

Self-Efficacy and Modernization

On The Origin of Change

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ABSTRACT:

Self-efficacy is the critical link between environment, culture, institutions, and modernization. It is the *primum movens* of change through learning by enabling human adaptation to environmental and circumstantial stimuli. Self-efficacy develops everywhere at all times, but in different strengths, domains, and levels. It is equally required in both developed and less developed economies. A lack of self-efficacy in leaders, elites, and ordinary electorate can foster retreating to manipulation or force, to exploitation and circumventing rules to pursue one's interests.

Self-efficacy is not genetic but learned and culturally transmitted. Individuals and communities with high self-efficacy believe to be able to learn and change their behavior favorably, and profit from doing so because they have learned that through positive past experience in a effort rewarding environment. Their past success begets future success through opportunity recognition, higher risk taking, better cooperation, and higher and longer investment. In contrast, individuals and communities with low levels of self-efficacy experience an unrewarding environment that does not support their efforts, and thereby does not foster learning and change and the development of higher self-efficacy. In a self-fulfilling prophecy, without experiencing positive consequences to one's activities, one will resist or not actively seek change because of the belief to fail.

Fortunately, the development of self-efficacy can be nurtured by targeted policies and measures.

Better understanding how self-efficacy works and develops will increase the efficiency and effectiveness of economic development and modernization policies. The goal of these policies is to foster economic performance and societal progress. Economic performance reflects how much humans change their habitat, while culture reflects the collective experiences in that habitat in norms, habits and rules. Self-efficacy as the origin of human behavior change vitally influences economic activity and social progress as changes can be brought about by the belief in one's abilities without retreating to force or manipulation.

KEYWORDS Self-Efficacy; Modernization; Learning; Economic Performance; Economic Development, Cultural Evolution.

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“Yet, only one thing has to be remembered: there is no effect without a cause, and there is no lawlessness in creation.” Albert Einstein¹

1. Introduction

When Acemoglu’s and Robinson’s (2012) suggested that the single most important factor for poverty was bad institutions, their conclusion was not only widely applauded, but also criticized as oversimplification, ethnocentrism, reversing causality or wrongly ignoring factors like geography, culture, uncontrollable and/or external circumstance and their historically-based argumentation as suffering from a hindsight-biased interpretation.² In this discussion between the most renowned social scientists of our times, probably all aspects of influence on a nation’s prosperity were named, all of which for good and proven reasons, and to all of which counter examples could be found though. There are successful countries with warm or cold climates, democracies and dictatorships raising countries out of poverty, countries of different religious beliefs and geographical situations being successful and unsuccessful. So far, no pattern has unanimously been identified, that could include or explain the notorious exceptions to the assumed rule. Possibly, this is due to the lack of identifying a “general transmission belt”: an operative tool which actually could “work” to causally relate culture, environment and geography to economic performance, the formation of the political process, and the shaping of institutions.

¹ Cited after Hermanns, William (2011).

² Actually, Engermann & Sokoloff and North, Wallis & Weingast had earlier found and suggested in a range of works many aspects of what A&R later wrote up as a congruent explanation. Their critiques range from Bill Gates to Jared Diamond, Jeffrey Sachs, William Easterly, Paul Collier et al.

This work suggests that self-efficacy (SE) could be this “missing link” which translates environment into culture and institutions, and all three to economic development and political participation. The psychological concept of SE was developed by Albert Bandura in the 1970’s and has been extensively empirically tested in a multitude of domains and applications; it was found as of high explanatory value for causally affecting human behavior and decision making. Here, I apply the concept of self-efficacy to the process of development and modernization, and trace its effects in an extensive appraisal of the existing political and economic development literature. I research if it could be self-efficacious agents whom Adam Smith³ (1776/2000) describes as labourously, in rational self-interest, chances recognizing and opportunities persuing producers of the Wealth of Nations; if it could be self-efficacy what constitutes Parson’s (1964) “evolutionary universal in development”, and account for the differing adaptive and creative capabilities of populations. Indeed, when Tetzlaff (2017)⁴ questions the possibility of development to produce Western benefactions like financial well-being, health, freedom, education, justice, individual choice and security outside of the (Western) economic and political system that brought these values about, self-efficacy to develop people instead of a system may be an universally employable answer and vital part of an explanation for the different pathways of development that the people of the world have taken⁵.

We can define economic performance as reflecting how much humans intervene in their natural habitat and change it - or nowadays re-nature it -, which also reflects if that habitat requests human intervention, how responsive it is, and if it

³ Smith describes drastically the distruction of self-efficacy unless protective policies are enforced: *“But in every improved and civilized society this is the state (of lack of exertion, b.d.) into which the labouring poor, that is, the great body of the people, must necessarily fall, unless government takes some pains to prevent it.”*, p.840.

⁴ cmp. p. 10; see also discussion on theories, the nation state and systems of development, p.20

⁵ please see chpt. 5.4: Self-Efficacy is Not Genetic.

tends to react positively or negatively. Likewise, we can see culture as reflecting the sum of experiences of a group of people with deduced norms, habits and rules in their habitat. This makes self-efficacy an important determinant of the extent of change, and direct result of the responsiveness of a specific habitat to human intervention. If we better understand how self-efficacy works to produce empowered, cooperative agents who set high goals, and with great persistence and ambitious investment work to achieve them, and how SE develops and can be effectively fostered, we can greatly enhance the efficiency and effectiveness of development and modernizing policies.

In the following, I will therefore

- develop a general understanding of self-efficacy, and its role in socio-political and economic processes; and identify learning and change as the actual modernizing process that requires self-efficacy to take place, and delimit SE from related concepts (here and ch.2);
- place SE into the existing theoretical framework of development and modernizing literature (ch.3);
- analyze modernization as a learning process with different kinds of learning (individual and collective/social), and differing costs and benefits for individuals and collectives (ch.4);
- address questions around the concept of self-efficacy including asymmetries, proxies, fostering its development, questions on its genetic origin, and the hurdles of empirical testing (ch.5);
- give an empirical example of the applicability of this concept with a study on Ghanaian smallholders which I co-authored⁶ in ch.6, and - conclude with a

⁶ Here: ch. 6 - Wuepper, David and Barbara Drosten, Draft August 2016, Historical Return on Investment and Current Economic Outcomes: The Cultural Evolution of Investment Self-Efficacy. Available from:
https://www.researchgate.net/publication/307560803_Historical_Return_on_Investment_and_Current_Economic_Outcomes_The_Cultural_Evolution_of_Investment_Self-

summary of the findings herein by underlining the value of the concept of self-efficacy for modernization challenges facing developing and developed countries alike.

SE is the belief to have the abilities and capability to cope and do well under present and changing conditions. It is not to be mistaken for self-confidence⁷, hope or aspirations (f.ex. Lybbert&Wydick 2016), or behavioral observations summarized under a new name. Many researchers are starting to trace the importance of human beliefs for behavior and economic decision making. In lacking a more widely accepted theory or model, new findings are given new labels, at times adding terms but not order. The present confusion should not prevent us from appreciating these findings and try to reach a common vocabulary for this perspective. The concept of self-efficacy I am suggesting has been extensively tested empirically in a wide variety of human activities since the 1970s, scales and methods for testing have been developed, and it is here introduced to modernization theory.

Naturally developed and culturally transmitted self-efficacy of a population, and their leaders and elites, can provide for the identification of causal relations between the different parameters of economic and political change. SE is the primus movens of intentional human behavior and thereby rational thinking as it links action to outcome under the limitations of environment and circumstance. It has been found to be well susceptible to altering interventions, positively and negatively. As SE is the main tool by which empowering and emancipatory policies work to enhance human agency, it can also enhance the effectiveness of other development and modernizing measures: a program that provides training f.ex. to raise agricultural yield via mulching or fertilizing can raise self-efficacy of its

Efficacy. Currently (sept. 2016) under peer review. Wuepper conducted the survey in Ghana and econometric analysis.

⁷ Ple see ch. 2.4, p. 43ff.

participants by raising their feeling of competence and potential, and being better equipped than non-participants; but participants can also leave the program with a feeling of inferiority or dependency whereby the enhanced technical information may not reap the attempted growth effects⁸.

Modernization is an ongoing process of adaptation to an ever-changing environment⁹. This is a process of learning¹⁰ by individuals in their different roles as individual, formal or informal group member, as member of an elite or as the leader of a group. Learning and adaptive change is necessarily a continuous process in any economic, social and political unit regardless of its stage of development to prevent stagnation or regression. Modernization will produce ever more cultural, scientific, technological changes of the kind that brought them about in the first place. Like self-efficacy, modernization also develops in self-enforcing feedback loops once a certain stage of independence from the natural environment has been reached, and if these changes are not politically or socially inhibited.

⁸ In researching self-efficacy in Ghana, the data contained the interesting effect that some people who had received more than three or more trainings showed less self-efficacy than those who received only 1 or two. Though it is possible that those ones who started out with particularly low se kept coming back for further training, it is also possible and important to watch out for in further measures that too much training might have the adverse effect of producing a feeling of incompetence and dependency on “foreign knowledge”, and thus lowering se.

⁹ I agree with Goetze that modernization is a continuous process like “keeping the on-button pressed”, but I do not agree that it necessarily means speeding up this process, nor do I agree with the idea that the process direction is irreversible. Cmp Goetze (2004).

¹⁰ Beinhocker (2007) differentiates between adaptation and learning. I suggest that adaptation happens via learning: any type of new or re-activated information requires a reaction of either ignoring, suppressing or actively processing its informational content – which is a process of learning that leads to adaptation, producing a new status quo; invention is not learning but an outcome of it. There is adaptation without learning as an act of imitation which can include a degree of implicit knowledge or, on the contrary, to the imitated knowledge being lost over time – as in the below given example of Tasmania; imitation is an important part of collective or social learning which will implicitly lead to learning and progress: watch the elders building a canoe, copy it and improve it.

SE makes the individual an agentic performer of intentional behavior. It has been found and well tested for its role in human behavior (Bandura 1977, 1986, 1990, 1993, 1997; and Bandura, Barbaranelli, Caprara, & Pastorelli 1996). Self-efficacy is process- and domain specific; this means it develops with regard to specific activities or types of activity in varying levels from low to high, and different strengths, reflecting how robust this believe will be in adversity or contradicting experience. SE can also take on different degrees of generality reaching from one specific domain of activity to a wider range of similar activities to a generalized state of feeling able to cope with life: from selling cars to being a good businessperson to being able to cope in general. It affects inter alia aspirations, goal setting, motivation, persistence, effort, risk taking, time discounting, investment behavior, and innovation responsiveness (in all of the above by Bandura and Bandura et al.), with higher SE increasing all of them.

Self-efficacy feedback loops lead to a self-enforcing positive or negative processes: a person with higher SE will set more ambitious goals, employ more effort for a longer period of time, even in the face of adversity, and thereby will be more likely to reap positive results which will then in turn elevate and strengthen her sense of SE even more. Similarly, low SE will lead to setting less ambitious goals, investing less time and effort, giving up earlier and quicker when problems arise, thereby being more likely to produce lesser results which will confirm low SE or lower it even more.

Self-Efficacy is neither a skill nor a task, nor is it outcome dependent. Every child develops her self-efficacy from emotions she observes when people she identifies with carry out activities in a certain domain. These emotions strongly influence her own towards these activities and eventually towards activities on a more general level, like having self-efficacy about one sport developing into a positive efficacy towards all sports, potentially spilling over into a high general self-efficacy of "I can do things that demand a lot of self-discipline, being persistent and working hard".

The emotion-turning-belief become part of her identity, and thus her self- and world-view. Self-efficacy in different levels, strength, and degrees of generality develops naturally everywhere at all times as a reaction to the responsiveness of an environment to human intervention. It can be close to none and destroyed by trauma or degradation. Different environments request different levels of intervention in different time horizons, and react differently strong and differently positive to human action, maybe encouraging and rewarding it, or sanction and discourage it. The decisive factors here are rewards and reliability allowing for long-term investment and planning, or arbitrary destruction and instability that both make for a high default risk. A natural environment of mediate climate, f.ex. with good soil, enough rain and absence of natural disasters or infectious disease will pay higher rewards to careful planning and farming work. A malaria-haunted or desert environment, with the odd neighboring tribe regularly raiding the adjacent meager fields, or harvests being destroyed by earthquake, flooding or locusts will offer very low rewards and incentives for investment in the land and planning. The former environment will foster higher SE than the latter as it “teaches” and “encourages” its inhabitants that their work and actions are good, and that they are sufficiently equipped for doing well.

Geography, climate, disease or other environmental factors apparently do not directly influence economic performance^{11, 12}. The answer to the question if or if

¹¹ ..., or at least not in a country-to-country comparison; the data for interregional comparison is not unequivocal and may actually vary according to the chosen environmental variable. Thanks to David Wuepper for this comment. The African historian A.G. Hopkins argues that Acemoglu/ Robinson chose their data according to their thesis, while Hopkins in turn gets criticized by James Fenske for not embracing their work as important progress for the trait. Presently, we have to assume that we do not know how much direct influence is exerted by environmental factors but have to keep in mind that many of these existed in Europe too before and while it ascended. Cmp.: Hopkins, A.G. (2009); Fenske, James (2010).

¹² In their critique of Jared Diamond and others who research environmental influence on economic and behavioral phenomena Acemoglu & Robinson decline the role of

not geography is linked to economy needs to identify an operative mechanism, tool or instrument of how exactly one factor would work to influence the other. Environment, culture, institutions, and any other man-made or natural factor all influence human behavior and thereby economic performance as limiting factors. But by which means and effect could these correlations work to form causal interaction?

I suggest that natural - and social - habitats with all their different conditions react more or less positively, and more or less strongly and reliably to human activity – and thereby encourage or discourage adaptive learning and change in humans and, consequently, environment. This interaction fosters different degrees of generality, levels and strengths of self-efficacy which in turn influence the way people feel about their potential to act, how they develop their survival strategies and organize their lives in cultural adaptation to that habitat.

This potential for almost unlimited adaptation is what enabled the human species to populate every geographic and climatic zone of this globe, and to commonly learn all the necessary abilities how to survive there. The results of this adaptive process can be called “culture”: culture comprises all the stock of collective knowledge about the survival of a specific human group in a specific environment under specific circumstance which is formalized in corresponding institutions that react back on individuals (f.ex. Hodgson, 2003) in that habitat. Culture functions as

geography and climate stating a causal correlation had not been found. The reason for this lies in the failure to identify the mechanism or tool by which a factor like geography might exert influence on the outcome of economic performance. Also, while declining a link between geography, climate and even culture to the way people organize their community and activities implying human behavior to be independent from surrounding conditions and beliefs, Acemoglu/Robinson do acknowledge that politicians in adopting wrong policies do not do so because of ignorance but because they react to incentives from their surrounding (p.65-67). Claiming these incentives to originate from political and economic institutions in their societies implies a profit/utility maximizing reaction pattern to incentives; and it leaves open the question, how culture and institutions, the “political process” and preferences (as decision parameter of utility) develop if not by adaptation to environmental or circumstantial stimuli. Cmp. Acemoglu & Robinson (2012), pp. 48-69.

information filters for the members of that group through taboos, norms, rules, roles, beliefs, and offers heuristics, all of which determine economic, social and political decision making.

The development of exploitive/extractive institutions is a result mainly of availability or opportunity: if an environment offers itself for plantation agriculture it will lead to exactly that with the corresponding social, political and economic processes and institutions. Or as Brian Arthur (2014) titles in his work on exploitive behavior: *"All Systems Will Be Gamed"*, and calls for failure-mode research for prevention policies.

I deduce that these exploitive institutions persist even after industrialization of some kind has occurred as the profiteers of exploitation will have missed the chance to develop their own self-efficacy beliefs for other activities and other power-balances, and tend to choose exploitive survival strategies henceforth, made possible by their institutionalized power¹³; world-wide gender issues may give more or less subtle evidence of this correlation.

Being a domain or process-oriented belief rather than a task- or goal-oriented one, the quality of self-efficacy in leaders and leading elites consequently influences the nature of the ruling ideology. Inspired by Schnaidberg (1994), the broad differentiation could be between an "impact-oriented" (or process) ideology in the case of higher SE, and a "profit-oriented" or rent-seeking (goal, task, Schnaidberg: *"production-oriented"*) ideology in the case of lower SE. The less SE a group of people or a leader has, the less will be the believe to be able to make it by one's own virtue, and the greater is the incentive to exploit others and secure that status by segregating people, avoiding competition¹⁴, or critique.

¹³ There is a vast number of studies on the topic of persistence of culture in groups and institutions; comprehensive: Greif (1994,); on institutional continuity: Gennaioli & Rainer, (2007).

¹⁴ An example of this mechanism can be found in sports or scientific institutions in early Nazi Germany who often dismissed Jewish members and rid themselves of competition

Group or collective efficacy is the belief of individuals as members of a group in the collective abilities of all group members to achieve set goals together. In a group, you will therefore find two sets of self-efficacy beliefs: the respective individual efficacy as well as the individual's belief in her group's efficacy. The latter is a field of its own and only mentioned here as relevant for this work¹⁵.

Self-efficacy is culturally transmitted and was tested positively for being well susceptible for targeted promotional policy measures. It can be purposefully build as has been proven in several fields by different researchers (see below). This makes self-efficacy a promising tool for modernizing or development attempts that build on human capital: self-efficacy is the mechanism for empowerment. Its cultural transmission makes it suggestible, path dependent and accumulative. Even individual levels and domains of SE are persistent¹⁶ over time without specific intervention. I suggest that higher SE can lead to more and wider spread modernization because it is likely to increase the inclination to learn by increasing faith in one's abilities while reducing costs of learning for individuals as individuals, group members, members of an elite, and leaders. It can thereby foster higher economic growth, enhance effectiveness of modernizing measures, and enable more participative political structures, while lower SE would have a tendency to produce adaptation stagnation, thus less economic development, petering out of modernization and development measures, and political structures of lesser participation.

before they were forced to do so: cmp: Martens (2016) on the treatment of Jewish athletes; on Albert Einstein and the Prussian Academy of Science: Grundmann (2004).

¹⁵ comprehensive summary in: Bandura (2000) and (1997).

¹⁶ In the enclosed study on Ghanaian smallholders, we did indeed find cultural persistence in groups and self-efficacy to be higher correlated to ancestral than to present conditions. Note that this does not imply SE cannot develop in the short-term; the self-efficacy levels we found developed mostly naturally without supportive measures: Wüpper & Drosten (2016)

Self-efficacy influences economic performance directly via four channels:

- individual investment behavior including not only financial engagement, but also effort, persistence, and ambition of the investment goal as well as cooperation to achieve it;
- the utility of learning and behavior change for individuals and groups, and for specific functions like leadership, all of which exhibit deviating to antagonistic utilities that move towards greater congruence with growing SE;
- culture and institutions of a given populace which directly reflect their life-circumstance and culturally transmitted survival-strategies;
- cooperation and participation.

Self-efficacy can increase economic performance and societal modernization in a very ground-laying way via increasing the ability and inclination for cooperation instead of competition, and participative, less hierarchical power division. Cooperation is the actual core of the market system as Adam Smith (1776/2000) argued in his discussion on the division of labor by providing for peaceful exchange of goods and information which in turn is the prerequisite for a division of labor and specialization. Low SE hampers cooperation via lack of trust in one's own abilities, and lack of trust in others and the possibility that collective action could reach the desired goals. High SE, on the other hand, fosters cooperation via higher trust in the abilities of all actors concerned, higher risk-taking for having more trust in one's own abilities to cope with failure and setbacks, therefore higher openness to novelty, and longer planning horizons, again, as the trust in oneself to cope with whatever comes up enables people to plan and live in the uncertainty of not-knowing the outcome for much longer.

There are different possibilities for individuals to set off a lack of self-efficacy¹⁷ in a surrounding of higher SE, but all of these come at a price for the collective in the form of risk, instability, unreliability, intolerance, defense, and rejection of novelty

¹⁷ please see extensive discussion in ch. 5.2 on proxies.

and change. These compensatory individual loopholes include institutions (bureaucracy, religion, organizations) with roles to fill in, rules to go by, signals of both via uniform, title etc., reputation not build on merit but self-marketing, money not earned by competence. There is no surrounding in which all individuals will develop the same (high) levels of SE, and do not need to because all of the above help the system to work anyhow as long as the ratio between real self-efficacy and its mimicry stays in “healthy” ranges; future research may well find tipping points in historic losses of specific nations or cultures where too much compensation and too little ordinary self-efficacy led to downturn.

I resume that it takes self-efficacy to acknowledge individual potential and boundaries as a prerequisite for being able to develop that potential, and be willing and able to limit oneself. This acknowledgement has deep consequences for the economic, social and political order: if one cannot embrace one’s own humanity in strength and weaknesses, it is a much smaller step to dehumanize the humanity of others, and degrade them to functional units. And it takes respect for oneself to build an identity which can take credit for her achievements to be able to build self-efficacy. Without self-efficacy, modernization is a thread, with SE it is a chance¹⁸. This makes SE a vital factor for development and modernization.

1.1 Approach

By defining modernization as a process of learning, and self-efficacy the prerequisite and outcome of learning, I need to research who or what sparks this change, under which conditions, and who or what entertains the process of change. In the case of modernization and learning, Tetzlaff (2005) asks: “*Who is the historic learning subject?*”. There are two kinds of candidates for the answer: individuals or collectives; non-human entities like states or institutions are not-learning constructs, changes are orchestrated by individual humans in the

¹⁸ This thought was formulated by Frank Pajares in some similar way.

respective position on behalf of one or more collectives. Even if we answer Tetzlaff's question with "an elite", or "the avantgarde", these groups do not develop a super-personal common mind or sense; it is always the individual human being who learns, and does so in her individual roles as individual, member of whatever group(s), or as individual leader, according to her different benefits, including those developing from some kind of group dynamic, and biases. Though many of these benefits may be unobservable and often ascribed to biases, the individual is the historic learner who reacts to environmental and social triggers, and who entertains, hinders or stops the developmental process of learning. Her benefits and inclination to learn follow suit to her belief in her ability to learn, to profit from learning, to cope with change, and profit from it – which is the definition of self-efficacy. In their self-enforcing feedback loops these beliefs tend to be self-fulfilling prophecies through the successes they produce.

In the following, I employ a wide variety of literature from political science, economics, sociology, psychology, biology, genetics, complex systems modeling and physics, history, behavioral and cultural research, and even literature, and profited greatly from questions-inspiring discussions with experts from these fields. In my attempts to learn what learning actually entails and means for human beings, I reached the firm conviction that only concerted efforts of scientists from a wide variety of sciences can solve the upcoming problems of ever growing complexity of interconnectedness. Modernization is not limited to installed institutional change or economic data, but a process that changes people in their inner structures and resonating cultural beliefs if it is to be supported and kept up by a population over time.

In detail, the structure of this work is as follows: In chapter 2, I introduce what self-efficacy is, how it works and develops, and which role it plays in the political and economic process. I delimit the concept from other psychological or economic

approaches or terms that could be mistaken for SE like aspirations, self-confidence, or agency etc.

Chapter 3 traces the path in development and modernizing literature that lead to the detection of the role of human environmental adaptation in the development process, and self-efficacy. I introduce major theories and authors not in chronological order of their publication but by grouping them in types of theoretical approach. I start at what I consider the furthest point from human traits as explanatory variables, which are materialistic and exogenous causes of underdevelopment. I then move towards the closest, in form of culture and institutions that lead to the detection of SE as the adaptive human trait enabling learning for modernization and development. The work of pragmatic authors who are less concerned with the causes but with designing efficient policies to foster elsewhere proven factors of economic growth like infrastructure, industrialization, and education are suggested to be have been possibly unintentional but implicit promoters of self-efficacy.

In chapter 4, I define modernization as a learning process, and sketch learning as the evolutionary tool for adaptation to different and changing environments. This chapter shows the two-fold, direct relation between learning and self-efficacy: se enables learning, and learning builds se by increasing the (mastery) experience of success. There are different ways of learning and different ways for individuals and groups to react to new information. Collective and individual learning and their different effects on building SE are described, as well as the act of learning, and what it takes for learning to lead to behavior change. I show different schemes of individual and group reaction to information by filtering them, and identify their respective different utilities of learning in relation to levels and domains of self-efficacy, which leads to differentiating between weak and strong groups. Identity is stated as a necessity for anchoring self-efficacy. I discuss the prerequisites of learning to show that the more SE people have the more they can be expected to believe in their ability to cope with novelty and change. As these changes are

brought about by learning and behavior change, people who don't believe to do well under changed conditions will develop little inclination for both learning and behavior change by themselves or others. Higher SE, in contrast, makes novelty an opportunity rather than a thread¹⁹. Problems with negative forms of learning like pathological learning through failure, wrong-learning as misinterpretation, and non-learning as a complete refusal to change are outlined.

Chapter 5 addresses questions and misunderstandings around self-efficacy, namely those of asymmetries between self-efficacy, resilience and entitlement, and those of too much and too little SE. Attention will be paid to phenomena of low SE, and those of asymmetric appearance in concert with subsidiary or complementary traits like resilience and entitlement. This chapter will also discuss how institutions like religion or bureaucracy can compensate for a lack of individual SE or hamper its development, while the group has to pay a price of instability, risk and need for control or manipulation for it. Separately, I discuss the question of nature versus nurture: proposals of a genetic origin of self-efficacy or a genetic/epigenetically inherited disposition for it as opposed to my concept of culturally transmitted and purposefully promotable self-efficacy.

Enclosed in chapter 6 is a paper on the historic roots of current investment self-efficacy and its role in investment behavior of smallholder pineapple farmers in Ghana, which I co-authored with David Wuepper, TU Munich, who conducted the fieldwork in Ghana and the econometric analysis (Wuepper & Drosten, 2016). Using an agent-based model and recent empirical data, we wanted to research if and how SE has an immediate effect on income. In the course of this research, we also found effects on the efficiency of development measures like training or the application of new methods like mulching, and interestingly, a correlation to more supportive leadership²⁰.

¹⁹ cmp. on thread appraisal: Bandura (1997), pp. 116f., 140f., 148f., 347-349.

²⁰ We could not include these in the WP, but I will discuss the findings in the course of this work.

Chapter 7 embeds the challenges of developing a formal theory on self-efficacy in economics in the current scientific discourse on modernization and development. The discussion addresses problems of empirical research of self-efficacy, finding it in the data, formulating the right questions to detect and measure it, and how to econometrically control for it. The problems of often-claimed task-efficacy against domain-specific SE are addressed as well as fields for further research.

The conclusion calls for a culture of learning instead of knowing and underlines the fact that the findings about self-efficacy do neither replace nor negate any of the many factors of economic and political underperformance identified by science so far. They rather offer a mechanism by which these findings can be put to more efficient use, and empowering policies in any field be more effectively targeted by knowing their operational tool. They also offer a chance to identify sources of failure and instability that could otherwise limit success of or destroy the achieved.

I.2 Contribution

There are still many question unanswered about how modernization and development happens, how best to foster it by intentional policies, and how to avoid or handle the potentially destabilizing social and political effects.

The main contribution of this work is to identify self-efficacy as an important tool and target for development and modernization policies in developing and developed countries. I introduce and apply the well-tested psychological concept of self-efficacy to economic, social and political questions of development and modernization, namely by showing how self-efficacy develops naturally; that it is culturally transmitted and how that makes it maladapted in case of sudden changes in the environment or circumstance through climate change or migration; how exactly it affects people's behavior. I develop how a lack of self-efficacy leads to negative social and political effects in leaders, elite and the general public as

interests will be enforced with manipulation, force or circumventing norms if SE is not high enough for their regular pursuit. I develop corner stones for a formal model of self-efficacy in modernization.

By employing a strictly interdisciplinary approach, I transfer insights from a broad range of disciplines like psychology, sociology, agricultural economics, anthropology, political science and economics and tie them together into one common search of how to best foster progress. In doing so, I show how self-efficacy influences the process and its results.

I identify modernization as an individual and collective learning process depending on an individual benefit-cost-logic largely determined by social conditions and individual self-efficacy. This allows for further research on who profits from learning, who does not and who profits from keeping others from learning. A better understanding of this can help to design better policy measures and help prevent destabilizing effects of change.

Empirically, the study from Ghana (chpt.6) shows that SE for agricultural investment is culturally transmitted over generations. Having historical roots explains why SE is so persistent. This finding is highly relevant for developing as well as developed countries as continuous modernization is a necessity for both and can be hindered by a lack of SE in amongst the population or its political personnel. Historically inherited SE reflects information from the past. As people tend not to update their basic self and world concepts without external shock or targeted intervention, SE tends to be information from the past, which is maladapted if context changes as in migration, climate change or dramatic technological, economic or political changes.

As self-efficacy has been found to be malleable, it can and should be fostered by intentional policy measures which I describe below. Building SE has several multiplier effects especially due to it functioning like a self-fulfilling prophecy which spreads through vicarious experiences. The empirical findings in Ghana also show that SE has a large, positive effect on investment behavior and subsequently,

on income, and it enhances the effect of other measures like training or financial support for mulching, fertilizers etc. which in turn raises investment and income. A major contribution to the present discussion on development and modernization is to suggest self-efficacy to be the *primum movens*²¹ of intentional human behavior and supporting rational versus biased thinking, which makes it not only a missing link in explaining historic roots of unequal development, but also a transmission belt for targeting empowering policies. SE is the mental factor that decides how much influence a healthy, free individual potentially can exert on her course of action under given circumstance. Bandura (1997, p. 3) phrases it: *“Perceived self-efficacy refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments”*. Though certain outcomes are desired for certain undertakings, their realization is usually the product of a variety of factors beyond individual control, which explains why SE can never be goal or task-oriented, but refers to activities and domains exclusively.

I delimit self-efficacy from the often confounded multitude of terms and concepts which try to capture what gives human behavior its modernizing direction. Also, I suggest it to be an universally and interculturally²² applicable concept important for the understanding of development and modernization processes in developed and underdeveloped countries (f.ex. Luszczynska, Scholz & Schwarzer (2005), Luszczynska, Gutiérrez-Doña & Schwarzer (2005).

I discuss applications and relations that have so far not had much attention with regard to self-efficacy in economic and political modernization like integrating groups and individuals with different utilities of learning. By showing learning as the operational tool for modernization based on the self-efficacy belief in one’s abilities to learn and cope with change, this work adds to our understanding of

²¹ While Rainer Tetzlaff called this effect “*primum movens*” in a discussion with the author in Hamburg, May 2015, David Zilvermann called it the “*prior of Bayesian learning*” in a conversation with David Wüpper, Berkeley, Sept. 2015.

²² ple see discussion on Henrich’s “WEIRD” people in my conclusion.

modernization processes and how to foster them: for example, not just by building schools, but by helping children gain self-efficacy about their ability to actually learn and do well, to believe in their abilities to carry out different activities successfully, to put to action what they have learned. I explicitly link this call for self-efficacy building with one for offering the experience of being trusted to cope and do well, as this is indispensable for building self-respect, which in turn is indispensable for positive identity building. A positive identity is what an individual needs to be able to take credit for her doings to build her self-efficacy beliefs and adapt them to changing circumstances.

Different environments shape different degrees of strength and generality of SE in their populace, and thereby create different costs and profits of learning and change in individuals, groups and leaders. The closer a human habitat to natural conditions the higher the influence of geography, climate, and natural endowment on human behavior and efficacy beliefs; the more developed, urbanized, industrialized and regulated by modern institutions, the less the influence of nature on behavior and self-efficacy and the greater.

I identify self-efficacy as what operatively enables the different spheres of a larger community to communicate productively with each other: as an evolutionary tool for adaptive learning and innovations, the mechanism that translates environment and circumstance via survival strategies into culture, and culture into institutions, which then react back on individuals; and thereby as the translator of political measures into economic performance and activating agent of empowering measures. I also suggest that effects of self-efficacy have been implicitly found in research on time discounting (Galor & Özak, 2014) persistence, resilience, risk taking, cooperation, climate and agricultural development, political participation, corruption, crime rates, and several others that display performance based on human trust conducting a process of any specific activity²³; SE can take on the

²³ Studies for example on risk attitude in general or in entrepreneurial decision making seldomly spell out self-efficacy, even though that is what they are implicitly also treating;

function as a prior in Bayesian learning, and influences cooperation and risk taking in game theory²⁴.

An important contribution of this work is to draw attention to enhancing the efficiency and effectiveness of policy measures that target material conditions like increasing the availability of capital, improving infrastructure, or reframing institutional settings: they can be expected to make substantial and sustainable difference in economic performance if individuals and groups have stronger and more general degrees of SE and are thereby able and willing to include new opportunities into their social relations and work life. This is more likely to happen with high SE as that is what builds the confidence to make it as well, or better than before. In the face of novelty, people have to be able to change their habits, beliefs, behaviors with regard to work, investing, methods and technology, planning, risk taking, reaction to and seeking of new information, and eventually change their self-image and social relations.

People with higher SE have been found to be more empowered, emancipated, independent, more agentic. High SE is an important trait also in reference groups, elites and leaders as their decision to allow or restrain learning and behavior changes amongst their members or clientele, and decisive for the success of modernizing measures. In sum, all questions that touch upon good governance and institutional support, as well as the learning culture of informal reference groups like family, clan, village, friends, contain an important aspect of functional

cmp. for example: Weber, Blais and Betz (2002), who basically research the same as Krueger & Dickson (1994) but only the latter spell it out.

An example for the wide application of the concept of process and domain specific self-efficacy can be found in the sociological study of Orna Donath (2015) on women resenting motherhood, who found that these women usually love their children (goal, target) but despise the process of motherhood, which the Christina Mundlos (2015) ascribes to the lack of confidence in their abilities to be a good mother, i.e. to master the process well – which is the definition of low self-efficacy for the process of mothering. This latter effect is at least true for the one third of interviewed women who said they had consciously made the decision to have children and then did not feel up to the task.

²⁴ F.ex. in spontaneous cooperation when non-cooperators fair better in a group of cooperators; Kabalak, Smirnova, and Jost (2014).

SE. Groups and leaders have to have enough SE to believe they will be able to keep their positions, gain new ones or make it as well without them²⁵ to allow for change.

This work aims to add to a better understanding of the workings of SE as this is important for the less developed, poorer countries of the South to foster development and economic growth, empower democratic participation and elites for better governance, and increase the efficiency of the financial and political measures. But a good understanding of self-efficacy and how to foster it may actually be equally relevant for the richer, democratic, industrialized countries which now face modernizing pressures internally, and externally, from past modernizing failures.

Western economies experience growing domestic modernizing pressures in their transition from industrial-production driven economies to digitalized ones. This transition happens as national populations are aging and declining, and in the presence of new pressures from social media out of reach for traditional politics, changing self-images, gender relations and roles, immense household deficits, financial markets that have been robbed the intervention possibilities of monetary policies, political and social omissions from the past, and rather fixed proportions of populations that have been difficult to integrate into an industrial labor market and dim outlooks for a digitalized one. High degrees of self-efficacy are required and helpful in individual and collective transitional processes.

External pressures caused by inequalities in the distribution of wealth and well-being around the world increasingly add to the challenges at home through large numbers of refugees and poverty migration, terrorism and wars which have reached the doorsteps of the developed countries. It is in their best interest to help the less developed to close the gap a good bit. While at the end of

²⁵ On specific development hurdles for especially African countries, some authors show that it is first and foremost the lack of institutional and policy support that limit successful entrepreneurship, f.ex. Kappel, Robert (2015), Kappel & Ishengoma (2011).

colonialism, the question of a more evenly developed world was very much one of morality and ethics, the incentives for prolonging pseudo-colonial relationships to a business-as-usual remained high. Using their best knowledge to assist every nation into peaceful stable modernization has now become the best strategy to preserve one's own security and wealth for the developed countries.

Institutions and elites must withstand the seductions arising from a lack of self-efficacy amongst elites and leaders that support corruption, manipulation and retreating to reducing democratic participation. This is true for developing as much as for developed countries. Every individual and every group of people in privileged positions with a greater access to power and income has a lot to lose from change. The industrialized world may believe their institutions were immune against these lures but democracy is a process, not a state, and has to be continuously reproduced: *"We have to imagine Sisyphos as a happy man"* (Camus, 1942).

Acemoglu & Robinson (2012, p.41) write: *"the inequality doesn't just have consequences for the lives of individual people in the poor countries; it also causes grievances and resentment, with huge political consequences for the United States and elsewhere."* Kappel (2015a) adds: *"it is not just about refugees and migration; Africa is in a broad process of radical change with crumbling states, which will have clear consequences for Europe and Germany"* (transl. bd). At the same time, as migration and terrorism carry the pressures of underdevelopment from the outside right into the middle of the developed world, the necessary adaptive measures here and helping the poorer countries more effectively there make understanding how to foster increasing self-efficacy of all parties involved highly desirable; it may carry the key to modernizing toward better governance for all in it. As Eric Beinhocker (2007, p.52) writes: *"Time waits for no one"*.

“Beliefs Are Rules For Action”

Charles Peirce²⁶

2. What is Self-Efficacy?

2. 1 Concept

Self-efficacy²⁷ is the belief to have the abilities to act according to one’s own decisions and to achieve desired goals, and to have the capability to cope with future changes. Self-efficacy also is important for rational thinking as it links one’s actions to their outcomes under given limitations of environmental or social circumstance. Experiences “teach” causal thinking when one does not only regard oneself as locus of control for decision making but as the one whose behavior and actions have a decisive influence on the results, that one’s actions matter. This effect accumulates and is self-enforcing.

Bandura, identifies its development as responsible for the revolution of knowledge and growth: *“This change in human self-conception and the view of life from supernatural control to personal control ushered in a major shift in causal thinking, and the new enlightenment rapidly expanded the exercise of human power over more and more domains.” (Bandura, 1996).*

Because self-efficacy assures and motivates people, it increases their persistence, increases their planning horizon, decreases their risk aversion and increases their openness to learning, thereby forming a basis for entrepreneurship. Self-efficacy develops at all times and everywhere in interaction with the surrounding environment, its evolution not being limited to specific circumstance. Only its strength is: the more positively an environment reacts to human intervention like granting greater harvests after fertilizing, the greater the strength of the respective self-efficacy people will develop. In environments with f.ex high

²⁶ Cited from an interview between Frank Pajares and Héfer Bembenutty (2007).

²⁷ The first part of this chapter is a revised version from Wuepper & Drosten (2015), pp.2-5.

disease pressure or low agricultural potential, a lower average sense of self-efficacy is the natural outcome. In these cases, low self-efficacy feeds back in lowering the propensity for effort, risk taking, and openness to novelty even further and thus future successful interventions even less likely. The ideal environment to develop a high sense of self-efficacy is a challenging one that can be mastered. Many environments in the temperate zone fulfill this criterion. Europe f.ex, where diseases were mostly weak enough to successfully fight them and where soils and climate allowed the development of intensive agriculture to feed a large and growing population was more supportive for developing self-efficacy, whereas tropical and polar regions were less so.

Bandura²⁸ started to experiment with self-efficacy in the 1970's after having been working on social learning theories (1963, expanded 1977). In his famous Bobo doll experiments (i.a. Bandura, 1965) he had shown aggressive behavior to not only result from drives and frustration, but from observation and vicarious reinforcement (watching behavior of relevant others to be rewarded or punished). Bandura discovered that learning was done differently than had long been assumed in behavioristic thinking. Learning, he stated, could therefore not be fostered in the according traditional ways through incentives, rewards and retaliation but needed a different approach. He went on to develop a theory of self-efficacy and widened his approach into his Social Cognitive Theory (1986)²⁹ subsuming his research on the different aspects of learning and behavior change. In this, he defines people as agents of their actions – not in the sense of being the sole conscious determinant of a specific outcome, but as contributors (1997, pp. 3 and 227ff) by being self-regulating, -organizing, -reflecting, and proactive: “*Beliefs*

²⁸ Bandura published his theory and empirical findings in an extensive number of papers. A comprehensive overview, containing revised versions of several earlier publications, offers: 1977, 1989, 1997, 2008 (1995).

²⁹ Bandura (1986); unfortunately, some of his important ideas have reaped misunderstandings and misinterpretations, which may have prevented a wider-spread acceptance and application so far.

of personal efficacy constitute the key factor of human agency. If people believe they have no power to produce results, they will not attempt to make things happen (1997, p.3). Bandura (1994) identifies four basic processes^{30, 31} through which belief in one's SE determines how people think, feel, motivate themselves and act, all of which constitute the framework for self-regulation:

- **Cognitive processes** which are influenced in several ways via goal setting, self-appraised capabilities, anticipations and visualizations, conscious commitment:

"The stronger the perceived self-efficacy, the higher the goal challenges people set for themselves and the firmer is their commitment to them" (p.3).

- **Motivational processes** as mainly outcomes of cognitive processes build anticipatorily forethought and determine what people believe they can do. There are three known cognitive motivators and respective theories:

- **causal attribution and attribution theory:** high SE beliefs attribute failures to insufficient efforts, while low SE attributes failure to inability.

"Causal attributions affect motivation, performance and affective reactions mainly through beliefs in self-efficacy"(p.4).

- **outcome expectancies and expectancy-value-theory:**

"motivation is regulated by the expectation that a given course of behavior will produce certain outcomes and the values of those outcomes. But people act on their beliefs about what they can do, as well on their beliefs about the likely outcomes of performance. ... There are countless attractive options people do not pursue because they judge they lack the capabilities for them".

Expectancy-value-theorists criticize that the concept of SE becomes useless if it is to explain the goal as much as the behavior that leads to reaching it. Bandura

³⁰ following is a summary of Bandura (1994) on efficacy-mediated processes; I cite from a reprint of his wp, retrieved online 10/5/15 www.uky.edu/~eushe2/Bandura/BanEncy

³¹ cmp. discussion in Hulleman et al. (2010) on "Different labels for the same constructs or different constructs with similar labels?".

calls for including SE as an influential factor that would enhance the predictability of expectancy-outcome-theory, not replace it.

