where they can manipulate them to change their performance. For human systems, this means going back in history and deconstructing which ideas, actors, technologies, economic or environmental factors and institutional as well as cultural aspects were instrumental in their emergence and how they now interact in a mutually

reinforcing manner. In both types of analyses checking for the 5 P's helps develop a thorough understanding of path dependencies: which ones lie at the roots of the development trajectory of the system or thorny problem one is tackling? Where in their dynamic interplay do stabilizing feedback loops or the potential to unlock them lie? And, linking it back to humans as the loci of change: where do the power potentials to achieve that unlocking lie?

Each specific system setup harbors different types of power potentials that will make it easier to induce change for some actors and less so for others. Of course, money and role-defined authority come to mind, but following Gramsci's guidelines also means being sensitive to the structural power enjoyed by those privileged under the status quo and its overarching paradigm: it tends to be perceived (or presented) as the default position against which proposals for change have to argue their case, and the arguments have to fit with the prevailing common sense.

With this in mind, the following provides a slightly more detailed description of what 'hackers' should look for in each of the P's, and also serves as a very brief summary of the arguments in this book:

- 'People' and 'Planet' are more explicit reminders that this is what sustainable development is about. Also, that these elements exist independently of the human-made institutions in the process circle. Yet, the manner in which they exist and develop lies exactly in the contextually and historically diverse ways that processes are set up. Statements that humans are just x, y, or z, or analysis based on this kind of assumption signal a difficult mind-set for repurposing work.

- 'Processes' comprise the dynamic workings that 'defend' particular behavioral patterns and development trajectories over time. The term 'path dependencies' highlights that this encompasses physical infrastructures and technology choices as much as politico-economic rules and incentive configurations like remuneration standards or interest-bearing money. This book makes the point that they also include sociocultural and individual role definitions, identities, habits, and mind-sets that shape what seems possible, justifiable or desirable. Usually, an alteration of some process configurations will impact the dynamics of the entire system, and change that is too abrupt or intense will lead to resistance or crisis. Given the multiple mutually reinforcing feedback loops behind path dependencies, existing systems show a high degree of resistance to transformational change. This is especially high if the system's generative rule or aim is challenged.

- So 'Purpose' lies at the heart of any system's behavior because it encapsulates its raison d'être. It connects overarching paradigms (assumptions about how the world is) with collective choices (which processes should we therefore set up) and individual values, beliefs, and actions (is this good and what is my role). A change in purpose is therefore a radical decision, and due to the multiple limiting factors referred to above, will usually require incremental steps to be successfully accomplished. Another possibility is not so much that the purpose will be changed, but the overarching paradigm changes and thus makes the

processes in place seem ineffectual. Or the purpose is changed but not the paradigm, so the paradigm is inapt for informing proper strategies to get to the declared purpose. This is the case that I made in this book: if the main paradigm informing development decisions—mainstream economics—is not updated, the declared purpose of sustainable development cannot be reached. The mainstream economic paradigm is blind to key aspects of this purpose (human needs and nature's integrity).

- 'Paradigms' are thus the source of system designs. Hegemonic ones stabilize processes and work as reference frameworks for the narratives with which actors engage in the creation and application of institutions and technologies. They translate into unconscious programming and routine habits that psychologists and neurologists explain are necessary for coping with the complexity of life. So holding paradigms or biased mind-sets is both unavoidable and helpful in organizing social life. However, there are always alternative paradigms, and with them alternative individual and collective wills that have the potential to incrementally irritate the status quo until windows of opportunity for conscious questioning and more radical political action arise. Depending on how the system is re-stabilized—a change in default or not—one might speak of a paradigm shift and radical system innovation, or not.

The speed with which a system purpose can be changed—and the likelihood of this change lasting—will depend substantially on the support or resistance of powerful actors in the SETS. Power, here understood as the capacity to influence processes and their purpose, is unevenly distributed in any SETS. It can be dispersed or concentrated, and has many facets that vary with each system's configuration; control over production sites, infrastructure or land are obvious loci, but outlets of public opinion, a recognized expert status in strategic discussions, or good connections with key decision-makers can be equally important. Describing such qualities as power potentials expresses the notion that one and the same aspect can convey considerable influence in one system, but not in another.

