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Building an entrepreneurial environment in rural regions: a possible way to develop human and social capital

The main hypothesis behind the paper is that creating an entrepreneurial team learning environment is a way to increase human and social capital in rural regions. Our work, based on literature review and primary research, tries to show that this process could support a shift in people's attitudes from being reactive to creative and also interdependent. The results of a Delphi survey show that all four 'spheres' of the Quadruple Helix model in rural development (government, science/university, business/industry and civil society) should play a role in the development of a learning environment, but that more importance should be attached to 'pull' type of learning designed to draw out people and resources as needed to address opportunities and challenges. In a second survey, among farmers in the Hungarian settlement of Mezőcsát, we found significant differences in the use of information channels by different age groups. Personal meetings are preferred by older farmers and the Internet by younger farmers. With regard to the Quadruple Helix model spheres, from the government sphere farmers' advisors play the most important role while from the business/industry sphere the most important relationship for farmers is with their peers. We conclude that the four spheres must create an 'outside-in' and 'inside-out' partnership. As creating entrepreneurial culture is a slow process, existing elements, such as the LEADER programme, building on those farmers who are ready to take part in rural development and the preferred usage of the Internet by the younger generation, have to be used.

Keywords: personal mastery, entrepreneurial team learning environment, rural development

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Introduction

Although there are many factors that can affect the development of rural regions (for example natural resources and geographical characteristics), earlier participatory action research by the authors has shown that, among these factors, human and social resources are the most important (Katona Kovács and Bótáné Horváth, 2012; Katona Kovács *et al.*, 2012; Bótáné Horváth, 2013). The focus on human and social capitals can be explained in terms of the dimensions of sustainability (nature, society and economy) as follows: *nature* (planet) creates the frame, the limits of growth, while *society* (and people as part of society) has to learn and understand this system and to become conscious consumers. On the other hand people have to become conscious *creators* of physical and financial capital and now, because of the growth in the world's technological capacity to store information (Hilbert and López, 2011), so-called 'big data' capital, and these three capitals make up the third, *economic* dimension of sustainability.

Senge *et al.* (1994) drew attention to people's different views of their relationship with the world: *reacting* orientation ("the world is happening to me"), *creative* orientation ("I create my future") and *interdependent* orientation, which is when, although recognising their integrity as separate person, they also feel 'a part of' the system. With regard to how we create our own reality and how we can change it, Senge (1990) lists five disciplines which will not be successful without each other: *system thinking*, *personal mastery*, *mental models*, *team learning* and *shared vision*. In the case of personal mastery (which starts with clarifying the things that really matter to us, of living our lives in the service of our highest aspirations), Senge stresses that there are only few people who are ready to develop themselves to be able to lead their own lives. "No one can increase someone else's personal mastery. We can only set up conditions which encourage and support people who want to increase

their own" (Senge *et al.*, 1994, p.193). We do not live in any of these frames of mind all of the time: we might have an *interdependent* attitude toward civic life, a *creative* attitude toward work and a *reactive* relationship with people with whom we regularly interact (Senge *et al.*, 1994).

Creating an entrepreneurial environment in rural regions could support a shift from being *reactive* to *creative* and also *interdependent*. Our hypothesis is that, similarly to organisations – "An organisation develops along with its people" (Senge *et al.*, 1994, p.193) – increasing the number of those who are ready to develop their personal mastery could promote the development of rural regions.

Building this entrepreneurial, encouraging and supportive environment could follow the 'Big Shift' approach developed by Hagel *et al.* (2010). This involves a change from a 'push' paradigm that still pretty much dominates how we act, to a 'pull' paradigm that sets out new ways to operate and engage. 'Push' approaches begin by forecasting needs and then designing the most efficient systems to ensure that the right people and resources are available at the right time and the right place, using standardised processes. For example, we are *pushed* into educational systems designed to anticipate our needs over twelve or more years of schooling and our key needs for skills over the rest of our lives; or we consume media that have been packaged, programmed and *pushed* to us based on our anticipated needs. 'Push' approaches treat people as passive consumers whose needs can be anticipated and shaped by centralised decision makers. 'Pull' is a very different approach, defined by Hagel *et al.* (2010) as the ability to draw out people and resources as needed to address opportunities and challenges. Using 'pull', we can create the conditions by which individuals, teams and even institutions can achieve their potential in less time and with more impact than before. 'Pull' is about expanding our awareness of what is possible and evolving new dispositions, mastering new practices and taking new actions to realise those possibilities.

