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# How One Rural Community in Transition Overcame Its Island Status: The Case of Heckenbeck, Germany

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**Abstract:** In the public debate, sustainable innovations are mostly associated with urban contexts, whereas rural areas are rarely seen as potentially creative sites. In contrast to this widespread suggestion, however, recent studies show that rural communities can also play a pivotal role in generating sustainable solutions. Yet, the transformative potentials of villages often remain socially limited to pioneers' personal networks and spatially restricted to insulated places. In this context the question arises of how rural communities in transition to sustainability can overcome their island-status to develop transformative potentials. In order to answer this question, we take the example of Heckenbeck, a village located in southern Lower Saxony (Germany), as a case and examine the social interactions and networks that exist between local sustainability niches and the socio-technical regime. By applying socio-technical transition theory in a multi-scalar perspective, our study illustrates how a group of niche actors has accomplished to effectively transform the local regime by spreading their ideas among their fellow village members and to put pressure on the regional regime by using windows of opportunity created in the socio-technical landscape to build multifaceted social networks to various sectors of society. The case provides lessons learnt and discusses possibilities and limits to transfer these lessons to other contexts.

**Keywords:** sustainability transition; multi-level perspective; socio-technical niches; social networks; change agents; windows of opportunity; rural development

## 1. Introduction

Sustainable innovations are often associated with urban contexts [1–3]. Rural areas, in contrast, are rarely seen as potentially creative sites. In contrast to this widespread suggestion, however, recent studies show that rural communities can play a pivotal role in generating sustainable solutions [4,5]. As apparent counterparts of urban agglomerations, villages can turn into "living laboratories" [6] for the needed global sustainability transition. Innovative projects and measures can be implemented much easier due to lower infrastructural barriers and less prevailing path dependencies in villages [6]. Furthermore, lower real estate prices, higher vacancy rates and more unused areas provide vital playgrounds for creative groups, and intense social cohesion enables the fast spreading of new ideas within the community [7]. As such, ecovillages and other intentional communities, which exist in their thousands today, can become local "heterotopias" [8] (p. 22), i.e., effectively enacted utopia generating innovative forms of sustainable, solidary, and convivial lifestyles [5,6,9].

Yet, despite their potential as creative sites, ecovillages often remain isolated to their respective regions and only rarely spread their transformative ideas, norms, and practices into mainstream-society. While local pioneers socialize intensively within their respective peer groups, noteworthy linkages to regional, established actors and organizations (local clubs and societies, rural policy-makers, local media, people of surrounding villages, etc.) are usually missing. In this way, the transformative

potential of rural initiatives remains socially limited to the pioneers' personal networks and spatially restricted to insulated places. Promising initiatives for the sustainability transition fail to achieve functioning regional synergies and are thus unsuccessful to becoming efficacious change agents [10,11].

In this context, the question arises how rural communities in transition towards sustainability (abbreviated as "communities in transition" or CiTs) can overcome their problematic island-status and become change agents that help to spread innovative ideas effectively among the wider society [12]. In other words, how can the potential of CiTs in rural areas be tapped for bringing about the social, technical, and ecological transformation needed for future sustainability? In order to answer this question, we take the example of Heckenbeck, a village located in southern Lower Saxony (Germany), as a case and examine the social interactions and networks that exist between local sustainability niches and the socio-technical regime. By applying socio-technical transition theory in a multi-scalar perspective, we illustrate how a group of niche actors has accomplished to effectively transform the local regime by spreading their ideas among their fellow village members and to put pressure on the regional regime by using windows of opportunity created in the socio-technical landscape to build multifaceted social networks to various sectors of society. As such, our case provides a number of best practices and we discuss possibilities and limits to transfer these lessons learnt to other contexts.

## 2. Background

Heckenbeck with its 480 inhabitants in the South of Lower Saxony is situated in one of the economically weakest and demographically most dwindling regions in western Germany; i.e., the western Harz Foreland [13–15]. Yet, in contrast to the general negative trend of the region, the population of the village has been increasing since the 1970s by about 20 percent. This development was initially triggered by the settling of a single pioneer, who intended to implement subsistence farming in one of the vacant farms within the village in 1984. This first pioneer's project attracted more people interested in alternative lifestyles in the countryside. In the following years, the growing group of so called 'newcomers' formed their own community, a socio-technical niche within the village, and re-established institutions for the local supply of various goods: A group of parents founded a small alternative school, others reopened the former pub as a cabaret and guest house, and a medical and midwife practice emerged. In addition to these sociocultural and health-oriented institutions, sustainability-related innovations related to food and mobility came up, whose extent was quite unusual for a village comprising less than 500 people: A member-based organic shop was established, a couple of organic farms in the fields of fruit and juice production, sheep rearing, and beekeeping settled down and a farm following the principles of Community Supported Agriculture (CSA) opened. While the compacted village structure made the use of automobiles in the village obsolete, a self-organized scheme for car sharing and a free bike rental were installed for bridging the distance from the village to the nearby railway station. Low-energy houses were built on the new development area necessary for housing the numerous newcomers and several small handicraft businesses opened. Altogether these newly established institutions can be seen as sustainability innovations, because they encourage environmentally friendly forms of mobility and food supply (ecological dimension), increase social cohesion and solidary through cultural, educational or health-oriented offers (social dimension) and provide jobs and income (economic dimension).

All these newly established innovations triggered the moving in of young families with children, who wanted to realize a sustainability-oriented lifestyle, which successively changed the composition of Heckenbeck's inhabitants, so that today about one third of the residents can be addressed as newcomers. Today, Heckenbeck has the highest proportion of young people in the region with 27% percent of the population being younger than 19, while rural Lower Saxony as a whole shows a significant trend toward demographic ageing [13] (p. 16).