- **goal setting and goal theory:** Bandura interprets goal setting as an important factor of self-influence rather than directly influencing motivation and behavior. To avoid cognitive dissonance and aim for self-satisfaction from achieving set goals, efforts would be intensified:

"Motivation based on goals or personal standards is governed by ...selfsatisfying and self-dissatisfying reactions to one's performance, perceived self-efficacy for goal attainment, and readjustment of personal goals based on one's progress. Self-efficacy beliefs contribute to motivation in several ways: They determine the goals people set for themselves; how much effort they expend; how long they persevere in the face of difficulties; and their resilience to failures. When faced with obstacles and failures people who harbor self-doubts about their capabilities slacken their efforts or give up quickly. Those who have a strong belief in their capabilities exert greater effort when they fail to master the challenge. Strong perseverance contributes to performance accomplishments."
(p.4)

- **Affective processes** which relate to how people feel about themselves, their activities and capabilities, and their surrounding. SE with regard to coping abilities determines the level of stress, and disposition for anxiety and depression. The belief in one's ability to cope not only with a given or potential situation, but also with exercising control over stressful thoughts and feelings has great influence on the question if a challenge is regarded as stress/thread, or as a challenge/chance.

- **Selection processes** which constitute the interface between individual decisions and environment: people make decisions, selecting between choices, thereby selecting and influencing possibly their natural, most certainly their social environment, which predetermines future selection possibilities.

"People avoid activities and situations they believe exceed their coping

capabilities” while “readily (undertaking) challenging activities and (selecting) situations they judge themselves capable of handling. By the choices they make, people cultivate different competencies, interests and social networks that determine life courses This is because the social influences operating in selected environments continue to promote certain competencies, values, and interests long after the efficacy decisional determinant has rendered its inaugurating effect.... The higher the level of people’s perceived self-efficacy the wider the range of ...options they seriously consider, the greater their interest in them, and the better they prepare themselves ... , and the greater is their success.” (p.6).

Bandura stresses the point that is amongst the most misunderstood about the whole concept: self-efficacy refers exclusively to domain and process specific issues. It does not refer to tasks or goals, i.e. it does not refer to the end result of a process. Self-efficacy is the belief in being able to *conduct*, to *act* in a way that is apt to reach a certain goal. When researchers find outcome, task, goal specific aspects, these do not directly indicate self-efficacy but its effects.

Self-efficacy exists and develops in different levels of strengths for different domains. Domains describe the kind of activity for which one perceives self-efficacy. Any person will have many very different levels of se for her different aspects of life: she can feel very high se with regard to her work as a farmer and feel very low se with regard to the business side of her work, even lower for playing in their village soccer team, and the highest for preaching in sundays. These are all activities, knowing the level of self-efficacy gives per se no information about the resulting harvest, profit, number of goals or rescued souls. But it does give information about the expectable effort, perseverance, and resilience when things do not turn out as intended. As people have different levels strength of se for different domains, they will also develop different levels of generality of se. While there are innumerable domains, many of them demand similar abilities and capabilities. People with high self-efficacy in major fields of

their life will tend to develop se in a more general sense, not just for football but sports, not just for selling sun-glasses but doing business, not just for preaching but to dealing with people in general.

2.2 Development of self-efficacy and the question of identity

Wuepper & Drosten (2015) researched how self-efficacy develops naturally as a result from interaction between humans and environment. We found how a responsive, stable natural environment which gives much leeway for human intervention, and rewards it with good harvests, good hunting, good trade, naturally builds higher levels of self-efficacy which are culturally transmitted in groups and to offspring, and are persistent. The more developed a group of people the more independent from their natural environment they become, the more important become the social and man-made influences on self-efficacy.

Bandura (1994) researched the social process, that lead to higher levels or more more general self-efficacy to be able to intentionally foster their development by targeted measures. He identifies four main sources of influence on how people develop self-efficacy: *“mastery experiences, seeing people similar to oneself manage task demands successfully, social persuasion that one has the capabilities to succeed in given activities, and inferences from somatic and emotional states indicative of personal strengths and vulnerabilities”* (p.13). Incidentally, these four sources of self-efficacy represent exactly the same mechanisms by which natural environments foster self-efficacy: experience of mastery and success in agricultural work through planning, investing, hard work, choosing the proper crop, for example; seeing other members of the village or clan succeed in their interventionist work; being told by elders personally that one was a good a hunter, fisher, farmer or by identifying with a “story” and “myth” on special capabilities that built the community’s social web, and the excitement and physical arousal of succeeding in whatever activity one then would chose to do.

Bandura suggests the most effective way to build self-efficacy is by mastering experiences. Taking on a task or challenge and succeeding in it, creates a robust sense of self-efficacy. Once a certain level of robustness has been reached, failures can be attributed to circumstance or a lack of effort. Before this stage has been reached, failure is likely to provoke self-doubt, undermine one's self-efficacy and attribute the misconduct to one's own inability. In order for failure to be overcome by more effort in another try, one has to have a strong sense of trust in one's abilities.

Vicarious experiences from social models, which succeed in their efforts lead to higher efficacy beliefs in those who can identify with them. Humans learn from others by imitating, identifying, watching and repeating. In growing up amongst a group of people, culturally transmitted self- and world-constructs and collective knowledge and beliefs will be transported with corresponding levels and magnitudes of self-efficacy. As culture has been found to be highly persistent, "inherited" self-efficacy is too. This does not mean it cannot be changed! It means that people are endowed with very different levels from which one has to build.

Important to notice is Bandura's observation that by verbal persuasion, self-efficacy can be quickly improved but not necessarily to robust stages unless it is supported by positive experience. And worse so, verbal persuasion is very effective in destroying self-efficacy. The logic of this lies in the functioning as a self-fulfilling prophecy: verbal persuasion may boost somebody's self-efficacy enough to make him exercise more and harder effort for a longer period of time and truly produce the attempted success and thereby promote a stronger, more robust sense of self-efficacy. If, however, instead of success failure is reaped, this only verbal stimulation will easily produce the opposite effect by lowering self-efficacy again, not necessarily to realistic, but possibly to even lower than appropriate levels. The worst case is to discourage people's self-efficacy by verbal attacks on their abilities to do well or cope: these latter two cases are difficult to overcome as people with low self-efficacy will avoid any challenge and situation

that could lead to failure or in turn success. *“But people who have been persuaded that they lack capabilities tend to avoid challenging activities that cultivate potentialities and give up quickly in the face of difficulties. By constricting activities and undermining motivation, disbelief in one’s capabilities creates its own behavioral validation.”* (Bandura, 1994, p.2). This effect, even coupled with group identification, has been unfortunately found by Steele & Aronson (1995) in their work on cliché: in a cycle of aptitude test, Afro-American students did worse when they had to indicate their race in the beginning of the test; when they were not asked to tick the respective answer, they did as well as all others.

Self-efficacy cannot develop if it does not have an “anchor”: self-respect as part of individual identity. The individual has to be able to give herself credit for her achievements through her own actions and by her own virtues. Her identity must include enough self-respect to claim and accept this credit. The child builds her identity by differentiating herself from her surrounding, later to decide how much she wants to be similar and how much she wants to be different from it. This process of individuation determines her identity, which is really another layer around her self-construct (see below chpt. on learning), but while her self-construct is believed to be stable for her lifetime, her identity is not as it undergoes several phases of transition. The experience of respect for one’s being, *not* one’s achievements, is indispensable for building self-respect. Without an identity that respects herself, one cannot build self-efficacy at all, one can only create compensatory coping strategies: like trying to evoke fear or praise for action instead of respect for one’s being.

If a social or natural environment does not request or reward human intervention, self-efficacy cannot develop; well-adapted behavior in this case could foster entitlement or resilience as survival strategies, but not self-efficacy. They can occur simultaneously but are independent, their asymmetric occurrence offering ample cause for societal problems. Think of nomadic groups surviving an inhospitable, barren environment only by regular raiding, without ever being able

to develop a sense of self-efficacy as their life space does not react to intervention of their capacity like hard work, planning, investment. Or consider communities whose achievements are regularly destroyed by natural catastrophes or lives cut short by uncontrollable diseases like malaria. It is the experience of successful undertakings, like choosing the right crop, employing the right amount of work and capital, doing the right kind of planning for storage, cooperation, and trade, that gives people a higher perception of their own ability to reach their goals, to influence their livelihood.

At present, there is intensive discussion in the U.S. about universities and colleges having to deal with growing numbers of students having psychological issues that impede their studying success, hence, producing dull outlooks for their professional lives. These issues resonate around lack of resilience and lack of self-efficacy with regard to handling adversity of any kind and ordinary every-day-challenges. Growing complexity, performance pressure on the one hand and insecurities on the other not only pose social and political problems but economic ones, when growing numbers of youths lag behind their potential because their belief in their capabilities is too underdeveloped to tackle their future.

2. 3 Self-efficacy in the economic and political process

It is important to note that the concept of self-efficacy does not shift responsibility from political decision makers, international corporations and aid agencies to the poor or less developed. Neither does it make good governance and inclusive institutions, or any other structural policy measure for building modern industries, infrastructure and finance sectors obsolete. One cannot develop self-efficacy from scratch by oneself. Once you have acquired a high and strong self-efficacy belief and have become a self-optimizing, self-regulating master of your own lot, you may build on your riches to add more. But in order to increase individual self-efficacy from low and weak to high and strong, one needs

indispensably triggers and entertainers as described above, i.e. firstly, stimulus from the environment or social support to make you believe you can exert purposeful action, and secondly recurring confirmation over some time and enforcing mastery experience. If you live in an environment that does not support the natural development of individual self-efficacy you depend on social intervention to create this support.

Bandura placed his concept of the individual in context with her surrounding in a triadic reciprocal (1997, p.6ff) causation, which reflects the connections between human behavior, environmental factors, and personal factors. Human behavior is exercised under personal cognitive, affective, and biological conditions in a natural and social environment, and circumstance. This interconnection is governed by reciprocal limitation, which means the different aspects set limits to each other and thereby define and determine each other. Each aspect influences the other two and is influenced by them. The respective influences are neither equally strong nor constant in their ratio, nor do they develop at the same time; the whole system is a complex dynamic one with self-enforcing feedback loops, producing unintended, unobserved and long-term effects, but can be tested for at least with regard to the produced efficacy beliefs.

Over three decades, this concept has been tested empirically by Bandura, and many other psychologists, who found that self-efficacy affects almost every field of human endeavor. It has been mostly tested with regard to medical compliance, risk behavior, sports and diets, and academic achievements, i.e. those human fields that refer directly to acute behavior change and learning new arguments, explanations, action and reaction patterns³². Based on Bandura's conception of

³² There are innumerable studies in these fields. Bandura gives a comprehensive list of studies in his 1997 book; good overview also: Pajares, Frank (1997, 2002); Stajkovic & Luthans (1998); Bandura (1990), Bandura, Barbaranelli, Caprara & Pastorelli (1996). An interesting study unfortunately states that "self-efficacy is not only of a task-specific nature...": Luszczynska, Gutiérrez-Doña & Schwarzer (2005); a similar, in my opinion wrong, interpretation about SE being task-specific give Woodruff and Cashman (1993).

triadic reciprocal interconnectedness and influence I suggest that self-efficacy is the key factor of individual economic and social performance, originating from long-term environmental stimuli³³.

An important feature of self-efficacy is that it is a “mental model” with a certain independence from the actual competence of an individual in a given moment (though competence will reap more success and foster higher se in the next period and vice versa), her immediate environment in the moment of decision making and of how realistic her judgment is. What is decisive for setting ambitious goals and calculating the chance of reaching them is the belief to have all what it takes to reach them. It is this belief that enables people to dare to learn new information, try new inventions, set high goals, keep trying for a longer time even when problems arise. Having a high degree of self-efficacy means that a person believes she has influence on her life, she has the internal locus of control and can move from there to act. She is able to be persistent in her endeavors, master difficulties and keep on trying for a longer time. Note that while persistence describes the time aspect of self-efficacy, resilience does not. Resilience is the ability to spring-back after an external shock and is an independent trait, which may or may not, and more often than not does, occur in conjunction with SE. Persistence and resilience are often used synonymously in the literature; it is important though to differentiate: persistence is an integral part of self-efficacy. Resilience is independent: you can find cases of resilience without self-efficacy as an ever-enduring in adverse conditions like in war times, and self-efficacy without resilience, as in the odd case of failure that a self-efficient agent will ascribe to his lack of effort or circumstance instead of any

Bandura has written several papers to answer his critics and misinterpretators, the latest being: Bandura (2012) and (2015). On measuring general efficacy via scales: Schwarzer & Jerusalem (1995), Luszczynska, Scholz & Schwarzer (2005). And in general: Schwarzer 1992/2014.

³³ On persistence of culture and human traits see f.ex. Boyd & Richerson (1985, 1995); Nunn (2012).

condition that would require resilience to cope. One could say, that self-efficient people have less need for “springing-back” from setbacks as they are protected from many adverse feelings because of their mental interpretation models for failure.

Self-efficacy is the core prerequisite of human agency as it is this belief that enables people to act as an agent for herself and others. It may occur in concert with resilience and entitlement, but while SE is part of the inward-oriented self-construct, entitlement is outward oriented and part of an individual’s world-view. Asymmetric occurrence of these three connected traits leads to social stress that may adversely affect economic performance: without the respective SE to earn the rewards one feels entitled to, may lead to a feeling of deprivation which in turn may lead to adverse or maladapted social behavior and to shortcomings in economic activity. Having resilience without SE may lead to suffering through endurance instead of activity to get out of the adverse situation, again potentially harming inter alia economic performance.

Research has shown that people with higher self-efficacy are more persistent, have a lower incidence of angst and depression, and are more successful in their education and training. Locke and Latham (1990) found what they called a “high performance cycle” in that people with higher self-efficacy tend to have higher expectations, which lead to setting higher goals. In a kind of self-fulfilling prophecy, they will then put in more effort to reach their higher goals which, when accomplished, increases their sense of self-efficacy more.

Wuepper & Drosten (2015) identify historical, environmentally shaped, and subsequently bequest self-efficacy as the source of entrepreneurial traits. From the times of Schumpeter (1934/1983) to Galor and Michalopoulos (2012) today, entrepreneurial behavior has been linked to economic development. Entrepreneurship is usually described by its aspects: openness to novelty, being explorative, have longer planning horizons, greater risk taking, faster in

innovation adaptation and others, all of which have been found to be directly influenced by the strength of self-efficacy beliefs. I suggest self-efficacy is what causes and enables a person to be and act entrepreneurial.

Self-efficacy as the belief in one's capabilities to act successfully, refers to conducting the process, not directly to achieving the goal as its end product. In their study on Ghanaian smallholders, Wuepper & Drosten (2016) identify self-efficacy to influence investment behavior and thereby household income. The goal of bettering one's livelihood by increasing household income could be realized by the belief in one's ability to invest better or more with regard to money, work, fertilizer, learning etc. We researched how different environments gave different signals to their inhabitants, either rewarding or discouraging entrepreneurial behavior, thereby shaping culture and human traits, and found that historically developed and culturally transmitted self-efficacy indeed affects today's farming income.

Lately, self-efficacy has been discovered by management researchers for motivating employees, recognizing opportunity by entrepreneurs (Tumasjan & Braun, 2011), questions of risk taking, time preferences, perseverance and resilience in crisis. The relevance of self-efficacy in a modern agricultural value chain on the example of Western Africa has been shown by Wuepper & Sauer (2016).

As an important determining factor for intentional human action, SE contributes to a range of phenomena, that are vital for economic performance (Stajkovic & Luthans, 1998) such as self-control: e.g. when tempted, individuals with low SE may convince themselves that their effort is hopeless anyway and thus consume their capital instead of saving/investing: time preference: e.g. low self-efficacy makes individuals discount their future stronger; and possibly trustworthiness: low SE may mislead individuals to justify dishonesty as their only means to get what they want. This latter point plays a vital role in cooperation and in economically-relevant investment of effort.

When Nathan Nunn researched the causes of poverty in Africa today, he found human factors, that he called “internal factors” causing it and being reflected in local cultures and institutions. He showed that these internal factors, especially a lack of trust, was an outcome of slavery: “... *that most of the impact of the slave trade works through factors that are internal to the individual, such as cultural norms, beliefs, and values*” (Nunn & Wantchekon 2009, p.46; Nunn 2007). In his examination of the Engermann-Sokoloff-Hypothesis which asserts that slavery and plantation economy in Latin America and the Southern States of the United States had produced inequality as the present source of economic dysfunction, Nunn did find the correlation between slavery and economic failures not with regard to inequalities, but again to trust (Nunn 2008). His findings correspond with those of Wüpper & Drosten (2016), and Wüpper & Sauer (2016) in West Africa with regard to self-efficacy: trust in one’s abilities goes hand in hand with a more optimistic, in general more trust-inclined attitude, trust in oneself, trust in others including one’s reference groups, and the course of things. I suggest that Nunn found the trust-destroying effect of slavery to include a destruction of self-efficacy and worse so, the destruction of the base for self-efficacy building in the form of self-respect and positive identity, and therefore a fundamental base of today’s poverty in former slave economies.

Belief in one’s self-efficacy fosters not only innovation diffusion, but also risk taking, long-term planning and cooperation, all of which are outcomes of trust (f.ex. Weber et al, 2002, Krueger et al.,1994, Tumasjan, et al., 2011, Stajkovic et al.,1998).

By the same token, will trust and its outcomes develop a more trustful culture and respective institutions that reflect it.

If SE is low, the requirements for trust in the potential cooperation partner are unproportionally high. The same is true for the stakes to any kind of risk taking: with low SE, the subjective costs will demand unproportional rewards or trust in circumstances. Sokoloff & Engermann in their study on the correlation between

slavery, plantation economy and today's lesser economic performance in the Americas found the same economic data but attributed them to inequality. Again, I suggest it is SE that was destroyed in slave trade, and through working and living conditions on the plantations, and in the rich households. And not only amongst slaves, but just as much amongst slave traders and owners who learned to live well off exploitation, missing out on developing self-efficacy on behalf of their own virtue. I suggest this combination: high sense of entitlement and material profit with a low sense of self-efficacy as trust in one's capabilities to succeed, as – aside of availability - a major cause of exploitive political and economic systems. If the reason for one's well-being lies within oneself, change and novelty offer chances for new endeavors, but if one's well-being depends on factors *external* to the actor and over which she has conquered some control and power, these will not be easily given up, but be defended. This can be observed in former plantation economies that seem resistant to modernization while being prone to corruption amongst the old elites who jealously protect their privilege: they may not have developed the self-efficacy to trust their abilities to do as well in a competitive system that is based on merit.

This is certainly a problem in all countries and systems at all stages of development: once the troughs of power and riches have been reached, few have the self-efficacy beliefs that whatever may be available for them after their present position will be as profitable. This is where the vital importance of institutions becomes apparent, and one reason why non-egalitarian countries may have difficulties installing them in the first place.

Culture and institutions, developed in a given environment, directly reflect levels and domains of self-efficacy of the respective population, i.e. individuals, groups, and leaders. Deducing from the innumerable studies on how self-efficacy affects human behavior, we can assume that Individuals with low self-efficacy and a perception of entitlement living in environmental conditions apt for it, will have incentives for building exploitive institutions to redistribute and gain some kind of

power position, whereas individuals with high self-efficacy would have a much greater incentive to build inclusive institutions to save on the social and material costs of power struggle and hampering development. High self-efficacy individuals can trust they can get what they want by their own virtue; these individuals are better equipped and motivated for cooperation as they don't need to forego regular ways to achieve their goals. Low self-efficacy individuals however, cannot not trust their own abilities in the same way and therefore be more susceptible for passive, resignative attitudes, or to the lures of manipulation, control or force to gain more of what they aspire.

Higher levels of self-efficacy help people to successfully go through different transitional phases in their lifespan as children have to enter into adolescence; adolescents have to grow into adulthood; young adults have to face the transition into partnership and parenting; and ever more people are growing older. Indeed, as more people live longer and at better health, more people in Western societies need to adapt to more different phases in their lifespan than before and will do so more actively with higher self-efficacy (Bandura, 1997, pp.168ff).

Self-efficacy has been found to foster political participation and more supportive democratic organizational structures. Lanning (2008) notes: *"...at the level of the individual, democracy implies both self-efficacy and engagement. With respect to self-efficacy, it is not enough that individuals are in fact self-governing. We must **believe** (highlighted by b.d.) that we are self-governing as well (Post, 2006; see also Gonzalez & Tyler, this issue). With respect to engagement, citizenship, like all forms of group membership, ..., may be understood as a feature of the self-concept. To the extent that this feature is prominent within the self-concept, the actor may be said to identify with the state. The role of identity in democracy is important in understanding individual differences in political participation, which do not derive only from differences in resources and abilities (Dahl, 2006), but also from differences in what Allport described as "ego-involvement." (p.433)*

Basically, there are two sets of political efficacy: the first one refers to the above described belief of a citizen to be able to exert some kind of influence in political surrounding and onto its procedures, which could lead to different degrees of engagement from thinking about political issues to running for political office. In a study on how to promote democratic citizenry with high degrees of participation, tolerance and involvement via school education, Solhaug (2006) found self-efficacy to be more important than knowledge for actual participation as it increases motivation. In a study linking human traits to political participation, Vecchione & Caprara (2009) found *“Openness and Energy/Extraversion accounted for significant variance in political self-efficacy beliefs, which in turn accounted for political participation”*. In a commentary on the roots of participation, Caprara (2008) priorly remarked: *“People have reason to participate if they have a voice in the in the choices of those entitled to use power, if they believe that authority considers their interests as valuable as others’, and if they judge that their arguments are influencing decisions. Thus – both voicing one’s opinion and exerting control over one’s representatives are crucial features of democracy that unavoidably have an impact on self-concept and identity (Lanning – this issues).”* This experience represents an originary efficacy-building mastery experience of political efficacy.

Vital for social, political and economic ability for cooperation, Caprara underlines: *“As voting outcomes depend on aggregation, voting is a cooperative enterprise that turns personal efficacy into collective efficacy”*, which applies to every successful constructive action in a collective framework.

There is second form which is often mistaken for political efficacy, as it happens in the political sphere, also aiming at political office, but of which I would argue to actually be non-political by origin: aspiring political office as part of another personal self-efficacy belief referring to those abilities that could gain political career, and a sense of entitlement. This is the same kind of efficacy belief that can also be found outside of politics: in business and management. As Chamorro-

Premuzic (2013) points out about the latter with his provocative question: “*Why Do So Many Incompetent Men Become Leaders?*”, we tend to “*misinterpret displays of confidence as a sign of competence*” (ibid) while the competence and corresponding efficacy belief is really only about this display, about the ability to gain a position, not about the actually needed business, management, intellectual, ethical, human, and political competencies for leading. This “hubris efficacy” belief is therefore about having the charisma, reputation building, networking, (military) power exertion abilities to gain office/job position, and in principle undemocratic, unparticipatory, and unpolitical.

Bandura (1997) observes an erosion of (real) political efficacy when trust in political institutions to solve human problems, their perceived efficacy, decreases (p.520). It is a good example for the interdependency of individual and surrounding: the human being exerts some influence over his life and surrounding, and is influenced by it, both limiting and determining each other.

2.4 What is not self-efficacy: related concepts

There is a range of seemingly similar, from psychology adopted economic concepts, that might be mistaken for self-efficacy or contain self-efficacy under a different name. Bandura differentiates self-efficacy explicitly from confidence, control beliefs, effectance motivation, expectancy-valence theories, intentions, locus of control, means efficacy, outcome expectations, perceived control, potency, self-concept, self-deception, self-esteem, skills (1997). Likely for confounding are all concepts that carry a “self” in their name. Self-esteem, self-confidence, self-concept, self-reference, self-appraisal and all other self-beliefs carry a part of this one aspect of self-efficacy in them that refers to belief in one’s abilities to act, including deciding and setting goals. But they are all more general concepts that refer to evaluating, judging and attitudes toward the self as a whole.

Especially self-confidence is often mistaken for SE. Bandura describes it as a “colloquial” and “non-descriptive term that refers to strength of belief but does not necessarily specify what the certainty is about. I can be supremely confident that I will fail at an endeavor. Perceived self-efficacy refers to belief in one’s power to produce given levels of attainment.” (1997, p.382)

Self-reliance includes the aspect of independence and is used in sociology, linguistics, data processing to describe a state of self-sufficiency. (In political science, it was part of a dissociative theory for developing countries to end dependency and the dictate of terms of trade in the 1970s (ple see below Nyerere, Galtung, Senghas).

Locus of control refers to a person’s notion of being the one who makes the decisions, and is in control of her own matters; it does not refer to the achieving process, but to the decision to start it – which is a result of self-efficacy and circumstance.

Aspirations as a concept for expanding human capital has been shown to have large impact on short-term performance, low aspirations being a reproducing factor of poverty in poor families through beliefs that serve stereotypes³⁴. Bandura et al. show that self-efficacy can be a decisive factor for developing aspirations and actual goal setting^{35, 36} while these are not identical: as aspirations refer to a wish like “I want to be a doctor”, a goal is the end result of a specific process that causally links one’s own actions to the desired result of that process: “I want to be a doctor because I can and will work hard in school which will earn me the degree and the well-paying job”. This linking of one’s actions to the

³⁴ f.ex with regard to development of aspirations and social groups: Gottfredson (1981); with regard to race, class and environment: MacLeod (1987).

³⁵ in children: Bandura, Barbaranelli, Caprara, & Pastorelli (2001); on social programs and poor families: Chiapa, Garrido, & Prina (2012).

³⁶ on lack of investment aspirations, and how to raise them through vicarious/video observation: Bernard, Dercon, Orkin, and Taffesse (2014); on raising investment behavior and aspirations through social interaction, encouragement and supportive leaders: Macours and Vakis (2009).

attained results is what people lack who lack self-efficacy. Aspirations are much easier to evoke than to develop SE especially in cases with clearly defined targets like education: the wish to become a doctor says nothing about the willingness to work hard and consistently, or having the persistence, resilience, frustration-tolerance, and adaptability every school system demands. When short-term simple measures like exposing people to a vicarious experience via film showings find quick success in producing wishes for higher education in children and parents, they are likely finding only aspirations without and instead of self-efficacy. People with low SE may have high aspirations, but low success expectation in proving oneself: “why should I try harder, if I will probably fail anyway”. And if they do, they may still lack the persistence and resilience that is necessary in most processes and which come with self-efficacy. Aspirations take only a wish for more or better which is easy to install by basically marketing and advertising something, building SE indispensably requires sufficient self-respect to even be able to anchor SE.

Even believing to have the internal locus of control and aspirations is not sufficient for actual goal setting (or achieving them). Having aspirations and locus of control but lacking self-efficacy for the necessary process can foster a problematic, frustration or aggression producing sense of entitlement without achieving competence. This unfortunate effect can presently be observed in the Maghreb (Müller, Sievert, & Klingholz, 2016) as a result of maladapted education programs that were able to produce large numbers of university graduates without being able to offer appropriate jobs. While many students underwent their education in the strict belief to be rewarded with good government jobs afterwards, many developed high aspirations. But their education according to the French system of hautes écoles (Hessel (2011), p.205ff, 235ff) ignored the necessities of catch-up

economies: people with entrepreneurial self-efficacy to create opportunities for themselves and others.³⁷

Hope (f.ex. Lybbert, Travis, & Wydick, 2016) sometimes combined with aspirations, is another attempt to capture human drive, but like aspirations is an unspecific notion, easy to evoke and easy to destroy, susceptible to manipulation and without clear reference to a person's own action; hope does not lead to a long-lasting robust state on which to found policies.

Theodore W. Schultz (1972, 1993) used the term allocative ability to describe the underlying necessity of man to allocate whatever he has and can do in an optimal way to achieve his personal optimal result – here, with regard to his harvest. Allocative ability is a summary of a several abilities that enable a person to make the proper decision which Schultz showed to increase with education. It does contain the aspect of SE as the necessary empowering factor: one has to belief in one's ability to act before making the decision to act. Self-efficacy empowers to exercise agency and develop allocative ability.

In an important attempt to formulate a general theory of psychological influences on economic behavior and decision making, Akerloff & Kranton (2010) developed

³⁷ This problem exists in many developing countries adding to migration pressures as well as possibly to a reservoir of potential terrorists amongst entitled, but not very self-efficacious (male) youths in (Islamic) countries, and possibly amongst second and third generation (muslim) immigrants; parentheses remind of due care of false generalization. The usually employed religious and anti-Western rhetoric appears like a justifying construct when delinquents are found to be unsuccessful drug-dealers, petty criminals, and otherwise failed but aspiring young men. A Western variation of this lack of self-efficacy combined with maladapted self-images may manifest itself in the orbit of Brexit, Trump, and AfD where those, often white men with disappointed aspirations or as such perceived, frail status make their fears and anger noticed with a justifying, but constructed anti-immigrants rhetoric. Asymetries between SE and aspirations or self-construct in concert with the experience of humiliation as a result of this asymmetry is in my opinion the actual cause of several of these phenomeny. I do not follow the argument of modernization losers; most inflicting men have not emerged from marginalized backgrounds, as the respective organizations were founded and led by studied men who could have led a company or hospital, but apparently suffered from more desires than have belief in ability. Cmp. findings in Tetzlaff (2016) and cited newspaper articles in fn. 301; also cmp. to fn 64 here: discussion on low self-efficacy in poor white men in America and class conflict as race conflict.

a concept of “Identity Economics” which aims to include all major insights of behavioral economics, building on a general definition of identity, and expanding it by a number of different concepts like biases, reputation, self-efficacy, different identities in different reference groups, clichée, and several others. Probably due to its generality, it has not received general acceptance; scientists are still searching for the connecting factor which could be self-efficacy in the end.

“ An unfortunate tendency of some politicians and economists is to use the terms “underdeveloped” and “developing” inter-changeably, with the latter regarded as a more acceptable euphemism for poor. Clearly, level of income and rate of change are different things.” Lipsey, Sparks & Steiner (1976)

3. How Self-Efficacy Fits into the Theoretical Framework

A wide array of theories aspires to capture the causes of today’s differences in economic, social and political development and to draw insights on how to overcome them. In the following, I trace major theoretical strings to embed the concept of self-efficacy in our present explanatory approaches.

3.1 Modernization and Development³⁸

Both terms above describe a process of change over a period of time, from a lesser state to one of higher complexity and order. In my interpretation there are no equilibria to be reached, and therefore no end to the necessity of the process.

³⁸ in the following chapter I have neither directly used nor cited Allen Schnaidberg (1970), but found his work inspiring for asking questions about the concept of modernization.

But rather, in analogy to the process of democracy which continuously needs to produce the conditions that bring it about, modernization and development are civilizing processes that need to produce material and human growth in a continuous process of self-limitation and self-empowerment that brings them about.

According to the Encyclopedia Britannica *“**Modernization**, in sociology, (describes) the transformation from a traditional, rural, agrarian society to a secular, urban, industrial society. Modern society is industrial society. To modernize a society is, first of all, to industrialize it. Historically, the rise of modern society has been inextricably linked with the emergence of industrial society. All the features that are associated with modernity can be shown to be related to the set of changes that, no more than two centuries ago, brought into being the industrial type of society.”* (Kumar 2014) The welfare and development economist Hla Myint (2014) answers with his definition of economic development as being *“the process whereby simple, low-income national economies are transformed into modern industrial economies. Although the term is sometimes used as a synonym for economic growth, generally it is employed to describe a change in a country’s economy involving qualitative as well as quantitative improvements. The theory of economic development—how primitive and poor economies can evolve into sophisticated and relatively prosperous ones—is of critical importance to underdeveloped countries, and it is usually in this context that the issues of economic development are discussed.”*

Both definitions describe basically the same kind of process equally ideologically burdened and limited in its suitability for describing the ongoing challenge for every economy and polity to provide for stability while continuously adapting to technological novelty, demographic changes and the necessary institutional

update. This never-ending, never equilibrium-reaching³⁹ process does not stop with industrialization or any other stage as far as we can know now.

The German historian Hans-Ulrich Wehler (1975) broadened the term by developing an analytical system of layers for

- economic growth,
- developing differentiation of life spheres in public, private and work (specialization) life,
- developing of universal rather than group-exclusive values
- spatial and social mobility
- growing participation in the political process
- institutionalizing of conflict and thereby committing the monopoly of force.

The sociologist Ulrich Beck (1996) expanded the concept even further into what he called “reflexive modernizing“ or “second modernity“ to include post-modern developments in industrialized countries, acknowledging that the need for modernization never ends, but also, that pre-modern and anti-modern phenomena continue to exist and exert pressure. Beck hereby rejects the notion of Wehler and most other authors that modernization is irreversible – which many examples in history have shown⁴⁰.

My concept of modernization most resonates with the approach of Hans van der Loo and Willem van Reijen (1997). They identify modernization as a comprehensive process including social change and differentiate four stages and

³⁹ “...in fact, if the system ever does reach equilibrium, it isn’t just stable. It’s dead.” John Holland at a Santa-Fé-Institute meeting, cited from: Beinhocker (2007), p.70.

⁴⁰ While the loss of structure, cultural achievements and wealth after the end of colonialism may be ascribed to the rejection of anything connected with the hated colonial rulers, the collapse of former high civilizations like the Mayan demonstrate how within one generation crafts were lost to other still disputed reasons like ecology and/or population pressure combined with sunk-cost effects f.ex.; similarly, at the end of the Roman empire, in one generation the ability to read Greek was lost. The detrimental effects of possible crowding-out of self-efficacies in this context will be discussed later.

spheres of change that are entangled and affect each other in feedback loops so that each one causes status and change in the other, thereby creating paradox effects that need to be addressed by politics and the social community:

- Modernizing happens through and causes specialization, and exploitation of natural resources, and offers as much opportunity for individual liberation and development as it demands civil self-limiting in cooperation and natural resources management.

- As complexity of communication and interaction grows ever more complex, “markets“ develop for self-regulating, which demand ever greater specialisation and ever greater, potentially worldwide exchange.

- Increasing individualisation comes with emancipation of old constraints. But these are replaced by more anonymous bueraucratic ones which, as much as the nation state has to yield to supranational organizations, come with growing alienation and lack of identification.

- The latter point increases the loss of culture in favor of ratio, tradition and authority are replaced by rational , normative analysis, the rule of religion is ended by the rule of science; and all of which end the dominance of the collective in favour of individual freedom, social and geographical mobility and ever rising insecurity and risk.

Van der Loo and Reijen spell out what modernization processes do to individuals and societies. I consider this the dilemma of modernization: While in a natural environment, the conditions of existence of anything are limited and defined by everything else that exists, civilization lifts man out of this limitation through circumstance and other beings except his fellow men, while imposing on him the levies of self-limitation. Modernization as the updating of the civilizing process reduces these collective limitations, and increases the normative demand for self-limitation. Where this is not answered, bureaucratic rules step in, without the emotional and social bonds to back them. It leaves behind an individual with the

need to limit herself according to self-set norms and self-constructed identity in transition.

The term “modern“, from the Latin *modernus* or *modo*, means “just now“, “contemporary“, “related to the present or immediate past“ (Webster’s, 1965) which cannot be a permanent stage. Modernization is therefore a necessity that puts less and more developed countries in the same boat which could offer new possibilities of cooperation or another uneven race with one decisive difference (that will be discussed in the chapter on learning): knowledge is the one “commodity“ with increasing utility⁴¹. The more you have the easier it is to acquire more. One part of the explanation is growing self-efficacy which helps not only developing countries to dare modernization, but also industrial countries to not lose larger parts of their population to unemployment and social disintegration on their way to ever more complex systems, and the elites of developed and less developed countries to fighting progress and corrupting institutions.

“Modernization“ and “development“ or “underdeveloped“ express an implied evaluation about the fact that there is an asymmetry in the economic, social and political state amongst the countries of the world. Those that are more modern are usually more developed and richer, exercising a greater degree of individual freedom, opportunities and guaranteed legal rights, degree of participation and gender equality. This standard of modernity clearly represents a normative evaluation of the idea of where modernization should lead when starting from a lesser state in the addressed fields. This lesser state is called underdeveloped, even though we could also call it less modern, implying that less developed really means more traditional in economic structure, culture and institutions, and thereby also in the social and political sphere. Withstanding attempts of de-politicizing it, development on these terms, is a process of moving from

⁴¹ according to Brian Arthur, this and the critique of Krugman, and the defense from Kenneth Arrow, in: Beinhocker (2007), p.57 and 464.

underdeveloped to developed and modernized, clearly with a targeted direction of reaching some state of modernity.

It needs underlining that modernity is necessarily a temporary state, which vanishes into non-modernity unless it is continuously updated via modernizing.

Both terms, “modernization” and “development”, are easily ideologically coopted. Huntington’s “Political Order in Changing Societies” (1968)⁴² is an example of connecting the complex processes of modernization with political agenda leading to a problematic further use of the term. He identifies modernizing economic measures to cause political and social instability, which sounds reasonable on first impression, and calls for authoritarian control measures to prevent social unrest; U.S. policy should discourage modernization attempts in poor countries for this destabilizing reason. Alesina and Perotti (1996), however, show in their analysis of 71 countries in the period between 1965 and 1985 very clearly, that the instability Huntington ascribes directly to modernization, is rather caused by the evoked inequality which not only hampers further modernizing investments but also calls for measures that cushion or limit the developing inequality, instead. One could add, it also produces a decrease in coping self-efficacy if conditions change quicker than self-efficacy can be build up for adaptation.

Here, I use the both terms without reference to any theory or ideology, and solely to refer to the process and activities of adapting to changing and new informational impulses from within or outside a national economic, social and political system, basically without regard of its status of development. Rather, modernization is understood as necessary and ongoing for any developed or less developed social unit, which by reassessment of old, or learning of new data adapts her existing knowledge, which regularly leads to higher order (f.ex. via differentiation) and complexity. These processes are naturally more obvious and therefore easier to detect in less developed countries, which thereby offer themselves for research.

⁴² cmp. discussion on Huntington’s “Clash of Civilizations” below.

A number of scientists searched and found a multitude of symptoms, causes, influential factors, phenomena impeding development and causing “underdevelopment as a sum of problematic development areas” (Nohlen & Nuscheler, 1982, p.30, transl. bd). They identify seven basic problem areas (“Problemfelder” as they call them) that are as much symptoms as causes of reproducing lagging development, and basically so intertwined that the following seven areas are not fully independent categories:

- Population Pressure; while Nohlen/Nuscheler here address the problem of population increases with the following pressure on all social institutions like medical care and education as well feeding the growing numbers, and employing them, the problems of a quickly growing population also touches upon the problems of ethnic and religious diversity that was so unintelligibly created by colonial bureaucracy.

- Food Shortage; this problem has been somewhat relieved between 1982 and today – 2016 - through the millennium project, though 1 billion people must still be regarded as poor enough to not live in a secured food situation. The question of healthy, clean food and water and a balanced diet in sufficient reliability is still unreached for many more people.

- Paid Work; sufficient fairly paid employment has been identified as a major driver for development while the lack thereof causes all of the above problems on top of the immediate social and human ones ranging from crime to depression and substance abuse to black markets that divert economic activity from the state sphere and thereby getting lost for a nation’s growth and development. (Even though there might be some impulses from heavy black market activity if human, monetary or technological gain get re-transported into the official market, but it has to be regarded as highly inefficient as most of it will get lost and resources tied up in this inefficiency).

- Health Problems; again, between 1982 and 2016, great progress has been made through vaccination and malaria prevention programs, but poverty still has to be

regarded as one of the greatest health hazards which is therefore inseparably tied to all of the above and the basic condition of underdevelopment. Clearly, unhealthy, mal- or undernourished, badly paid workers under suboptimal working conditions will only achieve a proportion of their working potential which is an immediate loss for the national economy and its developing potential.

- Education: Nohlen & Nuscheler point out education and health as key indicators of underdevelopment. Moreover, both are key causes of it.

- Natural Environment; Again, symptom and long term cause of underdevelopment, the exploitation of natural resources and destroying of parts of the natural environment while poisoning others, is causing social, political and economic results of incalculable dimension as their outcome lies in an unknown future while any reconstruction or repair of natural damage may prove impossible or demand time stretches beyond human planning horizons.

The above problem areas allow for identification of underdevelopment and its complexity. They can cause a constant reproduction of underdevelopment that was later to be described as causing a poverty trap (Sachs, 2006; Collier, 2007), a vicious cycle where tackling one of the above problems could unintentionally cause several others to deteriorate even further. But they do not shed light on the question what had caused these problems to begin with. Their validity for policies aimed at interrupting the recurrent reproduction of poverty, nevertheless, remains acute.

Materialistic schools of thought on the origins of lagging development can be grouped in two rough categories: those who would locate these originating causes exogenously, while others identify endogenous ones. Nohlen & Nuscheler disregard the categorization of exogenous and endogenous causes of underdevelopment as they claim this differentiation to be “analytically fruitless” (1982, pp. 25-47), and rightly so cite the example of exogenous influences having actually affected the social and economic structures of developing countries and

thereby having been “internalized”. I agree with their view, but for the purpose of tracing the path leading to the discovery of psychological aspects in development theory, I still find it helpful to use this differentiation. I am looking less at the results of dysfunction but at its root causes; my differentiation here will therefore stick to the exogenous/endogenous categories, but extended by the aspects of materialistic and psychological factors. The difficulties in this are institutional factors, which are as much materialistic as psychological in their materialized manifestation of culture. I attempt to solve this conflict by splitting up culture (psychological reaction to materialistic causes, becoming psychological cause) and institutions (materialistic result and cause), analogue to colonial economy (being the exogenous cause) and national elite (endogenous result).

3. 2 Materialistic Approaches

Major development researchers searched for material circumstance that could be targeted with specific economic measures and an active development policy. Over time and with the recession of white supremacy ideologies, a great number of factors and circumstance were identified that clearly contribute to poverty, lack of development, and lack of potential and hinder modernization of economy and society, some of which were exogenous, some endogenous, and some a mixture of both developed over time. The origin of the multitude of negative factors, the exact causalities and how they could be tackled, was therefore not quite clear in many cases, and object of ideological and scientific dispute. Especially, why and how European countries as the global measure for successful development had overcome their own historic underdevelopment while other regions of the world had not, could not be agreed upon, thus, lessons not be fully drawn from Europe’s rise.

While colonialism had clearly left a scar field of artificial nations with ahistorical boundaries, multi-ethnic, multi-language and multi-religions populations, and

inappropriate economic structures that should prove a detrimental legacy reproducing underdevelopment potentially infinitely, it had not caused the lack of development that they had met when the Europeans first arrived on foreign shores. The damage left behind by the colonial rulers not only in the political and economic structures, but also in the social settings of collaboration between the new national and old foreign elites were prone to hamper successful catch-up development and a group of scientists, partially from the countries in question, concentrated on identifying these aspects of distortion to demand their abolition for an independent economic and political development.