Addressing the question of how rural development should proceed in an age of austerity, Shucksmith (2013) suggests action at two levels: supporting networked actions at the local level while also rural proofing national, devolved and local policies. In our understanding, in order to create networked actions the above-mentioned *personal mastery* of local actors has to be strengthened. Becoming an active member of a network demands answers to questions at the level of the individual such as: what is my personal vision, what kind of networks I would like to belong to, and what role could I play there which could help the network's development and also my own.

We agree with Shucksmith that networked actions are needed. Hausmann *et al.* (2011) argue that the secret of modern societies is not that each person holds much more productive knowledge than those in a more traditional society. The secret to modernity is that we collectively use large volumes of knowledge, while each one of us holds only a few 'bits' of it. Society functions because its members form webs that allow them to specialise and share their knowledge with others. The more knowledge ('bits') one holds and the more colourful/diversified the 'bits' owned by local people the more they can share and use to build their region. As with biodiversity, higher 'knowledge diversity' of a region could increase the resilience of it. Also, the content and actors of knowledge transfer have changed radically over time, and along with this change, information has become a resource which can be easily shared. Marti *et al.* (2013) show how the very emergence of an entrepreneurial community is influenced by the contact with 'external insiders' or 'known strangers' who develop intellectual, social and affective ties with community members and help them to organise themselves and mobilise for action. They suggest that this contact is all the more effective when the community is progressively segmenting into different sub-groups of actors who are encouraged to take on particular actions, these actions contributing in turn to strengthen the entrepreneurial collective culture of the community.

Finally, the so-called Quadruple Helix model (government – science/university – business/industry – civil society) is applied. This is a development of the Triple Helix concept that interprets the shift from a dominating industry-government *dyad* in the Industrial Society to a growing *triadic* relationship between university-industry-government in the Knowledge Society (Stanford University, undated). The relationship between civil society and the Triple Helix has been conceptualised variously. In this paper civil society is understood as an 'institutional sphere' that is similar in nature to the three Triple Helix functional spheres. Carayannis and Campbell (2014) ascribe the following attributes and components to the fourth helix: 'media-based and culture-based public', 'civil society', and 'arts, artistic research, and arts-based innovation'. In this way the fourth helix represents the perspective of the 'dimension of democracy' or the 'context of democracy' for knowledge, knowledge production and innovation. Bock (2012) points out that social innovation requires new methods of innovation, characterised by processes of co-design or co-construction and collaboration with society.

By bringing together the elements introduced above,

namely the human and social resources of rural regions; personal mastery and the shift from 'push' or reactive to 'pull' or creative orientation; networked actions, also with 'external insiders'; economic complexity; and the 'institutional spheres' in the Quadruple Helix model, this paper tries to answer the question how to build a more entrepreneurial, team learning environment in rural areas. We ask five questions: (a) what opportunities do residents have for their personal and professional development, (b) how important are the 'push' and the 'pull' types of learning, (c) who are the most important actors from the Quadruple Helix model to help rural citizens when 'push' and 'pull' types of learning are in focus, (d) how do farmers process information in a small Hungarian rural settlement in the 21st century, and (e) how do these farmers participate in the development of their rural settlement.