One example for this could be fiat money: it needed new laws and regulations to come into existence and many incremental changes in regulation and strong paradigm support to become the powerful tool of private rule that it is today. Yet, if a financial crisis wiped out trust in virtual wealth, this tool would cede its power to material possessions or to human capabilities to actually plant food, educate children, build houses, and fix cars.

To sum up, large-scale transformations are tremendous, conflict-laden and long-term tasks. The outcomes will typically be different to what the individual actors in the processes foresaw. Nor are the processes linearly predictable. A comparably small change in one subsystem may have huge ripple effects in another. Often there are time delays between cause and effect, especially between small single causes and the accumulated effect of a tipping point. No one knows exactly when a critical mass or threshold is reached at which the fetters of the old can start thriving, but the estimates of 10 percent of the people being sufficient are rather encouraging (SNARC 2011).

The MLP shows that each large scale system is composed of many, many subsystems, and reflexive research and action frameworks help to connect the big sustainability challenge of a Great Transformation with the small sustainability potentials of each individual's decision to learn more, be mindful about his or her intentions, speak truth to power or organize change initiatives. In essence it means that a transformational 2030 Agenda for Sustainable Development begins with challenging and changing our self and inspiring those that we can reach. Gramsci called this the "progressive self-consciousness," explaining that: "The awareness of self is reconstituted through an appreciation of prevailing thought-patterns and the nature and distribution of life-chances. Hence the moment of self-awareness leads to a more complex and coherent understanding of the social world and is a form of historical change" (cited by Gill 2003: 31).

Such a change in personal mind-sets might bring about exactly what all innovation needs: the energy-sparking imaginary of what could be if x, y, or z were different. Offering alternative ideas, interpretations and practice experiences also means offering alternative meaning, legitimacy and knowledge about solutions. This can foster deliberative co-creative processes—or at least delegitimize claims that there are no alternatives. The future constellation of imagination, rationalization and justification patterns in which decision-making processes take place is changed. And even if it does not trigger alternative decisions or practice right away, the mind-sets of the people involved are altered. A spark of inspiration or resentment of complacency has been planted. The radical intention fuels another incremental step.

Award-winning   complex   system   and   leadership   researchers Margaret J. Wheatley and Deborah Frieze of the Berkana Institute found that from separate local efforts might arise networks which solidify into communities of practice once people join them not only out of self-interest but also for a jointly aspired-for outcome and out of concern for the others. From these networks might emerge new "systems of influence" that possess qualities and capacities that did not exist in the individuals before and were not anticipated: "the system that emerges always possesses greater power and influence than is possible through planned incremental change. Emergence is how Life creates radical change and takes things to scale" (Wheatley/Frieze 2006).

What Wheatley and Frieze call the "aspired outcome" equals Gramsci's 'aim' and my purpose: it can unify different expectations into a collective will for change. This outcome imaginary is not understood as a blueprint. Those, as complex system researchers agree and empirical research will show, are not available for living systems. Rather, when there is clarity about which default practice and arguments can be jettisoned, a corridor of steps that qualify as going in the desired direction can emerge, and movement both as a team and in a strategic fashion is facilitated.

This brings me back to the radical imaginary of recoupling, a common thread in twenty-first century science (Chap. 2) and one suitable for capturing the contextually different repurposing efforts of the pioneering initiatives presented in Chap. 4. Under   current   circumstances,   their   incremental   strategies   are   ones   of double-decoupling: doing things better when it comes to treating nature and

humans and finding ways to free their systems from the growth-for-growth's-sake imperative in order to do be able to do things well in the longer run.