The materialistic exogenous view locates several detrimental factors: dependency on the former colonialists, a world market dominated by their needs and wishes as reflected in unfavorable terms of trade, and keeping of long-term colonial economic structures – like mono-cultural agriculture, sometimes on the basis of imported and non-food crops, and concentration on natural resources instead of building up a modern processing industry - set up for serving colonial markets. These explanatory approaches revolving around imperialism, dependencia, periphery, and asymmetric international division of labor/terms of trade (Prebisch, 1976; Amin, 1974; Senghaas, 1974, 1979; Elsenhans, 1992; Wallerstein, 1974) identify today's poverty and lagging development as caused by colonial distortions in economic, social and political structures that are being ever reproduced by the problems they cause; corrupted political elites periodically employed and employing in ideological proxy wars who continue in their old spirit to prevent political and social change that could break the vicious circle; the industrialized Western former colonialists having built a world wide economic and financial system based on the inner logic of imperial colonial ideology, thereby updating the exploitation of the so called Third World basically forever. Consequently, disassociation and more independence from the world market mechanisms were

prominently suggested solutions (f.ex. by Wallerstein 1974)⁴³, inter alia, to gain greater bargaining for the following demands for a New Economic World Order (Tetzlaff, 1975; Amin, 1979). While over the course of some 45 years, considerable international political changes have helped to levitate some countries out of the worst poverty and some into the ranks of semi- or less industrialized countries, globalization of the past two decades has possibly widened the extent of exploitation from natural resources to large fractions of populations employed in semi-industrialized marginal jobs. Progress in the international political sphere is counter-acted by growing Western corporate and nationalistic interests (f.ex. land grabbing).

Exogenous explanations leave the question for the asymmetric state of development at the time of European arrival on foreign shores unanswered: Colonial seizure was possible because the to-be-colonies were in a state of pre-modernism when the Europeans arrived. Question is, if this was due only to an asymmetry caused by chance, suggesting, the Europeans had simply arrived too early, before a modernizing development had reached similar states, or if this asymmetry suggests that there were endogenous factors already at work, preventing timelier development.

From Malthus (1798) to Dennis Meadows (1972), population pressure has been identified as one of the greatest threats to development: ever growing populations consuming whatever excess gain was being achieved, exhausting the state's leeway for any type of modernizing investment like the introduction of new technologies, infrastructure or mass education. This could lead to pauperization of large parts of the population, dependency on Western aid and political instability. While indeed a great present strain on development, political stability and economic growth, population growth cannot be counted as a root cause of underdevelopment. It is now, but was not until Western intervention created it in

⁴³ For discussion of the proposed causal relationships see f.ex. Sautter (1985); Tetzlaff, (1975, 1982).

modern dimensions without equally raising food production and other economic prerequisites like education and jobs that helped to create Europe's rise in a natural and chronological order.

From the early times of Mesopotamian civilization, urbanization and population growth were a result of rising productivity and excess food production (Harari 2014; Diamond 2005), not the other way round. High population growth rates without respective food production rates are rather a symptom and result of underdevelopment, than a cause (Demele, Schoeller & Steiner, 1989)⁴⁴.

The aforementioned – externally caused - distortions of colonization (for Nunn, slave trade, see below) led to endogenous distortions in the social, political and economic structures of the former colonies that were regarded as reproducing themselves and their detrimental effects in "*vicious circles of poverty*" (Nohlen & Nuscheler 1985, p. 35) Low incomes would lead to low savings rates which would necessarily lead to a low investment rate keeping productivity and incomes low. Hernando de Soto (2000) identified indeed a lack of capital as one of the major inhibitors of development, but differing from German authors like Hesse & Sautter (1977) ascribed it not to an absolute lack of capital due to f.ex. export structure and terms of trade, but to a lack of institutional structure like property rights that would allow for sufficient endogenous capital accumulation and exogenous capital attraction.

Demographic structures as root cause for poverty and underdevelopment were identified by several scientists pointing at what Boeke (1953) in researching the Netherlands East Indies as early as 1953 called "dual society": societies being divided into a modern and an traditional part, with two parallel existing social systems, value sets, behaviors and habits, even ways of production and social organization, one, Westernized in self-image, consumption and aspirations to the point of what Nohlen/Nuscheler (1985, p.38) call "partly capitalistic", while the

⁴⁴ Specifically on birthrates, female education and female opportunity costs in developing countries: Akman, Wardatul (2002); Lim, Lin Lean (2002).

other one remains traditional, poor, unaspiring and, most importantly, non-entrepreneurial. This idea of a divided, disintegrated society, which also reflects patterns of exploitation and a political power divide, was, though criticized, partially adapted and enlarged developed into a theory of structural heterogeneity. The latter is regarded as a stable form of capitalism in underdeveloped countries, sometimes called peripheral capitalism leading to marginalization of the traditional segment without developing any modernizing dynamics (Tetzlaff, 1975).

Other scientists tackled the question why some countries are poorer and less developed by trying to identify why Europe was richer and thereby, track down possible causes to be found within the respective countries. Which factors helped the inhabitants of the European continent with its unfavorable climate in the North and infectious diseases in the South to leap from moor wading hunter-gatherers and mosquito plagued swamp inhabitants to colonizing the whole rest of the world? Many first turned to questions of geography before looking at human factors, tainted often yet by an ideological lens.

Climate and ecology were long treated under limiting premises. Researchers identified flaws in proper adaptation of western technology or methods to developing countries' ecology as causing further deterioration of soil quality and groundwater levels, but failed to research the interaction between environment and human behavior and its translation into culture and institutions. Even worse, under the heading of social anthropology climate theories, inherently racist explanations on temperature and work ethics (Alatas, 1977) were developed, justifying and establishing the image of the lazy, apathetic, hedonistic, undisciplined southern people (Nohlen&Nuscheler, 1985, p.33-35), the laborious Asian, the Weberian protestant. Not until Jared Diamond (1997) researched the differences between Europe and the world, starting at the beginning of divergence about 13 thousand years ago when a rather similar state of development could be assumed everywhere, climate and ecology were given the focus of ground-laying

importance. Diamond identified natural environment: i.e. climate, geography, flora, fauna, as causal factors starting in small differences that initiated a process of self-enforcing positive feedback loops, creating monumental results by taking Europe from stone-age to artificial intelligence (Beinhocker 2007, Epstein & Axtell 1996, Arthur et al. 1987)⁴⁵.

Diamond differentiates between initial “*ultimate*” causes that define different starting conditions and proximate causes that cause immediate differences in action outcome. He identifies the naturally given possibility to produce excess food as the one ground laying factor on which all others are founded: the presence of domesticable plants and animals, and the absence of insurmountable transportation obstacles that could hinder exchange of produce, knowledge and natural resources. This special potential for high yield agriculture in Eurasia offered the chance for sedentary life, leading to ever denser population and hence complex administrative and governing structures which relied on the development of a scripture which was then used to store and communicate ever growing knowledge over geographical distance and time, both of which were the prerequisites of technological progress. All of this led to Diamond’s proximate causes: many people living closely with their domesticated animals catching their “germs” – zoonoses – which made Europeans pretty much immune to what should later kill many of their colonial encounters (germs/disease); excess food production enabled urban societies with central governments, armies, specialization, all of which led to complex social structures with respective culture and institutions; technological progress, central organization, and exchange with others in knowledge and resources led to trade, scripture and new products

⁴⁵ Beinhocker (2007), pp. 79-97. In a whole chapter of his book, Beinhocker reports on a computer simulation showing how small starting differences in resource endowment will, under every possible test set-up, lead to unpreventable divisions of poor getting poorer and rich getting richer. The experiments were carried out at the Brookings Institute by Epstein & Axtell (1996). They confirmed earlier findings of Brian Arthur at the Santa Fe Institute from 1987.

(steel); and the will to expand (guns). While natural endowment caused excess food production, Diamond identifies the four proposed proximates: writing, disease, technology and complex social organization, as the causing forces behind the allocation of the thereby created wealth and power (Venkatachalam 2001), and thereby laid the groundwork for the discovery of the connection between environment and culture.

A wide-ranging theory in this context was developed by Welzel & Inglehart (2013) who identify the necessity of a certain climate and availability of natural transport systems in their Cold Water Theory as prerequisite of modern development, making a difference between development until and after the Middle Ages. They also argue for human empowerment as a multi-factor syndrome of development that will be discussed in the next chapter, but the material endogenous ground-laying cause of development in their work are “cool water` (CW) environments. These environments combine (1) fairly low average annual temperatures with (2) continuous rainfall over all seasons and (3) the presence of permanently navigable waterways.” (p.8) They argue that the early lagging of Northern Europe and Japan behind the Eastern countries until the Middle Ages, was owed to basically exact these features as they prevented early spreading of an excess-producing agriculture and its resulting in specializing and urbanization with all the positive results discussed above: *“Importantly, the Eurasian fringe location placed Northwestern Europa and Japan at a large distance from the early centres of agriculture stretching from the Mediterranean to China. The diffusion of advanced agriculture and urban civilization reached Northwestern Europe and Japan late for this reason.”*⁶ *Indeed, the data by Putterman (2008) show that the flank civilizations adopted agriculture millennia after the older civilizations of the Middle East, India, China and the Mediterranean. Likewise, Maddison’s (2007: 40) estimates suggest that levels of urbanization known from the older civilizations since long haven’t been reached in Northwestern Europe before the 15th century*

BC and in Japan before 17th century BC. The overseas CW-areas were even more isolated: no advanced agrarian societies were in the vicinity of the Northern coastal areas of today's US, the southern coastal areas of today's Canada, the Southern tips of South America and Africa or the Southeast of Australia/Tasmania and New Zealand. Accordingly, advanced agriculture did not emerge in the overseas CW-areas until settlers from the European CW-areas imported it." (p.9) (footnote 6: "The flank position of these two civilizations saved them from foreign imposition of despotism by Eurasia's recurrent land empires. Thus, the potential that resides in the CW-condition could unfold undisturbedly from foreign despotic absorption in Northwestern Europe and Japan. This was the exact opposite for the more inwardly located CW-areas in Eurasia, like Russia's Northwest or China's Northeast: they fell victim to despotic absorption.") (p.9)

The rise of Northwestern Europe and Japan since the Middle Ages is consequently attributed to the material endogenous causes of a natural environment that did not lend itself to central, large-scale exploitation and despotic (also foreign) rule, but produced material and psychological human capital effects that Welzel/Inglehart call "*plural autonomies*". This "*existential (environmentally driven, bd) autonomy orients groups towards the assertion and defence of derivative autonomies, including control over their produce (Braudel 1987, 315-319).*"⁴⁶

- "*widespread autonomy orientations provide a continuous source of resistance against unchecked rule and, hence, feed a pluralistic power structure. With such a structure in place, competing local, regional and national rulers must grant concessions in return for the tributes they wish to take*".

- "*a multitude of local, sectorial and corporate autonomies and a concomitant pluralistic power structure in pre-industrial Northwestern Europe and Japan with*

⁴⁶ the study by Braudel referenced here is probably (missing in original): Braudel, Fernand, Georges Duby & Maurice Aymard, 1987, Die Welt des Mittelmeeres: zur Geschichte und Geographie kultureller Lebensformen, Frankfurt a. M.

an apparent lack thereof in all of Eurasia's and Mesoamerica's pre-industrial civilizations (McNeill 1968; Jones 1985; Braudel 1987; Powelson 1997; Landes 1998) (p.10)

All of the above resulted in what should become the demographic root for technology and innovation: reproductive autonomies over fertility decisions (p.10) in a healthier environment leading to less child mortality, allowing for lower birthrates, allowing for an “emerging markets” logic: investing in skills and ideas in children and oneself instead of into the number maximization of offspring.

Some aspects of the above theories were recently found to be valid in a meta-analysis by Burke, Hsiang & Miguel (2015) who analyzed economic data from 166 countries between 1960 and 2010, and found proof for a worldwide causal interconnectedness of climate and economy: *“We show that overall economic productivity is non-linear in temperature for all countries, with productivity peaking at an annual average temperature of 13 C and declining strongly at higher temperatures. The relationship is globally generalizable, unchanged since 1960, and apparent for agricultural and non-agri-cultural activity in both rich and poor countries. These results provide the first evidence that economic activity in all regions is coupled to the global climate...”* (p.1)

Eventhough Burke et al. do not identify the mechanism at work that ties temperature to productivity, and offer no explanation for outliers like Singapore; they extrapolate with regard to global warming: *“If future adaptation mimics past adaptation, unmitigated warming is expected to reshape the global economy by reducing average global incomes roughly 23% by 2100 and widening global income inequality, relative to scenarios without climate change”.* (p.1)

The data and the effect that Burke, Hsiang and Miguel identify, may show an effect that seems to be of temperature on economic activity. Indeed, this may be a misinterpretation. I will argue further down below, that the observed effect may much rather be one of environments offering different environmental stimuli in the form of demands, rewards and detrimental effects for human intervention in

their habitat. High temperatures are one symptom of a certain tropical biotope of soils, precipitation, animals, bugs, diseases, cultivatable crops, threats like harvest destroying floods, droughts, heavy storms etc., which simply influence the possibilities of interaction and interaction rewards between humans and their habitat. I will argue that the effect Burke et al. have actually found is that different climate zones with differently responsive natural environments produce different psychological conditions (which could also produce different “cultures”) with regard to the levels, domains and grades of generality of self-efficacy, which is what then influenced economic performance.

"The foundation of political economy and, in general of every social science, is evidently psychology. A day may come when we shall be able to deduce the laws of social science from the principles of psychology."
Vilfredo Pareto, 1906

3. 3 The Human Factor

Several approaches have focused on human behavior in relation to economic performance and political organization. The concept of self-efficacy is an especially promising instrument to do this.

Nobody has yet produced unambiguous evidence that and how culture and institutions are decisive for economic success. One of the main reasons for this is that we have not yet identified by which operative means the influence of either or both could be exercised. But there is a widespread understanding that economic models of the past have been too remote from human existence to still be viable; as Hoff and Stieglitz (2016) write:

"Just as economists have had to come to terms with the fact that individuals act in ways that are markedly different from those predicted by the rational actor

*model, economists will have to come to terms with the fact that preferences and cognition are shaped by those surrounding us, and that these social interactions may be as important determinants of economic outcomes as the variables upon which economists have traditionally focused. The social influences on the nature of the individual are no longer beyond the boundaries of economics. Instead, social determinants of preferences and cognition are increasingly demonstrated in empirical work on individual choice and societal change. The broader perspective expands the explanatory power of economics and the accuracy of economic predictions. Most importantly, this perspective identifies sources of societal rigidity that the standard model takes no account of, and identifies new instruments that can influence behavior and long-run social change.*⁴⁷

The most wide-spread consensus on the matter seems to be Max Weber's identification of the religious belief of Protestantism that as a cultural factor would shape people perfect for capitalistic production: hard working, determined, frugal, resilient to hard ship, disciplined. But even this one consensus is questioned by Cantoni's (2014) findings. He used population figures of 272 cities from between 1300 and 1900, and found no effects of Protestantism on economic growth, though Weber and his basic concept is referred to in almost every study on culture and development, and gets employed in related fields like Huntington and Harrison show. Chakraborty et al. (2015)⁴⁸ argue that the answer may lie in the distinction that Lipsey, Sparks and Steiner (1976) point out in the beginning of this chapter: *"Clearly, level of income and rate of change are different things."* Chakraborty et al. model a capitalist culture with entrepreneurs and wage-workers, and find that under certain circumstances – here: external technological

⁴⁷ p.27; unfortunately, Hoff & Stieglitz mistake self-efficacy for self-confidence in their Appendix C, p.53f., and treat it accordingly.

⁴⁸ Once could argue that in their Bayesian learning function – p.3 – their prior could be replaced by self-efficacy as their posterior here contains the interpretation of passing on expertise, which could be the passing on of self-efficacy for entrepreneurial expertise or a combination thereof.

shock that boosts productivity – income levels might still depend on cultural bias while growth rates may be independent. The reasoning lies in the cultural transmission of adult preferences to their offspring that would be overcome by a large enough prospective income change from productivity boost.

More distinct answers on a causal correlation between culture, institutions and economy depend on identifying operational mechanisms as Gennaioli & Richter (2007) did with regard to precolonial institutions and accountability (see below).

It would also be helpful in this context to clarify the principal potential of genetic predetermination, epigenetics and culture. I will come back to this in my discussion on self-efficacy and genetics, but want to stress here: at the present state of biological research, human traits and behavior based on these traits must be regarded as not genetically determined, but as merely a genetic potential, comparable – if at all - to language. The new born child has the potential to learn to make any sound and sound combination physically possible, but acquiring the sounds of his mother tongue step by step “switches off” the other possible sounds, which is a major reason for accents in foreign languages learned after the age of ten. Humans have the potential of developing and learning any mix of culture, with f.ex. more or less cooperation, with being very cooperative within a group and very aggressive and uncooperative to outsiders etc.⁴⁹ The actual shape of human behavior seems to depend on the limiting factors of circumstance: whatever seems best – or profitable in a general terms – in the relevant natural and social environment will be done as soon as it has been learned and understood, or copied, what works best. Whatever circumstance lasts long enough will find its way into the lasting knowledge and behavior repertoire of people in that surrounding, and thus form culture. This correlation exists for environment and culture, and institutions as formalized culture respectively.

⁴⁹ Cmp. f.ex. the often wrongly as matriarchaic culture misinterpreted culture of the great mohawk nations, who were impressively peaceful and cooperative within their community of six first-nation peoples, and most feared for their cruelty in fighting others.

Avner Greif (1994)⁵⁰ suggests the *“organization of a society - its economic, legal, political, social, and moral enforcement institutions, together with its social constructs and information transmission and coordination mechanisms – “* as determining economic performance and growth and this organization (institutions) as a reflection of its culture, and culture in turn composed of cultural beliefs. Greif goes on to research the different development pathways of an individualistic versus a collectivist group of people and the respective economic impact by the example of medieval Genovese and Maghrebini merchants. He shows how both groups solved the problem of trust in trade in different stages of economic development until one of them – the collectivist – failed to develop modern institutional solutions to expand their tiers. Unfortunately for my work, Greif starts his analysis only after the groundwork for the two different strands had already developed which leaves us without information why they were able to develop so differently in the first place.

When researching the causes for the rise of Europe against the until recently, relative lagging behind of all other areas of the world, culture and institutions come to mind as the logical continuation of Weber’s concept of the protestant worker who developed a specific kind of work ethic which seemed especially apt for capitalist production. McCloskey (2015) titles: *“It was ideas and ideologies, not institutions, which changed in North Western Europe, 1600-1848.”* What changed according to McCloskey was the respect for individual life. This does make a lot of sense with regard to the central role of the entrepreneurial individual in the economy, her striving for happiness and fulfillment, her search for novelty, fantasy, ingenuity that creates a culture of diversity⁵¹, and institutions that support and secure it. Without individual freedom and support to flourish, fail and retry, there is no possibility for entrepreneurial personality to develop.

⁵⁰ p.913 and 915.

⁵¹ Beinbocker (2007) links economic evolution to quantity and diversity of possibilities, pp. 187-198.

On the same note writes Mokyr (2007, 2008)⁵² on the European Enlightenment and draws a straight line to today's economic success. Mokyr identifies two mechanisms that link the change in thinking and attitude to economic activity: the attitude toward technology which opened the door to unknown potential of new products and ways of production which in turn started a whole new cycle of social, economic and political changes; and secondly, the subsequent institutional changes that followed the change in attitude towards humans beings and morality of exploitive practices.

Scientific research of the role of culture and institutions poses severe problems of definition and isolation. Alesina & Guiliano (2013) have elaborated on this in great detail.

For the purpose of this study, I content with defining culture as the social essence of experiences that reflect the history of a specific group of people in a specific set of circumstance, which are determined by, but not limited to, their environment. One example would be the moderate climate and geography of Europe leading, over the centuries, to growing populations, greater proximity of different groups of people to each other, which would enable exchange of goods and ideas as much as increase competitive development pressures. Culture as a set of norms, habits and traditions including religion and language⁵³ is cast into institutions when it gets formalized and usually⁵⁴ depersonalized. Even though it is not clear yet how different languages and religious believes emerge, it is clear that they form feedback loops with the societies that brought them about. Punishing Gods for example fulfill great many limiting and socially unifying functions as much as

⁵² Mokyr's earlier work – f.ex. (2002) *The Gifts of Athena* - on why the enlightenment happened in in Europe in the first place, trace a long "enlightening" path. He does not operationalize individual factors, but spells them out most comprehensibly.

⁵³ Research is showing highly interesting findings of how language determines the way humans think, i.e. different languages promote different methods and ways of thinking. Cmp. f.ex. Athanasopoulos (2015); Gross (2013).

⁵⁴ "usually" because there are complex exceptions in mixed forms as in a dictator or absolute monarch.

different language shape all kind of different social outlooks and even abilities in their users. These range from more process to more result oriented ways of thinking, to time, gender, blame concepts, abilities of geographic orientation or simply exactness in thinking and expression, or the popular example of Indian numeration.

Clearly, religion and language as important cultural expressions reflect the natural environment they developed in. A surrounding that does not require or allow for storage of food stuff and therefore does promote planning will have less expression for time, time discounting, grammatical tenses that make the language and the thinking more complex. A nomad group of people who live in a rather unwelcoming desert surrounding with possibly raiding neighbors and a volcano posing constant threads of eruption may come up with metaphysical explanations of a punishing god (the volcano) to regain some kind of (hypothetical) influence on their lot – as some scientists believe was the beginning of the group of people who became the founding fathers of the three Abrahamic religions (Purzycki et al. 2016; Finkelstein, 2015; Humphreys, 2003; Der Spiegel, 52/2014).

My argument goes that institutions are shaped from a group's culture which is shaped by that group's history in a certain environment, which than react back on the members of that group. Culture and institutions form the social context of individuals – and the groups they build, while circumstance and environment build the natural context. From both, social and natural context does the individual draw her information for building her self- and world constructs that define her active role in the world, her goal setting, her risk taking, her novelty seeking. Culture is found to be highly persistent in groups, note not in individuals though; Voigtlaender & Voth (2012) f.ex. found attitudes in certain regions to be persistent over hundreds of years, so did Alesina & Guiliano (2013), Nunn (2012) found attitudes, beliefs and institutions to be persistent. Nunn also argues that culture is what brings institutions about and that it is this interaction that keeps both persistent and Tabellini (2010) found the same persistence in the correlation

between institutions from the Middle Ages still influencing attitudes today, all of them found historic influences of culture and institutions on today's economic performance. Wuepper & Sauer (2016) empirically tested the causal correlation between historical experiences and present day attitude and found this to be a determinant for economic performance. Michalopoulos, Putterman & Weil (2016) researched the influence of ancestral lifeways on present economic status. They compared descendants of pastoralist versus agriculturalists and found higher educational status and wealth in the former group, possibly caused by different attitudes and beliefs but not only in their own group, but also via being differently treated by others with regard to, inter alia, participation in political power. (see "promotion of self-efficacy" below)

Theodore Schultz's (1975, 1980) detection of allocative ability identifies an outcome of cultural attitudes and beliefs that influence time discounting, risk taking, and value individual learning and education. He writes: "*... the behavior of human beings is governed by the criterion of optimization under the constraints confronting each person.*" In his Nobel Lecture on The Economics of Being Poor, Schultz identifies a culture of poor people that is very rationally adapted to exactly their survival needs though these are different from those of people who are not poor, which motivates his call for cultural eye-opening in economics and social science, and which resonates fully with what Banerjee/Duflo have found in "Poor Economics", and Ramirez has been propagating in his work on communication in development: respect "poor" decisions as well-adapted, identify the self-efficacy behind them and support exactly that. Schultz' work on allocative ability encompasses self-efficacy and agency in how to prioritize and making decisions on the allocation of one's scarce resources.

Amartya Sen (2000), in his talk before the World Bank conference members in Tokyo, gives the most comprehensible overview of all the questions concerning the interplay between culture, institutions and development. Sen calls them the

means and ends of the development process, and underlines the obvious relevance of cultural conditions for human behavior and consequently economic choices and business decisions. Sen warns from any generalizations and oversimplifications in superficially classifying cultural traits, and giving the example of Japan, exemplifies that cultures change, and adapt, and merge over time – which is really what “culture” essentially is: the sum of evolutionary adaptations for survival of any defined group of people. In his own definition of development as the expansion of capabilities and freedoms to be and to do (1999, 2004, 2012) (see agency discussion below), institutional conditions are seen as essential instruments of any developmental policy to ensure stability in times of cultural and physical change while culture is seen as the basic human capital condition, the instrument and the outcome of development.

Culture

When Everett Hagen (1961) reviewed David McClelland’s “Achieving Society” (1961) for an issue of *Science*, he questioned: *“Is there an identifiable personality trait that promotes or retards economic progress in societies?”*, and called McClelland’s endeavor to prove just that *“a remarkable project for a scholar to attempt”*.

Since then, behavioral economics has incorporated the whole field of psychological research and testing because, as Rabin (1998, p.11) puts it:

“...psychology explores human judgment, behavior, and well-being, it can teach us important facts about how humans differ from the way they are traditionally described by economists”. In his paper, he subsumes the status quo of behavioral economic research on individual human economic behavior on preferences, choice making, biases including *“whether and when experience and learning lead people to overcome these biases”* (p.12). Like Rabin, Daniel Kahneman, Amos Tversky, Richard Thaler, Colin Camerer, George Akerlof, George Loewenstein, and

Ernst Fehr all work on the interface between psychology and economics and enlighten the emergence of culture and institutions as relevant for the social sciences⁵⁵.

McClelland's work on the "Achieving Society" revived Max Weber's (1973, 2010) ideas on cultural, in his case religious, values that bring about self-reliant⁵⁶, laborious, disciplined, resilient individuals who are perfectly fit for capitalistic endeavors. McClelland identified a related kind of spirit in certain people and in different strength, and connected this to economic performance, especially entrepreneurial activity. He regarded this drive to aim for achievements by doing something more or better than anybody before him as a cultural trait but leaving it unclear how that originally may have developed. In general, this entrepreneurial trait was regarded as one of the main pillars of Western rise.

Göran Hyden (1983), many years later, turned the argument around, and blamed the ignorance of Western development experts to appreciate traditional African cultures, regarding them as annoying hurdle for quicker economic progress, and the resulting failure to integrate them into the development process as a being a major cause for the lagging of development. He stressed that African cultures had grown on African soil under African conditions and this was what economic policies had to reflect and build on to help Africa catch up economically, but also socially and politically.

⁵⁵ Highly informative though and important for a background understanding of the field are: f.ex. Thaler (1988) on anomalies, where he examines "the existence of a cognitive illusion, a mental task that induces a substantial majority of subjects to make systematic error" which may cause market outcomes contradicting economic theory; on neuroeconomics in general see the comprehensive overview by Loewenstein, Rick, & Cohen (2008); on the value of neuroscience for economics: Camerer, Loewenstein, & Prelec (2005); on decision making theory in economics, which is vital for research on economic performance: Kenning & Plassmann (2005).

⁵⁶ Please note that here the term "self-reliance" refers to a psychological condition, not to the political program of self-reliance as dissociative development strategy against Western dependency as in f.ex. Nyerere (1967); Galtung, O'Brian, & Preiswerk (1980).

Engermann's and Sokoloff's work (Engermann & Sokoloff, 1997, 2002, 2006, and Sokoloff & Engermann, 2000) on disadvantaged economic development in the Americas took into account a possibly misfortunate natural factor endowment that favored the development of a mono-cultural plantation agriculture with its related slave labor, giving rise to a rent-seeking small (immigrated) elite, hindering the development of participatory institutions necessary for economic development⁵⁷.

This chain of argument was rejected by Nathan Nunn (2007). While he did find severe negative effects from slavery on today's economies, he could not attribute these effects particularly on large scale plantation economy with its institutional dysfunctioning and social inequality, but rather surprisingly, that small scale, non-plantation-work slavery had the worst effect on succinct economic performance.⁵⁸ I would suggest this to be caused by the totally different labor relations: while plantation slaves could easily despise of the plantation owners and lead their own, though marginalized lives, keeping their identity and sense of resistance, house slaves were very much integrated in the "white" lifestyle with often close, sometimes life-long ties with "their families", at least with the white children they would raise. House slaves would identify much more with their superficially privileged lives, which would actually injure their identity and destroy self-efficacy. And it must be noted, that these house slaves, though turned into normal work relationships with often disgraceful pay lingered on until today⁵⁹. Testing for slavery causing lagging economic growth via income inequality and land

⁵⁷ Engermann&Sokoloff's theory could be grouped into the next category of endogenous theories as they attribute the utter cause to natural endowment. Their work is discussed here because of the exogenous colonial elite and world market order effects, and the reply of Nathan Nunn which falls into this field.

⁵⁸ Nunn, 2007, p.2, pp.12-16, p.24.

⁵⁹ A vivid picture of 1960's Southern state's black housekeeping women and their discrimination and endurance between white exploitation and black male violence is painted in: Stockett (2009), *The Help*, New York; on the same note, cmp. the figure of the black majordomo who fully identified with his master to become the worst enemy of his fellow slaves in the Quentin Tarentino film "Django".

ownership, Nunn could again not find statistical proof for a causal relation (p.31ff.)

Nunn concludes:

“...the positive relationship between slavery and inequality is unable to explain the negative relationship between slavery and economic development. Instead, the data suggests slavery and inequality had two distinct impacts. First, slavery resulted in lower long-term economic growth, and second, slavery resulted in greater initial inequality, which has persisted until today. These two effects appear to be unrelated.” (p.34)

The two effects could well be related though when the effect of slavery on a person's, on groups', on elites and on leadership's self-efficacy are being taken into account. Slavery is a perfect example how violence and arbitrariness destroy the faith in one's abilities to influence by own actions the outcome of events. Leaders learn how total control and exploitation are the ways to riches and power, groups, especially elites learn the same as much as the dangers of not being in control oneself, and everybody enslaved learns helplessness (f.ex. Abramson, Seligmann, & Teasdale, 1978).

The concept of “learned helplessness” was first introduced by Martin Seligmann (1975), confirmed and expanded by many authors since. Seligmann tested extensively how people reacted to adverse situations that they could not exert any influence on, and found passivity and helplessness, enduring in agony at worst: effects that I interpret as conditions of very little or no self-efficacy. Neither of the two seemingly antagonistic groups of exploiters and exploitees learns to develop trust in their own abilities and capabilities. In the chapter on self-efficacy I use Seligmann's findings to describe especially the problems that arise when weak self-efficacy appears in conjunction with persistence to produce an all-enduring lethargy, or in conjunction with a sense of entitlement f.ex. through religion or belonging to a distinct group of people - this could be a gender, or an elite - which could help produce anything from terrorism to corruption and undemocratic control, depending on circumstance and nature of the group. These leaders and

elites are as weak in self-efficacy as their slaves, as they never learned that they could make it by their own virtue, and with power would lose everything without being able to regain on merit. It is worth noticing that this logic is not only valid for the extreme of slave economies, but in differing degree for hierarchical systems in general when power offers privilege and beats merit.

Mbeki (2011) gives a number of examples of this lack of leadership self-efficacy in his book on *“Advocates of Change”* where he cites indeed the necessity of building capabilities – and the respective self-efficacy - to promote change by good governance: *“Leadership therefore requires at least three capabilities: capacity to innovate; ability to implement through mobilizing the required resources; and capability to create followers.”* (p.6)

An interesting effect of culture and - as I interpret it - lack of self-efficacy, and how to use the former to overcome the latter, is given by Abhijit Banerjee and Esther Duflo (2011). They found a cost-intensive program to increase schooling time for girls in Kenya by sexual education as much less effective than giving them a school uniform for free. The latter measure increased years of schooling significantly and was cheaper. How did it work? By employing cultural values to increase the girl’s self-efficacy: being given the highly regarded uniform might have been received as an appraisal of their school work, thereby raised the girls’ believe in their ability to finish their schooling and take up a better qualified profession.

Nathan Nunn in his work on *“Culture and the Historic Process”* (2012) stresses the importance of cultural beliefs, norms and values in analyzing the past economic development of nations. In an answer to Acemoglu, Johnson & Robinson (2001), he underlines that in concert with colonial institutions, the cultural beliefs that brought them about in the home countries of the colonial rulers where transferred with them, and it is these believes that are persistent until today. In identifying that culture functions as heuristics or rules-of-thumb in every day decision-making, he argues that said cultural beliefs were the foundation of European institutions which in turn promoted economic development then, and I

would add, hinder it now that these countries are in different stages of economic and socio-political development.

This correlation has been widely established by behavioral economists like Camerer, Loewenstein, & Rabin (2011); Gigerenzer & Gaissmaier (2011), Moussavi & Gaissmaier (2014); and Mullainthan (2005). It has also been shown that these heuristics are culturally inherited through the works of Boyd & Richerson (1985), Boyd, Richerson & Henrich (2011), Richerson & Boyd (2008), Richerson & Henrich (2010). Connecting these two strands of thought – culture and the function of heuristics in economic decision making – and historical circumstances shaping the evolution of economically relevant rules of thumb as an economic culture, could highlight why individuals and whole societies make systematically deviating decisions despite facing the same incentives and constraints as others (Nunn, 2012).

Tabellini (2010) investigated the effect of culture at a regional level in Europe. His selection of cultural traits is based on prior research by others, especially by the American political scientist Edward Banfield (1958) who argued that certain cultural traits cause farmers in the South of Italy to be poorer than farmers in North America. He observed resignation and perceived helplessness, a focus on the immediate family instead of the wider community, and interpersonal distrust. Using an econometric framework to control for omitted variables and reverse causalities, Tabellini sought to find whether these aspects of culture have historic roots and matter for current economic development in Europe. He identified historic institutions as their cause and found that social capital and confidence in the individual go a long way in explaining economic differences.

Welzel & Inglehart (2014) find a similar relationship between economic performance and natural environment with regard to Northern Europe. One of the contributions of such research is that by understanding the historic origin of cultural differences and by quantifying their economic impact one might be better

able to design more efficient, more specifically targeted development policies (Mullainathan (2005); Wuepper & Drosten (2015)).

David Landes (1999, 2000) suggests a broad range of influential factors in his theory for the European rise. Like all others who ascribe an important role to culture he does so by retreating to Weber's protestant work ethic, but he also specifically spells out the attitude towards women as an important factor in development and as well as towards science and religion, both of which have really only been empirically shown much later⁶⁰. Landes also cites autocratic suppression causing a lack of political and economic freedom, which may be causal in the lack of entrepreneurship. His view of tropical climates not supporting economic development falls short of a reasoning why that should be so, when the rise of modern civilizations started in Mesopotamia.

Samuel Huntington (1997)⁶¹ also underlines the importance of culture for economic, social and political progress but does so in contrast to Nunn from an evaluating standpoint. In his foreword to *"Culture Matters"* Huntington cites Patrick Moynihan: *"The central conservative truth is that it is culture, not politics, that determine the success of a society. The central liberal truth is that politics can change a culture and save it from itself."* (2000,p.xiv). Culture is seen as a product of all kinds of possible unspecific influences and factors, ranging from *"geography and climate, politics, the vagaries of history. (and)...institutional modifications, often compelled by politics, can influence culture..."* (ibid,p.xxviii). The given evaluation that some cultures could be more *"deserving appreciation"*⁶² than others is problematic when the emergence of culture stays obscure, no

⁶⁰ On the role of religion in economic performance see f.ex. Bénabou, Ticchi, & Vindigni, (2015); on religion and innovation: Bénabou (2015); on islam and economy: Chaney (2008); on the general lack of entrepreneurs and the asymmetry between the few tycoons and the poverty of their countries: Freund (2016); on the newly discovered socio-political class-conflict role of the attitude towards women: al-Tahawy (2016).

⁶¹ Huntington's one dimensional argument and intentional use of mathematical "proofs" to underline his popular theses was shown by M.I.T. mathematician Serge Lang who twice successfully fought Huntington's call to the National Academy of Science.

⁶² Huntington citing Richard Schweder, in: Harrison & Huntington, 2000, p.xxvii.

mechanism being identified by which geography and history, or institutions and politics or any other factors should shape culture, while claiming that culture shapes history and politics⁶³ and that politics then reacts back on shaping culture. While Huntington describes in his foreword *"Culture Counts"*(2000) the importance of culture for economic performance of a nation, he does not attend to the question what brings culture about in its innumerable varieties all over the globe or by which instrumental ways culture than frames economic performance and could do so in a technologically highly developed world. Clearly, I would expect different skills and traits to be beneficial in different stages of economic development, basic industrialization differing greatly from economy 4.0, an agrarian plantation economy bringing about and demanding different cultural traits and institutions than a silicon valley kind of high-tech industry.

Huntington's observations cumulate in the remark *"South Koreans valued thrift, investment, hard work, education, organization, and discipline. Ghanaians had different values. In short, culture counts"* (ibid,xiii), in apparent consensus with Lawrence Harrison's book *"Underdevelopment Is a State of Mind"*. Some cultures in this interpretation of being more or less *"deserving appreciation"* apparently make wrong decisions, having wrong values, and therefore they are poor. With Huntington and Harrison, poverty becomes a question of fault and failure, a mistake that deserves correction, if so from the smarter, better outside or be left alone, as Huntington suggests in his *"Clash of Civilizations"* where he claims that Western nations have to protect themselves and their unique culture from misunderstanding and aggressive others, basically rewording his recommendation from 1968, that the West should discourage modernization as it would lead to destabilization, and endanger the West (Huntington, 1968).

⁶³ The occasional mentioning of politics happens without operationalizing by which mechanisms culture and politics interact, here as in Huntington, 1997, cmp. f.ex the whole chpt. 9.

This view has earned much criticism from political scientists and economist, including Jeffrey Sachs (2000) and Amartya Sen (2007). One effect of exclusively blaming culture is that, with their influence on American foreign policy, Huntington's et al. stereotyping serves to create exactly those conflicts they claim to describe. Another, possibly even more disruptive one, is that the actual causing factors end up being ignored instead of tackled, left to grow and do their damage.

In a comment to Jared Diamond and Jeffrey Sachs, co-editor Harrison in his introduction *"Why Culture Matters"* declines any substantial correlation of economic performance with other aspects than culture, again without suggesting how culture acts to promote development if not by a putative Weberian ethic: *"Geography cannot adequately explain the striking contrast between the north and the south of Italy; comparable contrasts among Guatemala, Honduras, El Salvador, and Nicaragua on the one hand and Costa Rica on the other..."*(Harrison, 2000). Jared Diamond is misleadingly cited with partly concurring: *"Cultural factors and influences ... loom large, ... human cultural traits vary greatly ... some (of which are) no doubt a product of environmental variation. ... but ... A minor cultural factor may arise for trivial, temporary local reasons, become fixed, and then predispose a society toward more important cultural choices."*(ibid, p.295)

When Harrison discusses the undemocratic history of most Latin American countries, he does not pay attention to the role of an exploitive culture and institutions left behind by exploitive Spanish and Portuguese colonial rulers, the interconnection between culture and institutions, and their persistence. Harrison suggests that not only institutions but also culture can be purposefully transmitted from a foreign source which Nunn explicitly denies (2012).

Not only does this concept apparently not take into the account past experiences from colonial rule, it ignores the very American history of being unable to build a common culture or progressive institutions with their native American or African-American community, or fully engage the former confederate plantation economy

and their cultural beliefs; instead one may ask how much reconstruction of confederate institutional thinking has been transmitted into the Northern states⁶⁴. It also underrates the experiences of brake-downs of forced modernization in Yugoslavia and Iran, and the struggling of all North African countries to find a peaceful balance between foreign/French-exported modernity and national/Islamic tradition. Aside of the question of the possibility of a peaceful transmission of culture and institutions, the question of legitimacy of such an endeavor is answered by a stipulated higher production of individual well-being by some cultures. The idea of purposeful culture and institution transmission might also be based on misjudging the experience of Singapore and South Korea which did not enforce a foreign culture to a traditional community. Singapore was basically an empty island (except for a small community of fishermen and functioning as a pirate hide-out) until the British built it up from scratch as their South Chinese ocean trading center with British institutions right from the start in the late 19th century. South Korea is a unique case altogether with their special relation to the U.S., but the country could build on the existing rice-farming

⁶⁴ Several socioeconomic parameters show that the U.S. is a divided into first world - predominantly white – parts with growth promoting culture and institutions and less developed – predominately colored – parts with growth-impeding culture and institutions: 22% of Americans are factual analphabets, 40% of afroamerican children are considered poor, 50 % of black fourth graders score below the basic reading level, as do 47% of Hispanics and 49% of American Indian, in: rif.org/pdf/literacy-facts; infant mortality in non-hispanic whites is about 5% while in non-hispanic blacks it is 11,3%, in: kff.org/other/state-indicators on infant mortality rate by race/ethnicity for 2013. As Jeffrey Sachs blames the electoral system for Congress (first-past-the-post), today's American institutions can appear as oligarchic (Sachs: corporatocratic), and influenced by the example of the extractive plantation economy of the Southern (formerly Confederate) states; cmp. Sachs (2011). In recent years, there has been a growing class of poor whites, that has reinvigorated the old race segregation, backlashing on those who instrumentalized the division between poor whites and poor blacks for stabilizing a political system.

experience⁶⁵ and U.S. aid, investment and personal interference (f.ex. via missionaries).

Contrasting the neo-conservative approach to culture and development was the program of Jeffrey Sachs (Gallup, Sachs & Mellinger, 1999) who concurs in identifying culture as the result of an array of influences but stresses the importance of geography and climate. His conclusion was diametrically opposite though, stipulating quick privatization, broad range liberalization measures especially of foreign trade. Applied in former Yugoslavia and Brazil, his theories stood the proof of reality as little as Huntington's in South Africa and Brazil. In his major work "*The End of Poverty*" (2005)⁶⁶ Sachs calls for a – much criticized - increase of development aid money from the industrialized countries to lift the poorest countries out of an alleged poverty trap which they could not do by themselves or with the help of only traditional development aid. Sachs suggests that after reaching the first step on the "ladder" of industrialization, the countries could ascend further with little or no further help. This is a new thought in the debate and resonates with my suggestion (and empirical findings in Ghana) that economic development happens in a kind of swinging movements between environment, individuals, culture, institutions and economy, producing temporary stages of different requirements to pass through to the next stage and interdependencies. Clearly, the dependence on natural environment decreases with industrialization and institutional requirements change. (Agrarian surplus can well be produced with exploitive institutions and undemocratic rule, creative computer apps, rock music or high fashion much less so!)