Methodology

A two-round Delphi survey was carried out to answer the first three research questions listed above. The survey was carried out in June and July 2014. The first round had 16 participants (three men and 13 women), while the second had 15. Participants with an interest in rural development from each sphere of the Quadruple Helix model took part, selected as follows. A representative from each sphere was recruited from each of two rural settlements in the NUTS 2 region of Northern Hungary, namely Mezőcsát (population 6,500), where the authors have been involved in participatory action research since 2009, and Noszvaj (population 2,000), where one of us has worked as an innovation broker since early 2014. Five interviewees came from Mezőcsát (a teacher, a mixed crop-livestock farmer, a transport and logistics entrepreneur, a representative of the association of the Mezőcsát Small Region Community and a rural development rapporteur from the small region office). Four came from Noszvaj (the leader of the local Integrated Community Service Centre, an entrepreneur in real estate, a local government representative and a person working with local groups through tenders in the field of local development). The remaining participants were drawn mainly from the neighbouring North Great Plain NUTS 2 region and two of them from Budapest (two entrepreneurs in the field of commerce and from a family business, a professor in education and an assistant professor in rural development from the University of Debrecen, a cultural coordinator at the National Institute for Culture, a senior planner from the VÁTI Hungarian Non-profit Company for Regional Development and Urban Planning, and one of the founders of the Community Developers Association).

Prior to the Delphi survey, participants were briefed about the relevant concepts, such as the Helix Model and 'push' and 'pull' types of learning. In the first round of the survey respondents were firstly asked to evaluate on a scale from 1 to 10 (where, for example, 1 stood for *not important* and 10 stood for *essential*) the importance of personal and professional development of local actors, and were also asked to list the possibilities they see for personal and professional development of local actors. Secondly, the respondents were

asked to assess the importance of ‘push’ and ‘pull’ types of learning, and the roles of the Helix Model spheres in learning. In the second round respondents were asked to discuss the results of the first round, and had the opportunity to make comments.

To answer the fourth and fifth research questions, a survey was carried out in Mezőcsát in the spring of 2014. The survey covered farmers who applied for the single area payment scheme (SAPS) of the Common Agricultural Policy in 2012. They were selected from the database of the Hungarian Agricultural and Rural Development Agency. According to the dataset of 2012, 108 farmers registered for the SAPS in Mezőcsát, of whom 103 were contacted. Seventy-two questionnaires were returned from which 60 were suitable for evaluation. Of the 60 respondents, 19 were women and 41 were men. The statistical significance of the differences in responses between farmers of different age groups was tested. Although analysis of variance (ANOVA) is commonly used, in our case the assumptions of ANOVA were not met, so we applied non parametric tests. The non parametric equivalent of the one-way analysis of variance is the Kruskal-Wallis test (Vince and Verbanova, 1993). The sample size of the groups should be at least five, which was fulfilled. The Kruskal-Wallis test can show whether the scores of the different age groups are significantly different. For the pairwise comparisons we applied the Mann-Whitney U test (Malhotra, 2005).

Results

Delphi survey

The Delphi survey participants assessed the importance of personal and professional development for building a more entrepreneurial, team learning environment in rural areas (and, by implication, for rural development) to be extremely high but the motivation for such development to be quite low (Table 1). In the second round of the survey there was not only agreement between the respondents that personal and professional development are essential factors in rural development, but it was also mentioned that both types of development are needed not independently but side by side. There was also agreement between the respondents that strengthening motivation for personal and professional development is needed.

In the first round of the Delphi survey respondents were asked to list opportunities they see for *personal development*, while in the second round they were asked to rank them. Twenty-one opportunities were identified and for each respondent the highest ranked opportunity was scored 1, the second was scored 2, and so on. The mean results were as follows: family was ranked first (1.4), followed by human relations and conversations (2.2), while school (2.6), communities (3.0) and kindergarten (3.3) were also listed as important opportunities.

The same questions were asked in the case of *professional development*, with the following results. Education based on local demand was ranked first out of 23 oppor-

tunities (1.7). The respondents believe that education must be flexible, practice oriented, high quality, local, correctly timed and properly funded. Learning through practice (2.2), communication between local experts and exchanging experience (2.2) were joint second. Volunteer work and internship (2.3) empowerment and support (2.3) communication and dialogue (2.5), development of new perspectives (2.8), lectures, vocational days and programmes (2.9) learning from each other (2.9), networking (2.9), integrated, holistic perspective training (3.0), study trips (3.1), communication with actors outside the region (3.4), foreign language (3.5), common actions (3.5), Internet (3.7) and books and newspapers (3.9) were ranked highly by the respondents.