In most of the Green Economy discourse, also in the context of reaching the SDGs, 'decoupling' is stated as the prime goal rather than a strategy. Also, the term only refers to single- and not double-decoupling. The GDP growth imperative remains the uncontested default. From my point of view this falls short of a paradigm shift and thus transformational leverage. It keeps one trapped in the mental model that created unsustainable solutions of uneconomic growth in the first place: can economic processes really be disconnected from nature or people?

Also, single- rather than double-decoupling means strategies claim success when more fictitious commodities are created: more natural life and resources are priced and thus push up exchange value output statistics, while 'immaterial' growth often stems from the same effect in social relations or the yet further financialization of the economy.

Of course, every paradigm, theory, model, or narrative is invariably a distortion of the real world. But it is important to reflect on them and decide whether the blind spots are acceptable given the declared purpose that one seeks to achieve. To me, a mind-set suitable for guiding transformational strategies for sustainable development can only be one that helps illuminate the qualities of human–human, human–nature, and human–technology relations so they can be governed toward thriving in harmony. The monetized growth imaginary of the mainstream economic paradigm fails miserably. The recoupling imaginary qualifies. It can become the radical backbone of a new narrative that organizes incremental transformation strategies for sustainable development.

5.3 Summarizing Outlook

Given the magnitude of change required to reach sustainable development, a focus on ideas and paradigms may seem a bit lofty. But a systematic exposure of the blind spots in the paradigm most influential in imagining futures today enables critical reassessments of common sense and the way the institutions built around it shape developments. Opening up today's SETS's to understand on which basic ideas individual positions as well as institutional designs rest will also shed a different light on joint interests, decision-making patterns, and coalitions—especially in contrast to the typical container concepts of 'government,' 'business,' 'civil society,' 'science,' and 'media.' While these institutions have been set up for particular purposes and thus carry mandates and role expectations (some of the famous path dependencies) that differ from each other, the way that individuals carry them out will depend on their respective mind-sets, evidence sourcing, and ethics.

Deciphering political dynamics by using such paradigmatic factors rather than institutional affiliation is thus very helpful for the transformative literacy needed to conduct system innovations. Also, on the individual level I believe that once we have started to see the world differently, the old ways will not feel 'right'—or at

least will not seem inevitable. The term 'mind' captures all of those less intellectual aspects of human existence, too: sense, meaning, soul, intention, or spirit. The seeds of imagination, belief, and argumentative ammunition for becoming a change agent have been planted.

The emphasis in this book lies on exploring the transformational potentials of a Great Mindshift in mainstream economics for the agenda of sustainable development. Of course one could also open up the blind spots and contingencies in other dominant paradigms of the development agenda, like nationalism and sovereignty or human rights and individualistic justice systems. But none of these are built on ideas or 'scientific concepts' that involve such a degree of flawed assumptions about the things to which they are applied: human-need satisfaction and natural resource governance.

Sustainable development is about integrating social, environmental, and economic goals in the short and long term. So while the monetized numbers and mathematical equations appear to provide a high degree of scientific certainty and predictability, they do not say much about the trade-offs behind the cost–benefit weighting that happened in the quantification process. The models running predictions of growth, employment, productivity, and competitiveness are equally intransparent and based on the assumptions that nature and humans can be freely substituted and should move around in the correct amounts needed for efficient markets. This is very unhelpful for informed decision-making. For democratic decision-making, it is a real problem. It means one can present computational graphs and numbers instead of having to make serious ethical and moral judgments explicit because they might be politically risky or detrimental for the justification of one's privileges.

Concepts such as utility, capital, market price, and growth are, as discussed, laden terms. Whether we like it or not they include many value judgments. Also, according to the mainstream economic theory, only more is better. Any idea of enough or sufficiency necessarily translates into limiting and unsatisfying results. Any vision of arriving at steady-state equitable prosperity is *ex ante* excluded from the imaginary. This is at least ideological. When looking at the triple crisis in environment, social equity, and economic stability today it seems future-foreclosing. History is an open-ended process and the security-, justice-, and well-being-providing potentials of sufficiency strategies become imperative for a world of nine billion, in particular with regard to future generations. They should not be qua theory excluded from the choice set of rational actors.