The newcomers, who moved to Heckenbeck in the past, were not only attracted by the village's many options to live in more sustainable ways, but also by the intense cohesion among the 'locals' [16,17]. Indeed, while most of the above mentioned sustainability innovations were built

up by the newcomers, there was never a deep-rooted cleavage between them and the locals. In fact, the locals have always cultivated mutual solidarity strengthened through manifold associations and renewed by means of regular festivities [9]. Thus, through their diverse activities, the locals and the newcomers have created together a high quality of life in the village, which has attracted supra-regional medial (e.g., [18–20]), scientific (e.g., [15,17]), and political attention (e.g., [21,22]). In sum, Heckenbeck can be seen as a CiT that actively opposes the overall trend of shrinking populations and degenerating infrastructures in rural Germany. It is thus predestined as a case for studying the transition process towards more sustainable lifestyles in rural areas.

## 3. Theoretical Considerations

### *3.1. Sustainability Transitions*

Climate change, resource depletion, and loss of biodiversity are among the most urgent challenges of our global future [23–25]. Several planetary boundaries are nearly reached or even crossed already [12,26]. In the last decades the necessity of changing the global societies' resource intensive production patterns and lifestyles has become obvious. Yet, the unsustainable way of life with its dramatic quantities of greenhouse gas emissions seems to be difficult to correct [27]. What is needed is a profound questioning and rebuilding of all available socio-technical systems, be they in the sectors of energy, food, mobility, or waste [28]. For this purpose, there is a need to develop not only new technologies, but also new political frameworks, new economic structures, new cultural norms, and new everyday practices [2,12].

Against this background, the emerging academic field of sustainability studies examines the feasibility of alternative economies and lifestyles and searches for viable ways to change the present-day structural non-sustainability [29,30]. The aim of this research is nothing less than a "radical transformation towards a sustainable society" [31] (p. 1). In terms of the scope of interventions needed, this "sustainability transition" [2] or "social-ecological transformation" [32,33] is comparable to the two fundamental revolutions of world history: the Neolithic Revolution, which refers to the invention and spread of agriculture and livestock, and the Industrial Revolution, which describes the transition from agricultural to industrial societies. Unlike the previous two, however, the revolution towards sustainability must be brought about purposively in a fairly narrow time frame and it is still far from clear how to achieve the goals of sustainable development set by the world community [12,34].

There are a number of different approaches and concepts in the field of sustainability studies, from environmental economics with its focus on quantitative surveys and econometric calculations (e.g., [35,36]) to political ecology with in-depth ethnographies and qualitative interpretations (e.g., [37,38]). For framing this study, we refer to the socio-technical transition theory [34,39–41] due to its explicit focus on transitions in socio-technical systems, which enable the fulfilment of societal functions such as mobility, nutrition, energy supply, or mobility. The socio-technical transition theory draws on insights from several disciplines and their subfields, such as evolutionary economics, science and technology studies, and neo-institutional theory, and applies a systemic perspective on the subject matter. Many socio-technical transition studies, like ours, use case study methodologies, since they enable investigations of topics in real-life contexts, focusing on causal links in complex situations in which a multitude of variables interact. By doing so, these studies allow us to understand transitions as non-linear processes characterized by accelerations and setbacks, by surprises and unintended consequences, as well as by political struggles and changing coalitions [40].

### *3.2. The Multi-Level Perspective*

In order to understand the dynamics of complex socio-technical assemblages comprising actors and artefacts, relationships and institutions, as well as discourses and practices, scholars of socio-technical transition studies work with the so-called multi-level perspective (MLP) [42,43]. The MLP is a heuristic framework, which serves to structure the empirical data and which enables

the explanation of a socio-technical transition as a process resulting from the interplay of multiple developments at three analytical levels: socio-technical niches, socio-technical regimes, and the socio-technical landscape [37,40].

(1) Niches are different kinds of protected spaces, in which radical novelties are conceptualized that altogether challenge the present regime. In classical socio-technical transition theory, these niches are seen primarily in corporate research and development laboratories or in state-run demonstration projects. The niche actors are mostly entrepreneurs or scientists, who hope for their promising novelties to be eventually used in the regime or even replace it [30]. Yet, Lawhon & Murphy [37] convincingly criticized this narrow focus, which only accounts for a subset of actors who shape transitions. They speak up for also including consumers, workers, and activists into the framework in order to prevent the concept from getting trapped in techno-economic determinisms, and to enable developing pluralistic and participatory institutions for transition governance. Against this backdrop, we take CiTs as niches. By doing so, we extend the framework by another group of actors who shape transition and who have been left unacknowledged in socio-technological theory so far.

(2) Regimes constitute the more pervasive and stable level of MLP, which is based on alignments of existing technologies and infrastructure, established institutions and networks, as well as routinized practices and cultural discourses [40]. In existing regimes, innovation is mostly incremental, as they are highly stabilized by path dependencies and by lock-in mechanisms of economic (sunk investments in competence, factories, and infrastructure), social (cognitive routines, social networks, user practices, lifestyles) and political kind (active opposition to change from groups with vested interests). While niches struggle against these well-entrenched socio-technical regimes, Shove [44] argues that this struggle cannot be limited to technical artefacts that may or may not prevail in the market. She demonstrates that artefacts do not necessarily arise to meet existing demands, since social needs themselves are created. This said, in this study we do not restrict our gaze on artefacts, which would lead to a rather apolitical lens on socio-technical transitions, but focus primarily on the shaping and reshaping of social practices that precede the development of specific social or technical solutions [44].

(3) The landscape is the wider context that surrounds both the niches as well as the regimes. It comprises material aspects such as the geomorphic structure or climate of a region, slowly changing societal aspects such as demographics, political ideologies, or macroeconomic trends, but also sudden events of translocal impact such as oil price fluctuations, recessions, wars or major technical incidents like the nuclear meltdown in Fukushima [43]. All these factors can be combined in a single category, since as a whole they form the external context that cannot be influenced in the short term by niche or regime actors [37,40].