For rural development the respondents considered ‘pull’ type of learning to be more important than ‘push’ type of learning, but in their experience the presence of ‘pull’ type of learning is very low (Table 2). In the second round of the survey the respondents emphasised that both approaches are needed, and it depends on the situation which one is more important.

To the question “which are the most important spheres of the Quadruple Helix model for rural development – in the present and in the future – when development of a learning environment is in focus, and how important is their role in creating ‘pull’ and ‘push’ types of learning environments”, the respondents’ opinion was that today the government sphere plays the most important role when ‘push’ type of learning is examined (Table 3). The roles of the other segments in ‘push’ type of learning have to be strengthened in the future. At present, each sphere except government is

Table 1: The importance and motivation of personal and professional development in rural areas of Hungary.

Importance of personal development	8.6
Importance of professional development	9.5
Motivation for personal development	3.8
Motivation for professional development	4.8

1: not important/very low level; 10: essential/very high level
Source: own data

Table 2: The importance and presence of ‘push’ and ‘pull’ types of learning in rural areas of Hungary.

Importance of ‘push’	6.9
Importance of ‘pull’	8.4
Presence of ‘push’	6.1
Presence of ‘pull’	3.3

1: not important/very low; 10: essential/very high
Source: own data

Table 3: The importance of the four Quadruple Helix model spheres in creating learning environments in rural areas of Hungary.

Helix model sphere	Role from the perspective of:					
	‘push’ learning			‘pull’ learning		
	Present	Future	Change	Present	Future	Change
Government	9.1	7.7	- 1.4	5.9	8.1	+ 2.2
Science/ university	6.2	8.7	+ 2.5	6.9	8.4	+ 1.5
Business/ industry	4.1	6.6	+ 2.5	4.9	6.4	+ 1.5
Civil society	3.2	7.6	+ 4.4	5.6	7.9	+ 2.3

1: not important; 10: essential
Source: own data

Table 4: The importance of the science/university and business/industry spheres of the Quadruple Helix model in creating learning environments in Mezőcsát and Noszvaj, Northern Hungary.

Helix model sphere	Mezőcsát		Noszvaj	
	Role from the perspective of:			
	‘Push’	‘Pull’	‘Push’	‘Pull’
Science/university	8.8	8.4	2.5	7.5
Business/industry	1.8	2.2	5.5	7.5

1: not important; 10: essential
Source: own data

considered to have a higher role in the case of 'pull' type of learning, but all four spheres must have increased roles in the future. In the second round of the survey, with the exception of two respondents there was agreement that all four spheres have similar responsibility in creating both 'push' and 'pull' types of learning environments.

Some differences were identified between settlements. In Mezőcsát the role of the science/university sphere in creating a learning environment was evaluated very highly while in Noszvaj the business segment is stronger, at least for 'push' type of learning (Table 4).

Questionnaire

Although with the development of information technology the number of information channels is increasing, for farmers in Mezőcsát personal meeting is still the most important channel both in the case of getting (consuming) and giving (providing) information (Table 5). The second most important channel (forums and programmes) is also linked to direct contact between people, without the use of IT. In the case of consuming information, after personal contacts television, radio and Internet scored more than 3.0, while in the case of providing information, after forms of personal contact (personal meetings, forum) the Internet is the only channel with a score 3.0. Clearly for farmers in Mezőcsát the Internet already plays an important role in information flow.

The process of generation change observed in agriculture produces interesting results in the use of information channels. In our analysis we created three age groups: young (24–41 years), middle-aged (42–59 years) and old (60–77 years) people. These age ranges are of equal size (17 years) and

Table 5: Importance of different information channels for farmers in Mezőcsát, Northern Hungary, 2014.