My argument throughout this work is that countries in environments that do not support natural evolving of strong self-efficacy have a hard time to get to that

⁶⁵ There is extensive research on the effect of rice farming on culture, work-ethics, time preferences, f.ex. Thomas et al. (2014); Henrich (2014); on time preferences Galor & Özak (2014).; cmp. here fn.70.

⁶⁶ A journalistic interim balance with disenchanting results draws: Munk (2013).

“bottom rung of the ladder of economic development” (Sachs). But once they have been helped out of their strong dependency on natural environment, and to build institutions that compensate for some lack of self-efficacy in some individuals, they can ascend.

Talhelm et.al (2014) and also Henrich (2014) finally identify causal correlations between environment, culture, and institutions, finding differences in cooperation, collectivism and individualism between rice and wheat farmers. They test against factors like climate or geography and clearly find what especially Diamond, and Sokoloff & Engermann, have been suggesting: that environmental differences in being better suitable for certain ways of working the land with crops that need different types of planning, investing, and cooperation lead to the strengthening of different human traits, fostering different cultures and succinctly, institutions, all of which get culturally transmitted and thereby form persistent distinctions. Interestingly, in a prior study on the psychological effects of residential mobility, Oishi & Talhelm (2012) found a causal relation between mobility and anxiety and familiarity seeking which have effects on range of economic decisions. Though researched on modern conditions, one could expect similar findings for nomadic lifestyles and descendants thereof.

On correlations of history, culture and environment, Wuepper & Sauer (2016) not only found culture to be an important factor in the successful introduction of new business forms, here contract farming; they also found that it was the ancestral history that explained cultural differences between current farmers and their propensity for successfully adopting this novel way of producing, cooperating and marketing. *“Indeed, we find that culture is a significant predictor of the (thus acquired) income ...We find culture effects of different historical production systems, the trans-Atlantic slave trade, malaria, the experience with colonial cocoa cooperatives, and the impact of Christian missionary schools. The most important cultural traits are self-efficacy (), trust and village social cohesion.”*(p.1) Interestingly, they found that positive experience of ancestors with colonial

cooperatives is causally correlated with higher self-efficacy in their descendants and better success of working today with contract farming, whereas the effect of missionary schools was dampening on social capital today: positive on self-efficacy, but negative on social cohesion, the latter effect dominating. (p.35,36)

One effect of culture on economic performance has been intensely studied under business and management aspects: effects of group or “herd” behavior, conformity pressures and naturally developing conformity, as all of these heavily influence decision making in companies, social problems in urban areas and even creativity for economic growth in developed countries. In his Nobel lecture, Daniel McFadden (2000) gave a full outline of the central role of economic choices and how economic theory had come to appreciate psychology and culture as determining factors. Group and herd effects have been researched by Roland Bénabou (2009), who found effects of “individually” rational collective reality denial in groups, organizations and markets – which were f.ex. demonstrated by Richard Feynman in his report on the challenger disaster to NASA. This is one effect of conformity pressure that will be dealt with in the chapter on learning as these effects heavily influence the cost of learning and behavior change. It can be deduced that a group’s culture is decisive for the propensity of change and development. Abhijit Banerjee (1992) developed a comprehensive model of herd behavior, formally acknowledging that *“There are innumerable social and economic situations in which we are influenced in our decision making by what others around us are doing”*. How strong this effect turns out, I may add, depends not only on the strength of the signals we’re are getting, but very much on the ability to inflict costs on deviating opinion and behavior.

Basically, most of the authors regarding culture as important for progress - except Theodore Schultz with his concept of *“allocative ability”* and Amartya Sen with his concept of *“agency”*, both of which are connected with self-efficacy - do not operationalize the mechanism by which culture should exercise its effects except in retreating to Max Weber’s work ethic that brings about some laborious

disciplined worker or entrepreneurial undertaker. The absence of the latter in a society is a phenomenon that Chakraborty et al. (2015) describe as following from an anti-capitalist cultural bias; I wonder if this cultural bias has a power-stabilizing function: keep self-efficacy low in those people who would demand their share. After all, it was merchants, not the old noble elite, who brought about change for modernization in Britain, and merchants who pressed for American independence. Amartya Sen⁶⁷(1988, 1999) worked on a very individual effect of culture: what makes an individual take on the responsibility for this life and actions, what makes him an agent of his own behalf? Sen identified the individual human agent to be the bearer of development, for once not in the Weberian sense, not even in that of just being an entrepreneur, but ideally in the sense of emancipation. As one of the most prominent critics of the theory of rational choice, Sen concentrates on the abilities and capabilities of humans to do what they chose to do as a measure for development rather than their potential to produce a certain outcome. Instead of hoping to produce some kind of social or political trickle-down effect of democracy and individual freedom via economic growth, Sen suggests a different chronological order for development: start with emancipation and empowerment to give people back their agency to produce economic growth. This quite resembles of course the chronology of the rise of today's rich nations. Over long periods of poverty, instability and struggles against monarchic totalitarianism, civil rights and freedoms developed slowly and painfully to conquer ever more parts of civil lives until a class of entrepreneurs and workers could gain enough bargaining powers to demand institutions fostering and securing their economic endeavors. As a stern critic of Huntington and Harrison, Sen rejects their alignment of peoples and cultures into stereotypes. Instead, Sen pledges for a view of culture as a rich

⁶⁷ Operationalized were Sen's ideas by the Oxford Poverty & Human Development Initiative, here: Ibrahim & Alkire (2007). A systemization of identifying collective and individual agency, and the respective fostering circumstance is offered by: Dietz & Burns (1992).

variability of identity affiliations, one of the most demanding challenges of the presently supported cultural conflicts. In the next chapter, I will attend to the question of transition of identity, the role of identity and the difference and connection between Sen's concept of agency and self-efficacy.

I suggest that the degree of self-efficacy which develops under environmental, i.e. supportive natural, geographic and climatic conditions, can lead to the early development of culture and institutions which shape circumstances reinforcing feedback loops in favor of development. It is important to note that the more developed an economy the less influential are natural conditions for culture and development of self-efficacy. An industrialized urbanized economy does not interact in the same way with its natural surrounding as a traditional agricultural does. One main effect of culture and its resulting heuristics on economic performance is its functioning as filter of information.

“Our self-made men are the glory of our institutions.” Wendell Phillips (1860)

Institutions

Acknowledging the vital role of culture for various economic choices, Alberto Alesina and Paola Guiliano (2013) research the interplay between culture and institutions⁶⁸. They base their study on the findings of Putnam et al. (1993) who found great differences in the institutional history between center-north and the south of Italy, which are indeed economically at different ends of the scale. These findings were in turn tested by Guiso et. al.⁶⁹, and found that the performance of

⁶⁸ This chapter discusses the interaction between individuals, cultural sphere, and environment with institutions. I will not include discussion of the New Institutional Economics as not relevant to my end, except in chpt. 5.4 referencing Hodgson, Pelikan, North and Kauffman. There is, however, interesting research on the interplay between ecology and institutions, f.ex. Young et al. (1999); comprehensive :Paalova & Adger (2005).

⁶⁹ Guiso, Sapienza & Zingales, 2008/2013/2014/2015; the citation is from their June 2014 online version.

today's institutions is actually based on institutional and cultural experiences in the Middle Ages.

*“We study whether a positive historical shock can generate long-term persistence in development. We show that Italian cities that achieved self-government in the Middle Ages have higher level of civic capital today than similar cities in the same area that did not. The size of this effect increases with the length of the period of independence and its intensity. This effect persists even after accounting for the fact that cities did not become independent randomly. We conjecture that the Middle-Age experience of self-government fostered **self-efficacy beliefs** - beliefs in one's own ability to complete tasks and reach goals – and this positive attitude, transmitted across generations, enhances civic capital today. Consistently, we find that fifth-graders in former free city-states exhibit stronger **self-efficacy beliefs** and that these beliefs are correlated with a higher level of civic capital.”*

They found that social capital today was higher in the formerly independent cities than in the suppressed ones, and find high correlations between today's economic performance and that of 300 years ago, which shows a high degree of persistence for culture, institutions and economic success. Their study may have unknowingly found a self-efficacy effect of rice farming (see Talhelm, 2014) as the center-north was not only host to early urban centers but also the traditional rice-farming region of Italy until today.

Hodgson (2003, p.172f) too, discusses how culture and institutions interact as institutions react back on individuals living within the culture that brought them about. He calls it “*moulding*” of individual habits and dispositions in a process of reconstitutive downward causation via institutions to cultures, and thereby rejects Gary Becker's and George Stiegler's ideas of fix preferences and neutrality of information, and supports John Kenneth Galbraith and Vance Packard in their view of the possibility of influencing human agency. With reference to Duesenberry (1949), he also questions the assumptions of rational choice for determining (consumer) behavior and rather suggests habits, circumstance, culture and

individual cases as important for decision making. Hodgson calls for a new acknowledgement of reciprocal causation of upward influence from individual to institutions and downward from institutions to individuals.

Decisive effects of environmental conditions on institutions have been found by several authors, i.a. in a recent study by Mayshar et al. (2015). In a new study and using statistical modeling methods similar to Wüpper & Drosten (2015, 2016), Mayshar et al. show how a certain social hierarchy *“following the Neolithic Revolution was an outcome of the ability of the emergent elite to appropriate cereal crops from farmers and not a result of land productivity...”*. They argue that *“cereals are easier to appropriate than roots and tubers, and that regional differences in the suitability of land for different crops explain therefore differences in the formation of hierarchy and states”* (p.1).

Several, especially agricultural, economists have been finding similar effects: that institutions – and indeed levels of self-efficacy – differ greatly in relation to cultivated crops; f.ex. with regard to gender roles (Alesina, Giuliano & Nunn, 2013). The differences do not only occur with regard to work intensity, long-term planning and need for cooperation as was shown in rice farming by Talhem et.al (2014). Mayshar et al. show a great difference arising from the storability of the produce on the example of cereals versus roots and tubers, the former giving rise to a non-food producing, protection-from-looting providing elite, and require more planning which changes time discounting. Galor & Özak (2014)⁷⁰ found these differences in time preferences depending on the cultivated crops which clearly lead to a different long-term behavior with regard to investment, cooperation, and risk taking.

Moeletsi Mbeki (2009) pledges for governance as the key to African progress. In his book *“The Architects of Poverty”* he identifies exploitive institutions and

⁷⁰ The measured data identified as time preferences may actually show self-efficacy instead; the way time preference is defined is very similar to how Wuepper&Drosten (2016) define self-efficacy.

exploitive elites who simply took the place of the Colonial rulers as the factor that inhibits a kind of catch-up development that many former Asian colonies have achieved.

As Engermann and Sokoloff (1997) in their study on the Americas had found the negative effects of exploitive institutions on economic growth (and here clearly identified environmental conditions for fostering them), Acemoglu and Robinson (2012) spell out institutions as the key to Europe's rise against the struggling rest, especially the difference between what they call "*extractive*" institutions versus "*inclusive*" ones, but basically do not account their character to environmental or geographic factors. In their earlier paper on the "*Reversal of Fortune*", Acemoglu, Johnson & Robinson (2001) had suggested a correlation between environment and institutions, but did not connect this to culture and population. Chanda, Cook & Putterman (2014) however, argue that the reversal of fortune had actually not happened if one took the population movements into account: apparently, when Europeans settled in an out-of-Europe home they took their institutions with them if their number was high enough. Chanda et al. showed that the new rich where the old rich, as the fortune stayed with the European population, in Europe and elsewhere. In his comment on both papers, Jared Diamond showed, that what the Europeans had brought to their new countries was not necessarily just institution, but possibly they imported also naturally not available environmental endowments like certain crops and animals which influenced the profitability of the land.

In their 2012 book "*Why Nations Fail*", Acemoglu & Robinson ascribe the development of institutions first and foremost to politics and rest their theory on a rich source of political science and sociological theory. What is missing though, even when taking culture, circumstance and events into the picture, is where these political processes for building institutions originate if not in culture and environment. For example, the case of Botswana's good governance shows, how

their inclusive institutions were build on inclusive traditional ones, developed by a traditional inclusive culture. How had that inclusive culture originally developed while all around Botswana it had not? I would argue, Botswana was lucky to be blessed with a natural environment that was completely useless for any plantation crops. Neither any early local nor any later colonial agrarian exploitation was possible in a country two thirds of which are covered by the Kalahari Desert. Early colonialism was simply not interested, and the Tswana people were left alone to save and stabilize their inclusive traditions into modern times, inclusive, because that was the only way to survive on that kind of land. In a second lucky strike, their diamond resources were only discovered in 1967, one year *after* independence, to provide good funding for good governance.

Gennaioli & Richter (2007) finally succeeded to operationalize one way in which institutions actually influence economic performance: via creating possibilities for accountability. They researched the impact of precolonial centralization in Africa on colonial and modern African institutions, and found similar to the above example of Botswana, a strong *“association between the provision of public goods such as education, health, and infrastructure in African countries and the centralization of their ethnic groups’ precolonial institutions”* (p.185). They ascribe this to increased accountability of local chiefs. Their findings *“stress the importance for developing countries to create mechanisms to monitor local administrators of public projects”*. Their work also demonstrates how much today’s institutions build on historic ones.

Robert D. Cooter and Hans-Bernd Schäfer (2012) argue similarly about only institutions being able to solve the dilemma of trust in business: economic growth relies heavily on innovation and innovation adoption. Innovators have to trust their investors by revealing their ideas, and investors have to trust the innovators with their money. Both sides being strangers, this *“double trust dilemma of development”* can only be overcome by laws and regulations and trusted

enforcement of both. Cooter & Schäfer clearly identify a major obstacle for investment in development, the question remaining how the political will to create and enforce the institutional framework could be created and enforced.

Policies

Scientists who have chosen a pragmatic way of searching for best actual policies and measures without exactly searching for the origins of the problems, may have oftentimes coincidentally and without aiming for it, have found ways to promote self-efficacy: when Ramirez & Quarry (2009), building on the works of Andreas Fuglesang (1982), and the Dag-Hammkjöld Foundation, call for “*Another Development*”, they do so based on life-long field experiences. Aiming at empowering local structures and groups – without calling it such – lead to including self-efficacy promoting measures into their conduct: f.ex. including local knowledge (=recognition, respect) in an aid project added not only to acceptance, but also to increasing and longer lasting of positive effects, which they could not attribute to the informational value alone⁷¹. When Duflo & Banerjee research the effectiveness and efficiency of development measures, they often find well-meaning measures designed after theoretical convictions being neither effective nor efficient, as the underlying cause-effect logic was imperfect. They usually retreat to simple measures that do work - as in the example of school girls in Kenya given above – by including self-efficacy and self-value enhancements.

Contained in the works of scientists like Kappel (2011, 2015b), or Delgado & Ketels (2014)⁷² are potential leads to efficient ways of practically promoting self-efficacy and economic growth in one move with sensible industry building measures. If this can synergistically be put to work will depend not only on what is done but how it

⁷¹ Summarized from a conversation with the Ricardo Ramirez, Guelph, Aug. 2008.

⁷² this blog was based on a nber paper: Delgado, Ketels, Porter, & Stern (2012).

is done: reproducing exploitive structures or building human capital with self-efficacy. In their blog on the WEF, Delgado/Ketels show recent data on Botswana as a (former) example of good institutions. They now identify a weakness in microeconomic competitiveness, which is a sign that the country has reached a stage of development where the macro level of national institutions and policies is not sufficient anymore to keep the economy striving. Apparently, institutions were not enough: What is needed now is individual entrepreneurial expertise, initiative and activity, and cooperation, all of which require a good sense of self-efficacy.

Pragmatically enforcing sensible policies like building industrial infrastructure where there is none, regardless of why there is none, may build self-efficacy as a side effect, very much adding to the attempted goals. Self-efficacy works as a self-fulfilling prophecy once that virtuous cycle has been started, which could be one explanation of why it is so difficult to get out of that bottom rung, as Sachs calls it, and so much easier once that hurdle has been taken, and the path of building human capital entered alongside.

In the controversy over the best ways to help countries and peoples to modernize from the outside, two scientists have found two seemingly contradicting answers: Paul Collier(2007) with his analysis of the poor and poorest nations “The Bottom Billion” and William Easterly’s (2006) writing on the West’s failure with regard to the poverty problems of the world.

Collier identifies four conditions that trap countries in poverty:

- the dangers of civil war,
- the discovery and export of natural resources,
- being a land-locked country with high transportation/trade costs,
- and bad governance

with the points one, two and four being closely related. Collier uses his analysis for a call on the rich countries to actively constructing the right conditions for economic growth in the respective countries, i.e. help to install a modernizing industrial, financial and economic policy.

Easterly, on the other hand, diagnoses a complete failure of Western policies, on trade and aid alike, to provide for a catch-up development amongst poor countries. He blames the basically wrong big-goals-big-solutions-theories behind the policies for this failure. He calls for small-scale, grass-root, targeted initiatives in cooperation with the local people. Easterly argues for a process-oriented approach: instead of setting big goals which are hard to achieve in the dire reality of development work, and put the implementing agencies under pressure from the funds providing superior organizations, the focus should lie on the actual ground work with interaction with the targeted people at any stage of the process, which entails if not in explicitly in goal, so certainly implicitly in result an empowering of the people involved via raising their self-efficacy.

Banerjee and Duflo (2011) opened the scientific door to this approach by researching the actual economic decisions of people living in extreme poverty. While these decisions often look irrational and economically wrong to outside observers, Banerjee/Duflo show that poor people quite in the opposite, adapt their economic decision making perfectly well in an optimizing manner to their extreme constraints. Building on their expertise to promote self-efficacy for changing into better conditions could offer a powerful instrument for development.

The above discussion of theories of human behavior in development and modernization has shown similarities and differences of learning-theoretical explanations for human intervention in their environments. Self-efficacy has been found to be of great explanatory value and a decisive policy tool. It offers thereby, in the sense of Thomas Kuhn (1962), not necessarily an explanation for everything but explains the human role in modernization processes better than anything else we have right now.

*“Learning is like rowing against the current,
as soon as you stop you drift back again.”
Benjamin Britten*

4. Modernization as a Process of Individual and Collective Learning

Economic growth as depicted in GDP does not necessarily give information about the process or status of modernization in society or economy, neither do consumption patterns nor urbanization rates⁷³. Instead, modernizing is a process in which individuals change and have to change their thinking, attitudes, judgment, adjust their self- and world-constructs, and their behavior. Eventually this individual change adds to changing of the larger group-culture and its institutions. This process is potentially destabilizing for individuals and their communities. As individuals and groups can have different utilities of change depending on their self-efficacy beliefs, they can also have different utilities of learning. And it is easy to see, how people and communities struggle with this process, sometimes violently amongst each other or with some outsiders, depending who can be found guilty for instigating impulses for change.

*“Countries lead wars in order not to learn“
Karl Otto Hondrich (1992)*

4.1 Modernization is Learning for Change

If we learn to identify those who profit from learning and change, and to identify those who profit from not learning and not changing, and those who profit from keeping others from learning and changing, we can help the first group, work on integrating or at least somehow coopting the second, and attempt keeping the

⁷³ for anecdotal examples of economic growth and lack of modernization in Iraq, Kuwait, Libanon, Syria, Egypt and the Emirates cmp. Al-Rawi (2002).

third from doing harm. And at best, learn how to encourage the second and third to join the first. Possibly just even more acute, it could help us design integrative measures to smooth the social fallout and destabilization that come with modernization processes.

What is modernization and how does it happen? What stimulates modernization of structures in a society? What fosters or hinders the diffusion of innovations coming from outside of a given collective, and stimulates their development within? Can adaptive learning processes and behavior change be initiated and even navigated by central, political measures? If we have a better understanding of what happens in groups and individuals in the course of adaptive processes and why so, we can aim to develop better policies to support these processes and help to prevent or cushion potentially dangerous and destabilizing effects. Better prepared, proactive policies may help to advance in constructive, welfare producing manners rather than allowing for harm to the common social and cultural web knitting a society together and forming the core of a functioning economy.

In the following, I do not attend to learning theories or the cognitive process of learning as such, but focus on social aspects of learning and behavior change as they influence the respective utilities, and thereby foster or hinder learning and change in modernization.

Mokyr (2002, 1990) discusses some problems with the term modernization and retreats to employing it to describe *“the basic and mundane observation, that economic performance, our ability to tease out material comforts from niggardly nature, has improved immensely in the past two centuries.”*(2002, p.2) This helps to avoid getting entangled in the great many social, economic and political symptoms of transition processes which may or may not demonstrate modernization or merely flash-lighting a copycat of modernity. He points out that any type of economic activity is based on knowledge, which as it grows, produces growing utility and more knowledge.

Economic and societal modernization is not simply tied to the production or consumption of modern products, nor to industrialization, rationalization or urbanization, i.e. to the visible aspects of modernity. One can adhere to very traditional cultural norms like female genital mutilation while using all the amenities of modern lifestyle. Also, the term modernization has often been criticized for being culturally Eurocentric/Western, and politically imperialistic as to assuming there was only one long-term system option of individualism, democracy and liberalism (Lipset, 1960; similarly argue Inglehart & Welzel, 2009). But this criticism may stem from a mix-up with the term “development” which more easily implies judgment at least in normative terms. Development implies developing from a stage of lesser development to one of some kind of higher level. How and by which means is this done?

I suggest development is done by learning “new”, i.e. more modern things, which is ergo, by modernizing: modernization, often used in contrast to traditional or old-fashioned, describes the process of adaptive transition over time which every economy has to do at any level of development. The most modern economy needs to modernize continuously in order not to become out of date. Strauss realizes critically: *“... people are more or less developed along certain lines or in regard to certain tasks. The observer, who stands outside the race, possesses tools for measuring crudely or precisely the amount of progress...(assuming, bd) fixed goals or norms against which the aspirants’ movements can be chartered (and which may be, bd) perceived as a series of stages or as steps along a continuum....Like the idea of a ladder,...arrival at the final goal is a resting place beyond which progress is not calculated.”* (Strauss 1959, p.64f) Indeed, there is no such thing as a final goal, modernization is a never ending necessity.

What we usually call “modernization” is actually the process of individual and collective learning which leads to modernizing updates in interior structures of humans and external structures of their surrounding societies, which is: in culture and institutions. If these changes do not occur, the process in question cannot be

regarded as modernization; in this case, it is merely one of economic growth produced by external factors or natural resources exploitation, which will only lead to isolated modernizing effects if specifically fostered by targeted policies (i.e. increasing university education rate).

Modernization happens when new information from within or outside is dealt with in an inclusive, incorporating way: Any change in human knowledge, i.e. the storage and personalized form of information, and behavior is preceded by a process of data reconciliation which is actually a process of learning. Some impulse to reconsider the fundus of known information and somehow treat the new data is needed to start the cascade of learning. In this process, the new data passes through individual and collective filters of culture and institutions, and has to overcome decision-making barriers of partially antagonistic utilities of learning between individuals and different collectives. New data by their very nature questions the status quo which is a major cause of different utilities of learning. Whoever profits most of the status quo has a lower utility of learning than someone whose present situation would profit from change.

Groups and individuals have to adapt to changes in their environment for reasons of survival. The less changes in the environment, the less adaptive processes are necessary or promoted. It has to be noted though that not every adaptation of behavior can be regarded as an outcome of ordinary modernization as it is not always a sign of prior learning; analogously, not changing behavior is not always a sign of not-learning. The reason lies in conformity pressures; these may demand an imitation of behavior without personal learning, or storage of otherwise suggesting information for times of greater diversity.

Modernization as a process of change produces insecurity and fear of the unknown future. The two basic ways to obtain wealth: redistribute the existing or create new one, cause anticipative insecurity amongst the owners of wealth, privilege and position, and may inspire the rest of society either to demand their

share through redistribution or all able ranks, to create hitherto not existing, neither physically nor in mental structures, new wealth.

The latter demands the creating of new inner personal structures and institutions of social organization, demanding of all those involved leaving familiar terrain to go into the insecurities of the unknown, the “*cloud*” as the evolutionary biologist Uri Alon (2013) calls it, and which can naturally not be organized nor planned in a hierarchal, orderly, calculable manner. The grandness and unsettling potential is actually comparable to Thomas Kuhn’s (1962) observations about a paradigm shift in science: individuals and collectives have to change, adapt, modernize their identities, their self-construct and their future outlook. This thought suggests that modernization happens in stages which can be expected to demand different organizational solutions for each stage producing different kinds of outcomes, levels of order and complexity (Beinhocker, 2013).

The process of learning itself can be painful and potentially unsettling: the learning subject has to be able accept at least one of three conditions:

- I don’t know – if you already know the answer, there is nothing to be learned;
- I cannot do it – if you can do it, there is nothing to be learned;
- I am somehow doing or thinking it wrongly – if you know and practice in exactly the right way, there is nothing to to be learned to improve your performance or understanding.

Hence, learning includes change: if you know it all to start with, there is no room for betterment, you can only do worse which would be against our intuitive understanding of learning as entailing improvement or moving forward, not back⁷⁴. But this admitting of not-knowing takes self-efficacy in two regards: in one’s learning abilities, and in one’s abilities to do well in changed conditions brought about by learning.

⁷⁴ This idea resonates with the old Zen wisdom that the master cannot fill the students cup before it is not completely empty.

The question if somebody profits or loses from change and learning therefore depends significantly on her level of self-efficacy: does she believe to have or know what it takes to keep her status or better it under changing circumstance? Does she believe to have what it takes to tackle new challenges and profit from them, or does her present favorable status quo depend on certain conditions, privilege, powers that could be eroded if these conditions changed. In this case, the status of a person/group rests on factors that are external to this person/group and are therefore not influenceable by means of merit. It follows, that the utility of learning and change at all levels of hierarchy, including leaders and leading elites, depends on a person's and her reference group(s)'s self-efficacy.

Harari (2014) identifies the ability to admit not knowing as the “*Discovery of Ignorance*” and as the actual cause for the scientific revolution that started the extraordinary economic rise of the European countries:

“The willingness to admit ignorance. Modern science is based on the Latin injunction ignoramus – ‘we do not know’. It assumes that we don’t know everything. Even more critically, it accepts that the things that we think we know could be proven wrong as we gain more knowledge. No concept, no idea or theory is sacred and beyond challenge.” (p.279, highlighting b.d.)

It is by no coincidence that the discovery or rather admittance of ignorance happened in Europe first as it takes self-efficacy to do so. Europe offered the most favorable conditions for the natural evolution of self-efficacy through climate, agriculture, relative absence of tropical dangers, geographic proximity of others to promote exchange and inspiration as well as cooperation and competition. So far unresearched, one might wonder how strong the influence of religion and religious institutions in building self-efficacy may have been in pre-medieval Europe. The individual relationship to a deity and thereby the underlining of the unique value of every human being as taught by the religion the Neither a king nor a prophet nor any other authority could claim to be in possession of any eternal

truth, everything can be right or wrong or proven to be in a certain way at a later date by and increase in knowledge in that matter. This new freedom poses a constant threat to any status quo or privilege as legitimization has to be won by merit, not by position, claim or heritage. The admittance of ignorance actually gave rise to the idea of meritocracy which carries in itself the core of democracy and emancipation: everybody can learn to know better, better than the neighbor, the king or the yesterday-me. Risk taking requires the chance for failing, for trying again, indeed for learning from mistakes. Any development of novelty, of any innovation requires the same: learning and failing are the two sides of the same coin. The higher self-efficacy at all levels of society, the more the culture of knowing which cherishes status, tradition and hierarchy, will move towards a culture of learning which promotes change, modernization and ever more learning. And will analogously create and be created by democratic, emancipated, and self-reliant political, social and economic subjects.

4.2 Different Kinds of Learning: Collective and Individual

Hondrich's above cited interpretation points to the fact that learning and change are difficult undertakings, facing great obstacles, producing aggression, defense, and avoidance strategies. But he actually continues to say that "after the war, losers as much as the winners have to learn"(Hondrich, p.52)⁷⁵.

Behavioral biologists like Eibl-Eibesfeldt (1997) agree that humans have not developed an intrinsic impulse for learning but rather, are equipped with an inborn sense of curiosity which leads the way to novelties, to trying out, to discovery. All humans are genetically equipped with it, the extent to which it is encouraged or hampered though depends widely on individual conditions of the

⁷⁵ The problems around the potential political and social implications of his remarks are intensely discussed in their book reviews by Gantzel (1992), who titles "war – learning from the consequences or what are the consequences for learning" (transl b.d.), and Senghaas (1992) who argues "against scholarly bellizism" (b.d.).

environmental and social context (f.ex. Traulsen et al. 2010)⁷⁶. Learning as such is a human ability that functions like a tool for survival. Learning enables quick adaptation to changes, dangers, information, impulse. Any genetic determination would leave the species unable to adapt to sudden changes as genetic modulation takes several generations which by then could have suffered extinction. Any genetic predetermination limits the possible habitat, feed, behavioral repertoire. Little genetic programming and large ability to learn and adapt enabled humans to populate the whole planet with the most different conditions and requirements.

Humans developed two different ways of learning: individual and collective learning, both methods offering very different advantages, thereby most profitable in different conditions, producing different results, but always for the same purpose: to increase the chance of survival for individuals and group. These two different ways of learning are each best appropriate for different stages of development and different environments. They are developed under different circumstances by different people who organize their social life in different forms, i.e. by different cultural manners and institutions. The transition from one method to the other, from collective to individual learning, poses one of the greatest obstacles to development as both groups and individuals have to adapt their identity, their self-construct and their future outlook. And this needs certain prerequisites to enable the necessary learning as such: it takes self-efficacy, the believe to be able to learn a new way and handle whatever new and unknown will come along.

Richerson, Boyd & Henrich (2011) call collective learning “social learning” and describe how in the absence of technology for communication and storage of knowledge, survival depends on the ability of humans to learn from each other:

⁷⁶ cmp. f.ex. the extensive research of the Max-Planck-Institute for Evolutionary Biology on different human traits and behavior like cooperation, reciprocity, public goods, volunteering, reputation; they find that individual behavior basically depends on boundary conditions and can be altered accordingly.

not every individual needs to know what the whole group knows and has been learning and optimizing over generations about survival in a specific habitat, nor could any individual actually acquire all the necessary knowledge by herself. Giving the example of Canadian Inuits, Boyd et al. describe all the extensive knowledge any individual needs to apply – and cannot possibly acquire by herself! - in order to survive above the Arctic Circle about food, hunting, shelter building, cloths making, hunting weapons making, canoe building, safe ice conditions and routes, weather signs etc., all of which has been developed and optimized since prehistoric times in this group of people. Any individual by herself would certainly have been dead before she could have learned even the most minute part of all this knowledge. Even in much less challenging conditions on the American East coast, would the Pilgrim fathers not have stood a chance to survive had the First Nation people of the Wampanoag not have shared their food and seeds and knowledge with them.

Collective (cultural, social) learning develops under circumstance where individual survival depends on the group, where technology for communicating knowledge over long distances or time is not available, and thereby reduces the for survival relevant groups to the immediate and present surrounding one. This dependency is not one-sided though, as every community is also dependent on the individual's knowledge and abilities: when in 1642 the first Europeans arrived on Tasmania, the aboriginal population had "forgotten" how to build shelters, make harpoons or other fishing devices, general tools and even cloths from local plants of which archeological findings showed that all of this had existed in their early times of arrival on Tasmania (Eberle, 2013). Similar observations were made with Inuit groups in North-East Canada and resonate with the findings of Hendrich et al. (2014) who show that populations below a certain number of individuals are not only unable to produce progress, but are endangered to lose and forget what they

had already achieved.⁷⁷ In the immediate lack of survival pressures, the passing on of old knowledge in small communities cannot survive the individual death of knowledge bearers. Social learning communities produce a different kind of individual and group identity, and respective perceptions of self-efficacy: achievements will tend to be ascribed to common efforts rather than individual ones and therefore not increase individual self-efficacy. This constellation will make change less likely: as individuals are the learning subjects their lower individual self-efficacy will decrease their propensity to learn and change, while groups for stability and coherence reasons - as we will see below - have differing utilities of learning.

Equally, individual learning is really only possible under circumstance that enable individual survival without the support of her immediate group, i.e. when the environment does not require complex knowledge and adapted behavior for immediate survival. This is possible when other groups exist that can be joined or individual survival on her own is possible, for example in a modern surrounding with technological problem solving tools and organized social networks. If this potential for group changing or individual survival exists, it will by itself change the originating group's treatment of individual learning and possibilities for changing behavior: either to much more strictly preventing and regulating it or to supportive, tolerant and diverse group norms to remain attractive. Which one it will be depends on the group's identity and self-efficacy in the face of alternatives which are – as technology increases – the modern form of threats to group coherence. It is again a development in self-enforcing loops: it takes self-efficacy to learn individually and learning individually increases self-efficacy. The problem

⁷⁷ There are indications that the Neanderthalers' extinction was at least partially caused by being too small of a population to survive an external shock. Beinhocker in his book on the Wealth of Nations shows several virtual simulations of how much surplus in people and ideas it takes to produce novelty and solutions for problems which is practically impossible with shattered and geographically separated small groups of people.

of change, also with regard to the form of learning, lies heavily in the antagonistic utilities of individual learning for the individual and her reference group.

Interestingly, there are first empirical indications that collective and individual forms of learning are differently supportive for developing individual self-efficacy. Theoretically, individual learning and cultures that support individual development promote higher self-efficacy as the individual ascribes her successes and accomplishments to herself in a self-efficacy fostering feedback loop. This virtuous cycle cannot get equally started if the virtues are ascribed to the group as a whole or some hierarchically higher members of that group. In a forthcoming study on descendants of nomadic herdsmen and pastoralists in Kenya, Wuepper, Lang & Benjamin (2017) research the importance ascribed to and success in formalized education, and find that the long standing underprivileged situation of this group, which usually reaped less income and less fortunate social indicators, has actually started to be overcome by the new free schooling initiative. This may be partially ascribable to overcoming disproportional lifestyle disadvantages as well as supporting transition of individual and group identity for building self-efficacy – similar to the above given example of the girls' school uniforms in Kenya (Banerjee/Duflo, 2011).

The differentiation Eric Beinhocker (2013,pp.354-379) makes between learning and adaptation is based on his observations of organizations that tend to have problems adapting: *“Learning is the acquisition of knowledge in pursuit of a goal, while adapting is changing in response to selection pressures from one’s environment. Although adaptation requires the acquisition of knowledge, and learning can occur in response to environmental pressures we will find it useful to maintain a distinction...As we will see, while organizations are generally good at learning, they have more trouble at adapting.”*(p.355) This distinction results from not observing self-efficacy and the different utilities of learning between individuals and groups. Organizations (as groups) need to preserve their status and coherence, and therefore learn what fosters their self-set goals; adapting

however, as described here, is giving way to outside-of-group pressures which questions the existing hierarchy and leadership, and easily provokes demonstrations of holding-on to power and status instead of fostering adaptation. This reaction depends greatly on the self-efficacy of the organization and her leadership elite or leader.

4. 3 The Act of Learning

Humans do not have a specific organ or any other way to identify reality or truth as Kleist (1801) wrote about Kant's epistemology (Erkenntnistheorie) (1781/1974), giving the example of green pieces of glass instead of spectators' eyes who then would interpret their world unknowingly in a green haze. The newborn child has neither knowledge nor concept of the world or herself, and learns about herself in the reflection of her own image in the people around her, thus constructing her self based on the filters of her human and environmental surrounding. Impressing – and in these cases sadly, this self constructing process as being fully depending on environmental impulses is demonstrated in its extremes of animal raised human children who fully adapted to their non-human hosts – often irreversibly (cmp fotoproject of Fullerton-Batten, 2015). Any information for the rest of her life will be processed through the filters that were first installed by her direct surrounding, and are normally renewed, strengthened, and broadened by new, but matching ones according to her reference groups⁷⁸. The actual reason for this is strong tendency towards continuity is thought to be the avoidance of cognitive dissonance which causes stress and anxiety, as well as providing for group stability for survival reasons.

⁷⁸ cmp, the concept of different self-constructs in relation to one's several reference groups, and their bonding and identification rituals, in: Neufeld & Maté, (2013)

Information and Knowledge

Information is the basic ingredient for a rational decision. If information is incomplete, lied, manipulated, filtered, or in any way more distorted than in the “eye of the beholder”, it loses its function in rational choice making.

New information represents an extrinsic impulse that induces a reaction from the individual and group at the end of which it is either internalized or discarded. It has to be “sufficiently” similar to what she already knows in order to be processed via association with a chance to enter her knowledge reservoir. If it is not processable, the new information will get lost. If it is sufficiently associable, the information processing can take several forms:

- the information can be ignored, fully or partially, leading to no or little behavior change;
- it can be imitated without internalizing its informational value, leading to an imitation of behavior without learning the underlying rationale; in this case the information and behavior will be lost again once the information flow stops; also, it is imaginable that through long-term imitation some kind of implicit learning may take place;
- it can be fought in various degrees of aggression ranging from lying about it to fighting the messenger or representative, leading to a negative behavior change with an increase of intolerance and strutting of the old rationale and behavior;
- it can be memorized and stored for future application without immediate behavior change – possibly causing cognitive dissonance and stress;
- it can be adapted in the form of learning to become part of one’s own fundus of knowledge in reappraisal of the old and leading immediately or over time to a modernization of behavior to avoid cognitive dissonance.

Once information has been stored to knowledge becomes part of an individual's identity and heuristics, the base of group identity and bonding⁷⁹, and is assumed to be inelastic to change, but rather seeks self-assurance⁸⁰ to avoid cognitive dissonance.

Note that cognitive dissonance (Festinger, 1962)⁸¹ is a state of stress to be avoided by in the case of new information which could lead to conflicting new and old inner images, group bonding, individual identity, behavior patterns and beliefs.

Information can occur as targeted – at specific groups or individuals – or random. It is caused by and a symptom of an occurred change in one's environment. Note: globalization of information f.ex. offers information of change that did not necessarily occur in one's own environment and still reach somebody, possibly stimulating adaptive processes alien to the environment, f.ex. with regard to self-image and consumption goals, or gender role and aspirations. New information can also be fed by old knowledge of an individual or group that could not be accessed before, because of group filters (taboos) or simply got forgotten.

Filters

New information has to pass the filters of individuals and collectives, of which several surround each individual. Here, I have called the relevant groups "reference groups", a term borrowed from interactionist theory. It is from the common culture of a reference group that an individual in the process of decision making will draw her own values (Shibutani, 1962), thereby reacting to the group function of social control. "Deliberately, intuitively, or unconsciously each person

⁷⁹ How much people build their institutions on the "stories" they believe in was shown by Akerloff & Shiller (2009)

⁸⁰ For an extensive discussion of information and knowledge in economics, including Gary Becker's definitions thereof, see: Wessling (1991)

⁸¹ The concept has been thoroughly discussed, enlarged, rejected, and replaced by alternative explanatory theories for human behavior, but a series of tests with brain scans has found the basic principles, including physical arousal, and predictions to be valid: Jarcho et al. (2010).

performs for some kind of audience,..., conduct is oriented toward certain people who are somehow deemed important.”(p.129)⁸² These filters can be implicit or explicit. Explicit filters are primitive in their structure and rely on rules like taboos, censorship or technical hurdles. Poverty filters work explicitly by physically preventing an individual open access to information and information processing like education, but also implicitly by preventing an individual to develop her potential and information seeking. Culture with all its aspects like norms, values, roles, beliefs functions as explicit (taboos) and implicit group filter on information. These group filters work like heuristics as they predetermine an individual’s openness and reaction to new information. Indeed, “ `social control’ refers not so much to deliberate influence or to coercion (in Western societies, b.d.) but to the fact that each person generally takes into account the expectations that he imputes to other people”(p.129).

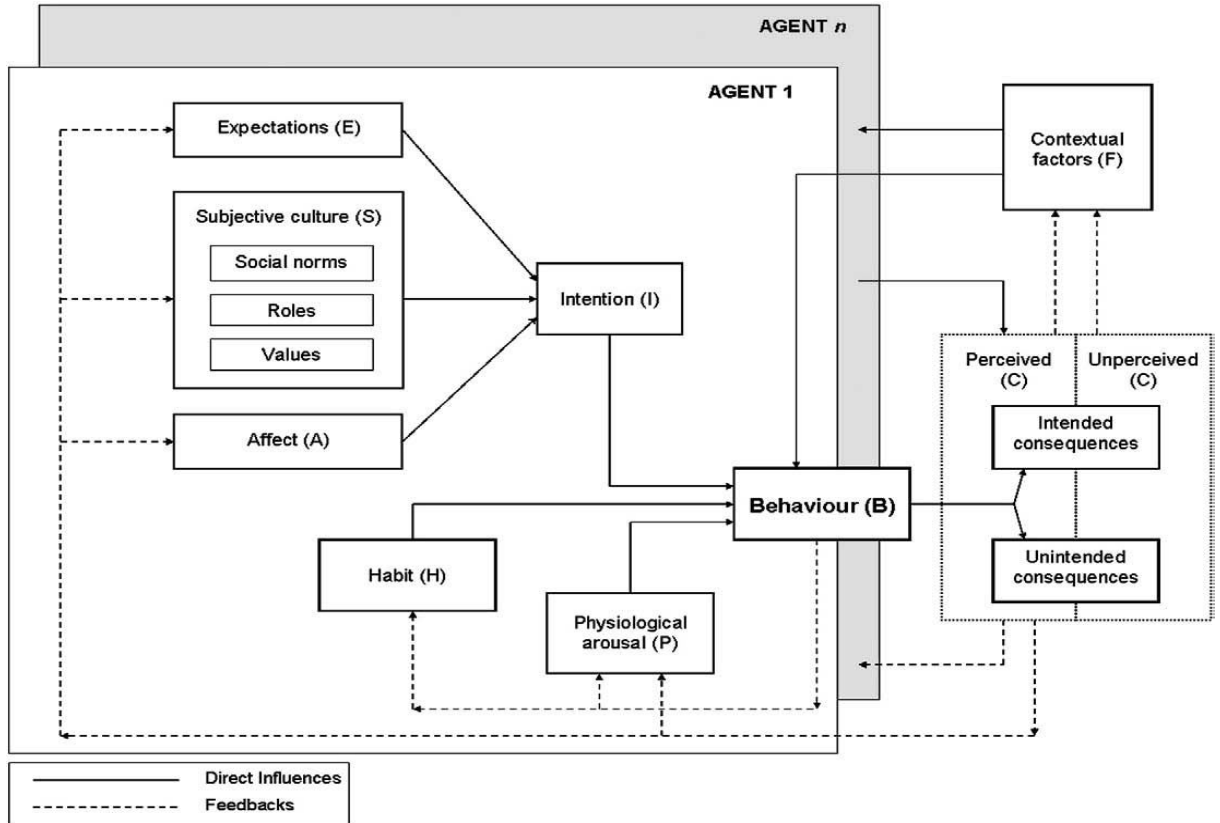
Though groups can exercise different degrees of tolerance and freedom of individual learning and experimenting, they have an intrinsic interest in ensuring the stability of the group with well-proven methods by preserving the old knowledge and not endangering the stability of the group or status of its members by experimenting. This objective survival pressure will regularly lead to cultural and institutional developments that discourage deviant behavior, different degrees of conformity pressures and critical reception of novelty on parts of the group, all of which lead to developing filters against new information that can range from mythically demonizing to a modern world censorship of the internet. Basically, dividing the world in groups of “them” and “us” already filters the information coming from the “non-us” by greater suspicion or scrutiny or downgrading it altogether. This group-preserving, immanent collective motivation is flanked by those individual motivations that profit from the group hierarchy, i.e.