The process of transition is understood as an interplay of processes at all three analytical levels. Niche innovations build up an internal momentum and affect the regime; at the same time, the destabilization of the regime creates windows of opportunity for niche innovations. Changes at the landscape level, again, create pressure on the regime. And, in the long run, changes in the regime also affect the landscape [40]. By acknowledging these diverse interaction patterns at different analytical levels, the MLP is grounded in the concepts of emergence, self-organization and circular causality. The transition itself is conceptualized in four phases:

(1) Experimentation: In the first phase, radical innovations emerge in niches, often outside or at the margins of the existing regime. Social networks of innovative actors are fragile in this phase, since there are no stable rules of interaction, various design options for artefacts and institutions, and overall much uncertainty. It is the phase of experimentation and testing [40].

(2) Emerging trajectories: In the second phase, innovations break out of their protected niches to slowly establish a foothold in society. Learning processes of innovators stabilize into dominant patterns and the innovation develops a trajectory of its own.

(3) Competition: In the third phase, the innovation diffuses into mainstream society where it competes with existing technology and the wider socio-technical regime. This phase is often characterized by struggles on multiple dimensions: Economically, there is market competition between new and existing technologies. On the business dimension, there are struggles between new entrants and incumbents. Politically, there are power struggles about the precise settings of policy instruments. Discursively, there are struggles about cultural interpretations, which frame problems and solutions in certain ways [40].

(4) Regime change: The fourth phase, eventually, is characterized by the transition itself, which occurs "when there is a disruption in the system that results in a new 'architecture' or system structure" [37] (p. 357). Noteworthy, transitions usually take time to complete, often decades or more. They become anchored in institutions and new agencies, practices, mind-sets, professional standards, and technical capabilities. While they might provide solutions to some of the non-sustainable assemblages, they also create new unintended consequences that need to be monitored and potential losers might need to be compensated [40].

## 4. Methodology

In contrast to most of the transition literature, this case study focusses predominantly on social, sufficiency-oriented innovations shaped by sustainable lifestyles and low-tech-infrastructure instead of technological innovations from private businesses [5,43]. Therefore, we do not concentrate on 'elite actors' like innovators, statesmen, or scientists [37], but on laypeople in their roles as residents, consumers and employees. We examine how a sustainable lifestyle milieu has been developed and how niche actors have spread their ideas in the village, the region and beyond by using existing windows of opportunity. The MLP helps us to understand this process.

Against this backdrop, we conceive of the local transition process not as result of a one-directional 'point source' process initiated and enacted solely by a group of peripheral niche actors, but as a dynamic interplay of a variety of actors and processes as being part of the *niche*, the *regime* and the *landscape* [34,43]. By doing so, we understand the socio-technical regime and the landscape as being multi-scalar settings which operate on different geographical and functional levels (political, medial, economic, cultural, juridical, etc.). Up to now, the spatial aspects, unlike temporal issues, are conceptually underdeveloped within the MLP [37,43,45]. Thus, for analyzing our case study, we conceptualize the MLP more stringently from a spatial perspective. The distinction of different spatial scales within the regime and the landscape helps to analyze and identify the concrete niche's framework conditions much more precisely. The landscape provides quite different windows of opportunities for the niche actors depending on the specific scale. Similarly, the regime's degree of changeability and interaction with the niche varies significantly, depending on whether to consider it from a local or supra-regional perspective. As such, we argue, it is not only useful but necessary to add a spatial perspective to the MLP.

We chose a qualitative approach to retrace the complex mutual interrelations between the analytical dimensions over time. During a one-year work stay between 2010 and 2011, one of the authors gained intensive and valuable insights in the different projects and the local networks, strategies and interrelations between the locals and the newcomers. By means of this "accidental ethnography" [46] the author participated in the village life, worked in different projects and engaged in the local sports club, which provided him with contacts to actors from both social groups, the locals and the newcomers. This long stay enabled an in-depth understanding of the local dynamics and its historical developments.

To systemize and scrutinize the collected impressions, one of the authors conducted eight problem-centered interviews on the specific topic of sustainability transition in the time from April to June 2016 on top of this long-term stay. He conducted interviews not only with newcomers and locals from Heckenbeck, but also with residents of neighbouring towns and with employees of planning authorities from the borough of Bad Gandersheim and the district of Northeim. The selection of these interview partners aimed at representing a wide range of relevant actors from different social

groups, ages, professions, genders, and cultural backgrounds (see Table 1). Last but not least, both authors participated in guided village inspections organized by Heckenbeck's people to follow-up on certain aspects relevant to this study. The details of data analysis from the building of categories to the interpretation of findings are shown in Figure 1.

**Table 1.** Interview partners.

| Interview Partner (IP) | Role | Social Group | Sex | Profession |
|---|---|---|---|---|
| IP 1 | Teenager who grew up in Heckenbeck | Newcomer | Female | Student |
| IP 2 | Employee in Heckenbeck and inhabitant of the neighboring town Bad Gandersheim | External | Male | Biologist and teacher |
| IP 3 | Inhabitant and employee in Heckenbeck | Newcomer | Male | Headmaster of the local school |
| IP 4 | Inhabitant and first village leader of the newcomers' group from 2011–2015 | Newcomer | Female | Former village leader |
| IP 5 | Administrative head of the building authority and deputy mayor of the borough Bad Gandersheim | External | Male | Administrative staff |
| IP 6 | Regional Manager of the district Northeim who provides support for regional village development and moderation including Heckenbeck | External | Female | Administrative staff |
| IP 7 | Inhabitant of Heckenbeck; actively involved in many local associations; editor for local newspaper | Local | Male | Press officer of the borough Bad Gandersheim |
| IP 8 | Inhabitant of Heckenbeck | Newcomer | Female | Gardener in the local community supported agriculture |