Information channel	Importance in case of	
	consuming information	providing information
Personal meetings	4.9	4.5
Forums, programmes	4.2	3.5
Newspaper	4.2	1.5
Television	3.7	1.5
Radio	3.5	1.6
Internet	3.3	3.0
Book	2.6	1.2
Video, film, YouTube®	1.6	1.4
Blog	1.5	1.4
Facebook®	1.5	1.3
Mobile application	1.4	1.2

1: "I do not use it"; 5: "The most important information channel for me"
Source: own data

similar numbers of respondents belong to each group (19, 21 and 20 farmers respectively). We compared the scores given by the respondents in each age group. The young age group use modern technical tools, such as the Internet, blogs and Facebook® as their primary information channel, while radio is preferred by older people. Taking part in forums or programmes is not a preferred way of communication for the younger farmers of Mezőcsát. While we found significant differences between the information channels used by the different age groups (Table 6), there were no differences between women and men (data not shown).

The farmers were asked who, through personal meetings, they considered to be their most important contacts among the four Quadruple Helix model spheres for information sharing. From the government sphere, farmers' advisors play the most important role (Table 7). This is a personal relationship between the farmer and the advisor. The Agricultural and Rural Development Agency is in second place, while

Table 6: Instances where significant differences occurred between farmers of different age groups in Mezőcsát, Northern Hungary, in the use of information channels in 2014.

	Age group:	P value (Mann-Whitney U test)		
		24–41	42–59	60–77
Consuming information	Radio		p=0.050	p=0.000
	Television		p=0.014	p=0.002
	News	p=0.010	p=0.027	
	Internet	p=0.002		p=0.000
	Blog			p=0.001
	Facebook®			p=0.001
Providing information	Forums, programmes		p=0.050	p=0.000
	Internet			p=0.004

Source: own data

Table 7: The relationship for sharing information between farmers in Mezőcsát, Northern Hungary and different actors of the four Quadruple Helix model spheres in 2014.

Sphere	Actor	Mean score
Government	Farmers' advisor (falugazdász)	4.6
	Agricultural and Rural Development Agency	3.3
	Hungarian Chamber of Agriculture	3.1
	Municipalities	2.1
	Hungarian National Rural Network	1.4
	National Agricultural Consulting, Educational and Rural Development Institute	1.4
	LEADER group	1.3
	Vocational school	2.0
Science/university	University	1.5
	Research institute	1.5
	Farmer	3.9
Business/industry	Vet and pest controller	3.4
	Seed sales person	2.6
	Pesticide sales person	2.5
	Consultant	2.3
	Accountant	2.4
	Lawyer	2.2
	Integrator	2.1
	Consumers	2.8
Civil society	Producer organisations (TÉSZ, BÉSZ)	2.3
	Unions	2.2
	Associations	2.0

1: no contact; 5: best relationship
Source: own data

the Hungarian Chamber of Agriculture, with its compulsory membership system, is the third most important actor in this sphere. Farmers had the opportunity to name other actors not listed in the questionnaire, but did not do so. The farmers have only weak links to the science/university sphere. Here, vocational school scored highest with 1.95, the reason for this being that a vocational school is located in Mezőcsát. From the business/industry sphere the most important relationship for farmers is with their peers. From civil society, consumers scored the highest with 2.8 but this was still more than 1 point lower than the score for farmers' advisors or peers.

In the context of the large amount of available knowledge and consumers outside Hungary (in many cases through direct Internet access) we also examined the use of foreign language. To the question "Do you or any members of your household speak a foreign language?" only 25 per cent of the surveyed farmers answered yes. To the question "Do you think knowing a foreign language is important for personal development and running the farm better?" 51.2 per cent answered that they do not need this skill.

Finally, the relationship of the farmers with the strategy of their settlement was examined (Table 8). While only 15 per cent of the farmers know the strategy of their settlement and just 23 per cent would like to take part in its formulation, 65 per cent answered they are open to taking part in its realisation. The result from Table 7 also underlines the low information sharing (2.13) between farmers and municipalities.

Table 8: Farmers' relationship with the strategy of their settlement (Mezőcsát, Northern Hungary), 2014.