⁸² This is an important reason for bonding to be so vital in learning (Neufeldt), and why self-efficacy raises independence in decision making.

the leader and the leading elite, and possibly other members who profit from relations and favors.

Leaders and leading elites have yet another intrinsic interest to control new information and avoid learning: Their status and position is often based on real or pretended “knowledge”. The act of learning itself, however, builds on the ability to acknowledge and admit not knowing. This widespread common acknowledgement of as the “discovery of ignorance” was the base of modern science and is actually identified by Hariri (2013, p.275) as the starting point of the European rise (see above). A leader who admits not to know, though, endangers his position to whoever may claim to know instead of him, and risks to lose the trust of his followers, which lowers his incentives for learning and for encouraging learning around him.

As a formalized example of the cognitive process in the face of new information, the following map Feola & Binder (2010) developed shows the interplay between an individual (agent 1) and the filters of his reference group (agent n). They developed this schema after researching the use or not-use of protecting devices against pesticides during application amongst Colombian smallholders. They find that the most important single factor for the decision on using protective equipment not schooling and information about potential health dangers; rather, the decision depended to a large extend on the actual or assumed behavior of neighboring farmers, and therefore conformity. All other potential explanatory factors like age, gender, education or income were equally ignorable as cultural context, cognitive problems, discomfort or culturally determined risk perception. Feola and Binder sum up in their Integrative Agent-Centered IAC framework the present state of discussion on the influential factors on individual reaction to innovation in interaction with others:



Feola & Binder (2010). What the IAC framework lists as „subjective culture“, I regard as those group-determined filters that function as blockage or group-conform heuristics for the individual in dealing with new information .

Similarly, authority-as-filter-effect or group-conformity-as-filter-effect have been thoroughly researched, and findings are analogue to those of biologists who research conformity and learning in animals⁸³. Banerjee (1992) developed a model on herd behavior and reasons it produces heuristics valuable; he offers an explanatory bridge between individual and collective learning. Roland Bénabou (2009) identifies conformity in organizations as “group think” and describes how this filtering of information can lead to denial of information and reality in groups, markets and organizations. He develops a model that shows how conformity pressures make this denial individually rational, but collectively detrimental.

⁸³ Aplin et al. (2014) f.ex. found that “experimentally induced innovations lead to persistent culture via conformity in wild birds”.

Mostly, when looking at the effects of this “conformity bias” which goes back to the cultural evolution theory of Boyd and Richerson (1985) we look at its harmful effects of distorting information⁸⁴. But this seemingly obvious notion has been questioned in business writing about the “wisdom of the crowds” (Surowiecky, 2004). Research by the ETH Zurich seemed to find that while swarm intelligence tested positively in many animal groups, it did not so in humans: humans in crowds behaved less rational than individuals (Eng et al., 2006/updated 2014). But other studies show that it seems to work both ways, depending in some cases on content of information and circumstance: studying signal processing in networks Golub & Jackson (2010) find *“(the signal recipients) naïvely update beliefs by repeatedly taking weighted averages of neighbors' opinions. We show that all opinions in a large society converge to the truth if and only if the influence of the most influential agent vanishes as the society grows. We also identify obstructions to this, including prominent groups, and provide structural conditions on the network ensuring efficient learning. Whether agents converge to the truth is unrelated to how quickly consensus is approached.”*(p.112)

They clearly identify leadership and hierarchy to impede proper information processing in groups by their mere existence. Inversely, one can deduce that the greater the level of self-efficacy amongst the members of the group, the less the conforming pressures in favor of the leading elite, and the greater SE amongst leaders, the smaller their incentive to obstruct information flow actively. In the analysis of smallholder data in Ghana, Wuepper & Drosten did actually find links between openness to novelty amongst farmers and supportive rather than disinterested chiefs who promote insecurity instead. Aulinger⁸⁵ clarifies that

⁸⁴ Padalia (2014) titles: “Conformity Bias: A Fact or an Experimental Artefact?” and questions not so much the whole concept, but its widespread use as an oversimplification, and calls for greater scrutiny in identifying other social causes for the observed behavior.

⁸⁵ Aulinger, Andreas, 2008, Verfahren kollektiver Intelligenz zur Evaluation von Verbundnetzwerken, in: Aulinger, Andreas (Ed.), Netzwerk-Evaluation: Herausforderungen und Praktiken für Verbundnetzwerke, pp. 171-190 .

human collective intelligence relies on the organization of the group: if individuals in a group – like in the example from Golub/Jackson – act independently from each other they will, as a collective, reach better results than each of them could by herself, while individuals acting collectively fall prey to group pressures and biases and produce lesser results as a group than as individuals.

Reference groups facilitate perspective taking which shapes identity and the outcome expectancy for different behaviors.

“A perspective is an organized view of one’s world, what is taken for granted about the attributes of objects, of events, and of human nature. The environment in which men live is an order of things remembered and expected as well as of things actually perceived. It includes assumptions of what is plausible and what is possible. Without such an order life would be chaotic; even doubts become possible only within an unquestioned frame of reference. Having such perspectives enables men to conceive of their ever changing world as being relatively stable , orderly, and predictable.”⁸⁶

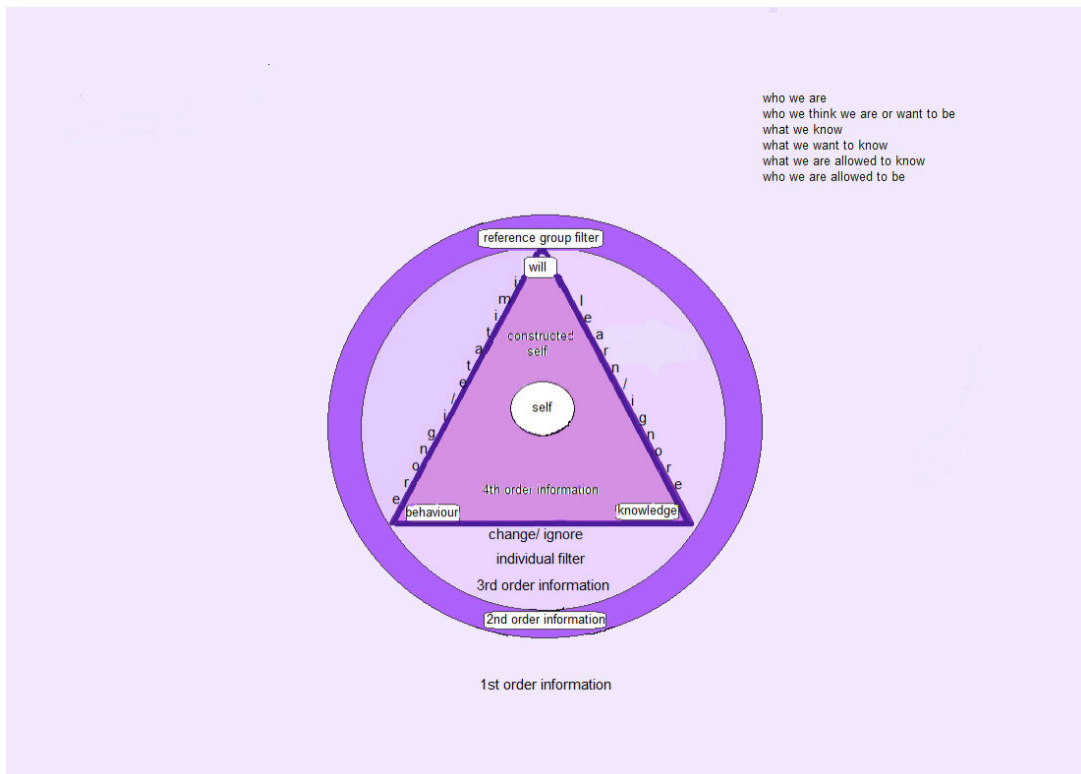
Note the dilemma for people changing their reference groups or worse, their surrounding culture through emigration, with regard to their identity which is necessary to building self-efficacy, and to their personal bonds which are important for learning. People take “perspective” by knowing what to anticipate from others.

The graphic below demonstrates filtering stages of information, knowledge and behavior changes all of which depend on the degrees, generality and domains of self-efficacy of individuals, groups and leaders⁸⁷. The filters protect the self, the constructed self, individual identity, group coherence, all of which form the

⁸⁶ Shibutani, *ibid*, p.130.

⁸⁷ This chapter is a revised and extended version of a presentation given by the author in 2011 at a seminar meeting on Behavioral, Social and Neuroeconomics, courtesy of Prof. Dennis Snower, Institut für Weltwirtschaft Kiel – Kiel Earth Institute.

mental core of any human individual and group. Due to the inability of humans to “know” reality or truth, the inner core is forever unknown; the self-construct is normally - outside of psychoanalysis - still not observable as it is revealed targeted “to an audience” (Strauss), which means more or less consciously and intentionally in differing aspects or “roles” or “identities”, according to whatever impression the sender wants to evoke in the respective observer.



Filters of information are a major instrument of stabilizing a collective that is based on extrinsic or secondary bonding (Neufeld, 2013)⁸⁸. They function as change prevention and status quo protection, and can come under external

⁸⁸ Neufeld describes extrinsic bonding is based on symbols, superficial external identification like uniform cloths, hairdo, specific behavior or language etc. while intrinsic bonding is based on emotional connection.

pressure as for example internet and social media influence have shown during the Arab Spring. They stabilize individual reality constructs about oneself and all others, and are not just limiting individual freedom of choice and development, but fulfill an important role in stabilizing individual life.

In their function as heuristics, information filters reduce complexity, and thereby are an important help for individuals and groups to function and reduce transaction costs in the sense of Coase⁸⁹.

These filters may be the reason for the aforementioned persistence of culture in groups. Their effect on stabilizing existing hierarchies and their profiting from the status quo in turn makes their adaptation to change or bypassing a sensitive matter for targeted policies. Adapting of information filters basically has to develop locally and within the group. Cases of externally induced or exploited breakdowns of these group filters have proven to be potentially uncontrollable and destabilizing and may have f.ex. added to the fall of the Shah regime in Iran as much as to the breakdown of Yugoslavia after Tito, when in both cases new and new-old reference groups could extend their bonding stories by utilizing older “stories” (Akerloff) and their respective filters.

4.4 Behavior Change

The decision and process to change one’s behavior puts an individual in a situation of reappraisal of not only her relationship to her self-construct, but also to her surrounding world. She has to reposition herself towards herself and towards everybody else, and it is done in public: learning cannot be “seen” before it is publicly demonstrated through behavior change. She makes herself observable and thereby more controllable.

⁸⁹ Coase theorem, as part of allocation theory, describes how market participants reduce their transaction costs by directly communicating within a given framework of institutionalized property rights.

Depending on the extent and group diversion, individual behavior change entails the possibilities and dangers, i.e. benefits and cost, of:

- loss of group approval, and
- loss of position in group hierarchy,
- through leaving the group consensus, possibly the group identity,
- all of which possibly leading to expulsion – which in the human evolution would have meant almost certain death as survival was hardly possible for a lone individual for many habitats for large periods of human history, and
- even risking group retaliation;
- loss of factors of identity,
- altogether loss of several reality defining parameters.

Furthermore, behavior change is the publicly observable demonstration to have been wrong in the past and to not have known (better). The price of this social and identity risk has to be clearly lower than the uncertain future gains of the change which include even successive uncertainties of one's own capabilities to learn and master the new. The old has to be given up before the new is fully known and mastered.

Behavior change can, but does not necessarily happen after new information has been made available to an individual. It is not only induced by actual learning, but can occur as imitation. The former may lead to group conflict, the latter is usually done to avoid group conflict. In any case, it will occur more frequently under subvention or tolerance of the reference group as that lowers the individual costs. Conversely is behavior change less likely or to a lesser extent if it is expected to be sanctioned by the reference group, i.e. the expected costs are high. Because of the present social costs and gains lying in an uncertain future, the behavior change induced by new information may actually occur in steps and with a time lag, thereby reducing uncertainty.

The existence of an alternative reference group and the possibility to change over to it, heavily alters the possibility of the old group to sanction undesired behavior

and levy social costs on its members. This is one channel how f.ex. the Arab Spring movement was spurred: social media create a global public which offer the possibility to identify with people outside of one's usual proximity. A girl living in a traditional family in Cairo or Jeddah can identify with blogging, rap-music loving New York youths, communicate with groups of hipsters on facebook and via skype, or facetime in Europe's capitals, sign avaaz and sum-of-us petitions in direct political participation, and actually feel part of a group of people which totally differs from those around her, and still not feel alone or left out. This certainly changes costs and benefits of behavior change radically – and in the short term, increases the immediate group incentives to use their repressive power to limit access to an out-of-group-public that undermines her tolls of power.

4.5 Utilities

Every individual with his self-efficacy beliefs belongs to a variety of reference groups (Sherif & Sherif, 1964; Kemper, 1968) with self- and group-efficacy beliefs; these reference groups are of different size and make-up reaching from family, peers, clan, tribe, religious group, to nation or race etc. Depending on their level and generality of self-efficacy, these reference groups each have their own calculation of costs and benefits for the group in toto, their leaders, leading “elite” and ordinary members, and this happens in interaction or competition with all other groups. Any group will aim to determine and enforce the social costs and benefits for the desired behavior of their members accordingly. This group rational can be represented by a “production function” of learning, wherein the group “produces”/facilitates a level of learning (via her members) and behavior change that it considers favorable for her benefit, f.ex. increase in members, identification, stability, power, privilege, influence. This group rational constitutes a large part of the group “culture” and is reflected in institutions.

Individuals who can be group members, elite members or leaders, and at the same time have a different status in different groups as well, have - according to their role and status and self-efficacy beliefs - utilities of learning and behavior change that can not only vary but also be antagonistic from those of their reference group, which is an important factor in the process and outcome of the modernization process. Individual utility functions represent the outcome of the group's "production function" of learning.

Learning and behavior change are both difficult and scary. The unknown in itself increases anxiety and stress⁹⁰. The question if individuals or groups profit from learning and will therefore foster learning for themselves and others, depends on their self-efficacy beliefs: weak groups tend to fear change when their present status offers privilege that they don't trust to hold in the future and which may not be regainable, while strong groups tend to foster learning and change when they trust to be successful in keeping group identification stable and profiting as a group or in favour for their leader/leading elite.

The anticipated (feared) social costs of learning can be expected to be more decisive for dealing with new information than the anticipated (hoped for) benefits due to biases like the well tested endowment bias, risk adversity and socially developed heuristics that hamper

⁹⁰ Eibl-Eibesfeldt (1997) identifies four possible human reactions to perceived danger, be it virtual or real. I add; sudden new information pose a thread or potential risk until proven otherwise and induce the mammal brain to produce the chemical, mostly hormonal reaction fit for any of these four pairs of emotions and actions: fear and flight (also: insecurity and avoidance!); anger and fight (physical, verbal, virtual, imagined – in all stages of dominating, impressing, threatening or downgrading behavior to actual physically fighting or negating of information); resignation and submission; self-confidence and cooperation; cmp. also Schwarzer (2000).

change amongst individual group members⁹¹.

Furthermore, the ease and possibility to change one's reference group is likely decisive for the incurrance of costs as well as their evolution as being decisive for the enforcement possibilities of sanctions in the first place. While individual benefits from learning can range from increasing self-esteem to income, they lie in the future and are merely expected or hoped for and uncertain. Social costs, however, for leaving the common grounds of one's reference groups have usually been observable in the past and are part of the group narrative.

Tetzlaff's "historic learning subject" is hence the individual, neither reference group nor elite as collective entity, but rather individual human beings; these, however, in their social roles as members of various collectives, holding differing positions of hierarchy and self-efficacy. Leaders and members of a leading elite must be treated as individuals and group members acting on their own account in their own interest.

In the course of growing up in different groups, individuals construct their "self" in constant discourse with their environment. The constructed self yearns for coherence, efficacy, and protection or safety (survival) for which it will usually seek integration in groups that offer some or all of the above. The individual is such in a latent conflict between her own interests and those of her reference groups in every change of behavior she may seek. Groups, as an amalgamation of individuals, develop a common "culture" of roles, traditions, symbols etc. that offer the experience of coherence, efficacy and protection to their members, but in turn discipline them through the same instruments to stabilize the group. Groups may actually have an interest not only not to "learn" (collective learning

⁹¹ Extensive experimental research was conducted by Kahneman & Tversky (1979) and Tversky & Kahneman (1992) on biases and risk adversity for their work on prospect theory; Thaler, Tversky & Kahneman (1997) on Myopia and Loss Aversion in Risk Taking; Kahnemann, Knetsch & Thaler (1991) on endowment and status quo bias, and loss aversion.

consists of adapting the group culture to changes in the environment as well as amongst their membership) as a collective, but also to sanction individual learning of its members when learning could destabilize group identity or endanger privilege and status. Also, organizational hierarchy offers the possibility for individual members to gain power over other members, individual non-members or other groups. In this case, the group effect of supporting their members is being reversed, and the need to discipline and raise costs for deviating behavior may rise up to the point of possibly life threatening consequences - which is the exact antipode of why groups developed in the first place. Analyzing the situation of individuals and their reference groups in a given situation under the aspect of who profits from learning or from preventing people from learning offers insight in the chances for development and for empowering the learners, develop strategies for incorporating the non-learners and those, who may lose a privileged status. It may even lend itself for developing a better understanding of learning stages in a society, i.e. at which point of group organization basic rights and freedom granted to the group members like physical immunity, right to exercise a religion, sexual preferences, gender rights etc. can be granted to non-members as well and become universal rights.

Utility of individual learning⁹² and prospect theory

The idea that people will still have an incentive for learning and changing their behavior in situations where environment does not require it for survival reasons, builds on the economic logic of rational choice (Simon, 1955)⁹³: people will rationally decide on their behavior after evaluating the pros and cons of all

⁹² Analogue to suggestions of Akerloff & Kranton (2010) formulating a utility function on identity and other biases, these simple schematic descriptions in the form of general utility schemata are aimed to help visualize the relationship between influential factors. This section profited greatly from discussions with Steffen Ahrens and David Wuepper; any flaws are those of this author.

⁹³ Despite controversy about the actual contribution of rational choice theory to understanding human behavior, its basic concept is still very present and influential.

alternatives, taking heuristics as short cuts (with the scientists' difficulty to differentiate between habit and heuristic (Clark, 2010)). As this assumed rational choice often seems to lead to decisions that look suboptimal not only for others, but also for the decision maker herself, economists have been looking for explanations and found some in calculating mistakes, biases, and imperfect or "framed" information, which the field of behavioral economics is researching. Sociologists look at evaluating different information on the ground of "perspective" which refers to the values shared amongst members of a reference group.

Analogue to Banerjee/Duflo's findings on rational economic decision making under the constraints of extreme poverty, I find it helpful to assume that human behavior is perfectly rational, but subjectively so, and regularly unobservable from the outside. While any human behavior may be perfectly rational by her very own, individual cost-benefit calculation, it cannot be observed from the outside as her personal utility not only depends on her own preferences and conditions, but on those imposed on her from her complex net of social interaction, her reaction to this, and the filters of information from her surrounding and her own, self-construct protecting, tools⁹⁴.

Becker & Murphy (2000) suggest a utility approach to social interaction in total freedom of choice, including to change the reference groups. I consider this approach as not commonly applicable and ascribe a large aspect of the social costs to the fact that this change will normally be as much difficult as costly or

⁹⁴ One of the greatest stress factors for humans is when their self-construct is endangered. This will usually be avoided or fought off; learning of information that endangers self-construct and constructed identity is one of the greatest challenges in the modernizing process; please see chapter on identity, and for example the present European discussion on refugees and fear of identity loss on both sides. Compare Lehmann (2012) on: Die Bedrohung des Selbst als Ursache von Stress – eine experimentelle Operationalisierung des SOS-Konzeptes (stress as offence to self due to failure or downgrading by others, b.d.).

even impossible in large parts of the world still⁹⁵ and certainly in the greater part of human history.

However much rationality or social influence one will ascribe to human decision making, it is commonly assumed that an individual's decision to act in a certain way depends on that person's subjective assessment of her benefits and costs incurred in conjunction with that behavior. While Adam Smith had discovered self-interest as "the motivating force that drove the economy" (Beinhocker, 2007, p.28) without explaining the actual process of translating it into economic action, Jeremy Bentham identified "the pursuit of self-interest ...(as,bd.) a rational activity based on the calculus of pleasure and pain" which could be quantified by "utility"(ibid, p.28). This relationship was first identified by Daniel Bemoulli in 1738, and again by Jeremy Bentham in 1744 (ibid, p. 461).

It can be expressed as simple general relation where utility equals benefits minus costs:

$$U = B - C$$

Keep in mind that both benefits and costs lie in the future, and are therefore as risky as uncertain. The decision maker *i* aims to maximize her utility *U* which equals the benefits *B* minus her costs *C* with regard to specific alternatives of behavior *j*:

$$U_{ij} = B_{ij} - C_{ij}$$

McFadden (1974, 2000) shows that the probability that a decision maker decides for one specific alternative of behavior can be expressed as:

$$P_{ij} = \frac{e^{U_{ij}}}{\sum e^{U_{ih}}}$$

where U_{ij} and U_{ih} is the utility of the alternatives which are here:

- learning with a change of behavior
- learning without a change of behavior
- no (intrinsic) learning, but behavior change due to imitation
- no learning, no behavior change

⁹⁵ for discussion on rational choice and framing of decisions Tversky & Kahneman (1986).

Following the suggestion of Akerloff & Kranton (2010) to construct a utility function to include behavioral aspects, a general function of utility could be adapted to include different factors of influence on an individual's decision to learn

$$U = \alpha + I(se)(\beta_1 B + \beta_2 S + \beta_3 R) - \beta_4 \left(\frac{C}{\Delta G + X} \right) + e$$

where

- U represents individual utility of path-dependent, long-term factors as well as context-dependent, short-term influencable factors.

Utility here equals total expected outcome of the behavior "learning" depending on the qualities of self-efficacy.

– α is a constant that picks up a fundamental individual utility of learning that is assumed to be $\alpha > 0$

It corresponds to the long term individual utility structure that is assumed to be a life-long stable function created by early life experiences, taken over from important bonds (like parents) and is part of the constructed self. It also reflects those costs of learning that the self-construct suffers from having to adopt to exogenous impulses.

In cases where $\alpha < 0$, we have a case of "pathological learning", i.e. only forcibly by failure.

- I is the influence on changing one's learning behavior as a function of the believe in one's self-efficacy. (This compares to Akerloff & Shiller's (2009) concept of "story": individual perception is the measured factor, not how realistic it is.)

- B subsumes any expected benefit which includes material, emotional, financial benefits as well as greater coherence to one's self-construct or to actual or desired relationships.

– S represents the factor of state dependancy, i.e. if an individual is presently learning or not.

- R is the factor that shows how strong and important the individual bonding is to her self-construct and to her reference group.
- C are the total expected costs , divided by the possibility to change the reference group plus the potential for externalizing costs of learning and behavior change. These costs are another pragmatic lever for policy measures: by designing policies that directly lower the costs of learning for different groups of people, f.ex. women, their utility of learning rises directly.
- e is the unobserved part of the utility function.

Note that due to risk adversity, benefits have to be considerably greater than costs, before a change in learning behavior can be expected. Also, endowment effects, i.e. effects that have an individual ascribe a higher value to the status quo than to an only future potential can be assumed to add to the upward pressure on the benefit/cost ratio (Kahnemann, Knetsch, Thaler, 1991).

There has been fierce discussion and critique about the question of if and how behavior, expected outcome and self-efficacy are related. When in his later works, Bandura included “outcome expectancy” with self-efficacy as both determining behavior (here it would be $I = se + u$), he was heavily criticized for it. His critics insisted that expected outcomes had been proven in experimental settings to influence self-efficacy perception and thereby invalidating the whole theory. Bandura rebutted critics with the argument that the perception of self-efficacy was not invalidated by being influenced by expected outcomes. This dispute may have resulted from another misunderstanding about the concept as a whole that I have found even amongst experts and followers of Bandura’s theory: the question of what self-efficacy really refers to: tasks or goals or domains or processes or else? (and from the lack of a comprehensible demarcation from all other concepts like self-esteem or self-confidence, agency and locus of control, to name a few.)

I suggest: Self-efficacy (se) for a certain behavior (here: learning l) that is supposed to produce a certain expected outcome u (modernizing and promotional benefits of learning) influences outcome expectancy, but not the actual outcome directly (as in $se(u)$), but via reinforcing the effort in exercising the procedural behavior (here: l , learning) that is meant to produce that outcome. If someone believes she has the ability to play soccer really well, she will put in extra effort to win that a tournament. This will indeed increase her chances to win that tournament, but: her belief to be a great soccer player will not win the game, her extra effort produced through self-efficacy will.

A positive expected result will not increase self-efficacy towards the process that brings the expected or attempted result about, but may lead to greater effort and yet better results in a self-fulfilling prophecy and following this, increase self-efficacy in the next period.

A negative expected outcome may lower the incentives to take on the task of working towards this outcome with great effort – *but* it will not decrease the actor's self-efficacy for conducting the process that would have brought that outcome about. If self-efficacy for the process was high beforehand it will not decrease through an expected low outcome *ceteris paribus*.

Once the process has been performed and the actual outcome produced, learning-from-experience may set in and influences future expectations as the self-efficacy for the respective process has increased. This, however, is something else than a priori outcome expectations. As a result of a posteriori experienced positive outcome, an increase of self-efficacy can be expected as trust in one's own abilities to do well in this kind of process for similar actions in the future.

In the case of negative outcome experience, self-efficacy may not sink but remain stable or even increase as the cause for less than optimal results can be projected onto others or circumstance. Also, one may be dissatisfied with the result and still be proud of one's effort, work, persistence and may undergo the satisfaction of

having learned a valuable lesson to be better prepared for the next time, and thus increase one's self-efficacy perception.

Self-efficacy is neither goal- nor task-specific but process- and domain- specific, and thereby not directly correlated with results or expected results. Self-efficacy and results are correlated only via the belief in being able to do well in the process that may eventually lead to that specific aspired outcome (Bandura, 1986; for critics: Williams, 2010). There are objective constraints to reaching certain outcomes that cannot be influenced by more effort or any other purposeful action but are determined by third parties and circumstance; the locus of control and the respective self-efficacy refer only to those aspects of the process that can be influenced by the agent. In all other cases or aspects, self-efficacy is irrelevant for the outcome.

There are cases where the expected outcome is highly attractive, but the agent does not have the self-efficacy belief in the necessary capabilities and will therefore not attempt to act. In yet other cases, higher self-efficacy can lead to greater efforts and longer time of attempt so that initial constraints can be overcome and positive results achieved nevertheless.

Kahneman & Tversky (1979) took the probability of an event under risk into account, and found inter alia a "certainty effect" which leads individuals to underweight outcomes that are merely probable in comparison to those that are certain. They interpret this effect to add to risk aversion, an endowment effect and other biases that lead people to value what they have more than what they can possibly get. But this effect may actually be causing risk aversion in the first place in all those cases where a lack of self-efficacy leads the individual to doubt her abilities to reach the uncertain result. When people make choices over behavioral benefits that lie in the future, they can only speculate about their probability based on

- their experiences from the past about circumstance and
- the behavior of relevant others, and

- their belief in their own abilities to attain what they desire.

Kahneman & Tversky expanded traditional expected utility theory by assigning values not to the final outcomes but to the gains and losses incurred and replace probabilities with decisions weights. I suggest to develop a further model to take self-efficacy as a function of the expected costs and benefits into account. In their "Advances in Prospect Theory", Kahneman & Tversky (1992), and Heath & Tversky (1991, in their work on preferences, beliefs, ambiguity, and competence) already found self-efficacy effects: *"More recent evidence indicates that people often prefer a bet on an event in their area of competence over a bet on a matched chance event, although the former probability is vague and the latter is clear"*(1992, p.298), but Heath & Kahneman call it "competence", and find several proofs that perception of competence changes behavior and decision making with regard to classical predictions .

Group "production" of learning in strong and weak groups

Any given collective represents a reference group for those individuals who are or want to be a member of/ in association with the group. As mentioned before, every individual is at the same time and successively member of several more or less formalized groups which may have contradicting rules, norms, demands on roles to take on. The group shares common identification marks based on a common self-construct and the according "stories" that may be channeled into behavior, language, looks, values, norms, rules, etc. which all serve as bonding factors according to Neufeldt (2013). Individual learning potentially endangers this "social glue" if it puts the individual in deviation from the group, and will therefore be sanctioned with costs to discourage it. Groups have incentives to filter information getting to its group members ranging from actual censorship to discrediting message or messenger, the more so the less stable the group is, the more endangered it feels by change, the more it has to lose as a group or the more here leaders and leading elites have to lose and doubt to be able to regain.

The less the leader or leading elite are inclined to learn for themselves the greater their incentive to keep others from learning though they themselves can acquire more status-quo preserving, ruling knowledge. The weaker the group efficacy, and self-efficacy of its members and leaders, the higher the inclination to prevent or sanction change. Strong groups profit from learning, weak groups are threatened by it.

In a strict sense, a production function shows the amount of yield produced from different amounts of inputs. The “group utility function” of learning looks basically the same as the former utility function of individual learning but with one important distinction: assuming that the costs C of individual learning in the above function are determined by the reference group, one can argue that the group’s utility function of individual members’ learning equals the group production function of individual learning. The yield equals the utility of the group because it shows the best mix between offering the group members the possibility to learn while keeping a maximum of group coherence and status.

$$Y=Ug = \alpha + \lg(se) (\beta_1 B + \beta_2 S + \beta_3 R) - \beta_4 \left(\frac{C}{\Delta G + X} \right) + e$$

Here, we can assume that:

the group’s yield will be the utility U of the group g for the behavior learning l in the form of granting to its members different degrees of learning and behavior change, depending on the self-efficacy of the group and according to its expected benefits b in the form of group stability, status, influence, power, privilege and access to resources, with S representing the present state of learning and R the stability of group coherence.

Group behavior is superimposed by individual member interests, individual leader interests, and those of individuals, who belong to different hierarchical layers including the leading elite. I find it helpful to look at the different utilities in this schematic way to demonstrate the possibly antagonistic shaping they can take. It becomes obvious that learning individuals endanger the stability of the

group and thereby its status, all of the above listed factors of benefits for its non-learning members including those in the higher ranks. This correlation applies to formal and informal groups and demonstrates why individuals are the bearers of progress – when they profit - and why groups have a natural interest in preserving the status quo. The same is true for leaders and leading elites: as long as they profit from the status quo they profit not only from not learning but also from keeping others from doing so.

Acemoglu & Robinson (2012) identify this “stabilizer-in-slump” (pp76-95) as the preventor of evolutionary appropriate adaptation to change in their discussion of extractive and inclusive institutions. They describe the incentives for the leading elites to institutionalize their fears of Schumpeter’s creative destruction, as it is their extractive privilege that is at stake. Any attempts to modernize will be more successful if those who profit from non-learning and from keeping others from learning too, are being identified and especially targeted in a coopting, self-efficacy building⁹⁶ way. The higher their self-efficacy, the higher their trust in their own ability to still do well under changed circumstance, the less the need to discourage learning efforts of others, and the higher their own incentive to learn and believe they can profit from the newly appearing opportunities.

The respective self-efficacy to be able to do learn, adapt to change, change herself and profit from it, forms an important part of the self-construct and identity of the potential learner and his prerequisites of learning: aside of the circumstantial conditions, it is the perception of one’s ability to learn and make the best of the new possibilities that determine whether change and novelty will be regarded as chance or as thread.

⁹⁶ In a personal discussion with Prof. Jens Weidner as an expert for especially difficult non-learners in aggressive youths, he said that different cooptation measures like giving people extra tasks or extra status had been found successful amongst violently destructive, criminal youths up to the point, when only complete separation from the more cooperative individuals was possible for least-learners, who defied any attempt of winning them over into cooperation, or even tried to violate the efforts of others; also Kilb & Weidner, 2013.

“A sense of identity `is never gained or maintained once and for all. Like a good conscience, it is constantly lost and regained’.” Erik Erikson (1954)

4.6 Learning and Identity

The difference between self-construct and identity lies in its origin and purpose: identity is the self-construct in differentiation from others, identity splits the world in me and not-me, while the self-construct defines me from inside. Identity includes different roles and functions the self takes on.

Identity defines what somebody wants to represent in this world, what she wants to do and be and have in conjunction with and differentiation from others. Identity therefore is very much built on the experience of respect for her mere existence, not for her achievements. The German Basic Law starts with asserting “Human Dignity is Inviolable” – for it is the experience of deserving respect for being human that lays the groundwork for having a life: there is no self-respect without the experience of respect, there is no positive identity to function as natural anchor for building self-efficacy. Without this anchor, SE cannot be build, subsidiary/compensatory and supplementary traits will take its place: entitlement, resignation, or enduring (instead of activating) resilience.

If somebody f.ex., has less self-efficacy than she needs for satisfying her identity believes about status and consumption she can compensate this lack through a sense of entitlement. Instead of fully using the respective learning potential in accordance with the however low or high SE, this asymmetric entitlement may keep her from learning and staying below her potential, in turn preventing her SE to increase. In the case of high self-efficacy, entitlement would work as a supplement and increase aspiration and learning ambition.

Resilience, on the other hand, has the potential to work both ways: supplementing the perseverance aspect of self-efficacy, resilience would increase self-efficacy for

the process of enduring hardship and adversity and enable restarts from longer and more severe draw-backs. Resilience could, however, also compensate of and substitute self-efficacy and thereby prevent its development by helping to endure negative circumstance without believing to be able to escape them by one's own virtue. In these cases, the necessary prerequisite for building self-efficacy is missing: the locus of control.

In social science, psychology and philosophy different aspects of identity and identity building are being researched and defined. The common ground is that individuals as well as groups have their own general identity as well as partial and overlapping ones: individual, gender, national, cultural etc. Identity is the result of a process of self-identification in which a person or group associate themselves with specific characteristics in contrast to or association with others that do not or do share the same ones. Identity is important for mental health and social functioning of a person.

Identity endangering occurrences are major external shocks causing severe reactions of denial, submission, flight or fight comparable to Eibl-Eibesfeldt's earlier discusses identification of human/mammal reaction patterns to danger. Sociologists have attended to the question of identity transition which is vital for modernization and its underlying learning processes on the part of the individual in her different functions and hierarchical status as well as her collectives. Individual and group identity come under pressure when new information is being received, and the old identity is not sufficiently in tune with the new data. Every human being undergoes these conflicts when passing through the different stages of life: when the old child identity does not fit the adolescent, or the adolescent does not fit the adult life requirements, transition from young to old person, single to parent etc. Most cultures have developed rituals of some kind for these transitions to help cushion the destabilizing effect for the individual and her reference group, and offer some kind of mold for the new identity, clearly defined do's and don'ts, roles and behaviors to take up, even ways to dress.

Unprepared and unsupported are people when they go from traditional to modern life in the case of migration, flight and foreign installed modernization. In the latter case, Huntington's conclusion to therefore better discourage modernization and suppress respective attempts, cannot be a humanistic nor a sustainable answer as history has proven over and again. Rather, people have to be supported as they undergo along. Industrializing production methods is not enough, but human support in identity transition has to accompany it for everybody to redefine her place in the changing world, to not be left behind in fear, anger or resignation, to understand what she herself can and has to do to move along with her changing world. Spending money to send a girl to school instead of marrying her off at the age of four is not obvious, but has to be learned as a new task in parenting.

Promoting self-efficacy for having the ability f.ex. to change one's ways of living and working, and learn all the new information and find a new good role, is vital for this process.

Anselm Strauss (1959), in his essay on "Transformation of Identity" describes stages of natural transformation during an individual's lifetime, those caused by external shock, by group demands to filling into differing roles, and those caused as an unexpected and possibly unwanted result from decisions made about something else, like migrating to a better life and finding out that your identity does not fit your new role. He does not answer the disputed question to which extent people's core identity actually does change or whether changes after adolescence are merely variations around that core, but treats the observed problems as "revealed" identity conflicts. He describes f.ex. the conflict of people who feel betrayed by their group or group-induced role when it does not hold up to the test of reality, which – though first written in 1959 – sounds prophetic for the late 20th century follow-up generations of migrants who cannot keep their family and conformity duties while trying to find a new positive identity in their new home countries and develop the respective self-efficacy for it.

Equally problematic is the situation for those who do adapt their individual identity and risk to lose their group bond. Groups, formal or informal, often provide for their members more structured passages of transformation offering security in change but little room for individual variations and development. Steps and phases of change are susceptible for crisis. If the level of self-efficacy is not sufficient to counter “acute strain” of (group) conflict and change, the protagonist may “(abandon, bd) *the regular or institutionalized sequence of steps...and break away in desperation or with defiance, leaving their occupations, families, social classes, and other such organizing frameworks of commitment and loyalty.*” (p.77)

This describes the present, 2016, situation of well-established second-generation, middle-class immigrants who leave their well-paid jobs in – say - the UK to join a terrorist group in a far-away country they have never even lived in, speak the language or are used to the hygienic atrocities, all of which may be indicators for the long ignored pressures people suffer, and: their personal utility calculation is higher that way than staying, learning and changing. Strauss describes turning points of realizing the change of identity being related to feelings of “*surprise, shock, chagrin, anxiety, tension, bafflement, self-questioning.*”(p.67) Note that a major part of the process of change happens first psychologically and is then realized ex post as a need to change consciously, putting practical questions of observable behavior and relations under the stress of new definition. It is then when the decision to go through with the change or to fight it off becomes a question of self-efficacy being strong enough to support it; if not, the “*sense of personal continuity*”(p.82) becomes an “*imagined persistence*” deducted from symbolic acts (as the person has already started to change inside but adheres to the old identity for reasons of insecurity).

Shibutani (1962) points out that it is not the whole surrounding of an individual or all the groups she somehow belongs to that are important for identity building and potential for learning and behavior change, but only her reference groups which constitute the “*significant others*” (p.138): those whose judgment is of identity-

building relevance. This relevance is a result of bonding and the reason why we can have different cultural systems side-by-side in close proximity without influencing each other for a long period of time. It is because the views, roles, expectations, values, perspectives are not relevant for the respective others. Reference groups are an important source of social control (p.128) and thereby build the groundwork on which institutions have to function. Modernization against major reference group interest and economic progress against major reference group profit seems difficult. Emancipatory and empowering policies to support individual learning via self-efficacy building, and coopting and appeasing major reference groups or limit group influence altogether are major policy aspects on the pathway to a learning society. It does, however, carry a great risk of destabilizing individuals and the social network.

4.7 Prerequisites of Learning

Learning requires moving from a stagnant stage of knowing to a time, energy and effort consuming process of change with uncertain results and benefits, and certain risks. This has to be sufficiently beneficial with regard to gains and costs, meaning: given endowment bias and risk aversion, the anticipated gains have to be over-proportionally higher than the anticipated costs. Or, to express it in a physical image: It takes a lot more impulse energy to get the ball rolling again after it has lost his potential energy than to keep it going while it's still rolling.

The individual needs self-efficacy for learning

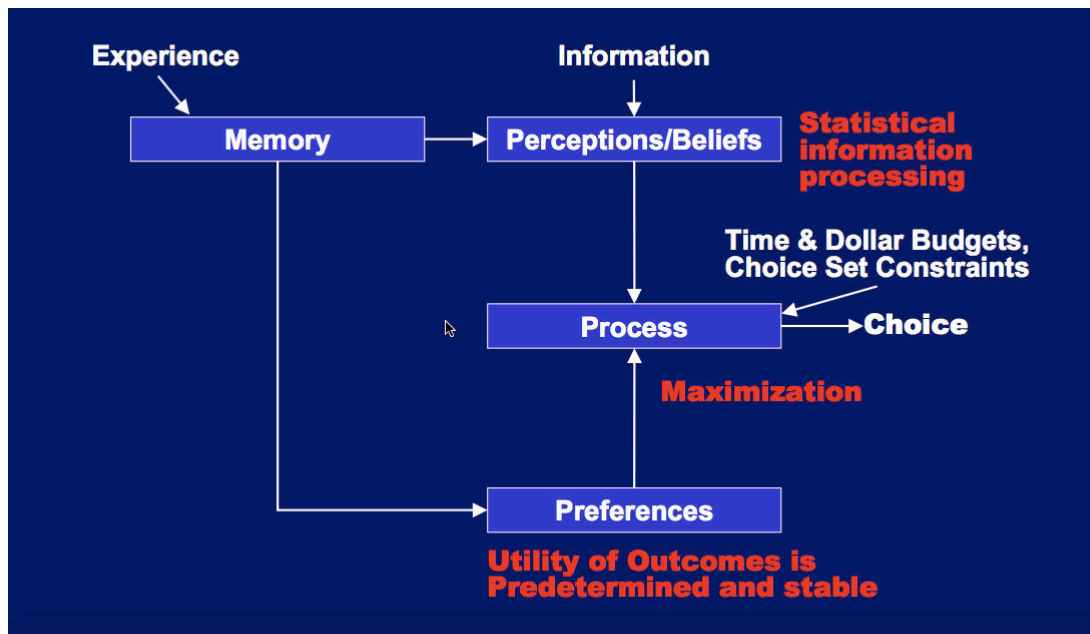
- to develop a stable identity that is strong enough for transition and
- to develop a positive anticipation of the reaction to change of her reference groups' members, or,
- in cases of negative reactions or unstable group bonding, have self-efficacy and physical possibility to enlarge or change her reference group.