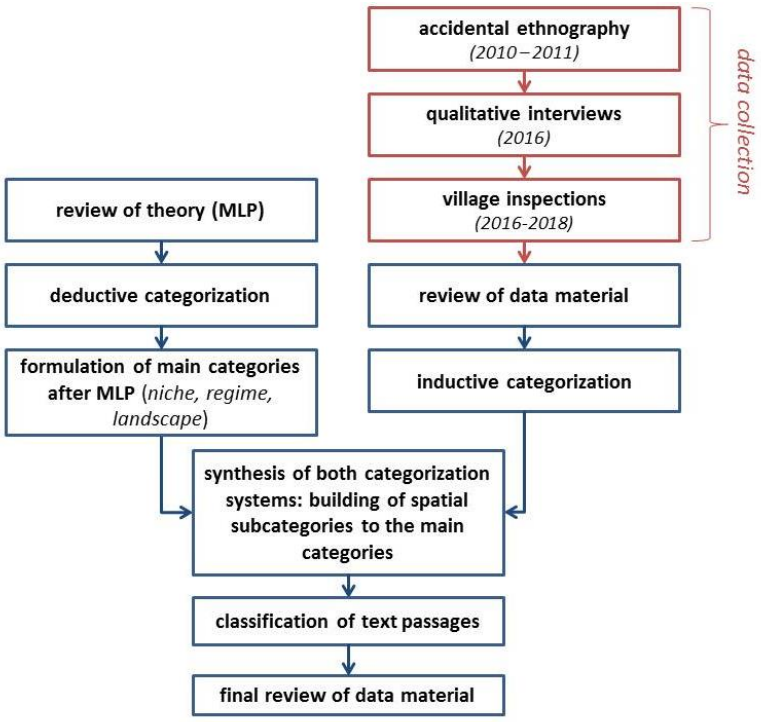


**Figure 1.** Data analysis.

This study features at least two limitations: (1) Since it is a single case study, any generalizations cannot be more than hypothesis to be tested in the future by means of comparative studies. (2) A more stringently organized ethnography right from the beginning would have reduced the search time for relevant informants and information and would probably have brought deeper insights into the societal and psychological details of the complex transition process in situ.

## 5. Results

### *5.1. Heckenbeck as CiT*

During the last decades, a wide range of different projects, organizations and rural infrastructures were established in Heckenbeck, which not only enhanced the local quality of life [17], but also set the context for more sustainable forms of consumption, mobility, and education. Many of these projects exist now for more than ten years and have become an inherent part of the village community, like the Free School Heckenbeck with its democratic-participative educational concept and with an associated kindergarten, the cultural center *Weltbühne* (engl. "world stage") that offers cabarets, music and theater performances, or a medical and midwifery practice that guarantees primary health care.

Food, education and construction activities are the three most important sectors in Heckenbeck in regard to sustainability: The only local retailer provides certified organic food as well as non-food items and the CSA provides 80 shares of local, seasonal and organic vegetables. Organic beekeepers, sheep farmers and juice producers as well as different craftspeople and artists further enrich the village diversity. The association *Heckenrose* (engl. "dog rose") prosecutes environmental education among others and supports sustainable forms of mobility in the village, such as car sharing and a lending system for bicycles. Apart from that, and triggered by the recent village growth, people in Heckenbeck have planned, designed, and constructed individual houses as well as the local school building according to ecological criteria. All these projects can be seen as local sustainable innovations, because they are newly implemented and (mostly) collaboratively organized, focusing on mutual solidary between users and demanders (e.g., the CSA) and facilitating resource-poor lifestyles within the village. Besides these projects of newcomers, there are also established associations in the village that are run by locals, like the volunteer fire department, the gun club (*Schützenverein*), the civic association (*Bürgerverein*), the church, the choral society, and the sports club with nearly 300 members.

### *5.2. Experimentation and Emerging Trajectories in Heckenbeck*

The initial trigger for Heckenbeck's transition process (see Table 2) occurred in 1984 when a single pioneer arrived in the village with the idea to build a self-subsistence farm. In the following years, further people moved to Heckenbeck who started additional ecological and social projects. Together, these newcomers were not only able to experiment successfully, but also to craft an emerging new trajectory for different types of sustainable lifestyles in the village. The above mentioned three analytical levels of *niche*, *regime*, and *landscape* help us to understand this process.

#### 5.2.1. The Socio-Technical Niche

After the arrival of the first pioneer, the rapidly growing newcomer community provided a vital protective niche for social innovations and alternative lifestyles in the village. Initially this group "*had the impulse to relate only to themselves [ . . . ], to create own ways of living and to set themselves apart from the outside*" (IP 2). Accordingly, in this initial phase, a clear social distinction was drawn between 'the locals' representing the local regime and 'the newcomers' standing for the emerging niche. For both groups varying attributes or partly judgmental synonyms were used, such as 'the long-established' or 'the old' for the former and 'immigrants', 'newcomers', 'the greens' or 'eco-hippies' (humorous) for the latter group. This self-distinction helped the latter to actively search for new modes of living and to test them. Intense trust-based relationships bonded the newcomer community and created an innovation-friendly and supportive atmosphere within a small protective frame. In this way, the

community built facilities for CSA, the above mentioned free school with new educational approaches, the medical practice and sustainable forms of mobility. All of these projects were built *by* newcomers predominantly *for* newcomers.

**Table 2.** Experimentation and emerging trajectories in Heckenbeck: Analytic and spatial levels.

| | Niche | Regime | Landscape |
|---|---|---|---|
| Local level | • Newcomers distinguish from locals and create sustainability-led innovations in the village<br>• Innovations increase attractiveness of the village and generate population growth | • Locals are known for their vivid village life<br>• Locals keep in distance to newcomers<br>• Skepticism remains the dominant attitude toward the newcomers due to ideological gaps and mistrust | • Numerous vacancies in the village and shrinking population in the region create "playground" for newcomers' projects<br>• Compacted village structure facilitates non-motorized traffic and encounters of both social groups |
| Regional level | • Several other small niches with direct or indirect references to Heckenbeck emerge | • Interaction of niche actors with local construction companies<br>• Ignorance on part of local media | • Demographic ageing and rural emigration<br>• Negative economic development<br>• Declining infrastructure |
| Supra-regional level | • Newly emerging (inter-) national networks function as supportive platforms for local niche activities (e.g., community supported agricultures) | • Funding programmes (EU, national level) provide windows of opportunity<br>• Scientific interest and emerging media coverage | • Discursive space in the context of global environmental change and urbanization puts pressure on regime's policies |

The newly established infrastructures facilitated a more resource-friendly way of living, but at the same time these novelties conflicted significantly with the local socio-technical regime: in the eyes of many locals, the new concepts of living such as a membership-based organic shop or new educational approaches at school stood heavily in contrast to their long-lived perceptions and habits. One inhabitant of the neighboring town described these tremendous cultural differences between the niche actors' and the locals' ways of life at the beginning as "deep ditch" (IP 2). Like in most other villages of the region, medical care, retail stores, and educational institutions had ceased to exist long ago, while daily commuting to neighboring cities by means of motorized private transport had been the dominant mode of living.