	Know the strategy	Would like to take part in its	
		formulation	realisation
Percentage of farmers answering 'yes'	15	23	65

Source: own data

Discussion

Johnson (2013) believes that we are at an interesting point in history. Science and technology have progressed to the point where what we build is only constrained by the limits of our own imagination. The question we have to ask is not *can we do it* but *what do we want to do*. The deficit we have is not science, not technology, but ourselves and our own imagination. This change of the 21st century demands a shift in the learning environment – to what we (the authors) call the entrepreneurial team learning environment – to help the development of human and social capital, including in rural regions.

Looking at rural regions as learning organisations, creating a shared vision *sensu* Senge (1990) is an important element. Although legal frameworks such as the European Union's LEADER programme are provided for co-creation, the experience of the last ten years illustrates that because of lack of communication and high administration burden it is not yet operating properly. In particular, analysis of its implementation through the concept of 'mainstreaming' revealed that many regions fall short of the potential

for innovative local action through this programme (Dax *et al.*, 2013). The results of our survey demonstrate that most farmers in Mezőcsát do not really know the strategy of their settlement. They do not want to take part in its formulation but they are willing to take part in the realisation. This suggests that at present farmers in Mezőcsát are rather *reactive* oriented. One of the reasons for this could be similar to the case mentioned by Forsyth (2014) who drew attention to the communication gap between universities and farmers. She emphasised the 'soft' targets of the work of universities including giving confidence to farmers, which helps them to be ready to innovate and take risks. The importance of gaining confidence in the case of rural people was identified in an earlier action learning process of ours (Katoná Kovács and Bótáné Horváth, 2014). Giving confidence, encouraging and supporting people who want to increase their personal mastery (Senge *et al.*, 1994) is part of the conditions needed for the entrepreneurial environment.

The results of our Delphi survey show that all four spheres of the Quadruple Helix model should play an important role in the development of a learning environment but that higher importance has to be given to 'pull' type of learning. Wellbrock and Roep (2015) demonstrate that the operation differs between rural areas. In rural areas with economic prosperity, close-knit networks and shared identity, public administration is more likely to delegate decision making powers and responsibilities to non-governmental actors. Our Delphi survey also showed differences in the relative importance of the Helix model spheres in creating learning environments. In Noszvaj, where entrepreneurship is stronger (due to the high number of incoming young families), the role of the business/industry sphere was evaluated more highly than in Mezőcsát. By contrast, in Mezőcsát, where in recent years more participatory action research has been carried out, science seen as having a greater role in creating a new team learning environment.

The Delphi survey respondents' opinions on the most important opportunities for personal development were in line with three of the five so-called environmental 'suns' of the Piirto Pyramid Model (Piirto, 2011), namely 'the sun' of home, 'the sun' of community and culture, and 'the sun' of school. In the case of professional development, education based on local demand was listed first by the respondents, followed by communication between local experts and exchanging experience.

Our data on which actors the farmers of Mezőcsát consider to be the most important contacts among the four Quadruple Helix model spheres for information sharing (Table 7) are in line with the results of Kühne *et al.* (2013) who state that farmers are influenced by fellow farmers in their decision making processes. Communication between farmers is an important element of the development of an entrepreneurial learning environment in rural areas. The result (Table 7) that information sharing between farmers and consumers is low, and lower than information sharing with other farmers, underlines the challenge also mentioned by Katona Kovács *et al.* (2006) and Jokinen *et al.* (2010) that farmer's strategies are focused more on production methods and not on the competitive strategies needed to compete in today's market. According to Wirwich (2013), lack of entrepreneur-

ship could also cause the differences between rural areas on public reliance. His findings show that the oldest members of the workforce in post-socialist eastern Germany are less likely to be entrepreneurs than their peers in the western part of the country, even 15 years after the fall of the Berlin Wall. The entrepreneurial gap can be partially explained by East-West differences in values and attitudes. Eastern Germans rely more on the state and perceive lower control over life events, both of which are presumably shaped by their previous exposure to socialism. The persistence of such informal institutions poses a challenge to entrepreneurship since it is low state reliance and a high internal locus of control that make an entrepreneur (Wirwich, 2013).