Collectives need group-efficacy for learning and to have a leader or leading elite who have leadership efficacy for learning

- to foster stable group and leadership identity strong enough to not feel threatened by learning-induced changes;
- to allowing for new information entering the group and reaching the group members without knowing the effects;
- for tolerating or fostering learning and behavior change of its members and non-members.

I regard all of the above necessary for the single most important prerequisite of learning – the acknowledgement of not-knowing without egos or greed having to fight Harari’s “Discovery of Ignorance”. This is what I interpret as the actual reasoning of Hondrich’s suggestion that countries lead wars in order not to learn - for a short time, the aggression of war can cover up the pain and dangers of having to learn.

Daniel McFadden subsumes the individual decision making process which lead to choice of behavior as follows:



McFadden (2001) shows how past experience creates the base of memorized knowledge on which to build the perceptions and beliefs including self-efficacy, and preferences which then under the given constraints of individual life produce a certain choice for behavior. In contrast to Becker, preferences are more realistically not assumed to be fix, but stable which may reflect their probable link to people's identity. There has been debate over this assumption as a multi-billion dollar advertising, marketing and lobbying industry seems to suggest otherwise. But it may well be that the noted - and by those industries targeted - diversifications of preferences are mere variations rather than originary changes of preference.

"Hero in War but a Coward in Peace"⁹⁷

4. 8 Negative Ways of Learning

Martin Meredith (2005/2011) describes in his book on Africa since independence the path several African countries have taken since the 1960s, and in great detail the path that also the new African presidents have taken. Under the title "The Great Plunderer" he describes Mobutu developing from quite effective modernizer in the 1960s to worldwide symbol of African despotism and corruption, assumingly having looted over 5 billion u.s. dollar from his impoverished country's natural assets and foreign investors. Within short, Mobutu started to copy King Leopold "an ambitious, greedy and devious monarch" (p.94) who treated the country as his personal property" in his "lust for territory and wealth" which he sought to satisfy with a system of brutal subjugation, and which international approval, obtained "after much manoeuvring" in 1885. After starting out with a rather effective economic modernization program in 1965, Mobutu quickly employed what he seems to have wrongly learned from his colonial teacher about rule: a mix of cooptation, nepotism, bribe and brutality to exploit and stabilize a country in

⁹⁷ Lyrics from: Malaya, 1998, Rock in the Tide.

despair, and play the international community. Eventhough Leopold's and Belgian rule in general had obviously not lastet, Mobutu held on to his recipe when the situation economically and socially deteriorated dramatically and international support plummeted. Having once learned a lesson on power, he was unable to learn new information and adapt to changing conditions that his non-learning had created, with only short glimpses of compromise through pathological learning when things had become so bad as to have no choice, like in 1976 when he had to reopen the country to foreign investors – now with little success⁹⁸. Mobuto is just one, though a glaring example of someone exhibiting all forms of negative learning which lead to collaps, paid for as in all cases where socializing of costs is possible, by others possibly more than himself and until today.

Wrong-Learning

Learning for the pleasure or self-enhancement like tennis or piano lessons is a luxury of fully secured living conditions. Most people on this planet live under conditions where learning is part of their survival strategy. Every lesson is learned under some kind of social strain, the risk of unknown consequences, and the uncertainty of possible, eventual identity adaptation and group conflict. This is also true for learning false or manipulated information, interpreting things wrongly, making mistakes in the application. As we usually learn from our surrounding, our reference group, wrong-learning may put us in conflict with our reference group, either when we learn the wrong information or when we want or need to “unlearn” it.

Wrong information is doubly difficult to “unlearn” or cover up with yet new information as it carries the burden of doubly not-knowing. One has to admit to not have known in the first place to learn whatever, and then, to admit to have made a mistake in learning the wrong thing. If the new “wrong” has already led to

⁹⁸ Meredith, p.300; pp.293-308 describe all three ways of Mobutu's negative learning.

behavior change and reaped publicly observable action it is a triple incentive to hold on to the “wrong”.

Important here is who evaluates what is wrong and what is right: if it is someone from outside of one’s reference groups, one may rather fight them off and hold on to the “wrong” despite of any information suggesting otherwise. If the evaluator is part of the group, holding on to a non-conforming belief may cause group retaliation in different degrees of severity, up to the point of expulsion.

Coming back from wrong-learning will take more effort, more strength, more support, more bridge-building, and ever more so the longer and deeper the wrong-learning had been internalized, and the more actual behavior and action has been involved, than it takes to support initial learning. When the wrong-learning and possible wrong-doing has happened in concert with others from a the same reference group, the effects will be rooted yet deeper.

Experiences of rehabilitation of people who fell prey to religious, political, criminal groups demonstrate the concentrated essence of a painful modernizing process⁹⁹: inner and outer structure may get lost or shaken up. Modernizing is always a difficult, insecurity causing endeavor; but when the past can be honored as having been good and right at its time, it can be left behind as just outdated. In this case, one can still keep most inner and outer structure giving factors, especially one’s beliefs and constructs.

But when the modernizing process happens after the past is cast away as wrong in the sense of undeserving respect, all structures, inside and outside of a person, come under stress. One may identify with the undeserving old, and cling to it for

⁹⁹ Drug addicts, or girls suffering from anorexia f.ex., seem more endangered to suffer from relapse, possibly because of the social aspect of their addiction. Due to their life as some kind of outcasts, they often form strong bonds amongst other addicts. Rehabilitation and getting “clean” mean losing their peers. I expect the same effect for former soldier groups, or migrants; common convictions (and deeds) and habits separate them from their new surrounding, when real learning is passed by.

misinterpreted loyalty and lack of self-efficacy in one's learning and modernizing abilities.

If learning for the future has to be build on a perceived need to separate oneself from a reference group that suffered a moral wrong, possibly from the only new, because "modern", reference group conflict becomes dilemma as the normal loosening of structures in modernization cannot be counterbalanced by new structure-giving bonds. African Americans having to decide for the identity of the former slave owners, the State of Israel having to trust an international order to provide for their security after six million of their fellows were murdered in the presence of that order are extreme examples of identity and loyalty conflicts. Problems with second generation immigrants may entail some of these aspects¹⁰⁰. All of the above factors of identity and utility play into the hands of perseverance in the wrong. By all we know to this point of the effects of self-efficacy on all the factors listed here and discussed below, I assume that the most effective support will be self-efficacy building measures. The Saudi Arabian government has designed a program for the rehabilitation of Al Qaida fighters that seems to build exactly on these principles. Long-term effects remain to be seen.

¹⁰⁰ Cmp. Geiger (2015), Warum Ärzte und Ingenieure in den Dschihad ziehen (why doctors and engineers go to jihad, bd); by the title "The Roots of Radicalization. It's Identity, Stupid" Maher (2015) asks: "What links a white Englishman from Buckinghamshire with a second-generation British-Asian man born in Dewsbury and a missing family of 12 from Bradford?", and with regard to their common journey to jihad answers: "...strip away all the grievances and myriad individual triggers that might drive an individual to join an extremist group and you find underlying issues of identity and belonging."

“Many of history’s worst authoritarians started out as losers”¹⁰¹ Elizabeth Warren (2016)

Pathological Learning

In avoiding voluntary or pro-active learning, one will reconsider the known and acknowledge the new with some kind of learning process only if forced so by circumstance. The pathological learner is one who will react only to the stick of failure, not to the carrot of incentives. It is a costly behavior as it causes time loss in adaptation, wastes resources in inefficient set-ups, alienates modernizing elements and thereby loses out for a future even long after he himself has given in to learning – like Germany losing their Jewish intellectual elite to mostly America for generations to come. The pathological learner is whom Honrich described in his remarks in “Lehrmeister Krieg” (transl: “War, the Great Teacher”, bd). With regard to countries, pathological learning is a typical case of group and leadership efficacy being too low to expect the usually falsely high sense of entitlement to power, privilege and profits still to be satisfied under modernizing conditions. And it is also an example how easily low and weak self-efficacy can be destroyed easily and instrumentalized by negative rhetoric: when in times of change parts of a population are haunted by the insecurity of not being able to cope with the anticipated future, these fears can easily be mobilized by an elite who fears the same and in their favor. Holding on to a status quo or attempts of reconstruction are examples of this phenomenon. Monarchs, clergy, nobility, all ranks that enjoy profits on the grounds of status rather than merit suffer the same pressure to avoid modernization unless they find ways to modernize their function in their society. Constitutional monarchies have found a compromise and could possibly be an example for the pragmatic incorporation and cooptation of formerly anti-modern groups on the way to modernization.

¹⁰¹ Warren, Elizabeth, 2016, Democratic Senator of Massachusetts, cited after: time, vol. 187, no. 12, 2016, p. 6.

“When the Gods wish to punish us, they answer our prayers” Oscar Wilde (1895)

Non-Learning

Non-learning does not refer to who cannot learn or to limited personal capacities. This whole work assumes that the potential results of people’s learning efforts will differ in quality and quantity for natural differences and circumstance. But I assume that learning as an evolutionary behavior is part of human nature, and having the chance to do so as important and satisfying for individuals and their social collectives. But there are individuals and groups thereof who will neither learn, nor change nor adapt in toto or with regard to aspects of their life that offer privilege unrelated to merit. These non-learners insist on and cling to a given status quo, usually because they profit from it with regard to power, social status, financial profit, unjustified greater rights.

Non-learners find ways to externalize the costs for their not-learning to either other members of their group or to outsiders if individuals do not stop them or if institutions do not hinder them. War is the most dramatic way of externalizing costs of non-learning as Hondrich noticed, every shout-out in human interaction being its miniature version.

This behavior is not limited to a ruling class or leader, it could be a whole gender, race, religion, political movement which provides their members profits from undeserved – by merit - inequality and thereby prompting incentives for non-learning.

In a natural environment, this rigidity, even if it was only a being too slow to keep the pace, would be punished by long-term extinction as a trait. Humans though have been able to gain some independence from natural laws. While outside of the human race reciprocal limitation governs the space everyone can occupy, and in which way and for how long, humans have found, up to a certain extent, ways to fight being limited or determined by others and thereby rid themselves of

evolutionary pressures to learn and adapt according to environmental and other exogenous pressures.

In the short term and until the negative effects of stagnation fall back onto the originators, this behavior poses more of an immediate risk for others than for the non-learner herself. The non-learner has a vital interest in keeping others from learning and modernizing as otherwise the pressure on her to also start learning would rise. Non-learner will tend to gather others like her around herself, justify her behavior, defending it by creating feelings of supremacy, by creating stories of loyalty and defending tradition, denouncing learners as traitors to the common party, national, team, village, religious cause. Because the causation for the unwillingness to learn and change lies in the fear to not be able to gain, keep or regain the privileged position on behalf of one's own virtue and merit of work, it is actually a lack of self-efficacy in occupations connected with knowledge or ability that has to be substituted with a some kind of Weberian charisma or talent to succeed in a hierarchy.

At the core of this phenomenon is an asymmetry between self-efficacy and the sense of entitlement. I assume that leadership self-efficacy may have a crowding-out effect on a leader's other domain-specific efficacies, and possibly even on those of the people around him: a great leader may actually discourage learning by his mere example of being great by pretense, offering an easy way how to get a lot without being able to do a lot.¹⁰² This crowding-out effect is an important field for future research as it may be a complicating factor in integration efforts in migration, and in cooptation efforts of "old" elites in modernization.

¹⁰² An example could be found in American "gangsta idols", rap musicians who often have a criminal record and are still, with their demonstrated riches, popular role models for adolescents, which Obama has deplored as especially African American youths lacking idols of lawyers, doctors, scientists, or architects.

5. Questions around Self-Efficacy

5.1 Asymmetries

Beliefs about oneself and actual abilities and capability for future potential do not always correctly coincide and may lead to too much or too confidence and effort. But does it also lead to too much or too little self-efficacy beliefs? Overconfidence can lead to inappropriately adapted behavior and has been found to cause a multitude of damage in decision making¹⁰³.

Too much self-efficacy would mean someone's trust in her abilities to act successfully in a certain situation would be higher than her actual skills would enable her. As self-efficacy, opposite to confidence, does not refer to an aspired result of action but to the process of action itself, the asymmetry between belief and ability would lead to a greater exercise of effort to compensate for the lack of competence. This increased effort could then actually make the process successful and/or increase competence through learning. People with high self-efficacy have been found to blame their failure not to circumstance or somebody else, but to their own lack of employing enough effort (Bandura, pp.83-85). If a process turns out to overstretch someone's abilities, she would tend to blame it on her lack of effort and try to do more and thereby learn, increase her abilities, and in a self-fulfilling prophecy learn to have what it takes to do better. Should this not be possible or still lead to a negative result, the respective self-efficacy would undergo a corrective movement downwards, like addressing an asymmetry between supply and demand for a certain good via the price mechanism in a functioning market. If the remedy of more effort still does not help, self-efficacy beliefs will be lowered and aspired goals recalibrated to produce success on the next occasion. Too much self-efficacy is possible, but only for a short period of

¹⁰³ Cmp. f.ex. linking overconfidence to over-optimism, representativeness, framing and

time to then either produce higher competency or effort or be realistically downsized.

Too little self-efficacy is much more difficult to tackle as its self-enforcing mechanism leads to avoidance of exactly those mastery experiences that could enhance it. People with low self-efficacy tend to shy away from challenge, set lower goals, give up earlier, invest less. Without external support from a third party who provides for verbal encouragement, vicarious or own mastery experience, or situations that stimulate affective arousal, low self-efficacy is usually persistent.

Self-efficacy for processes that produce an aspired result is a prerequisite for a political and economic system that links profit to merit. If people lack a sufficient sense of self-efficacy to receive what they desire, they may still develop a sense of entitlement to these gratifications. At all times groups of people have invented common myths to justify their entitlement to more rewards than their merits would have earned them, based on religion, color, race, gender, lineage, nation and else. In modern times, advertisement and marketing have inflated a social problem by creating consumption wishes that the economic situation of many does not support. It is the same economic situation that at the same times undermines self-efficacy believes in growing parts of the population through increased competition, rationalization, unemployment, precarious jobs, uncertainty though time contracts. Having low or weak self-efficacy and high sense of entitlement is a socially dangerous product often enough of modernization as technology spreads information on the possibilities for consumption long before the economic base for acquiring them is build.

Resilience at the other end of the social disturbances scale, is often regarded as part of self-efficacy. I do not agree: persistence is an integral part of self-efficacy and leads to longer and more effort investment. The ability to spring back after failure - which is the definition of resilience – is not an indispensable part of se, as a person with high efficacy can ascribe her failure to not having tried hard enough

or to factors so out of her control that it does not touch upon her self-efficacy belief. That having been said, people with high and possibly general self-efficacy often do feature resilience as well. I ascribe this to their belief to be able to cope, which gives them a more optimistic outlook on future endeavors even if things went badly wrong. People with low efficacy beliefs have usually neither a great portion of persistence in effort nor resilience as the ability to spring back after drawbacks, but suffer from an unfortunate endurance in adversity without the impetus to go about changing it, producing the opposite effects of self-efficacy.

The learning and adaptation effect of experience is important for self-efficacy beliefs to be realistic in a given situation for a given activity. It is therefore vital that resilience after failure is not dominant to keep someone from reevaluating her efficacy beliefs.

I regard resilience as an independent trait that can and often does appear in concert and adapted strength with self-efficacy to possibly make an extra strong or extra stubborn agent.

5.2 Proxies

While I have argued that without targeted measures, self-efficacy develops naturally and always according to the responsiveness of one's environment, and creating self-enforcing feed-back loops, I have also pointed out that this trait is important for modernizing politically and economically, as through several described behavioral effects self-efficacy fosters economic performance, cooperation, and political participation. But in a surrounding of self-efficacy prevailing, not every individual needs to develop by herself a high degree of self-efficacy for her or her community to thrive. Individual self-efficacy can be offset by rules and regulations, and clear instructions and procedures of how to act, and a de-individualization of processes which de-personalizes responsibilities through

office, hierarchy, title, position, uniform or other symbols of status. People can take on efficacious roles of representing a self-efficacious authority.

There are compensatory possibilities for a lack of individual self-efficacy that come at a price and with constant risk: In a less responsive environment, institutions and policies can mimic the positive-reaction pattern of a more responsive natural environment which have been found to be favorable for building SE. Institutions can also compensate for a lack of individual self-efficacy: defined rules, regulations, norms, common myths to believe in, roles to fit into, relieve the individual from having to develop agentic abilities in and by herself, and enable agentic behavior as a fulfillment of instructing rules and patterns, without the otherwise necessary SE. The same can be said about the simple fact of having money that was not generated in the comfort of self-efficacy reaping merit and trusted ability. Having a lot of money enables people to play the role of success and abilities, opens access to social status, chance and privilege. If these were not attained by one's own work and genius, they were received through factors that do not lie in the control of the privileged: one can only exert control over one's own effort and work, but not over factors that lie in the discretion of others. The lurking risk of losing it all without being able to regain it (through work and effort), will dictate reconstructing or adhering behaviors, like attempts to exert some kind of force or manipulation for preserving or securing the status quo. The same rational goes for people who have little money and little influence to feel secure about their however modest or even middle-class means. If someone has low self-efficacy beliefs about his capability to keep or regain what he has attained once, they will feel threatened by change just as those on the other end of the social hierarchy – which explains the unfortunate coalition of these two seemingly antagonistic groups in times of change (Weimar, Brexit, Migration) – and why it is the merit-based middle class that carries the burden of stabilizing a system.

Reputation if not based on merit but on smart self-marketing, works in the same way. The individual steps into a position, follows the formal rules of conduct, has usually no personal responsibility, but power, profit and reputation by virtue of the role she is filling in. This gives her all what she needs to perform as if she had the competence and self-efficacy for the action; her position and the rules of conduct that come with it cover up her lack of self-efficacy.

This proxy self-efficacy includes a danger and a chance. It is an important factor in explaining why the process of modernization continues over generations in an accumulative way without having to start from scratch with every new-born baby. The next generation can partially just step into the efficacious roles bequest to them. It also explains why individuals can be much easier integrated into a new surrounding than a whole group, for which such a common role does not exist; they have to develop it anewly for themselves with their outdated efficacy beliefs that developed in completely different environments.

Unfortunately, one cannot export well-functioning institutions as Nunn showed because these have to be supported by the culture that brought them about. But in self-efficacy fostering measures one should consciously build inspired local institutions to foster robust development as these can make up for the lack of individual self-efficacy for some time. As described before, proxies come at a price: individuals will feel the insecurity of low self-efficacy and overstress the adopted authority; groups will suffer from change-fearing individuals who despise of novelty with different degrees of intolerance, aggression and super-elevating status quo preserving mechanisms.

It is important to that institutions, modernization and economic development through their compensatory effect on individual self-efficacy may over time have a negative effect on the evolution and transmittal of self-efficacy in a society as a whole: by cushioning or compensating evolutionary pressures, institutions and modern times amenities distort evolutionary signals and take away survival pressure from the individual. Modern societies have used competitive sports and

other high-performance pressures to set-off this dooming effect that may have added to the downfall of former societies and empires.

5.3 Fostering Self-Efficacy

The concept of purposefully boosting self-efficacy has been extensively studied and tested in many fields of human behavior in psychology, pedagogy, education, sports, and medicine. The mechanisms of targeted intervention are well understood as is how self-efficacy beliefs can be injured and weakened, namely by verbal devaluation, devaluating treatment from others, and de-engaging individuals from making mastery experiences.

Policies to reinforce financial, industrial, infra-structure, political, educational and social measures, potentially build self-efficacy implicitly as they may lead to jobs, a more valuable and appreciated surrounding, and efficacy building experiences. The efficiency and effectiveness of conservative economic measure will in turn profit from more self-efficacious people in the economy to receive them and put them to use.

Explicit measures aim for empowerment of those people who must carry out the actual modernization process, and best at young age. Though it can be developed at any point throughout a lifetime, SE works like a self-fulfilling prophecy and thus builds up over time from observed and one's own success experiences and growing abilities which in turn reap more success. It simply accumulates and reaps more results if it starts early, and all possible life paths to chose from are still open. In a highly relevant study Müller, Sievert & Klingholz (2016)¹⁰⁴ have shown what can go wrong, and make conditions worse through well-intended policies. The authors identify the high educational status of the young population in the MENA (Middle East/ North Africa) region as causing political and social unrest, high migration pressures, and very little economic growth. Stéphane Hessel (2011,

¹⁰⁴ See also here chpt. 2.4, p.41.

p.205ff, 235ff) had prophesied just that when he criticized that the educational system of the former French colonies was formed exactly after the French haute école system instead of according to the needs of developing countries. Müller et al. find high degrees of formal education without much practical ability, little culture of (or self-efficacy for, but) entrepreneurship to offer employment opportunities, little inclination for self-employment, and due to the lagging economy little financial clearance for state financed government jobs. Also, they attribute the small number of well-educated women in official employment and the high rate of reproduction as a result thereof as further factors of deterioration. The message is clearly, that education by itself does not create jobs and economic growth, but education that conveys practical skills and self-efficacy to taking initiative, and to tolerate female competition could.

Supportive programmes should mimic the conditions of how SE develops naturally in an environment that rewards effort and investment, hard enough to be challenging, and responsive enough for the challenges to be overcome by effort, at best, the more effort, the higher the reward:

- offer mastery experiences: f.ex. give trainees a goal to reach or task to fulfill which take effort, persistence, planning, possibly resilience after failures, so that a positive experience from affording these features is made. The learning effect should be that effort, openness to new experiences/methods/ideas, overcoming frustration, possibly cooperation, exercising persistence, and possibly resilience reaps profit, success and personal emotional gratification;
- enable trainees to observe role models and peers master a difficult and ambitious activity: the training could f.ex. be carried out by people from the community who were trained by the foreign experts separately and beforehand so that the actual target group experiences one from their own ranks to be the expert teacher.

- positive verbal enforcement and encouragement rather than critique should be exercised by everybody involved; to be robust, verbal persuasion, lectures or videos are best followed directly by a mastery experiences.

- keep in mind that physiological arousal can foster or harm SE. Situations that cause stress or anxiety lower efficacy beliefs while positive emotions like excitement or joy increase it. Design lectures, videos, trainings and exercises in such a way that the participants experience these positive emotions for the conveyed content to stay on.

Current research results show that SE fostering interventions can bring individuals in contact with the right role models (i.e. successful persons that are similar to the individual), they can consist of group discussions and verbal persuasion, or they can consist of changing communication or creating support that increases positive experiences. Once SE is improved, success breeds success. As individuals update their SE when they achieve an ambitious goal, and when they observe role models or peers to be successful the social multiplier effect sets in that they themselves become role models for others.

5.4 Self-Efficacy is Not Genetic

The story of the dopamine receptor gene variant DRD4 (D4 indicating the suppressing of dopamine) may serve as a negative example of how genetic findings can get misinterpreted even in renowned journals (Williams, 2014), and with regard to human behavior; the genetic interpretations for self-efficacy as for intelligence are equally sensitive as they suggest a genetic determination as fate, unchangeable by policies and prone for false categorizing, even racism. It is very important to note that

- the influence of hereditary factors change when environmental factors change (only the rate of variation in the population stays fix),

- and the present state of research and knowledge does not allow any conclusions. Several study results that claim genetic causality for intelligence f.ex. could not be repeated; Chabris et al. (2012) find that “Most Reported Genetic Associations with General Intelligence Are Probably False Positives”, some were proven wrong or were found much more complex both of which I will show below with regard to DPR4.

Intelligence for example - without discussing the important question what it is and how it can be tested - has been found to be determined in children by 20 to 45% genetic influence depending on age and study (Chabris et al., 2012), the remainder depending on synapsis building (Neisser et al. 1996) which in turn depends on nutrition of mother and child during pregnancy and after, and emotional and intellectual stimuli pre and post partum. This is the reason why socially deprived children in North America exhibit considerably lower scores in IQ tests (Brooks-Gunn et al., 1996). Taking into account that poor families stand a chance of less than optimal nutrition, maybe substance abuse and socio-economic stress, it is realistic to assume that these conditions influence epigenetic triggers for brains to become less sensitive to environmental information. The Flint-effect explains that environmental feedback loops have caused an 15% increase in IQ in Western populations over the past 50 years. Whatever link between genes and intelligence may exist, it is apparently neither decisive nor unchangeable.

Analogue, the linking of self-efficacy to a certain genetic polymorphism is not purposeful. Human traits must be changeable and influenceable in the short-term to enable quick adaptation to uncontrollable change in environment and circumstance; this is an important factor for the survival and success of the human species. Evolutionary biologists have found indicators that suggest human behavior depends mostly on circumstantial/environmental limiting factors.¹⁰⁵

¹⁰⁵ for research by Max-Planck-Institute, Ploen, on cooperation see fn 231.

Several studies have nevertheless argued that entrepreneurial behavior— as vital for economic growth - to novelty seeking which was then thought to be genetically conditioned and inherited (Galor&Michalopoulos, 2012; on genetic inheritance of self-efficacy Waaktal & Torgersen, 2013). It was assumed that the genetic polymorphism DRD4 was correlated to novelty seeking (Benjamin et al. 1996; Ebstein et al. 1996). Extensive research could not verify this. In a comparative study between different populations, different incidences of this specific polymorphism - in the American (high) versus Asian (low) - Chen et al., 1999 could not sufficiently link them with any specific effect. While Chen did find higher frequencies (specifically of DRD4-7R) of certain genetic make-ups in nomadic in comparison to sedentary populations (implying the former to be more novelty seeking than the latter group of humans), other studies tried to link novelty seeking to exploratory and excitable brains more ascribed to another gene (the DRD4 48bp VNTR), which again could not be verified. The only presently assumed association between novelty seeking and one specific polymorphism of a certain gene - -52 1C/T – could not be sufficiently connected to its implications for human behavior. In several meta-analyses (Faraone et al., 2001; Munafò et al., 2008; Wu et al., 2012) the link between novelty seeking and these genes was found to have been a mislead interpretation. Interestingly, later research on DPR4-7R showed that the incidence of this gene in children can lead to two completely contrary behaviors depending on the social conditions: either prone for hyperactivity, substance abuse, and other social dysfunctions, or extraordinary levels of empathy and positive social behavior¹⁰⁶, which is another indicator that the mere incidence of a gene does not necessarily determine a specific effect, least behavior.

¹⁰⁶ The explanation is highly excitable brains are more sensitive to environmental information: Belsky & Pluess (2009) on brain plasticity. On the same note argue Marinus von Ijzendoorn, Leiden, Tom Boyce, Vancouver, and Bruce Ellis, Tucson.

Finding it would have carried the danger of falsely regarding it as a historically determined genetic heritage and fate, unchangeable by policy measures and supporting modern revivals of ascribing differences in economic development to – constructed - genetic differences analogue to discussions on intelligence: self-efficacy is shown here to have developed in response to natural conditions and these were different on continents, in climate and geographic zones. For example, those groups of humans who stayed on in Africa where they knew how to survive had little pressure to develop new methods for survival, while those who left for Asia and Europe had to constantly adapt to new existential challenges. What this created over thousands of years was the experience of having to cope and being able to do so in new, often harsh and changing circumstances, while often finding more responsive environments with greater need and rewards for human intervention and planning as colder, harsher conditions or more fertile soils were encountered. The result was self-efficacy to act and influence one's environment.

Entrepreneurship is in any case much more than novelty seeking. Though it does take interest and openness for novelty to be a successful entrepreneur, it also takes less adventurous, but pragmatic and complex qualities like planning, persistence, high frustration tolerance, hard work, learning, cooperation, decision making, initiative, opportunity seeking and recognizing.

Complex human behavior like entrepreneurship can be assumed to be the result of interaction and feedback loops of genetic disposition, epigenetic triggers, education and example, and personal and environmental circumstance (Chakraborty, S. et.a.l, 2015). Merely the disposition for a brain's reactivity to certain stimuli in its complex electro-chemical interaction can be linked to genes. If and how this disposition translates into actual behavior or can be altered throughout a life-time, depends on the opportunities, rewards and restrictions of personal life conditions-more personal circumstance, experience and opportunities. If an environment neither requests nor rewards a certain behavior it will usually not persist or spread (except of those odd cases where a special

feature developed as useful in certain conditions and was not given up as useless after these conditions changed when it was not harmful). Regularly, only what is needed and pays off the effort will be repeated in acts of individual and collective learning, and respective genetic changes passed on and spread if the gained advantage is also one in reproduction. Phenomena like the absence of widespread entrepreneurial traits within the ranks of 19th century nobility as suggested by Galor&Michalopoulos (2012) could for example not be explained except by environmental triggers: especially the existence of wealth inheritance and status-quo conservative culture made entrepreneurial behavior neither necessary nor desirable, and left the system of rewards for hard, risky and environmentally adapted entrepreneurial work to those who needed it. More so, noble life style would have been supportive for building a sense of entitlement, not self-efficacy for entrepreneurship.

The generational correlation Wuepper and Drosten (2015, 2016) believe to have found in Ghana, was one of merely better reproductive success of those who developed higher self-efficacy through better livelihood (cmp.f.ex. also Chakraborty, S. et al., 2015). And this effect works two-fold: People with higher self-efficacy will likely be more affluent and thereby healthier, making for more attractive reproductive partners. Their better livelihood can be expected to raise more and healthier off-spring. This effect of increased reproduction of people with higher self-efficacy causes more children to grow up under more promoting conditions with individual and possibly collective cultural learning in a community of more adults with greater self-efficacy. Children learn from their parents and other important adults to form their self-images not only by conscious association through speech, education, stories, but also unconsciously and thereby highly resistant to change as a meme (Kandel, 2006). As parenting has been found to have a significant influence (Bandura, 1993; Whitbeck et al. link socioeconomic conditions to parent behavior and children's SE) another line of generational influence via greater self-efficacy may also positively influence the development of

entrepreneurial traits: parents tend to actively teach their children to follow their survival strategies, and pass on especially their entrepreneurial knowledge which tends to accumulate over the generations (Chakraborty,S., 2015). Note here, that it is difficult to differentiate between actual technical knowledge that constitutes an exclusive advantage, and the accumulated self-efficacy of generations: “we can do this, we have been experts on this for generations”. The grandson of a medical doctor whose father was also a doctor chooses the profession not by virtue of having learned specific skills over the supper table but because he had the vicarious mastery experience by which he deduces his self-image with self-efficacy. With regard to entrepreneurial skills, I would argue the bequest is the self-efficacious belief: if they can do it, I can too do business, treat customers right, deal rather than exact technical skills which outdate too quickly anyways. By the same token, sense of entitlement passed on by generations of professionals of any trade as well as a higher level of resilience of generations who were able to cope well in their environment, in summary, traits of an empowered person well-prepared for successful economic behavior in her habitat, can be expected to be culturally bequest but biologically made possible through family bonds and enhanced by epigenetic triggers of neurotransmitter driven arousal.

Building on the work of Douglas North (1993)¹⁰⁷ and Stuart Kauffman (1993) on the origin of order in evolution, development and human society, Hodgson & Knudsen (2006), and Pelikan (2013) suggest a combined model of instruction-based genetic and social operations for evolutionary and developmental processes. In comparison to insufficient, racistically-employable exclusive genetic explanations, it offers the incorporation of human traits like self-efficacy which facilitate adaptive and innovative advantages. Here, a basic genetic hard-wiring in conjunction with environmental triggers and stimuli constitute individually limiting

¹⁰⁷ North defines institutions as “*humanly devised rules-constraints, such as formal law and informal social norms*”, offering insecurity-reducing definitions and limitation of choice, p. 4; citation from: Pelikan (2003) on institutions and evolution.

factors of potential which will be optimized by social, i.e. institutional, software. The models provide for emerging self-organization and including individual-instruction-group dynamisms.

Richerson et al. (2010), and Richerson & Boyd (2005) suggest genetic-cultural coevolution of cooperation which describes a very likely process of self-domestication. Their excellent world-wide data implicitly show outcomes of self-efficacy resulting from the process described herein. Self-efficacy fosters cooperation and self-referential responsibilities instead of cooperation-undermining scape-goating. In the absence of specific genes for cooperation or other changed genes, we presently have to assume that the apparent differences in behavioral preferences amongst societies are cultural and possibly epigenetic, enlarged or weakened by institutional effects.

5.5 Empirical Testing of Self-Efficacy

Empirical research entails the difficulty of knowing that the found cause of action is actually self-efficacy, and how to distinguish the gathered information from related concepts? One needs to avoid “noise”, concentrate on asking for processes instead of outcomes, circumvent the ordinary interviewer traps, and delimit SE in the data which I am describing below:

Compare self-efficacy to the big-bang and it causing today’s cosmic background radiation: we cannot measure it directly but we can measure its short- and long-term effects. I suggest that we can measure the effect of self-efficacy, but testing self-efficacy directly through self-evaluation seems prone for “noise”. Asking directly for self-efficacy is impossible to delimit from influences produced through the interview context. In the 2016 and 2015 study, Wuepper and Drosten treated a range of questions that reveal several related, but not identical constructs. According to our theoretical considerations, it is self-efficacy that has a significant effect on the economic success of individuals, because it increases the motivation

to act by increasing the belief in one's ability to act appropriately. Consistent with this expectation, we found questions that measure self-efficacy have the suggested, significant effect on economic outcomes via changing people's investment behavior including learning, effort, openness to novelty, opportunity perception etc.

The revealing pattern we detect is that process-oriented questions identify self-efficacy, whereas result-oriented questions do not.

Questions on:

- whether nature provides what the farmer needs or if it is the task of the farmer to make nature productive;
- most important income determinants, i.e. whether external factors were named (e.g. weather), or internal factors like learning (while controlling for peoples' observable environment like weather, training, market prices etc)
- how far ahead the farmer plans (periods ranging from one day to the lifetime of his children)

as well as the principal components of the above three (to reduce the measurement error), measure self-efficacy well.

Important is the individual believe to be able to do what is necessary to reach a certain goal, which is interestingly enough not much related to peoples' external context but relies on the goal-achieving process about which the individual feels confident. Every question for self-efficacy must therefore solely refer to the process and the personal role in the process, and avoid referring to the goal or circumstance.

Simple rephrasing can shift the focus from the process to the result. We found that questions only slightly differently worded did not find self-efficacy.

Asking questions on whether:

- the farmer's current income had been mostly determined by his decisions and abilities or rather not (focus: current income=result, not ability to invest or manage properly);

- the farmer felt to “make his life” or whether “life happens to him” (focus: life responsibility=result, not ability to take on responsibly);
 - the farmer feels responsible for the success of his farm or whether the success was mostly determined by factors he could not influence (focus: measured success=result, not responsibly acting to manage or work well)
 - the basis of economic success is hard work and creativity or rather connections and/or luck (focus: economic result of hard work/creativity etc, not the ability to work hard/be creative etc.)
- do NOT measure self-efficacy.

Possibly hidden in these latter answers could be information on agency and locus of control. Further research must be aware and careful about what aspect of the economic process the wording of a question is aiming at as much as the suggestive identity of the one asking. Skin color, gender, age and personality of the interviewer affect the self-evaluation of the interviewee. Asking directly to judge and evaluate their own self-efficacy is commonly used, but likely to measure self-confidence, and self-image, reflect the relationship between interviewer and interviewee, and include aspects alien to self-efficacy.

In the statistical analysis on the effect of self-efficacy amongst pineapple smallholders in Ghana, a specific instrumental variable (historic farming systems) was used to find out, if the empirically observed correlations between self-efficacy and household income had a causal link. One looks for a variable that generates exogenous variation (changes caused by non-controllable influences) of the endogenous variable (here: self-efficacy). In other words, the variable is used to predict what the variation in the endogenous variable (self-efficacy) would be, if it was not endogenous. This approach, however, only works if an important assumption is valid: The variable used as exogenous predictor can only affect the outcome of interest through the endogenous variable and not otherwise. If there are any additional causal channels, this will cause omitted

variable bias, because some of the other effect(s) will be attributed to the endogenous variable itself. The researched South of the country was traditionally host to different crops that yielded distinct returns on investment, thereby fostering differently high and strong self-efficacy beliefs regarding agricultural investments. We had to make sure that the observed correlation between historical farming systems and self-efficacy were not caused by other causal channels like inherited wealth, bigger farms, family size, higher profits etc.. Econometrical testing against a wide range of possible other influences finds only a statistical relationship between the historical farming systems and self-efficacy but not between the historical farming systems and other productive assets or circumstances. For other fields of study, self-efficacy scales (Luszczynska, Scholz & Schwarzer, 2005; Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005, Chesnay et al., 2010) has been developed and widely tested. It is possibly a helpful tool for testing questions around individual SE keeping above limitations in mind. It must be noted though, that Bandura himself has been very critical of these scales as a one-size-fits-all mistake which by definition cannot measure self-efficacy as *“a differentiated set of self-beliefs linked to distinct realms of functioning”*. Additionally, these scales work with self-evaluations the limitation of which has been stated above. If one choses to use work with them, the questions must carefully concern a process only, not the outcome, and the wording must target capability: like “can do”, not intention: “will do”. The potential to deter the results in using scales is so plentiful that Bandura (2005) wrote up a guide of probably practical use prohibiting complexity.

6. Historical Return on Investment and Current Economic Outcomes: The Cultural Evolution of Investment Self-efficacy¹⁰⁸

ABSTRACT We investigate investment and income differences amongst smallholder pineapple farmers in Ghana and find that farmers in regions that historically depended on cereals invest significantly more and thus achieve significantly higher incomes than farmers in regions that historically depended on other crops, such as roots, tubers, or tree crops. We argue that cultural evolution explains this finding. Cultural Evolution Theory suggests that much important information is largely unquestioned, vertically transmitted from parents to children, which generally improves decision making but which can also make individuals better adapted to past than current contexts. Consider perceived investment self-efficacy (SE). It captures how much a person believes in her ability to make profitable investments. This belief is reinforcing, because individuals with high SE set themselves ambitious goals, invest a lot of effort, and persist in doing so, even in the face of adversity. Individuals with low SE, in contrast, set themselves unambitious goals, invest low effort, and give up easily, which means their reluctance to try forbids them to learn about their true potential. We use agent based modelling to theoretically explore the cultural evolution of SE in response to historically distinct farming systems. We then use empirical data from 400 Ghanaian pineapple farmers to test our model. We find that a higher historical return on investment is associated with higher SE and higher SE is associated with more investments and a higher income. We do not find any evidence against a causal interpretation of our findings.

KEYWORDS Self-Efficacy; Economic Performance; Economic Development; Economic History; Cultural Evolution; Smallholder Farming

¹⁰⁸ Wuepper & Drosten, August 2016, Working Paper, First Draft, on: <https://www.researchgate.net/publication/307560803>, Wuepper conducted the field work and econometric analysis.

6.1. Introduction

Perceived Investment Self-Efficacy (SE) captures how much a person believes in her ability to make profitable investments (Bandura 2012). We show that this belief has a historical origin and a persistent large effect on investment behavior and incomes. Self-efficacy is a domain or activity specific belief about one's own ability to do well. It can reach a certain grade of generality in similar, domain overarching activities. It works like a self-fulfilling prophecy as high SE will lead to more effort and learning, while low SE will lead to less effort and risk avoidance. It is possible to be "trapped" in a low SE equilibrium, e.g., if low SE leads individuals to never try to achieve ambitious goals (Bandura 1997, Pajares 2002, Bandura 2012). The perfectly rational homo economicus assumed in classic economic models has high SE: Whatever his initial beliefs might be (irrationally high or low SE), he quickly learns about the truth (Gilboa et al. 2012). Humans, however, might start with culturally inherited and biased prior beliefs that affect what is subsequently learned (Guiso et al. 2010, Dalton et al. 2016, Wuepper et al. 2016). Irrationally high SE is commonly corrected in a Bayesian fashion. However, low SE is not, because individuals with low SE do not challenge themselves to achieve ambitious goals, so they never get a signal that their SE is too low.

According to Bandura (1997), general self-efficacy affects preferences including time discounting, goal setting, risk taking, openness to novelty and thereby recognition of opportunities. It also affects capabilities by changing aspirations, effort, and persistence via motivating agency, and resilience, as failure and setbacks are interpreted as being surmountable via increasing effort. Self-efficacy affects all intentional behavior and thereby agency.

Here, we research the effect of historically different investment experiences on the SE of currently living farmers in Ghana and how this in turn affects investment choices and income.

Low SE can reduce the expected profitability of investments because it reduces the amount of complementary investments, and increases the probability of premature resigning (Maddux 1995, Bandura 2012). Economists have just begun to appreciate the importance of subjective beliefs for economic outcomes (Greif 1994, Hoff & Stiglitz 2016, Wuepper & Sauer 2016). Especially, the evolutionary roots of peoples' beliefs are not well understood yet. A partial discussion of this young literature is provided by Nunn (2012) and Nunn (2014). Especially close to our research is the theoretical model of Doepke & Zilibotti (2014), which is an endogenous growth model that includes cultural evolution, where innovation is driven by the share of entrepreneurs in a society. Recent empirical studies include Talhelm et al. (2014), who present empirical evidence from China that a historical dependency on rice and wheat created either more holistic or individual thinking patterns, respectively, and Galor & Özak (2014), who argue that in addition to cultural evolution, also genetic evolution could have shaped cultural differences; they present empirical evidence that historical returns on investment shaped distinct rates of time preference.

In the following, we show that different historical farming systems and historical returns on investment shaped current SE, i.e. how much individuals believe in their ability to make the right investment decision given their skills, and to achieve the necessary performance to maximize the profit. As an example, a subsistence farmer pondering about whether or not to adopt fertilizer does not only evaluate whether fertilizer is generally profitable but he evaluates the perceived probability that it is profitable for him. The challenge is greater than it appears at first, because he needs to adjust other farming practices, and learn how much, when, and how to apply the fertilizer. The ability to deal with this disequilibrium has been coined adaptive capacity by Schultz (1975, 1980). Whether a farmer believes in his adaptive capacity can be understood as his SE.