Interestingly, some important economic thinkers like Mill (1806–1873) and Keynes (1883–1946) also had sufficiency ideas for the scenario in which economic output growth led to a certain degree of material saturation. At levels of sufficient supply, they reasoned, humans would work and produce at a constant level and efficiency or technology improvements would lead to more time with family and friends, cultural events, education, recreation, and so on. These thinkers also always limited the realm of an economy, and therefore economics. Neither the governance framework nor the paradigm were foreseen to impact all of human existence and natural life.

In 1844, Mill criticized a too-narrow and too-widely applied definition of political economy: "Political Economy considers mankind as occupied solely in acquiring and consuming wealth," and it would seek to explain all realms of societies, even "though many of them are really the result of a plurality of motives." He went on to say that "with respect to those parts of human conduct of which wealth is not even the principal object, to these Political Economy does not pretend that its conclusions are applicable" (Mill 1844, Essay V. V.38). I am sure he would be rather surprised by how matter-of-factly the public discourse today speaks of the culture economy, the wellness economy, the health economy, or the nursing economy.

So I hoped to show that this overstretched application of the mainstream economics mind-set has produced framings and frameworks of reference that limit rather than expand creativity, innovation, caring, resilience, and even happiness. There are a lot of things about human beings and nature that are much better experienced if economic mind-sets are shed and much better captured with non-quantified variables. So while recent amendments to economic models might improve the predictive capacity of econometrics, their universal application to everything and everyone in this world cannot continue. Neurosciences, psychology, and sociology show the detrimental effects of living with a quantifying cost–benefit mind-set for both individual well-being and that of societies.

Empirical economics like the work of Elinor Ostrom has been dam-breaking in showing that the assumptions of rational choice models, for example, are fit for highly competitive markets for private goods but not for public goods or common pool resources like most of our ecological systems—or for a financial system serving the real economy. Ostrom also pointed out how the political-institutional de- and re-regulations of the last four decades in particular have been influenced by the mainstream model and its *Homo economicus* assumptions. Such ongoing 'deregulation' has done its very best to reregulate societies into resembling Polanyi's stark utopia of the market system, a world composed solely of highly competitive markets for private goods. But this is not proof of the rational choice model's validity. On the contrary: the sustainable development agenda is proof and evidence of the problems that this is causing, and urges us to stop this totalitarian approach to running the world.

Transforming a system in full operation without risking its collapse is, of course, a dire task and I am not saying that the structural path dependencies behind growth economies can simply be thought away. Too rapid or too sudden interference with interdependent value chains and relationships would have devastating effects. But I am saying that the cultural and political dominance of a worldview and paradigm that has led us to building these institutions can and needs to be quickly and radically challenged. It obfuscates or even justifies utterly unsustainable behavior and developments while being void of any meaningful insight about the quality of good lives for all, led in harmony with nature.

What I am therefore saying is that the normative underpinnings and impacts of predominant science and political narratives need to be put firmly on the table. They are the ideas that shape future realities. In her 1978 book *The Life of the Mind*,

philosopher and political theorist Hannah Arendt expressed this as follows: "The activity of knowing is no less related to our sense of reality and no less a world-building activity than the building of houses" (Hannah Arendt Center 2013).

This is different from today's ubiquitous call for an unspecific boost in education that is supposed to somehow bring all the unemployed young people into structurally unavailable jobs and transform the wealth gap between the rentier class and working people. Instead, the first challenge is to jointly identify which kind of knowledge is important to quickly spread transformative literacy and the courage and connections to help unlock the unsustainable path dependencies that keep societies hostage today. Arendt unequivocally declares such normative aspects to be part of any scientific endeavor: "Thinking, no doubt, plays an enormous role in every scientific enterprise, but it is a role of a means to an end; the end is determined by a decision about what is worthwhile knowing, and this decision cannot be scientific" (Hannah Arendt Center 2013).