However, the local niche innovations cannot be seen as insulated events. Beyond the regional level, newly emerging supra-regional niche developments played a pivotal role. Supportive platforms, like a nationwide group of alternative free schools or the network of CSAs, functioned as important idea providers and contact points for local activities.

#### 5.2.2. Socio-Technical Regime

The socio-technical regime must be seen as a heterogeneous and geographically multi-scalar setting which interacts with the local niche in various ways. To analyze these interactions between the local niche and the socio-technical regime more profoundly, we distinguish between the *local*, the *regional*, and the *supra-regional* regime. The different scales and their levels are no objective and fixed categories, but rather socially constructed and as such highly dynamic and mutually interwoven [45,47]. Thus, we do not perceive different spatial levels as naturally pre-given entities, but as analytical categories for understanding the geographical dimension of transition in our specific case.

In the phases of experimentation and the emergence of new trajectories, the *local* regime in the village consisted mainly of the long-established, the former village leaders and the traditional local associations, which seemed to be comparatively easy to influence on part of the newcomers in the absence of administrative institutions and local economies. However, in actual fact, the newcomers and

their new ways of living engendered rather skepticism than admiration by the locals, which caused them to keep their distance at the beginning. This finding shows that the local regime comprises also the attitudes and cultural norms of the people, in the midst of whom the niche developed. The following statement of one of the interviewees illustrates the initial tension and mistrust that existed at that time between the niche's people and the local regime in Heckenbeck:

> *"There was a perspective like: 'They [the newcomers] are a little mad [ . . . ]. It's all a bit strange and unfamiliar, [ . . . ] they [the locals] had a personal distance to those people [the newcomers] at first, how they looked like, how they behaved and they rejected that [ . . . ]. At first it was a relatively heavy divide"*. (IP 2)

The *regional* regime additionally included policies set by political and administrative institutions (e.g., planning authorities) of the responsible borough and district as well as the interaction of niche actors with private businesses (e.g., existing ecological construction companies) and supporters from outside as well as the ignorance on part of the regional media at that time.

The *supra-regional* regime, eventually, played a role as provider of so-called windows of opportunity, e.g., in forms of private and public funding pools or institutional support. Niche actors harnessed these potentials for innovative projects, e.g., by offering publically financed actions for sustainability education or integrating nationwide organized volunteer services within their social and ecological projects. Beyond that, local actors participated in national and EU programmes for rural development, which functioned as incentives for social cohesion and the spreading of sustainable practices (e.g., village contests, LEADER). Also, the scientific interest, local and regional development concepts [13,14] and supra-regional media coverage need to be mentioned in this regard, that altogether discussed recent developments in Heckenbeck as best-practice examples to be multiplied elsewhere.

#### 5.2.3. Socio-Technical Landscape

As a compilation of historically found factors that cannot be influenced directly by niche or regime actors in the short run [34], the landscape can be subdivided geographically, too. The *local* landscape comprises, e.g., the prevailing vacancies in Heckenbeck prior to the newcomers' arrival, which offered opportunities for new projects as well as for housing. As existing framework for the newcomers' activities, the compacted village structure away from major thoroughfares facilitated non-motorized traffic and daily encounters of both social groups in public space. Apart from the material infrastructure, the locals' basic attitudes and experiences also played an important role as mental infrastructures of the local landscape (see below) [48].

The *regional* landscape consisted of the dominant trends in the district, such as demographic ageing, the rural emigration of young and qualified people, the dismantling of public infrastructure, the shrinking private sector, and the municipalities' financial bottlenecks. All these trends exerted high pressure on the regime actors, especially political decision makers who could hardly reject the local trend reversal that was evolving in Heckenbeck over time. An inhabitant of the neighboring Bad Gandersheim described the situation at that time as follows:

> *"[Heckenbeck's overall development] proved against this [skeptical] attitude [ . . . ], because it was unmistakable that this village generated so much energy, which also flowed into the region. And if people from southern Germany move to Heckenbeck to send their children to the [local] school [ . . . ] then of course this has a charm and it can't be rejected"*. (IP 2)

Thus, the negative basic conditions of the regional landscape helped the niche actors to establish themselves in this particular region.

Lastly, the *supra-regional* landscape worked on a much more abstract level. Two broad trends of global impact, namely environmental change, and urbanization, provided a discursive space that helped Heckenbeck to emerge as CiT and to be seen as such by the wider public. Yet, these pressures also affected concrete regime's policies, e.g., in form of climate protection concepts or funding programmes for shrinking rural regions, from which the niche's actors could benefit.

### *5.3. Competition and Regime Change in Heckenbeck*

In the following years after the establishment of numerous ecological initiatives, the hitherto clear-cut distinction of niche and local regime actors successively blurred and nearly vanished in the last years. The former alternative projects influenced the local regime more and more and even dominate it today so that the locals and the newcomers have merged lastly to a new local regime. In this section, we focus on this latter development, being characterized less by competition, as the theory suggests, but more by debate, mutual convincing, and a successive change of practices. We identify the factors beneficial for this regime shift by analyzing the respective interplay among the niche and the regime actors and the landscape at different geographical levels. Figure 2 provides a summary of our findings.