We take for granted that historically, everybody had low investment SE (Bandura 1997). The reason for this is that in early human history, men were mostly

adapting to their environment. In a process of reciprocal determinism, economic development and SE accelerated, but not equally distributed, neither across nor within countries. In the following, we show that an important factor that shaped the distinct cultural evolution for different communities could be the environmental feedback to human interventions. People learned how big their capacity was to purposefully intervene in their environment to make a better living of it and taught their children not only the techniques, but passed on this belief. We present a simple agent based model (ABM), which shows how historically individuals might have interacted with their environment. The ABM framework is optimal to simulate how this interaction may lead to feedbacks and emergent phenomena (Berger 2001, Janssen 2005, Farmer & Foley 2009). Our model is general, but because we use empirical data from Ghana to test the model's predictions, we had Ghana in mind when we created it. In historical Ghana, some regions were most suitable to grow roots and tubers, other regions where more suitable to grow cereals, and other where optimal for trees. Important for our research, cereals are different from other crops, in that they historically requested comparatively more investments and rewarded them greatly (Heisey & Mwangi 1996, Rees et al. 2012, Galor & Özak 2014). This is important because low-SE-societies would only have invested in crops with very large benefit-to-cost-ratios and not persisted much against adversity. In our ABM, the historical farmers randomly differ in their initial propensity to invest into their fields. In some regions, the investing farmers gain an evolutionary advantage, whereas in others, the non-investing farmers are better off. Over time, the farmers learn which behavior is better and converge to it. This creates two distinct development paths: In one region, farmers invest and benefit, learn that they have, and can increase with effort, the ability to raise their yields, and pass high SE on to their children. In the other region, farmers do not invest and thus never have the chance to learn about their ability to increase their yields –not even when the introduction of new crops and technology changes the return on

agricultural investments, when globalization creates profitable export markets, nor when extension services and development agencies support agricultural intensification. It is an empirical question how fast individuals adapt their cultural beliefs to their context. With self-reinforcing beliefs such as trust in others (Guiso et al. 2008) or trust in one's competencies (Wuepper & Sauer 2016) this can be very slow or settle in slump.

In psychological literature, SE is developed as a function of one's own mastery experiences (pursuing and reaching an ambitious goal), observed mastery experiences by social models (observing peers succeeding in an ambitious task), verbal persuasion (encouragement has to be followed by mastery experiences to be robust though), and physiological arousal (situations causing stress or anxiety lower efficacy beliefs while positive emotions like excitement or joy increase it). The first contribution of this research is the proposition of cultural evolution as an omitted, but important source of SE. This cultural endowment of SE is a fundamental building block of agency in all living people who targeted supporting measures should acknowledge. The second contribution is that we test our model's predictions with empirical data from smallholder farmers in Ghana. We find that the descendants of cereal farmers have currently higher SE, invest more, and achieve higher incomes.

We have chosen Ghana's pineapple farmers not just as a test for our model. As in most parts of Africa, the intensification of Ghana's agriculture is a major policy challenge (Government of Ghana 2010, World Bank 2011), and it is not well understood, why farmers are not investing more into making their operations more productive. Explanations include dynamic learning processes (Conley & Udry 2010), tenure rights (Udry 2011), and uninsured risk (Karlan et al. 2012), all of which, however, are unlikely to give the full explanation (Udry & Anagol 2006, Foster & Rosenzweig 2010).

According to our model, it is also evolutionary developed cultural differences between the farmers that explain why some seem to have higher incentives and

lower constraints (consistent with Schultz 1975's adaptive capacity). Our model predicts that these cultural differences will eventually disappear, while the pace will depend on market and institutional dynamics, but especially on implemented policies.

What makes Ghana interesting is that the farmers are right on the interface between traditional and modern agriculture (Conley & Udry 2010), giving us a helpful surrounding to study trajectories of development and cultural change. On the one hand, farmers have the financial incentives to grow high quality pineapple for export to the European market, on the other hand, many structures are rather adapted to subsistence farming than global value chain participation. We identify as one crucial aspect that farmers, who culturally inherited beliefs from low-return-on-investment environments, would benefit from policies that help them to update their SE beliefs to their new context of a high-return-on-investment environment. This is, however, a sensitive issue as raising SE is different from raising aspirations, confidence, or expectations, and it is complementary with mitigating other constraints (all of which will be discussed below).

Other research that has investigated how cultural evolution both increases our average adaptability to environmental demands and explains why humans sometimes behave more adapted to their ancestors' environment than their own is extensively discussed in Henrich (2015), Bisin & Verdier (2010), Richerson & Boyd (2008), and Boyd & Richerson (1985). Other research on SE and farmer behavior in Sub-Saharan Africa includes Gebrehiwot & van der Veen (2015), who investigate the relationship between SE and technology adoption amongst Ethiopian smallholder farmers. As a caveat, they ignore where SE differences come from and simply compare farmers with higher and lower self-reported SE, which makes it difficult to understand how much SE is a cognitive bias and how much it reflects unobserved, economic incentives and constraints. As mentioned earlier, Bernard et al. (2014) conducted a randomized control trial (RCT) in

Ethiopia, where they find that increased SE increases investments. In Ghana, Wuepper & Sauer (2016) investigate the performance of contract farming and find that culturally inherited SE is an important factor, as well as social capital which is in turn increased by high SE (due to lower risk adversity).

In the following, we first model the evolutionary origin of SE differences in an ABM framework (2), and then test the model's predictions using empirical data from Ghana; we also investigate whether higher SE actually leads to significantly higher incomes. We explain our empirical framework in section 3, and present our empirical results in section 4. We explore how plausible it is that we quantified the true causal effect of SE in section 5, and discuss and conclude the study on section 6.

6.2 A Simple Agent Based Model

We develop our idea in a simple agent based model (ABM) in Netlogo, adapted from Centola et al. (2000). ABM is an alternative to equation based modeling (EBM), such as presented by Bisin & Verdier (2001), or Doepke & Zilibotti (2014). The main difference between the two approaches is that ABM are programmed and simulated, while EBM are written and solved (Berger 2001, Janssen 2005, Farmer & Foley 2009). In many contexts, both approaches can be expected to give the same result, but ABM can have advantages when it comes to complex interactions and emergent phenomena.

The basic argument is that historical environmental circumstances have favored the development of SE in some regions and hampered it in others. In regions where agricultural investments had a higher benefit-to-cost ratio, individuals had more opportunities to learn about their abilities to benefit from agricultural investments than individuals in less rewarding regions.

Our model begins with a population of historical subsistence farmers who can choose between two competing survival strategies: They can either try to

minimize their costs and live of their natural endowments (endowment strategy), or they can try to increase their production and invest in their fields (investment strategy).

Initially, all farmers have low SE but there is variation at this low level, such that some farmers start with slightly higher SE than others, which makes them experiment a little more with investments.

If for those farmers who start out with higher SE investments pay off, their SE increases and thus, their investments in the next period increase too. If the investment does not pay off, those with higher SE will ascribe the setback to their own insufficient effort and increase their investment in the next period with a good chance of producing higher yield and increasing their SE even more, while those with lower SE will ascribe it to their lack of ability or uncontrollable factors and react with less investment and further decreasing SE. Those farmers who start out with low SE will not chose to invest much in the first place. They will exclusively choose the endowment strategy, without much consideration of investment opportunities. Their low SE tends to remain low as by avoiding the risk of failure they also forgo the chance to succeed in mastering challenges which could increase and strengthen their SE.

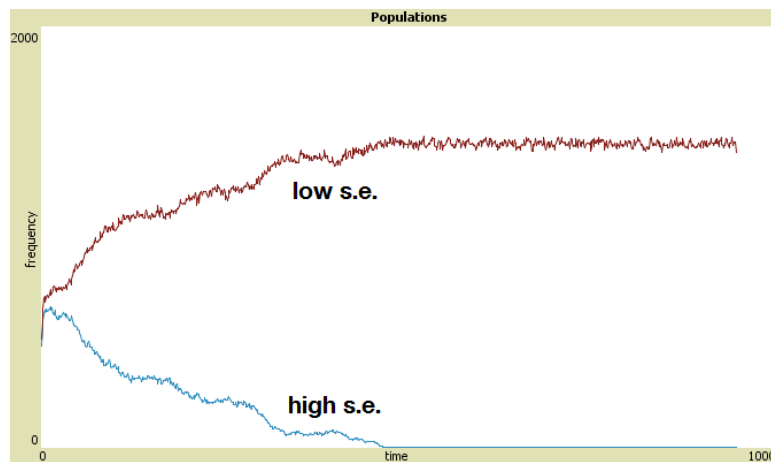
The differences in strength and level of original SE follows from individual factors like personality et al. and prior mastery experience. Farmers with success experiences have higher and robust SE whereas those without prior mastery experiences or strong family success stories only have lower, and with regard to positive change, weak SE (see Bandura (1997) for a discussion).

In our model, it is the environment that either rewards or punishes investments and thus determines whether the farmers develop higher or lower investment SE. Exogenous variables are the costs and benefits of investing, the probability of a random shock that negatively affects the return on investment (risk probability) and its severity (risk impact). Furthermore, we include institutions as a second source of feedback in addition to the natural environment. For simplicity, these

institutions only affect the strength of the environmental feedback, so that environmental feedback might be weaker than before.

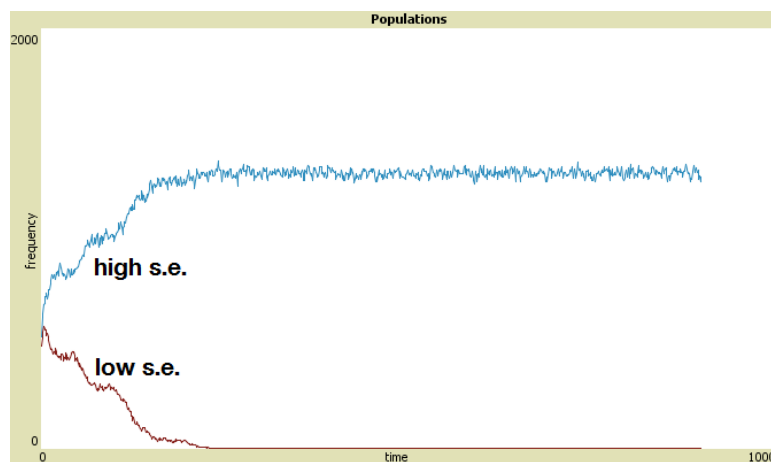
We only present three exemplary cases for the cultural evolution of investment SE. In all figures, the X-axis is time and the Y-axis is the frequency of high and low SE in the population.

Figure 1. The Evolution of SE (Context A)



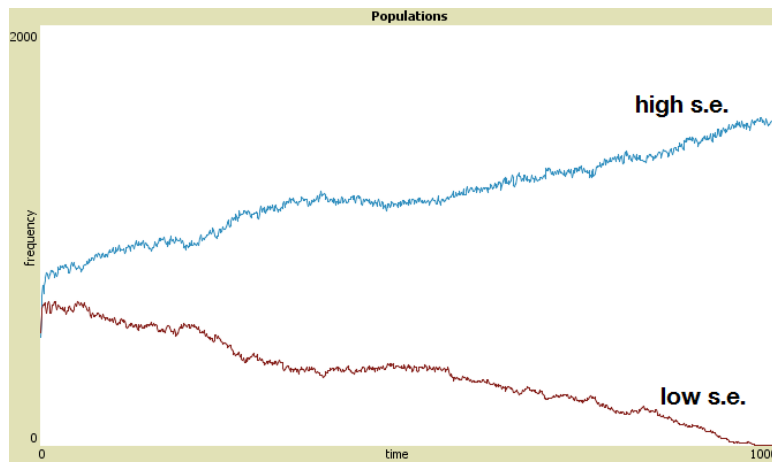
Cost=0.3 Benefit=0.4 Risk probability=0.1 Risk impact=0.5 Institutional persistence=0.5

Figure 2. The Evolution of SE (Context B)



Cost=0.44 Benefit=0.66 Risk probability=0.2 Risk impact=0.4 Institutional persistence=0.2

Figure 3. The Evolution of SE (Context C)



Cost=0.44 Benefit=0.66 Risk probability=0.2 Risk impact=0.4 Institutional persistence=0.8

The situation depicted in **figure 1** is an example for a region in which investments are not sufficiently beneficial for the farmers. Thus, over time, the number of farmers with higher SE dwindles, because their SE is not yet sufficiently high to sustain investments through repeated setbacks. In other words, investments in this region would require very high SE to be profitable. Another interpretation is that there are binding, external constraints that always make investments unprofitable, independent of SE. The important point is that this region has a return-on-investment that is low, so that over time, the population is comprised exclusively of low SE individuals.

In contrast, **figure 2** shows a region in which the return-on-investment is sufficiently large to lead the population into a high-SE-equilibrium. Individuals with initially slightly higher propensity to invest demonstrate to their social peers that they all have the ability to benefit from investments. In time, more and more farmers invest, learn that they have the necessary competency to do so, and continuously build higher and stronger SE.

The influence of institutions can be seen in **figure 3**. By assumption, institutions can slow down the cultural evolution of SE, if they are such that environmental feedbacks are dampened. Figure 3 shows a region in which high SE develops but

the process is slower than before, because institutional persistence limits the rate of cultural change. (Note that one could also think of institutions that compensate for low SE, which we ignore; see discussion on proxies, p.140f.).

In conclusion, the model makes 3 testable predictions, which we first state and then discuss below.

H1: Farmers from high-return-on-investment regions have higher SE than farmers from other regions.

H2: Higher SE leads farmers to invest more.

H3: Distinct investment behaviors create culturally induced income differences.

The reason why historical environments affect current beliefs are learning costs. As discussed by Boyd et al. (2011) in general, and Nunn (2014) for economics, learning is usually costly, so it is often optimal for individuals to simply imitate others (free-ride on their knowledge). Thus, instead of “re-inventing the wheel”, individuals might decide to copy existing ones, without necessarily understanding all the details, and without constant reappraisal of alternatives. For this reason, fundamental beliefs such as SE are usually found to be highly hereditary (Bandura 1997), but more culturally than genetically (Richerson & Boyd 2008).

It should be noted that cultural learning saves learning costs but at the cost of risking that beliefs are outdated. Technological progress, environmental change, market developments, and migration are some of the factors that can make the knowledge of past generations ill-adapted to current circumstances. **Figures 1** and **2** show that despite the environment clearly favoring one mental model, for some periods both co-exist. With the introduction of institutional persistence, this can last for many periods.

Today, most contexts offer profitable investment opportunities but they require SE to be used. It continues to be one of the most puzzling economic phenomena that farmers in developing countries are so hesitant to adopt apparently profitable innovations (Feder et al. 1985, Foster & Rosenzweig 2010). We propose a simple explanation: It takes time for culture to adapt to new

opportunities. For farmers from high-return-on-investment environments this can be quick, but for others, it can take very long. Thus, in many contexts, we expect to find that investment differences amongst farmers can be explained with differences in culturally inherited SE and these differences have significant income implications.

In the following, we test our three hypotheses with empirical data from Ghana's pineapple farmers.

6.3 Empirical Framework

We divide our empirical analysis into two parts. In the first part, we explore the relationship between SE and investments as well as SE and income. We begin with OLS regression and then use 2SLS to explore the causality of the estimated relationships. In the second part, we extensively investigate the reliability of our analysis.

We begin our analysis with a naïve comparison of farmers in different income categories, to see whether they differ in SE. To test the statistical significance of the observed relationship, we then proceed with OLS regressions of the form

$$Y_{ij} = \alpha_j + \beta_1 SE_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \quad (1)$$

where Y_{ij} is the income of farmer i in district j ; SE_{ij} are alternative measures of SE ; X_{ij} is a vector of control variables, and α_j are district fixed effects. We also regress different measures of agricultural investments on SE and controls:

$$I_{ij} = \alpha_j + \beta_1 SE_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \quad (2)$$

where I_{ij} are different investment measures (per hectare input costs, reported success of innovation adoption, adoption of technology); SE_{ij} is a factor variable capturing the farmers' SE ; X_{ij} is a vector of control variables, and α_j are district fixed effects.

Using observational data, we are concerned whether measured SE is a culturally evolved cognitive bias (as in our ABM) or whether it reflects the objective

constraints of the farmers (in which case measured SE would simply be a proxy for a range of unobserved variables). We attempt to exogenize SE using a 2SLS framework:

$$\begin{aligned} Y_{ij} &= \alpha_j + \beta_1 \widehat{SE}_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \\ SE_{ij} &= \alpha_j + \beta_1 H_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \end{aligned} \quad (3)$$

Where H_{ij} is our source of exogenous variation in SE_{ij} and Y_{ij} is the income of farmer i in district j . For H_{ij} we use whether the ancestors of our surveyed farmers were cereal farmers or not. The idea is that the descendants of cereal farmers have culturally inherited higher SE than others. As always, the exclusion restriction must hold, namely that historically different farming systems only affect current farm incomes through their effect on SE and subsequent investment behavior, and not through any other channel. We extensively explore the plausibility of our assumptions in a separate section.

To conclude the first part of the empirical section, we use mediation analysis to estimate how much of the estimated income effect of SE is explained by differences in investment behavior.

We proceed with several tests of our previous analysis. First, we repeat the 2SLS regression with alternative measures of SE, to compare and evaluate them. Then, we investigate what explains differences in SE, using another OLS regression:

$$SE_{ij} = \alpha_j + \beta_1 H_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \quad 4)$$

To probe the credibility of our instrumental variable, we graphically investigate whether the descendants of cereal farmers might simply have inherited more practical knowledge from their parents, so that human capital differences could be a confounding factor in our analyses. We then use OLS regressions to investigate whether regional suitability for cereals, roots, tubers, or tree crops leads to differences in inherited land or local market prices. This addresses the concern that descendants of cereal farmers inherited more land or live in regions with higher investment incentives.

Finally, we use 2SLS to explore whether our instrumental variable would also work for alternative causal channels, namely social capital, off-farm income, or contract farming:

$$\begin{aligned} Y_{ij} &= \alpha_j + \beta_1 A_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \\ A_{ij} &= \alpha_j + \beta_1 H_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \end{aligned} \quad (5)$$

Where A_{ij} are alternative channels through which H_{ij} could affect income (farm-size, social capital, local prices).

It is clearly impossible to test every potential confounding variable. However, as Altonji et al. (2005) demonstrate, estimating the same effect despite of varying control variables should at least increase our confidence that other variables will plausibly not change the results either.

6.4 Empirical Analysis

We begin this section with a description of our sampling strategy and our data. We then present the results of OLS regressions, followed by the results of 2 stages least squares regressions (2SLS), and finish with mediation analyses.

We representatively surveyed 400 pineapple farmers in the south of Ghana in 2013 (pineapple farming is only feasible in the south of Ghana as the north is too dry).

If the farmers want to participate in exporting of fresh pineapples to the European Union, they need to have an export certification, which guarantees that certain production and quality standards are met (Kleemann & Abdulai 2013). Such certifications can be obtained from specialized organizations. Certifications are usually given to farm groups that are recorded as such, and can be used for stratified random sampling.

Table 1. Variable Descriptions

SE	Factor variable from the variables below
nature	Whether the farmer perceives nature to be a provider versus a potential (1-4)
planning	How long the farmer usually plans (from only for today to lifetime of children)
investing	How much the farmer believes that her income is determined by her investments
ability	How much the farmer believes her income to be determined by her abilities
determinant	Whether farmers report income determinants that are under their control (3), outside of their control (1), or ambiguous (2), from an open ended question.
social capital	Factor variable from the reported frequency of social event attendance, generalized trust, and number of people the farmer could borrow money from
off-farm income	Whether the farmer has off-farm income (1/0)
education	No. of years of formal schooling completed
age	Age of the farmer in years
household	Number of household members
gender	Whether the farmer is male (=1) or female (=0)
training	Whether the farmer received training from an international development agency
amount training	How often the farmer received the above trainings
Investments	Whether the farmer has <i>successfully</i> adopted an innovation in the last years
costs	all production related costs, excluding the opportunity costs of family labor
revenues	Quantity of sold pineapples times their price, on the local market and to companies
rain q	Reported, farm specific rainfall quantity
rain t	Reported, farm specific rainfall timing

soils	Reported, farm specific soil problems, defined as how much soils limit productivity
elevation	Calculated in GIS, in meters
topography	Calculated in GIS, as standard deviation of the elevation in meters
farm size	Area where pineapple is grown in hectares, including plots not currently used
prices	Average, local pineapple price
md2 variety	Whether the modern MD2 variety is grown
sc variety	Whether the Smooth Cayenne variety is grown
contract farming	Whether the farmer has a formal farming contract with a processor
tenure security	Reported safety of the plots
company distance	Calculated in GIS, as distance between farms and nearest company, in km
capital distance	Calculated in GIS, as distance between farms and Accra, in km
advantage cereals	Calculated in GIS , whether the biogeography is comparatively best for growing cereals

The sampling procedure was as follows: First, we identified the major pineapple growing areas, and obtained lists from groups of export-certified pineapple farmers. From these lists, farming groups were randomly selected. From each one of these selected groups, we interviewed a number of farmers according to the size of their group.

To cover non-certified farmers as well, we asked extension agents and development agencies to identify a representative sample of non-certified pineapple farmers for interviews. These non-certified farmers were sometimes from the same communities as the certified farmers and sometimes from adjacent ones.

The proportion of export-certified farmers in our sample is roughly 50%. It should be noted, that many certified farmers do not make use of their certification and

sell all their products at the local market instead, whereas some non-certified farmers sell their produce to companies for non-export usage.

We present descriptive statistics about the farmers in table 3, but first we explain our variables (**table 1**) and especially, how we operationalize our SE measures (**tables 1 and 2**).

In **table 1**, the upper panel shows our SE measures. These measures focus on slightly different aspects of SE, and it will later be of interest to compare which are most relevant to the investment behavior of the farmers and their subsequent income. For example, the variable “nature” captures how much a farmer perceives nature to be providing for her, in contrast to being a potential that must be actively used. A farmer with high investment SE would see nature as a potential. After a bad harvest, this farmer would increase her investments to increase it in the future. After a good harvest, she would increase her investment to further increase it (Bandura 2012). Such a farmer would also have a longer planning horizon. First, because this gives her additional opportunities to achieve more ambitious goals, and secondly, because a farmer with higher SE feels the responsibility to perform well as a result of the perceived ability to perform well (Fernandez et al. 2015). How much the farmer believes that her income is impacted by her abilities and choices are very direct measures for a farmer’s SE (Bandura 2012). In contrast to the previous questions, an alternative measurement strategy is to openly ask the farmers what determined their incomes in the last two years. This has the disadvantage, that answers must be coded into low, medium, and high SE by the researcher, which raises subjectivity concerns. However, it offers the important advantage that farmers do not get influenced by the researcher’s suggestions, but report what comes to their minds first. Furthermore, from the question, the farmers cannot interpret what the researcher is trying to find out; this helps to avoid associated biases. In table 2, we present a selection of typical answers and how they were coded.

Table 2. Categorization of Mentioned Income Determinants

Under Control (3)	Ambiguous (2)	Outside Control (1)
agricultural practices	training	rainfall
seriousness	productivity	prices
regular weeding	yields	costs
learning		disease

Notes: The table shows exemplary answers to the open question about main income determinants in the last two years. The answers were translated into an index according to whether the mentioned determinants were under the control of the farmer (1), out of control (3), or whether the answer was not clearly within either category (2).

The vast majority of answers were farming related and quite clearly either under the control of the farmers or outside. If an answer describes a variable that is a choice of the farmer (such as agricultural practices, increased knowledge, improved attitudes and behaviors), then the variable “determinant” (for reported income determinant) was coded as a 3 (high SE). If the answer describes a purely exogenous variable (bad rainfall, low prices, high costs, etc.), then the variable “determinant” was coded as a 1 (low SE). Finally, if the answer was ambiguous or intermediate, it was coded as a 2. Examples for this last category are training (has the farmer chosen to participate in a training or does she attribute her low productivity to the fact that she is not provided with enough training), and yields (it is not clear which causes the farmer has in mind).

The main explanatory variable in the following analysis is the factor variable SE, which reflects the commonality of all individual SE measures. It is a factor variable from “determinant”, “nature”, “planning”, “investing”, and “ability”.

We begin our analysis with descriptive statistics. As we argue that SE is a kind of capital, we would expect that farmers with higher income report higher SE. This

can be seen in table 3. Other differences between the income categories include the amount of training received from development organizations (positive), which pineapple varieties are grown (MD2 and Smooth Cayenne are the most valuable), participation in contract farming, distance to the capital city (negative), off-farm income (positive), farm size (positive) and several more.

The observed differences amongst farmers (shown in **table 3**) make clear that we cannot naively compare farmers with different SE but we need to control for confounding variables.

Table 3. Comparing farmers in the lower, intermediate, and upper third of the farm-income range

income statistic	low		medium		high	
	mean	sd	mean	sd	mean	sd
SE	-.313	.940	.194	.832	.548	1.005
determinant	-.155	.961	.017	1.019	.454	.953
nature	-.238	.855	.087	1.051	.552	1.073
planning	-.268	.892	.156	.991	.551	1.057
investing	-.188	1.126	.159	.755	.296	.848
ability	-.157	1.102	.188	.778	.148	.950
social capital	-.004	1.017	-.030	1.087	.068	.761
off-farm income	.186	.390	.196	.399	.343	.478
education	2.641	1.205	2.663	1.103	2.955	1.307
age	44.698	11.987	43.975	9.330	43.761	9.055
household	5.842	2.766	5.819	2.571	6.432	3.129
training	.473	.500	.573	.496	.656	.478
amount training	1.363	.785	1.295	.849	1.298	.778
investment	3.24	2.71	4.09	2.50	5.02	1.93
costs	396.53	517.29	556.25	506.08	1200.60	984.22
revenue	380.59	351.44	1884.52	518.97	8280.62	5370.81

rain q	4.427	1.439	4.483	1.241	4.641	1.054
rain t	3.937	1.533	3.983	1.460	4.462	1.222
soils	1.674	.746	1.655	.820	1.567	.820
elevation	88.825	66.451	86.013	62.311	72.117	39.887
topography	45.811	42.636	40.541	38.004	33.729	17.619
farm size	2.971	3.756	3.389	4.277	7.731	8.246
prices	.431	.187	.373	.134	.404	.096
md2 variety	.200	.401	.368	.484	.552	.501
sc variety	.220	.415	.426	.496	.462	.502
contract farming	.349	.477	.344	.477	.641	.483
tenure security	5.322	1.237	5.765	.728	5.723	1.059
company distance	58615.14	35786.35	34021.36	30641.28	29376.49	31429.71
capital distance	65191.95	39899.9	40740.64	32765.05	37682.31	27894.74
advantage cereals	.23	.10	.32	.10	.32	.08

Notes: Variables in the upper panel are standardized (mean of zero and standard deviation of 1). The variables in the lower panel are unstandardized, except for social capital. In the analysis below, all variables are standardized.

Table 4 shows the estimates of 6 OLS regressions, in which we control for education, age, rainfall quantity and timing, elevation and topography, distance to the capital and gender (set 1). In the next table below we vary the control variables but in table 4, we keep the control variables constant and only vary our measure of SE. The included controls are clearly exogenous and theoretically important income determinants. Other variables - such as participation in contract farming or which variety is grown - are also likely income determinants but plausibly endogenous to SE. We always control for district fixed effects (FE), and cluster the standard errors at the level of farm groups and communities. As table 4 shows, we regress income of farmers on various proxies for SE (specifications 1 to 5), and on a factor variable from all of them (specification 6). Across the specifications, there is a statistically significant and positive

relationship between SE and income. The clearest result is achieved when using the factor variable SE, which explains 5% more of the observed income variation than does the variable used in specification 5. A one standard deviation increase in SE is associated with a third of a standard deviation increase in income.

Table 4. OLS Results Income A

	(1)	(2)	(3)	(4)	(5)	(6)
model	ols	ols	ols	ols	ols	ols
dep.var	income	income	income	income	income	income
determinant	0.227*** (0.0735)					
nature		0.184** (0.0825)				
planning			0.216** (0.0990)			
investing				0.132*** (0.0407)		
ability					0.106* (0.0614)	
SE						0.286*** (0.0902)
controls	Set 1	Set 1	Set 1	Set 1	Set 1	Set1
district FE	yes	yes	yes	yes	yes	yes
R-sq	0.19	0.17	0.18	0.16	0.15	0.20
N	398	376	398	398	398	398

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are multi-dimensionally clustered at farmer groups and communities. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

Table 5 shows the results from regressing income on the factor variable SE and controlling for different potential confounding variables. To see how robust the relationship between SE and income actually is, we begin with no controls (spec.1), and add more and more controls from specification to specification. In specification 2, we use the same controls as in the previous table (for easy comparison), in specification 3, we also control for farm size and local prices, and in specification 4, we additionally control for the grown pineapple variety, participation in contract farming, tenure security, and off-farm income. Clearly, especially the last specification is at high risk of over-controlling. Nevertheless, the estimated statistical relationship between SE and income only varies between 0.27 and 0.23, mitigating our concerns about selection on unobservables (Altonji et al. 2005).

Table 5. OLS Results Income B

	(1)	(2)	(3)	(4)
model	ols	ols	ols	ols
dep.var	income	income	income	income
SE	0.269*** (0.0744)	0.268*** (0.0825)	0.231*** (0.0771)	0.231*** (0.0698)
controls	none	Set 1	Set 2	Set 3
district FE	yes	yes	yes	yes
R-sq	0.17	0.20	0.27	0.29
N	398	398	398	398

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are multi-dimensionally clustered at farmer groups and communities. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

Table 6. OLS Results Investments

	(1)	(2)	(3)	(4)	(5)	(6)
model	ols	ols	ols	ols	ols	ols
dep.var	investment	investment	costs/area	costs/area	fertilizer	fertilizer
SE	0.523*** (0.0837)	0.481*** (0.0824)	0.184*** (0.0347)	0.199*** (0.0461)	0.122** *	0.125** (0.0568)
training		0.110*** (0.0380)		0.0957** (0.0406)		0.0356* *
credit		0.109** (0.0428)		0.249*** (0.0810)		0.0265 (0.0396)
risk perception		0.185*** (0.0413)		-0.0596** (0.0253)		0.00567 (0.0343)
controls	set 1	set 1	set 1	set 1	set 1	set 1
district FE	yes	yes	yes	yes	yes	yes
R-sq	0.30	0.36	0.22	0.28	0.71	0.71
N	398	398	398	398	398	398

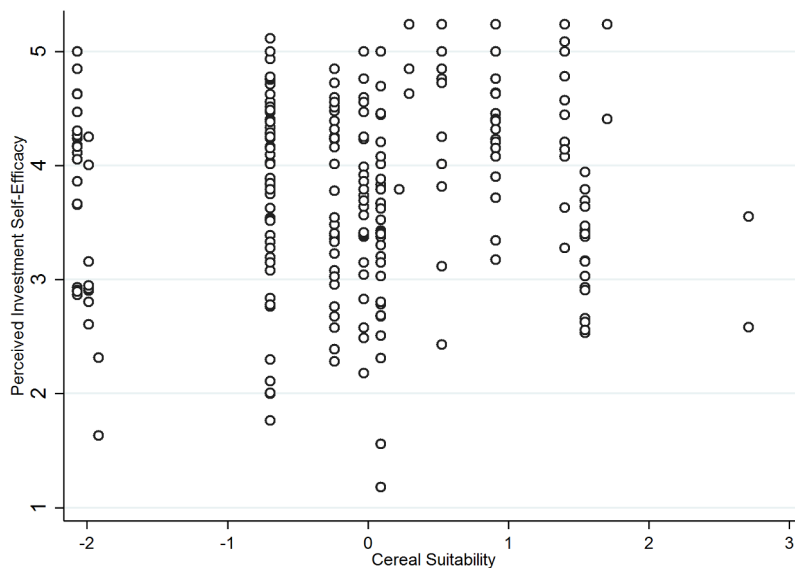
Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are multi-dimensionally clustered at farmer groups and communities. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

So far, the empirical results are in line with our model; we have yet to show that it is investments that drive the income differences. In table 6 we regress three different measures for investments on SE and controls. We begin with whether a farmer has successfully adopted an innovation in the last years, with baseline controls (spec. 1) and also agricultural training, credit, and risk perception (spec. 2). We also tested risk attitudes, but these are insignificant when controlling for risk perception. It can be seen that SE is statistically significant and positively correlated with this first measure of investment. Our second measure is the expenditure per hectare of the farmers. An obvious difference between the first

and second measure is that the first is discrete and the second continuous. Another difference is that the first is targeting innovations and the second is targeting general input intensity. As specification 3 and 4 of table 6 show, there is a robust, positive, and significant relationship between SE and expenditure per area. To address concerns that our first two measures are relatively vague, we also analyze the discrete choice of using fertilizer or not (specifications 5 and 6). The results mirror the previous ones.

In our ABM we saw that historical returns-on-investment could be the historical source of current SE differences. In Ghana, historical environmental suitability to grow different crops could be a source of such differences. Data on the regional suitability to grow different kinds of crops is publicly available in FAO's GAEZ database (<http://www.fao.org/nr/gaez/en/>). In **figure 4** we graphically depict the relationship between SE and the environmental suitability to grow cereals. As expected, it is positive.

Figure 4. Cereal Suitability and Perceived Investment Self-Efficacy



Most farmers in our sample have ancestors who relied on roots and tubers (few also have ancestors who relied on tree crops). The reason is that most of southern Ghana has a comparative advantage in growing roots and tubers. Along the coast of the Central Region, e.g., the farmer found good conditions to grow these crops, which have several advantages. Amongst others, they can be grown and harvested all year long, so they require less planning than other crops, and they are robust and flexible for mistakes and production constraints to be less severe. Their most prominent characteristic is their very low requirement for external inputs (Rees et al. 2012). Trees are similar. A very different kind of crop are cereals. Cereals are less robust and flexible, and require far more investments. On the other hand, they respond strongly to investments and their productivity can be greatly increased with the right agricultural practices at the right time (Heisey & Mwangi 1996). The region in the south of Ghana that had a comparative advantage to grow cereals is located in the Savanna zone north of Accra. Even further north, biogeographic circumstances favored tree crops, the production of which is more similar to that of roots and tubers than to that of cereal crops. The explanation why such a historic variable can persist to affect current farmer behavior is cultural evolution. The basic idea is that individuals can save learning costs by imitating their parents and peers. Even without understanding why, a farmer might behave well adapted in her environment if she chooses similar investment levels as others in her community have always done. This strategy, however, works better in environments that do not change too much, as past behavior of one's ancestors has evolved to fit to their context and not to the current one. Thus, migration and technical change are two classic examples why cultural beliefs can become "outdated" (Richerson & Boyd 2008, Henrich 2015) and lose their heuristic value .

Below, we will test how likely it is that historical suitability for cereals only affects current income through shaping the evolution of SE and not through other channels (section 5). In this section, we investigate whether SE retains its

significant and positive relationship with income when we instrument it with a dummy variable, indicating whether it was optimal in a region to grow cereals. Whereas this variable is strongly correlated with the actual historical dependency to grow cereals, it avoids a historical selection bias (i.e. that farmers with already higher propensity to invest chose to grow cereals).

Table 7 shows the results of 2SLS estimation. In the first stage, a regional advantage to grow cereals is indicated to be a strong instrument for SE across all specifications 1 to 4. The F test for the excluded instrument is always above 20. In the second stage, the relationship between SE and income becomes even stronger than before. As before, specification 1 includes no controls except district fixed effects, whereas specification 2 includes plausibly exogenous controls, and specifications 3 and 4 also include increasingly endogenous controls. An increase in the estimated effect of SE between specifications 1 to 4 is counterintuitive at first. An inspection of the data suggests that this could be driven by the trainings provided by development organizations. Farmers who receive many trainings might develop a feeling of incompetence and dependence; at least the data suggests that they have lower SE than others. Taking a conservative stand, specification 2 seems most reliable, perhaps showing the true, causal effect. This would mean that a one standard deviation in our SE measure leads to almost half a standard deviation increase in income.

Table 7. 2SLS Results Income

	(1)	(2)	(3)	(4)
model	2sls	2sls	2sls	2sls
2ND STAGE	income	income	income	income
SE	0.397*** (0.126)	0.369* (0.210)	0.796*** (0.303)	0.833** (0.347)
1ST STAGE	SE	SE	SE	SE
adv. Cereals	0.841*** (0.158)	0.619*** (0.114)	0.658*** (0.147)	0.593*** (0.127)
controls	none	set 1	set 2	set 3
district FE	yes	yes	yes	yes
F excluded	28.38	29.64	20.10	21.67
N	398	398	398	398

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are multi-dimensionally clustered at farmer groups and communities. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

We conclude this section with a mediation analysis, estimating how much of the estimated income effect of SE is mediated by differences in investment behavior (**tables 8 and 9**).

In specifications 1 and 2 of **table 8**, we use a dummy mediation variable that captures whether the farmers report to have successfully adopted an innovation in recent years. This is indicated to mediate the investment SE effect by 21 – 24%. In specifications 3 and 4 of table 8, we use the average costs of investments over the last 2 growing periods as mediation variable. This is indicated to mediate between 32 and 36% of the investment SE effect. These figures are clearly below 100% but this is consistent with SE theory, because much of the investments is unobserved in form of individual effort, time spent working and work intensity, so we would not expect that our partial proxies mediate the full effect.

Table 8. Mediation Analysis for the SE Effect

spec.	(1)	(2)	(3)	(4)
model	mediation	mediation	mediation	mediation
dep.var.	income	income	income	income
SE	0.212*** (0.0567)	0.185*** (0.0632)	0.184*** (0.0478)	0.155*** (0.0533)
investments	0.116** (0.0540)	0.113** (0.0555)		
costs			0.370*** (0.0457)	0.376*** (0.0464)
ACME	.056***	.060***	.085***	.089***
Direct Effect	.211***	.185***	.183***	.155***
Total Effect	.267***	.246***	.268***	.245***
% of Tot Eff mediated	21%	24%	32%	36%
controls	none	Set 1	none	Set 1
district FE	yes	yes	yes	yes
R-sq	0.18	0.20	0.29	0.31
N	393	393	393	393

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are clustered at farmer groups. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

Table 9. Mediation Analysis Including the Effect of Risk

spec.	(1)	(2)	(3)	(4)
model	mediation	mediation	mediation	mediation
dep.var.	income	income	income	income
SE	0.225*** (0.0666)	0.202*** (0.0729)	0.175*** (0.0590)	0.149** (0.0641)
investment	0.117** (0.0569)	0.112* (0.0585)		
costs			0.379*** (0.0465)	0.384*** (0.0472)
ACME	.048***	.050***	.098***	.104***

Direct Effect	.223***	.201***	.173***	.148***
Total Effect	.271***	.252***	.272***	.253***
% of Tot Eff mediated	18%	20%	36%	41%
controls	set 4	set 5	set 4	set 5
risk controls	yes	yes	yes	yes
district FE	yes	yes	yes	yes
R-sq	0.19	0.21	0.30	0.32
N	393	393	393	393

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are clustered at farmer groups. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

As a robustness check, we include measures of risk perception, attitudes and preferences in the mediation analysis (table 9). The results remain qualitatively the same with a few percentage points change between the **tables 8 and 9**.

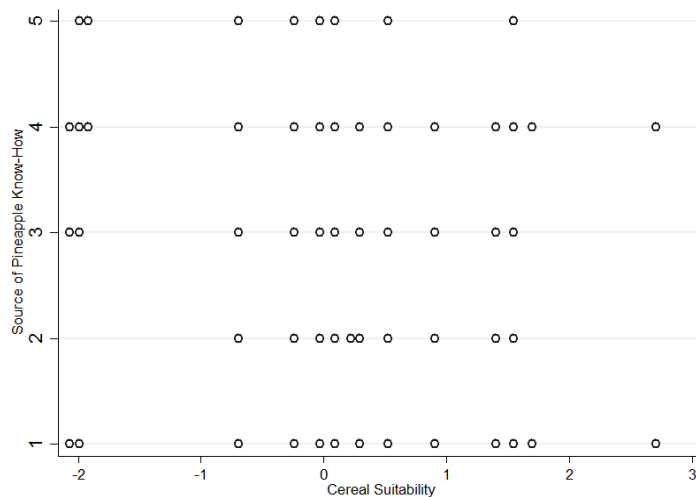
In the light of our empirical evidence we cannot reject any of our hypotheses. The data is consistent with our ABM, predicting that historical differences in the return-on-investment caused differences in SE, which persist over generations, and help high SE farmers to be successful entrepreneurs, whereas low SE farmers would underinvest and achieve significantly lower incomes. As we are using observational data, we devote the entire next section to probing the causal interpretation of our estimations.

6.5 Robustness Analysis and Falsification Tests

Figure 4 in the previous section graphically depicted a clear, positive relationship between our instrument variable: the historical suitability to grow cereals in a given region and the current SE of the farmers. An obvious concern is that this could only reflect that descendants of cereal farmers may have learned practical farming skills from their ancestors, which would now increase the profitability of their investments. The logic behind this is that cereals required more investments than other

crops, and now that all farmers earn their income with pineapples, those who have more knowledge about how to invest, would be more likely to report high SE, and to achieve a higher income through more and better investments.

Figure 5. Cereal Suitability and Source of Farming Know-How



We cannot rule out this concern on theoretical grounds but this alternative explanation is not consistent with our data. **Figure 5** graphically depicts the empirical relationship between historical regional suitability to grow cereals and from whom the farmers report to have mostly learned how to grow pineapples. In figure 5, learning from family members is coded as 1, as a laborer as 2, from friends as 3, from extension service as 4, and learning by doing as 5. If descendants from cereal farmers would have learned more from their parents than others, then we should see a clear clustering of source 2 at the right of the figure. Instead, we see a clear absence of any correlation between cereal suitability and from whom the farmers have learned how to grow pineapples.