This is what The Great Mindshift stands for. Since thinking does not happen in a vacuum, it needs to be embedded in a great institutional shift. Not only, as discussed in detail in this book, is a particular way of seeing and experiencing the world turned into the powerful default by enshrining it into 'the ways things are done.' These 'ways in which things are done' will also either support conditions for change or inhibit them and host unevenly distributed forms of power for different groups or individuals. There exist brilliant scientific studies on the politically motivated and strategic build-up of the mainstream economic worldview through think tank funding, lobbying and financing of elite university chairs, political campaigns and media outlets (e.g. Gill 1990; Scherrer 1999; or Sklair 2001). The perception of what is the 'right' thing does change with believes about how the people and the world work—and of course with intended outcome. So thinking and knowing differently is a necessary but not sufficient precondition for behavioral change. Complex system theory as well as empirical studies in sociology, psychology, and institutional economics show the importance of feedback mechanisms that reinforce positive or negative learning and create anticipation about the reliability of others changing as well (Ostrom 2009: 431).

But so far, collective action theory, once again influenced by the mainstream economic paradigm, has placed more attention on transaction costs and payoff-functions than on how individuals can build the trust that allows them to take the risks of actually doing things differently. That would lower both structural and sociocultural moral hazards and could keep power abuse in check.

All of the pioneering examples in Chap. 4 have design principles that emphasize the reflexive-adaptive aspects of navigating change in complex systems: explicit learning and amendment of their indicators or matrix or principles through ongoing engagement with the groups that decided to be governed by them. All of them were conscientious about their governing structures and how these would enable or inhibit sustainable development principles. This also meant that their benchmarks for progress made the integrated perspective explicit, and contained qualitatively differentiated and contextually fitted ideas and measures of value, productivity, cost-benefit, or progress. Furthermore, the benchmarks involve the scrutiny of

which types of competitiveness and growth in any given circumstance are promising, and which are harmful. All of them engage with the potentials that principles and goals of enough or sufficiency can bring to a development ideal and strategy. Also, all of them put a great emphasis on processes instead of products in order to ensure that utility can increase by economic activity and that the latter meets jointly defined ends.

To me, these are pioneering initiatives from which a transformational 2030 Agenda for Sustainable Development can learn. Of course there are many, many, many more around the world. These have already inspired significant movements that easily make it onto the radar screen of a Europe-biased scholar searching for radical incremental change examples in practice. They share the conviction that changing the management of our economies and our relationship with our one and only planet—the declared purpose behind the SDGS- cannot happen without changing our dominant development paradigm and its institutional embedding.

It is this insight that I think is spreading quickly around the globe right now. The old way of doing things will not deliver. Something new is needed, even if we do not know yet what it can and should look like. It provides a renewed window of opportunity for the deeper and wider changes that the 1992 Rio Declaration in parts clearly foresaw. The late 1980s and early 1990s thus had a moment of paradigm-shifting potential, but it was overrun by the fall of the Soviet Union and the subsequent 'End of History' claims.

In his review, Simon Dalby asked me why I think that deeper changes should be possible today. I think we once again face the conditions of a structural crisis that Gramsci said was necessary to break the hegemony of a particular system setup. And we have the experience of a first round of less radical responses to the ecological and social costs of the market system utopia. In all three dimensions of sustainable development—also in the economic one—even rich countries are experiencing setbacks and widespread disbelief in the promises of the ruling elites. The typical North–South divide, the patronizing distinction into 'developed' and 'developing countries' starts giving way into either the acceptance that not one country can keep its development strategy (the universal approach behind the SDGs), or into something that resembles feudalism on a global scale. In both cases we reach the tipping points where the power of the default cedes: the burden of proof starts shifting toward those who still claim that the continuation of the status quo is possible and desirable.

The gap between the top 1 % and the rest of the world is too great, the impunity of the haves too visible and the increasing squeezes on the have-nots too strong, as the recent upsurge of conflict refugees and desperation-based migration shows. The war zones are too suspiciously concentrated in oil-rich areas and other resource reserves and the weather changes, droughts, floods, and storms experienced across the globe are too much of a physical sensation.