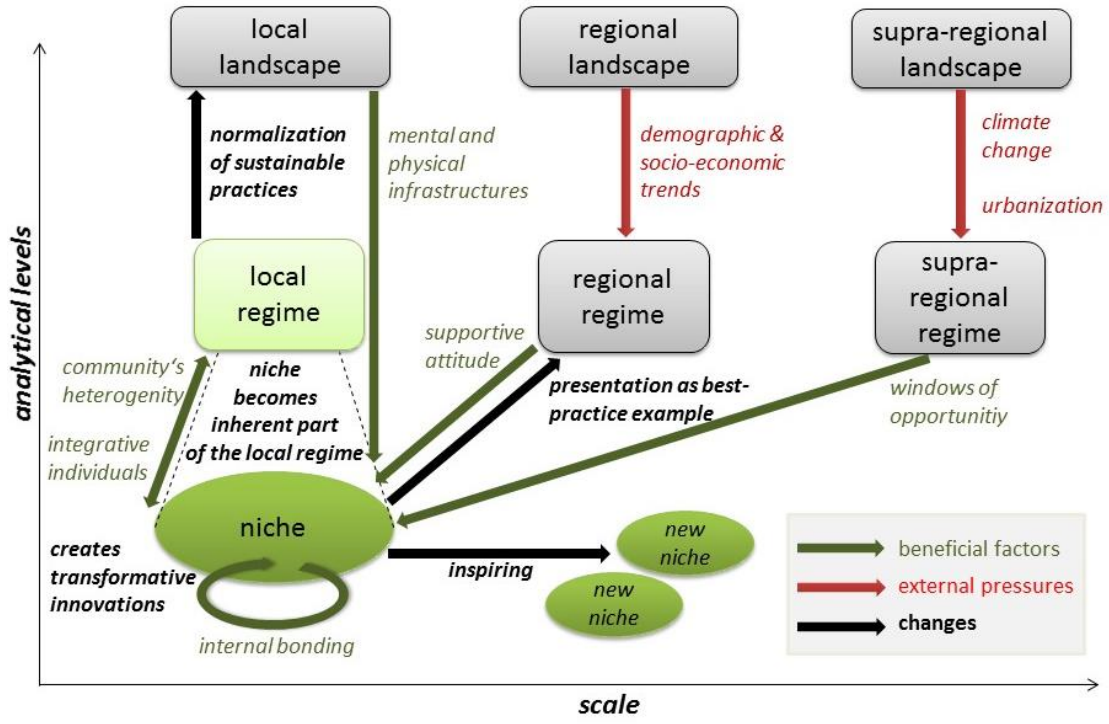


**Figure 2.** Interplays on different analytical levels and scales in Heckenbeck's transition process.

#### 5.3.1. Dynamics in the Socio-Technical Niche

Right from the beginning, there were several outstanding persons among the newcomers who helped to overcome the community's initial island status in the village. These integrative persons helped accelerating the building of mutual trust and exchange among members of the two social groups. For instance, the former village leader, the local doctor, or the director of the cultural center were able to raise their voice to be finally heard by both the locals and the newcomers. In this way, they helped making the transition happen as they actively and emphatically pushed forward inter-group contacts by organizing events for social encounter.

Another positive factor was that, after some time, the group of newcomers was not anymore perceived as homogenous by locals, but as "*incredibly varied, diverse and proactive in all possible directions*" (IP 2). The fact that there was never a formalized process of decision-making among the niche actors helped visualizing this diversity for others. While aspects with effects on the entire village were discussed in open plenum sessions, most issues were addressed individually on a face to face basis. In turn, in everyday life, the niche actors did not act like a monolithic whole or a closed network (IP 4), but provided the opportunity for social mixing by actively interacting with locals on an everyday basis (IP 2). Accordingly, one of the newcomers describes the community today as a 'loose network',

which appears accessible to outsiders not least also due to its absence of clear hierarchies as well as the absence of one (and only one) shared ideology:

> *"That is, I think, the reason, why this is in a way so successful, because I do not perceive this compulsion to participate here and there or to champion a specific ideology. Therefore, it is a much more varied blend and also much less threatening"*. (IP 3)

This heterogeneity and the missing dogmatic orientation of the newcomers' community encouraged the bridging to mainstream society, since it reduced the prevalence of stereotypes and undermined dissociative mechanisms. Moreover, the diversity is also reflected in the wide spectrum of different professions among the niche actors, as there are academics socialized in urban milieus as well as craftsmen with agrarian backgrounds among them. This particular aspect of diversity further eased the bridging between niche actors and the locals, because people literally spoke "the same languages" and often shared a common habitus (IP 4).

#### 5.3.2. Niche, Regime and Landscape Interplay at the Local Level

Several aspects of the socio-technical landscape facilitated the local transition process by providing windows of opportunity: Right from the beginning, the compacted village structure inevitably led to daily encounters between newcomers and locals [49] (IP 3). In contrast to many intentional communities and ecovillages, the newcomers' projects were not placed somewhere beside the 'old' village, but were rather inscribed directly into the traditional village structure; e.g., the free school in the village center or the CSA next to the locals' gardens and fields. The niche's visibility helped reducing its perceived strangeness on part of the locals and made the projects soon to be an integral part of the village as a whole. Besides, the many encounters between newcomers and locals encouraged a vivid public life.

The locals' frankness played an important role as mental infrastructures of the local regime [48]. Even before the influx of the first pioneering newcomers in the 1980s, Heckenbeck had traditionally been perceived as being an agile village, whose diverse associations attracted many people from neighboring villages. One of the locals underlined this in the following statement:

> *"This is the clue from my perspective that it was quite simple for the newcomers here. Especially in our table tennis and football teams we always enjoyed a large clientele from the district. That's why it wasn't so difficult for the newcomers to arrive on the scene here [ . . . ]. Because it wasn't unusual, when suddenly a stranger appeared, whom no one knew"*. (IP 7)

This statement shows how shared visions and attitudes of the regime actors influence the acceptance of niche innovations and actors by the regime itself.