A second concern is that historic cereal farmers might have achieved a higher income, and their descendants would have simply inherited more capital than

other farmers. On a theoretical basis, this is unlikely because if the cereal farmer really achieved higher incomes than other farmers, a Malthusian dynamic would rather have increased their family size than the wealth of individual offspring (Austin 2005, Galor & Özak 2014). It is not even clear that cereal farmers actually did achieve higher incomes before they started to grow pineapples, which is a rather recent phenomenon (Conley & Udry 2010). Nevertheless, we can also test this concern empirically by regressing the farmers' land endowment (as a measure for their capital inheritance) and the local pineapple price (as a measure for the regional income level) on the regional suitability to grow cereals, roots and tubers (with tree crops as the omitted category).

Table 10 suggests that both the descendants of cereal farmers and the descendants of roots and tubers farmers have larger farms, which is apparent, because the descendants of tree farmers live in a rugged, mountainous region (Kwahu South), which explains their smaller farms. There is no significant difference in land endowment between the farmers in the lowlands (spec. 1). Specification 2 of **table 10** shows that there is no significant difference between local pineapple prices and other crops. Thus, it seems rather unlikely that the descendants of cereal farmers differ significantly from other farmers in how much capital they inherited, except SE.

Table 10. Falsification Test A: Direct Effect of Crop Suitability

	(1)	(2)
	OLS	OLS
dep.var.	land endowment	pineapple price
advantage cereals	0.142*** (0.0349)	0.105 (0.189)
advantage tubers	0.110*** (0.0369)	0.0471 (0.107)
controls	yes	yes
district FE	yes	yes
R-sq	0.13	0.92
N	398	398

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are multi-dimensionally clustered at farmer groups and communities. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***).

Our third and final concern is a correlation between the cultural heritage from cereals and other outcomes than agricultural investments that also correlate with income. One could hypothesize that the different crops incentivized different degrees of cooperation that led to persistent differences in social capital, that the descendants of cereal farmers are more likely to have access to off-farm income, or that they simply got lucky because they live closer to the pineapple processing companies and are thus more likely to participate in contract farming due to transaction costs advantages. In table 11 we report the results of three 2SLS regression, where we substitute SE with social capital (spec 1), off-farm income (spec 2), and contract farming (spec 3), and explore whether we could use the historical regional advantage to grow cereals as an instrument. Please note that the second stage only has meaning if the F test for the excluded instrument is sufficiently large (we would like to see a double digit value, better larger than 12).

Table 11 shows that an advantage to grow cereals neither explains social capital differences, nor off-farm income, nor participation in contract farming (with F values of 0.1, 2.7, and 0.1, respectively).

In conclusion, we are unable to find alternative causal mechanisms that could explain our findings.

Table 11. Falsification Test B: Instrumenting Confounding Variables

	(1)	(2)	(3)
	2SLS	2SLS	2SLS
2ND STAGE	income	income	income
social capital	-15.08 (45.34)		
off-farm income		2.717** (1.332)	
contract farming			-27.85 (97.65)
1ST STAGE	social capital	off-farm income	contract farming
adv. cereals	-0.0417 (0.130)	0.231 (0.140)	-0.0226 (0.0797)
controls	set 1	set 1	set 1
district FE	yes	yes	yes
F excluded	0.10	2.74	0.08
N	398	398	398

Notes: Table shows estimated coefficients and standard errors (in brackets). Standard errors are multi-dimensionally clustered at farmer groups and communities. Significance levels are 0.1 (*), 0.05 (**), and 0.01 (***)

6.6 Discussion and Conclusion

Since the seminal work of Schumpeter (1934), economists see a strong link between entrepreneurship and economic development (Acemoglu 2009, Galor & Michalopoulos 2012). The important role of entrepreneurs is the recognition and exploitation of economic opportunities, which others either do not see or do not dare to take on. Why some individuals are more innovative than others is not fully understood yet, despite intense research efforts (Feder et al. 1985, Foster & Rosenzweig 2010). More general than only the discrete choice to adopt an innovation or not, we investigate why some individuals generally invest more than others. This is motivated by the literature showing that many poor farmers do not only hesitate to adopt innovations but also seem to underinvest in highly profitable inputs, such as fertilizer or seeds (Banerjee & Duflo 2011, Benin et al. 2011, Duflo et al. 2011, Collier & Dercon 2014).

We offer the following explanation for this empirical puzzle: In information scarce environments, individuals rely heavily on culturally inherited heuristics (“rules-of-thumb”) to guide behavior (Richerson & Boyd 2008). These time-proven rules of thumb have developed over generations in response to environmental demands and often follow a safety first principle (Boyd et al. 2011, Henrich 2015). Especially important for survival is basic information about how much to trust whom, how ambitiously to behave, how much effort to invest into reaching which goals, and how much to try before giving up. Humans have the amazing capability to basically survive in every habitat on the planet, but this requires, amongst other things, to not waste resources on unlikely goals (in marginal environments especially) or miss opportunities to produce a surplus (in regions with seasonal restrictions especially).

In many developing regions, historically, the return-on-investment (ROI) was much lower than it is today. In the example of southern Ghana, access to the European market to export pineapples in the 1990s dramatically changed the economic incentive to invest (Udry & Anagol 2006, Conley & Udry 2010).

Investments did increase in response, but significantly lower and heterogeneous than optimal, so that Ghana currently struggles to be internationally competitive (World Bank 2011, Barrett et al. 2012, Gatune et al. 2013).

Above we define perceived investment self-efficacy (SE) as how much a person believes in her ability to make profitable investments. In an Agent Based Model (ABM) we first simulate how SE differences might have arisen in response to the historical ROI and how these could have culturally developed over the generations. The basic idea is that some environments encouraged experimentation with agricultural investments and others did not, and that successful investments created a belief of being able to profitably invest (SE), which was passed down the generations and continues to explain investment differences amongst the current generation of farmers, who make their living now mostly with pineapples.

In Ethiopia, Bernard et al. (2014) conducted a randomized control trial, where they varied the SE of smallholder farmers by showing the treatment group a documentary about business-success-stories of social peers (vicarious mastery experience: they are like me; if they can do it I can do it too). An experimental design can hardly identify the effect of a long-term cultural evolution of SE but it gives a very clean estimate for the causal effect of SE on investment choices. Bernard et al. (2014) find that the treated farmers increased their investment, especially in education. This suggests that SE differences explain differences in economic behavior across a relatively broad spectrum of contexts, at least across horticultural export crop producers in West-Africa and traditional subsistence farmers in East-Africa. There is also suggestive evidence from Germany (Grothmann & Reuswig 2006) and the Netherlands (van Duinen et al. 2014) pointing towards SE being associated with innovation adoption, and opportunity recognition (Tumasjan & Braun, 2012; Krueger & Dickinson, 1993, 1994).

The concept has interesting implications for both economic theory and practice. It contributes to the emergent literature on individual endogenous preferences

and constraints (Carter 2015, Hoff & Stiglitz 2016, Wuepper et al. 2017). If we acknowledge SE to affect what individuals want and what they actually achieve, this implies that we need to ask how policy recommendations might change in this new light. Many studies using observational data conclude that credit constraints are a major constraint for the adoption of innovation. However, it seems that if the farmers really want, they are able to find investment capital (Karlan et al. 2012), but if they are not convinced about their ability to make a difference, they do not use credits effectively (Banerjee & Duflo 2011), or do not even want to take them at all (Banerjee et al. 2011, Karlan et al. 2012). The experiment of Bernard et al. (2014) shows that raising SE significantly raises credit taking, which means that indeed existing supply side constraints are not the full story of explaining the causes of credit constraints. It thus seems that in many studies, SE differences are an alternative explanation to the identified ones. Raising SE is most effective in the long term, as much of it is developed (or not) during childhood. Uncertainty and negative shocks are significant barriers to the development of SE, which has potential for a poverty trap (Dercon & Krishnan 2009, Dercon & Sánchez 2013, Dercon & Singh 2013). On the other hand, Krishnan & Krutikova (2013) present experimental evidence from India that it is possible to significantly increase the SE of poor students with mentoring, challenging activities, active support, and special lectures, in general, all targeted measures that use provide mastery experience, vicarious mastery experience, verbal persuasion, and physiological arousal in doing successful things

SE clearly does not guarantee success. As Bandura (1997) extensively discusses, SE allows individuals to better exploit their opportunities, to make the most of what they have and extent their potential by learning. But men is not in full control of his surrounding, SE only influences one's own behavior. A farmer is also dependent on infrastructure and bio-geographic circumstances. Suri (2011) e.g. shows that investment behavior of Kenyan farmers is explained by binding infrastructure constraints, which simply render investments unprofitable. There

are however many cases where farmers face non-binding constraints, and where SE differences can have a large influence on whether they are overcome or appear as binding. Efficient policies should address external incentives and constraints (credit, insurance, infrastructure) as well as internal ones (SE, trust, self-control).

7. Theoretical Considerations on Self-Efficacy-Driven Modernization

Finnish researchers just published research that found a “Flynn-effect“-like increase of certain economically valuable personality traits which hints towards the here claimed suitability of self-efficacy for development policies. In their 15-year study of 419,523 Finnish men, born between 1962 and 1976, representing 79% of their cohort. Jokela, Pekkarinen, Sarvimäki, Terviö & Uusitalo (2017) researched development of personality traits that have been correlated with economic success over a period of fifteen years: self-confidence, sociability, leadership motivation, activity energy, achievement striving, dutifulness, deliberation, and masculinity. While controlling for other factors like family background, they found a significant increase for all surveyed traits except masculinity. Their findings of short term changes of traits, which are largely components or outcomes of self-efficacy, show that these can actually adapt quickly if environmental/circumstantial incentives foster it.

The relevance of self-efficacy for development and modernization is often questioned by the argument that it solely concerns the potential of intentional action and therefore does not change immediate material conditions – like the existence of the tse-tse fly, the lack of infrastructure, corrupt government or unfair terms of trade, all of which impede progress and demand dauntless action. This is true, but only in the short run as the ability of people to recognize and take on opportunities, persevere in their efforts, comply with a change of methods

and be resilient in case of draw-backs is certainly decisive also for the success of traditional development aid or other policy measures. Self-efficacy is the key to an upward cycle of development. It interacts with material factors in a kind of swinging movement from a state of SE to the use of a material condition and acting back on the state of SE, at best increasing it; it aggregates over time and influences the capability to influence one's environment which then acts back on its inhabitants self-efficacy to start another cycle of change on a higher level. It is therefore not by coincidence that some collectives give themselves more supportive institutions than others or spend their money on infrastructure instead of dubious causes (cmp. the present surge in evangelical "churches" in Kenya and Ghana which skim off vast funds from the productive economy with the promise of divine lifting from poverty and earthly troubles). People with higher self-efficacy tend to produce and demand a more supportive, integrative, cooperative political and economic surroundings (on political efficacy i.a. Caprara, Vecchione; on economic decision making i.a. Mc Closkey, Mokyr, Boyd, Richerson, Hendrich) while people with lower self-efficacy suffer from a lack of opportunity recognition and utilization (Tumasjan & Braun 2012; Krueger & Dickson, 1993, 1994). The first case produces a virtuous cycle of growing self-efficacy with growing political participation and economic welfare while the latter produces an attraction of "strong-man" politics and further economic segregation as Kakkar & Sivanathan (2017) showed in their study of 140,000 people in 69 countries. The fact that dictatorships can produce high economic growth rates does not contradict this correlation.

This natural process of positive reinforcement can be interrupted by external shocks – like f.ex. foreign-led slave trade - that can lock countries in a state of stagnation or down-turn comparable to a post-traumatic stress disorder, and like this, calls for pro-active individual *and* group self-efficacy building. I believe, this process is also endangered by institutional and other proxies that allow future generations to elude the pressures of having to develop individual self-efficacy

until their share in the population reaches a tipping point – which could help explain downturns of formerly successful cultures; this aspect needs further empirical research.

Self-efficacy building is not the silver bullet of development, but it is its seed and fertilizer: decisive for an empowerment that affects all other policy measures as it enhances peoples' capacity for positive change.

Tetzlaff (2017, p.24ff) differentiates three theoretical schools of growth and modernization: those that count on economic growth to create i.a. a trickle-down effect; theories of political change to build capacities of adaptation and self-organization; and theories of mental and social change which include cultural and individual adaptations.

Economic development-by-growth-theories (f.ex. from Ragnar Nurske, Arthur W. Lewis, Paul Rosenstein-Rodan, Walt E. Rostow, and Gunnar Myrdal) (see Tetzlaff, 2017; Menzel, 2010) are less concerned with historic sequence and complexity, but rather focused on material factors like available capital that could be controlled, manipulated or produced by – possibly foreign – intervention with hopefully short-term results. In the aftermath of Keynes, scientists like Rostow concentrated on identifying specific target industries and respective policies – via market forces or state interventions like taxes or five-years-plans. Material action needs humans - individuals and groups - who are able and capable to make use of the newly available potential.

Similarly, social and political theories treat the development of integration, modernization, participation, welfare and allocation capacities (Gabriel Almond, Lucian W. Pye), and Karl W. Deutsch added thoughts on international adaptive and self-regulating capacity to analyze differences between political systems in their abilities to react constructively to challenges. Scientist like the above mentioned and many others like Dankwart Rustow, James S. Coleman, Sidney Verba, Myra Winet, Stein Rokkan, and David Lerner identified three universal

functions of a political system: a legitimization function by political socialization; a process function by incorporating elites, articulating and grouping of interests and political communication; and finally, a performance function by mobilizing and allocating resources like taxes, stability of political order and peaceful foreign relations (Tetzlaff, 2017; Menzel, 2010). Their insights help to analyze and categorize the expected modernization crises grouped around problems of governmental penetration/state-building; integration of different societal groups; national identity and nation-building; legitimization of modern institutions and powers; political participation and politicization of institutions; and the allocation/re-allocation of national wealth, security and welfare to growing groups of entitled people. (based on Tetzlaff, 2017; Menzel, 2010). Political self-efficacies, as shown by Caprara et al. (2009) and Vecchione/Caprara (2009), have been found to be fundamental for active as well as electoral political participation in the democratic process. The correlation of self-efficacy with cooperation, trust and economic performance can be expected to be an important positive factor in the political process.

The third school of development and modernization theories treat the field of mental and social change, represented prominently by David Lerner, Karl W. Deutsch and Everett Hagen (see chpt. 3, p.67) who see the motor of change in the individual human being who has to ascend four (universal) stages of personal development on her way to modernity which is projected as a state of a mobile, educated, politically and economically fully integrated and participating individual with growing income. At this stage, she is expected to develop universal empathy (David Lerner, 1971). Tetzlaff (2017, p. 27) criticizes Lerner for underestimating cultural persistence, which would lead to cultural filtering of modern values, disorientation and hybrid forms of culture between traditional and modern personal demands. Political self-efficacy, the belief to be able to exert influence in and via the political process, and general self-efficacies step in here to enable personal change and learning as shown explicitly in chpt. 4 on learning and 2.2.

on identity, because self-efficacy helps to master the identity threatening and destabilizing effects of modernization for the individual, but also for the collectives that make up a society's structure.

Habermas locates his "project of modernity" (Tetzlaff, 2017, p. 20) in four parts: individualism as the unfolding of all individually particular peculiarities; the right to critique, meaning that nobody should be forced to accept anything they have not found legitimate; autonomy of acting; and finally, in the idealistic (constructivist) philosophy itself (ibid). If the concept of self-efficacy is analyzed under these – individualistic -premises, it is so as a factor that did exist as an intrinsic human feature before formal education, state institutions, infrastructure and banks for capital supply were created, that has further grown as development progressed, and which is now found to have had an important part in creating all of these material signs of progress. But it is - as Habermas claims - a factor that builds individual agency for an individual-driven modernization, which, on the one hand offers the chance to overcome the dangers of imperialistic imposition of alien elements via modernization policies by empowering people to become agents of their own development, and break up progress-impeding collective structures; but - on the other hand - the strengthening of individualism may intermittently be a special strain to some people, groups, societies and their inner structures (which makes the identification of different learning groups (chpt. 4) a vital element for integration or cooptation policies).

The early chapters of this thesis discussed the work of scientists aiming to identify factors promoting and hindering development and modernization to reduce poverty and human suffering, and add to peaceful international cooperation. The hope was to find universal causes, universal chronological steps, universal processes or structures to possibly repeat, produce, and orchestrate economic and social development.

Talcott Parsons defined this positive development as growing adaptive capacity

of a social system to its environment, as well as modifying instead of enduring its conditions (cmp. Tetzlaff, 2017, pp.18ff; Menzel, 2010, pp. 73f). Parsons thereby regards development as an outcome of human abilities which have been found to be directly correlated to the trait of (growing) self-efficacy (cmp. here chpt. 6 on how SE develops naturally as an answer to environmental stimuli); he consequently differentiated traditional from modern societies by this capacity as reflected in the specialization and differentiation of societal roles and their institutional analoga in education, law, banking, religion etc. Proceeding to normative stages of higher order, less survival stress and less human suffering, as spelled out by Harrison (2000) and found by Lübbe (2005, pp. 65-69) through growing self-efficacy helps to dissolve the antagonism between the known and the unknown as well as between one's own traditions and the alien modernity as it empowers for developing one's own "new".

Adaptive necessities frequently lead to destabilization (Huntington) as inner structures of people and their communities get questioned, for example identity defining hierarchies; status quo profiteers feel endangered, while present status quo losers often lack the capacities to channel their wishes into constructive change. And worse, because Western donor countries bring a Western-style modernization with their money which has been received as neo-colonialism and cultural imperialism; it has become a project of what and how-to, unfortunately designed by the interests of those financing a major part of it, instead of increasing peoples' and countries' agency to create their pathways themselves. Modernization within Western countries themselves has similarly left behind parts of their own population and created growing integration barriers for migrants and their second and third generation offspring, because its prescribed ways again are limiting peoples' capabilities in controlled and controllable ways instead of setting free their potential.

The general question that has been raising doubts about applicability and

desirability of transferring the European model not only in its results but also in its conduct was, if whatever has enabled the production of economic and social welfare in unprecedented amounts, can be, and how much of it *must* be, transferred – assuming it would produce similar results under different limiting conditions. Accusations and animosities about cultural imperialism, neo-colonialism combined with the real dangers of losing privilege, have helped to slow down modernization and discredit development aid to the point of defaming the term “development” altogether as Tetzlaff rightly bemoans (Tetzlaff, 2017, p.19; Dirmoser et al, 1991, p.11; Moyo, 2010) Ulrich Menzel (2010) went even further in his critique by declaring the modernization ideal dead and the potential good of development policy cut back to economic, medical, military and political emergency aid.

Scientists have identified numerous aspects of “First World” economic development and “Third World” economic slugging, and how to overcome it – Tetzlaff (2017, p. 23) counts about two dozen theories, theorems, paradigms, and models of development in the past sixty years. When important factors or strategies are identified like capital (de Soto, 2000; Yunus, 1999), neo-colonial, exploitive trade and business structures (Ziai, 2014; Wolfgang Sachs, 2002) institutions (Acemoglu&Robinson, 2012; Alesina&Guiliano, 2013; North 1990), governance and democratization (Jacobeit et al, 2014; Schubert&Tetzlaff, 1998; Nohlen, 2005) or culture (Weber 2010; Etounga-Manguelle, 2000; Kabou, 1993; Elwert, 1997), we are left with doubts if our analysis of the situation of poverty and its causes were comprehensive in the first place: starting with Ghandi, Karl Polanyi, Ivan Illich, Michel Foucault, Edward Said, Stuart Hall, and Gustavo Estevan suggested that the misery of the non-Western world was partly a constructed myth based on the wish to continue exploitation after the end of colonialism and the arrogance and disrespect for non-Western traditions.

One example is the disregard for subsistence and other traditional institutions of production in an informal sector, which was rightly criticized by the “Bielefelder

Verflechtungsansatz” (a theory of coexistence and partial integration of the formal and informal sector by a team from the University of Bielefeld). This critique of Hans-Dieter Evers (1987) and others opened a more grass-root view to an ignored reality of reproduction (Hennings, 2009), and the female role in it (also see below).

Similarly, we cannot be sure to have identified the factors that caused the European rise correctly and completely either as historic singularisms might have occurred and produced unrepeatable synergetics and prohibit drawing parallels.

The apparent attraction of the Western model (Tetzlaff, 2017; Lübbe, 2005) – at least of its material results - , however, answers transformation processes that have been taking place for centuries since the 17th century (Tetzlaff, 2017, p.19; similar: North, 1990, Diamond, 1997, 2005) to produce the present level of wealth and welfare. They took place in a certain chronological order, which hints to a certain causal relation; reversing the chronological order cannot be expected to reverse the causal relationship as well. In Europe f.ex, economic growth of a kind produced the spreading of schools and universities. Without this initial “more” of economic substance, however, growing levels of education lead to growing frustration and unemployment with all its secondary destabilizing social effects (as in the North Africa). Mara Squicciarini and Nico Voigtlaender (2015) found f.ex. that *“although studies of contemporary economies find robust associations between human capital and growth, past research has found no link between worker skills and the onset of industrialization”* (p.1 – their findings are i.a. supported by Mokyr, 2002, and Mokyr and Voth, 2009); rather they found that this early phase was driven by a small knowledge elite.

If at all Europe’s rise holds helpful information for future modernization and development processes, it is worth a look at what was there before there were supportive institutions, political/business alliances as in Venice, infrastructure, industrialization, universities, enough venture capital, and only *people* who

brought all of this about in their producing economic and social welfare.

David Brooks wrote in his op-ed New York Times column:

“Roughly speaking, there are four steps to every decision. First, you perceive a situation. Then you think of possible courses of action. Then you calculate which course is in your best interest. Then you take the action.

Over the past few centuries, public policy analysts have assumed that step three is the most important. Economic models and entire social science disciplines are premised on the assumption that people are mostly engaged in rationally calculating and maximizing their self-interest.

But during this financial crisis, that way of thinking has failed spectacularly. As Alan Greenspan noted in his Congressional testimony last week, he was “shocked” that markets did not work as anticipated. “I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such as that they were best capable of protecting their own shareholders and their equity in the firms.”

*So perhaps this will be the moment when we alter our view of decision-making. Perhaps this will be the moment when we shift our focus from step three, rational calculation, to step one, **perception**.” (NYT, Oct 27, 2008)*

And indeed, Hendrich et.al (2010) found that the people of the Northern half of the globe differed significantly in their perception of themselves and the world around them (cmp. Chpt. 8 below) from those of other people on this planet: they are generally WEIRD from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies and differ greatly in: *“visual perception, fairness, cooperation, spatial reasoning, categorization and inferential induction, moral reasoning, reasoning styles, self-concepts and related motivations, and the heritability of IQ.”* (p.61).

In a worldwide study on “Global Evidence on Economic Preferences“ of 80,000 people in 76 countries, representatively chosen to cover 90% of the world

population, Falk et al. (2015) measured time preference, risk preference, positive and negative reciprocity, altruism, and trust. They found

“that preferences differ substantially across countries, but heterogeneity within countries is even more pronounced. The preferences vary with plausibly exogenous individual characteristics – gender, cognitive ability, and age – but relationships are in some cases culturally specific. Preferences also vary with cultural differences as captured by language structure, and with country-level characteristics like geography. Individual level economic outcomes, including savings decisions, labor market choices, and prosocial behaviors, are correlated with the preferences, and these relationships are similar across countries. Important aggregate outcomes, ranging from economic development to the frequency of armed conflicts, also vary with country-level averages of preferences.

The measured indicators correlate with constituent factors of self-efficacy: time preference, risk preference, and trust which correlates with reciprocity and altruism and may be deducted from the general belief in one’s abilities to make it (well), which makes trust and cooperation less costly or risky. Interestingly, in an earlier research on The Relationship between Economic Preferences and Psychological Personality Measures, Becker & Falk et al. (2012) researched the Big Five (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism, and locus of control and found only low degrees of association with economic preferences. They did find though, complementary results when looking at economic life outcomes (labour market success, health status, and life satisfaction).

Falk et.al have now empirically found what scientists from Max Weber and David Landes to George Akerloff and Joseph Henrich to Dambisa Moyo, Moletski Mbeki and Daniel Etounga-Manguelle have propagated: that cultural factors as in human perceptions are decisive for the outcome of intentional human actions. This includes not only economic decision making but all of the political process and its outcome like institutions as the result of human decisions based on

circumstance/environment, historical pathway, preferences and opportunity, which Acemoglu & Robinson (2012) identified as the single most important factor for successful development.

We can assume that many scientists have found self-efficacy at work, but without consensus on terminology called it by its better known aspects or effects.

Development models that build on democratization, class, gender, or governance and regimes, build on enhancing human agency. Together with the Bielefeld Integration Theory they reveal a realistic view of the reproduction and political reality of large parts of the world's population. The latter draws attention to women as the prototype of profiteering from learning and modernizing, as they conduct their social and economic life in the informal sector in countries of lesser political order. Women have been identified as a large untapped source for modernization by the microcredit movement. Despite feminist criticism of functionalizing poor women, the insight that women tend to use capital more responsibly and reliably for their family's is good for them and political decision makers. The destabilizing effects of modernizing processes have often hit women and girls especially hard and twice: by devaluing their work and status in the informal sector (cmp. Ester Boserup, 1970/2007), and as pressure valves and reconstruction target for thus disconcerted men. Women and girls can therefore be expected to profit most and immediately from self-efficacy building and twice again: from their own by freeing their historically restricted potential, and through men and boys with higher self-efficacy as self-efficacious men in European studies have been found to be more cooperative, more supportive, less masculine, more sociable, more dutiful and more agreeable; I interpret that as potentially also less aggressive and less suppressive.

The overall economic, political and social effect of empowering women and destabilized men via self-efficacy has an enormous multiplier effect on society on all levels and offers great potential f.ex. in the integration demands of migrants and the economically less competitive.

Based on knowledge on decision making under uncertainty, expanded by prospect theory taking endowment and risk biases into account, expanded further by the biases of self-efficacy, it is possible to spell out building blocks of an economic and social theory of human behaviour that offers the chance of a development policy

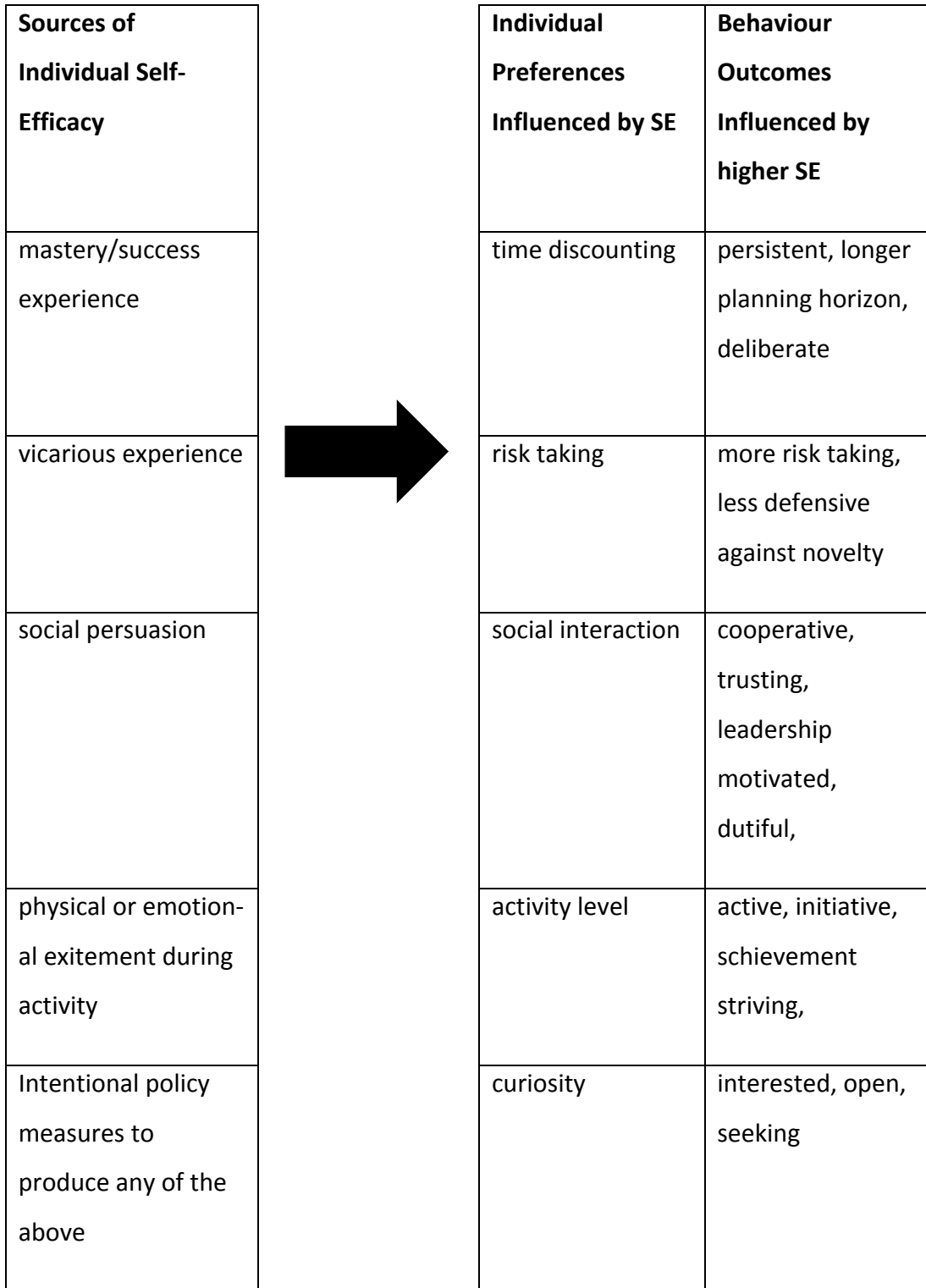
- that is not culturally intruding, as it does not tell people what to do and how, but helps to give them the agency for change of their own making
- that integrates elites who have much to lose by leaving some of the threads of change in helping them to develop trust in their ability to still make it well after change; without them or against them change is costly or impossible, or will be under reconstruction pressures in favour of the old structures
- that alliviates some of the threads of change for those who fear losing their self-identification, social role or privilege as man, cleric, shaman by helping them to develop trust in their ability to redefine their role and do well
- that empowers all those who have lacked the capacities and the faith in themselves to take the risk of change

The existential human struggle for survival is at the core of every culture, developed as the common experience and knowledge for survival of a given group of people in their habitat. Culture reflects this historic knowledge and develops certain self-efficacies in her such bequested members. Culture and self-efficacies become a vital part of one's self-identification as they include survival knowledge; it is not folklore or outdated tradition, it is the notion that my culture encompasses knowledge that helps me survive. That is why culture is so persistent as it is. But it can be updated, enlarged, expanded or changed if and only if new information fulfills three criteria:

- it must offer me the belief that i am personally able to use it
- that i will be better off than before
- it leaves my self-construct intact from shame or fear fo identity loss

Building self-efficacy in people holds not only the potential to foster modernization processes in less developed countries or make them less painful in developed ones for all ranks of society, self-efficacy can play an important role in integrating migrants and following generations who suffer from disparate reference frames and outdated self-efficacies. It is important to pay attention to the fact that parts of the present elite with the power to influence modernization processes may have low self-efficacies for learning and change as well: everybody who profits from a status quo and got there possibly not fully by merit may fear change unless he has enough self-efficacy to trust in his abilities to stay put or profit from change.

The following schema offers a simplyfied overview of individual self-efficacy, how it naturally evolves or is intentionally fostered and which perception fields and economic, political and social behaviour qualities it influences:



8. Conclusion: A Culture of Learning Instead of Knowing Needs Self-Efficacy

In this work, I developed the origin, cultural transmittal, effects and importance of self-efficacy for the economic, societal and political modernization process in developing and developed countries. I identified self-efficacy as the tool for adaptation to environmental and circumstantial changes like climate change or migration. At the same time, through cultural transmission and without targeted measures, SE is based on information from the past and therefore maladapted to changing conditions, which means people need help to update quicker than they would do by themselves. I elaborated about the negative effects of low, and the potential of high self-efficacy, and pleaded for it as a major policy tool with several multiplier effects as SE enhances the outcome of many other policy measures. Low self-efficacy in leaders and elites is especially endangering for the system, as it makes people tend to be less cooperative and more inclined to pursue their interests with norms obeying methods.

Henrich, Heine & Norenzayan (2010) found that much of behavioral science empirical research was conducted on volunteering (for small fees) U.S. American university undergraduates, who had made it through the American educational system to a good university, and on other Western sample populations. They identified the origin of most of the researched people as WEIRD – Western, Educated, Industrialized, Rich, Democratic. In a global context, these people are weird indeed, they are outliers, not representative for the life realities of the vast majority of all other inhabitants of this planet. In comparing data from across populations, they found results from the WEIRD people as particularly unusual: *“The domains reviewed include visual perception, fairness, cooperation, spatial reasoning, categorization and inferential induction, moral reasoning, reasoning styles, self-concepts and related motivations, and the heritability of IQ. The findings suggest that members of WEIRD societies, including young children, are*

among the least representative populations one could find for generalizing about humans. Many of these findings involve domains that are associated with fundamental aspects of psychology, motivation, and behavior". WEIRD people inhabit rich democratic countries and their outlying features resonate with the concept of self-efficacy: WEIRD people have a lot of self-efficacy.

The origin of these fundamental aspects of human traits have been traced back to the life circumstance of European populations to the early Middle Ages. Outlining the different pathways muslim and European countries have taken since, Tetzlaff (2016) finds the same differences in culture and institutions which Greif (1994) found in comparing early Maghrebini and North Italian traders, and Alesina & Guilino (2013) as well as Alesina, Guiliano & Nunn (2013) found on the role of women and in the persistence and interaction of culture and institutions to have prevailed since as early as 1200. All find that the special life conditions of Europe with its specific climate and geography enabled a series of little steps starting with the kind of cultivated crop and domesticated animals (Tetzlaff, 2016, p.26f.) to developing financial systems based on institutions that provided for anonymous trade (instead of Maghreb family/clan-based trust relations) (Greif, 1994) or today's role of women developing from agricultural practices and female participation in them (Alesina & Guiliano, 2013). Today's culture, institutions, political participation and wealth are a result of at least a thousand years of history developing in one particular environment, and its population adapting to it. By this process, European populations developed self-efficacies that make them demand and provide for more political and economic participation and respective political leadership and institutions. Their SE enabled more inclusion of more and different people with more individual freedom to unfold their potential, bringing about entrepreneurs as much as technological progress and creatives in exactly the liberal, democratic diversity that Beinhocker (2007) showed to be indispensable for innovation. This process is one of self-enforcing, non-linear, non-controllable emergence through people with enough self-efficacy to cooperate,

innovate, learn and cope with change and diversity. But without doubt, and proven in disastrous wars and fallbacks, this is not an irreversible process, but one that has to be adapted and reproduced in every generation and demographic change and supported by modernizing, change-adapting institutions.

In the beginning of this work, I found that all existing theories explain important aspects of the evolution of poverty and wealth, and the different pathways countries have taken. But they suffer from lack of an operational tool that causally links the parameters of human society together. I suggest this tool to be self-efficacy. When Henrich et al. implicitly found outcomes of self-efficacy, they found WEIRD populations living in an environment that fosters self-efficacy, and who developed institutions that compensate for an individual lack thereof. They found a so far underrated aspect of development: populations whose efforts in a sufficiently calculable surrounding have been generally rewarded for generations, and therefore developed higher levels and wider spread self-efficacy which created a self-fulfilling prophecy of achievement and success. Moyo (2010) accuses the present form of development aid for not only feeding corruption of (low-efficacy) elites, but to keep whole nations in (low-efficacy) dependency and thereby undeveloped.¹⁰⁹ But there are also great dangers ahead for Western style democracy and capitalism as Shiller & Akerloff (2016) currently proclaim. Capitalism and democracy both give the greatest individual freedom to develop one's potential, but need fair play and respect for democratic institutions to work. Fair play needs potent institutions and self-efficacious players as all others will tend to corrupt the play; by definition those who do not believe to be able to get what they want the regular way will aim to get it by force or manipulation. Shiller & Akerloff bemoan the latter having produced a mafia-style capitalism. Their demand for stricter regulation and stronger institutions is as much correct as a dilemma: the compensatory effect of institutions described above has dampened

¹⁰⁹ Cmp. experiences with too much training in Ghana above.

the evolution of individual SE. At the same time, marketing and advertising at worldwide annual spending expected to surpass U.S. 1 trillion (billion in german)¹¹⁰ in 2017 and annual growth rates of presently 4% p.a. helped to create ever increasing desires and perceived entitlement, endangering the system that created it – a classical case of pathological learning – and an analogon to our whole treatment of a planet where we have been so successful as to be in danger to destroy it.

Self-efficacious populations and leadership have the best potential to develop and modernize without alienating parts of a population, and stabilize what would otherwise be a constant threat to the newly built economic potential. Developed countries could profit in their continuous challenges by employing self-efficacy building for the integration of all parts of their societies: following generations, immigrants, less educated, less cooperative, those low in self-efficacy but high in entitlement to consumption, power and prestige, and those low in self-efficacy but high in enduring, and possibly most important, bring about leaders and leading elites who are high enough in self-efficacy to be able to cooperate and share their power in democratic manners. The present tendency for dictatorial powers aspiring politicians is also a sign of people and leaders having developed less self-efficacy than would be needed for them to feel secure and able for the present and growing complexity of environmental and other challenges, and consumption possibilities.

One of the most important and rewarding effects will be found in the empowerment of women who's vital role in the development process has been amply shown. Women are the one worldwide group who will profit most from policies that build self-efficacy. Traditionally and without a representative election system – and even then at times - power of people over people is power of those

¹¹⁰ Not even included expenditure on direct marketing, promotions, retail trade spending and discounting according to strategy analytics, rapid research and world federation of advertisers, prnews.com and online research.

who have too little self-efficacy and often too much perceived entitlement to get what they want through trading, convincing, cooperation and compromise. Power compensates for this inability or excess desires by using violence, threatening to use violence or manipulating which is a form of violence through lying. (I leave out the odd case of power through merit-earned reputation¹¹¹.) Women whose vital role for economic progress has been amply documented, and who have often been taught to endure suffering rather than changing it, can be expected to profit twofold from higher self-efficacy: by their own virtue in the above described ways of goal setting and achieving action, and through male self-efficacy leading to more cooperative, conciliatory treatment of women and children. An efficacious person does not need to suppress others as her efficacy is a sign of her high, strong and general belief in her abilities to act and be successful. A multiplier effect of push-and-pull economic, societal and political steps can be achieved and any country, at any point in their development, be supportive to include more people on their necessary pathway of continuous adaptation, and peacefully moving from a hierarchic culture of knowing to a democratic culture of learning.

9. Outlook on Further Research

Many questions are unanswered with regard to the application of this concept in social sciences, some methodological, most of them contextual.

The methodological refer to how to identify self-efficacy in the data on human action in social, political and economic processes. Information could be hidden in data on risk taking, time discounting, inclination for cooperation, openness towards novelty, participation, empowerment, and others. Findings on aspirations, growth mindset and other self-concepts are likely to contain information on self-efficacy. It can be distinguished by strictly delimiting the actual

¹¹¹ leaning on Max Weber's schema of power here.

process that leads to an end from desired outcomes. As the above given example of political efficacy shows that efficacy for the process of winning public support (which would be similar to winning any leading or popular position, like talk show master, party or religious leader or successful sales professional) is quite different from the efficacy to head a successful government and manage a complex administration.

Little is known about self-efficacy differences amongst and within populations, and its macroeconomic effects. There is research (f.ex. by Vecchione et al. 2016) on personality, value change, and openness to change, but not with regard to the different levels and domains of self-efficacy, which would be enlightening here.

Another need for further research refers to self-efficacy effects with regard to elites and leadership.

Also, so far there has been no empirical testing on the relation between rational decision making and self-efficacy. This would be an important information to have for political decision makers to increase their inclination for self-efficacy building measures.

The relationship between self-efficacy and cooperation needs attention: Does higher self-efficacy influence ability and inclination to cooperate? Does higher self-efficacy amongst group members influence the type of leader or representation preferred? Do self-efficacious leaders affect cooperation and efficacy within groups, and in individuals?

Little to nothing is known about the asymmetries around self-efficacy that potentially cause destabilization in modernization, including those not discussed herein of chronology and societal sphere like unsynchronized developments in individual SE and political, societal and institutional reactions. Knowing more about this process could help governments to promote a more orderly process where change can act more positively than unsettling.

Another unknown effect concerns the important question of possible crowding-out of efficacies that produce big advantages over other efficacies in a person.

Especially the question if leadership efficacy or efficacy to obtain a leadership position have a crowding-out effect on other efficacies in the leader, and possibly other players as well, could have important institutional consequences.

Caprara et al. (2009) have developed and tested scales for measuring political efficacy, Schwarzer & Jerusalem (1995) and Luszczynska, Scholz & Schwarzer (2005)¹¹² developed scales for measuring general efficacies in different cultural context, both employed in quantitative- descriptive manners. Bandura's theory on self-efficacy has suffered from a lack of wider acceptance in psychology as well as in interdisciplinary employment. According to his own comments, this seems to be at least partially due to some misunderstanding and misinterpretations. This powerful concept deserves all the transport into economics, political science and sociology scientists can render, as it may hold the key to widespread individual empowerment and benefits thereof. Social, cultural, and economic measures to promote self-efficacy should be developed and their application scientifically surveyed to learn what works best in which setting. More and enhanced scales for standardizing the produced data could prove very helpful for this end. It will be important to enhance the exactness of the scales to ensure it is really self-efficacy what is measured, and self-efficacy for exactly the domain in question (cmp. discussion on leadership and obtaining a leadership position).

One of the most important research needs would be a better understanding of the widely unknown field of institutions being able to offset a lack of individual self-efficacy and therefore falsely reduce the evolutionary pressure to develop it. This would lead over time to countries with well working institutions to have a growing part of their populations with ever less self-efficacy until a tipping point is reached were the functioning of that society is endangered. If this holds true, it would help to explain long economic cycles and possibly add to our understanding of the downturn of high cultures.

¹¹² Bandura comments critically on the "one-size-fits-all" aspect of these and other self-efficacy scales: Bandura, Albert, 2015, *ibid*, p. 1028.

The most challenging task is to develop a formal model of self-efficacy which would also standardize our terminology, and thereby foster interdisciplinary social, political and economic analysis. The complexity of societal progress in the face of rising environmental dangers and worldwide reawakening of undemocratic currents calls for a concerted approach fostered by a formal model that all human sciences could employ.

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