Thus, I would say we are already experiencing the preconditions in which more strategic and conscious paradigm shifting work can boost the emergence of a development vision that finally lives up to the integrated perspective of sustainable

development. This makes me less pessimistic than sociologist Harald Welzer, who recently wrote:

> For the time being, the transformation necessary today lacks guiding principles of the kind that early industrialized societies had in terms of progress, freedom, prosperity and growth. It will not be possible to establish new mental infrastructures without guiding ideas, yet if they do not dovetail almost naturally into day-to-day lives and lifestyles, visions of the self and frames of reference for the future, they will remain just that—ideas (ibid. 2011: 32).

For me it is not so much that we have to find an alternative to freedom and prosperity, or even growth. We have to reclaim their meaning for a world with 9 billion instead of 1 billion people who have too little spiritual guidance rather than too much, and a degree of commodification and homogenization in productive activities and consumption that limits need-satisfying possibilities rather than expanding them. In the midst of this, functioning as a great positive feedback for these trends, the next technological revolution, digitalization, is unfolding. With it comes an overturning of former standards of communication, speed, size, and reproducibility of goods and services. At the same time, knowledge and evidence about the dimensions of human impact on the pattern of oceans, greenery, and soils that make up the fragile ball of Earth has led to the emergence of a new term: the Anthropocene.

The political, cultural and economic circumstances from which the Enlightenment movement sought liberation simply no longer exist. A Second Enlightenment in the twenty-first century would seek liberation from very different types of totalitarianism and limitation to human potential. So which imaginary could progress, freedom, prosperity, and growth, the principles mentioned by Welzer, carry for the era of the Anthropocene? In my view both theory and practice reviewed in this book offer the tenets of the guiding ideas a Second Enlightenment could foster:

- Instead of being an output measured only by money, progress can mean the equitable and balanced progress of the whole SETS as measured by differentiated social, environmental, and cultural indicators.
- Instead of freedom meaning the absence of obstacles to individual purchasing desires, it can embody human security and sufficiency: freedom from the fear of falling behind in the race for resource accumulation, and freedom from the culturally created endless want that impedes well-being.
- Instead of prosperity embodying ever more consumption choices, it can stand for a holistic and adaptive understanding of human needs and resilient access to diversified need-satisfier strategies.
- Instead of economic growth being an end in itself, different types of economic output and activity grow, stay steady, or also de-grow as means to the end of securing well-being within Planetary Boundaries.

Many of the SDGs and their targets speak to these principles, albeit with the exception of the dogmatic clinging to GDP growth and greater income for even the rich. Many say they are not specific or binding enough. But in system innovation strategies, it is more important to map where not to go (anymore) and then outline

several acceptable trajectories for change. The 'instead of' in the list may well mark such no-go areas and fit well into the double-decoupling strategy: freeing economies from both human and natural overexploitation and growth-for-growth's-sake financialization.

The actual repurposing work comprises three key aspects that can also be done in a division of labor: delegitimize the traditional arguments, offer alternative meaning, and shine a light on alternative practice options. This means the Second Enlightenment does not happen solely in universities and institutes while everybody else applies the instructions they're given. Polanyi's account of The Great Transformation showed how many of the eighteenth- and nineteenth-century thinkers or philosophers he cited were also factory owners, priests or involved in politics. The Second Enlightenment can thus emerge from networks of pioneers and engaging innovators from all walks of life.

Finally, a successful *Great Mindshift* for sustainability does not mean replacing old universal theoretical laws with new ones. Instead, the emerging twenty-first century paradigm is about reflexivity and transformative literacy: working on a properly integrated perspective with clarity and transparency about one's own assumptions and value judgments. Shunning commodification, corporate interests, and contra-petition from scientific inquiry would allow for precaution, respect for diversity, and remaining open to what emerges. Donella Meadows called this "transcend[ing] paradigms" and positioned it as her highest leverage point for system change. Engaging in a Second Enlightenment therefore needs to be married with futures ethics: what are the novel frames and imaginaries that I am proposing —and with which intention?