#### 5.3.3. Niche, Regime and Landscape Interplay at the Regional Level

Shaped by the negative economic and demographic situation at the regional landscape level, the political and administrative institutions as part of the regional regime expressed no great resistance to Heckenbeck's transition process with its positive demographic and economic trends (see above). Instead, the borough as well as the respective district lent support in form of symbolic, financial, or administrative efforts. For example, the borough Bad Gandersheim adjusted the legal requirements for building areas in Heckenbeck to enable the construction of eco houses. Additionally, the borough and the district of Northeim supported the enlargement of the school building in 2014. By doing so, the regional policymakers clearly spoke up for the village's development, since the school functioned as main attractor for new families moving to Heckenbeck.

Apart from that, Heckenbeck was repeatedly portrayed as a best practice example in administrative development concepts [13,14] and started to receive increasingly positive coverage also by regional media (IP 4). The school's headmaster described this growing political interest as follows. According to him, the politicians wondered "*how this [positive development of Heckenbeck] could*

*come about*? [ . . . ] *Because it's no flash in the pan, but it's sustainable. Demonstrably sustainable*" (IP 4). Given the public concern with sustainable development, the case of Heckenbeck was now discussed in media reports, policy briefs and scientific publications, which even went beyond the regional level (e.g., [15,17,18,20–22,50]). This widespread, predominantly positive coverage, e.g., by popular TV documentations (e.g., [19]), brought along an increased reputation of the socio-technical niche of Heckenbeck, which in turn made it easier for the niche actors to attract new regime actors as supporters of their projects (IP 8).

#### 5.3.4. Niche, Regime and Landscape Interplay at the Supra-Regional Level

It should not stay unacknowledged that niche actors profited from financial support from several small-scale donors, e.g., environmental foundations supported projects for nature conservation, environmental protection, and education. The projects' high reputation, local knowledge about funding opportunities, and supra-regional networks helped to get hold of these financial supports.

Nevertheless, much more important than the selective financial supports were existing political incentives that were harnessed by the local actors. In the case of Heckenbeck, a particularly important factor for the increasing integration and social mixing of the villagers was the joint participation in supra-regional village contests. While rankings and contests between regions and cities are repeatedly criticized as a neoliberal form of regional development (e.g., [51]), our case shows that contests can also help setting positive incentives to create a common village identity. The nationwide contest *Unser Dorf hat Zukunft* (engl. "Our village has a future") is one example. This contest aims to activate people in rural areas and awards villages with less than 3000 inhabitants for their efforts to organize joint activities, enhance local living conditions and improve their overall appearance. As a result of the United Nations Conference on Environment and Development 1992 in Rio de Janeiro, the long-established village contest was realigned so that future-orientation and sustainable development were put in focus. This realignment can be read as a trend that stems from the global landscape and puts pressure on the existing regime.

In Heckenbeck, this pressure did not stimulate new transformative projects or village activities, but rather worked as a bridge builder between locals and newcomers and, therefore, accelerated the transition process. Several interviewees stressed the changed self-perception of the villagers, which came along with the preparations for the contest and was fortified after being successfully awarded (especially for the aspects of sustainability and rural life quality). The socially mixed working groups, which organized the preparations for the contest, generated a wide and valuable mutual exchange about the diverse existing projects and associations in Heckenbeck independently of the primarily responsible social group [52]. One of the locals explained the result as follows:

> *"The assessment team finally did not recognize what was a newcomers' project and what was a project of the locals. We showed them everything together [ . . . ]. We passed the gun club house [dt.: Schützenhaus], then we came to the local organic shop and then to the vegetable field of the community-supported agriculture"*. (IP 7)

In this way, the intense joint preparation created an atmosphere of *one* village and *one* community, which all of our interview partners rated as highly valuable. A gardener of the CSA reported, e.g., that "*suddenly the locals said: 'Yes, this is our vegetable field.' Previously they hardly ever appeared there and suddenly they identified themselves with it"* (IP 8). This statement demonstrates how the contest created a window of opportunity for the two groups of villagers to get in contact with projects of the other group and to finally identify with them. The former village president confirmed this, as he mentioned that these contests and regarding application procedures created a "*very strong feeling of togetherness*" for the village as a whole (IP 4).

Apart from the contest mentioned above, there were several further supra-regional institutions, which created windows of opportunity for Heckenbeck's people to expand the existing transformative projects beyond the niche. As such the free school and the kindergarten, e.g., participated as an

awarded project partner in the United Nations Decade of Education for Sustainable Development and the local environmental association Heckenrose e.V. as well as the CSA became involved in the nation-wide agricultural and educational network *Transparenz schaffen* (engl. "Creating transparency").

## 6. Discussion

By looking at the entire process of socio-technical transition, we argue that Heckenbeck can be seen as a CiT whose socio-technical niche actors successfully managed to overcome their previous island status, to effectively transform the local regime by spreading their ideas among their fellow village members, and to put pressure on the regional regime by using windows of opportunity created in the socio-technical landscape. While initially the newcomers crafted cross-sectoral sustainability innovations *by* themselves *for* themselves, the alternative infrastructures and practices spread to Heckenbeck's long-established inhabitants. As our interview partners stated, the newcomers and their innovations were initially seen as 'a little mad', but gradually changed the locals' perceptions and practices and thus transformed the local socio-technical regime. Today, Heckenbeck is known for the social innovations of the so called newcomers who have shaped the village for already more than 30 years now (IP 2). On the one hand, this transition can be seen in the newly built eco-houses or in the many vegetable gardens in and around the village. On the other hand, it can be seen in the transport of local vegetable produce by bikes, or in groups of students visiting the village on several occasions around the year to learn about organic farming practices. In this way, and by media coverage, both the internal and the external perception of Heckenbeck has changed positively (IP 2, IP 4). At the same time, the traditional associations persist until today and have partially even been enlarged by the newcomers' participation. With the election of a newcomer as village leader in 2011, the transition process has also found its way into the village's self-administration. Due to missing vacancies in Heckenbeck today, more and more people settle down in neighboring villages and towns, where new niches emerge. As such, Heckenbeck starts to even grow its first satellites in the regional surroundings and, therefore, to slightly influence the regional socio-technical regime (IP 2, IP 7).

In sum, we identify two overarching factors that made Heckenbeck successful in overcoming its island status: First of all, the newcomers' community effectively managed to create a strong mesh of open and closed networks. In the first two phases of the transition process, a close network with its intimate and trust-based relationships among the newcomers provided them with a protective atmosphere for sustainable niche innovations in the form of mutual assistance and support and the joint handling of setbacks. In the later transition phases, these kinds of bonding relations within closed networks were widened to strategic partnerships with spatially more distant niche actors from related fields: Today, e.g., Heckenbeck gardeners are meanwhile embedded in supra-regional networks of CSA initiatives and the free school participates in a nationwide evaluation network with various models for alternative schooling. Simultaneously, the niche actors started to tie more open networks with actors beyond their respective niches. Locally, those were mainly neighborhood relations and joint festivities that enabled contacts between the locals and the newcomers. Regular events like the annual Christmas market organized by a mixed group of locals and newcomers attracted external visitors to get into contact not only with the village as such, but also with the newcomers' niche projects (IP 1, IP 2, IP 3, IP 7, IP 8). Currently, the CSA and the environmental association Heckenrose participate in a network with conventional farmers. Furthermore, the local organic shop serves as best practice example for a nationwide initiative for the re-establishment of village shops. Last but not least, the school and the cultural center cooperate in many ways with the regional theater festival.

Even though these networks play a crucial role, they are not sufficient for explaining Heckenbeck's successful transition process. Of similar importance are the windows of opportunity unfolding in the socio-technical landscape. In fact, the structural conditions have been very advantageous for the niche actors to make their sustainability agenda strong. As such, given its negative economic and demographic situation, the regional political and administrative institutions expressed no great resistance to Heckenbeck's transition process. Instead, the borough as well as the respective district

lent support in form of symbolic, financial, or administrative efforts. For the overcoming of local cleavages and the integration and social mixing of the villagers, the nationwide contest *Unser Dorf hat Zukunft* was particularly important, since the intense joint preparation created an atmosphere of *one* village and *one* community. Without these windows of opportunity, Heckenbeck's transition process might have taken much longer or might not have even happened at all. Thus, by bringing together the niche actors networking activities and the overarching structural conditions, the MLP helps us to understand contemporary sustainability transition processes without necessarily overstating either social structure or individual agency.

## 7. Conclusions

In this study, we investigated the question of how a rural CiT can overcome its problematic island-status to become a change agent that help to spread innovative ideas needed for social-ecological transition effectively among the wider society [12]. For answering this question, we took the example of Heckenbeck, a village located in southern Lower Saxony (Germany), as a case and examined the social interactions and networks that have been established between local sustainability niches and the socio-technical regime. By applying the MLP inspired by socio-technical transition theory, we illustrated how a group of actors (the 'newcomers') has accomplished to effectively spread their ideas among the local, regional and supra-regional society by making up multifaceted open and closed social networks and by using windows of opportunity created in the socio-technical landscape. The sustainability transition in Heckenbeck was predominantly initiated by the moving in of pioneers. This moving in cannot be easily reproduced in another location or on a large scale. Nevertheless, the case of Heckenbeck provides several findings that can become valuable for transition processes in other small rural places. From our findings, we deduce the following lessons learnt:

(1) A strong social self-isolation of niche actors from the surrounding regime might create protective frames to provide spaces for experimentation. However, in the long run, these innovations will remain within their niches and fail to spread into mainstream society, if no relations to regime actors exist [10]. The chances for spreading increase the more the alternative lifestyles are practiced visibly and openly. An accessible alternative infrastructure as part of the established village structures helps to overcome barriers for participating in niche projects.

(2) In contrast to technological innovations, the diffusion of sustainable practices and sufficiency-oriented lifestyles is a much more protracted process. Social practices and lifestyles embedded in structural non-sustainability are fixed by means of physical and mental infrastructures, which are difficult to change [1,30]. Our case shows that the bridging of distant milieus—in our case of 'newcomers' and 'locals'—can successfully take place when face-to-face interactions happen on a regular basis. In Heckenbeck, the joint creation of a village identity and of social cohesion was highly successful. Furthermore, the important role of spaces for sustainability transitions became clear. Innovative practices lead to new physical infrastructure, which has in turn effects on the practices of others. In this way, the ideas of a CSA or the free school became experienceable by people outside the niche, who integrated them into their daily routines. On the basis of daily encounter, new lifestyles were thus taken up not (only) due to moral reasons, but (also) due to their mere practicability. As Smith et al. [43] (p. 444) phrase it, "places bring meaningful historical and social narratives into the realization of abstract goals. They generate regionally relevant visions whose symbolism and specificity carry greater moral authority as a result."

(3) Even on a local level, regime transitions are conflictual and generate resistance. This resistance can be overcome by intense efforts to organize events that enable encounters and successively create a mutual understanding between niche and regime actors. For fostering sustainable innovations in administrations, communicative and courageous actors, strategic networks and partnerships, media attention and/or scientific reputation can help. Yet, without specific windows of opportunity offered by the regime and landscape, niche innovations are at risk of failing by

not spreading into mainstream society. Thus, the identification and utilization of windows of opportunity by niche actors play a crucial role and often are decisive of either success or failure. In the light of our findings, we confirm the statement of Smith et al. [43] (p. 441) that "both strong socio-technical alternatives *and* favorable openings in the regime selection environments" are essential factors for transitions to succeed.

(4) These favorable openings do not occur by chance or automatisms but are mostly results of political decisions. The MLP enriches the transition research by the focus on the structural framework and its interplay with transformative niche actors. Against this backdrop, it is necessary to address politics and planning authorities to create structural framework conditions that facilitate civic transition processes by providing accessible windows of opportunity and dismantling obstacles for its realization on a local scale. The solution of urgent sustainability challenges must not be unilaterally shifted to individuals in a neoliberal logic, but is a central task of politics.

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