Our finding of significant differences between the information channels used by farmers of different age groups draws attention to the development of information flows between age groups as well. As personal meetings are the most preferred communication channels for providing information for older farmers and Internet for young farmers, creating an entrepreneurial learning environment and generating dialogue about their common needs could help local actors to find answers to their challenges.

Sharing knowledge between different spheres is underlined by Dockès *et al.* (2013), who emphasise the importance of Learning and Innovation Networks for Sustainable Agriculture (LINSAs). LINSAs are defined as networks of producers, consumers, experts, NGOs, SMEs, local administrations and components of the formal Agriculture Knowledge and Information System (AKIS) that are mutually engaged with common goals for sustainable agriculture and rural development – cooperating, sharing resources and co-producing new knowledge by creating conditions for communication. These networks operate on the principle of sharing knowledge and learning. They benefit from the ‘mode-2’ learning process, which implies exchange and feedback loops between research, extension and practices, rather than the linear ‘transfer of knowledge’, as in the case of the conventional view of the AKIS. The need to find the way for better communication also underpins the idea of European Innovation Partnerships (EC, 2014), which are intended to be challenge-driven, focusing on societal benefits and a rapid modernisation of the associated sectors and markets.

While increased communication and dialogue is one of the most important actions needed in the case of the civil society and business/industry spheres of the Quadruple Helix model, the findings of Estrin *et al.* (2013) have important implications for policy makers, in our case the government sphere. Institutions are multi-faceted, and higher level institutions are slower to change than lower level ones. Their results suggest that policy makers concerned with increasing growth and employment creation through entrepreneurship should firstly try to understand more carefully which aspects of the institutional environment are deficient, and then systematically work to improve them, focusing consistently on the long term as well as short term changes. The higher order institutions remain important for growth aspiration entrepreneurship, even when we account for the moderating impact of local social structures: growth aspirations are significantly reduced where corruption is high, property rights protection is inadequate, or government size is large. These three indi-

cate the directions for any policy reform aiming to enhance growth aspirations of owners/managers of young businesses.

According to Annibal (2015) it is also worth reflecting that while hard pressed local authorities continue to do their best, major market forces have far more impact on local rural communities than they do. He suggests that social enterprise, defined as taking a thoroughly business-like approach to addressing a social challenge, can lead the way. Social enterprise does not have to concentrate on tackling one rural challenge; the model has the scope to act as a ‘junction box’ to combine the wiring underpinning all the challenges facing a rural community. They have the potential to overcome the impact of multiple market failures by making profits in one area of community need and reinvesting them in another.

The above mentioned roles of the Helix model spheres in creating a shift in the learning environment have to be played not from top-down or bottom-up in hierarchy, but ‘outside-in’ and ‘inside-out’, in partnership between the spheres. Following the lessons Dinwoodie *et al.* (2014) learned from nature: ‘outside-in’ activities represent the tasks of preparing and introducing systemic disturbances and creating the systems, structures and processes to guide change effort, and ‘inside-out’ capabilities are reflected in the change leader’s ability to create a web of interdependent change agents and shape an environment that elicits the behaviours across the system necessary for transformational change to take root and flourish.

This study underlines our earlier results that development of human and social capitals is one of the most important steps for rural development. Creating an entrepreneurial team learning environment, helping rural regions as learning organisations with a shared vision, where each sphere understands its responsibility in the process, sharing knowledge, creating transparency, and improving communication and dialogue, could help to develop these capitals.

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References

- Annibal, I. (2015): Village Companies. A think piece. RuSource Briefing 2121. Stoneleigh Park, Warwickshire: The Arthur Rank Centre.
- Bock, B.B. (2012): Social innovation and sustainability; how to disentangle the buzzword and its application in the field of agriculture and rural development. *Studies in Agricultural Economics* **114** (2), 57-63. <http://dx.doi.org/10.7896/j.1209>
- Bótané Horváth, N. (2013): Fiatalok vidéken. Mit tehetünk a jövőnkért? [Youth in Rural. What can we do for our future?], in: Régiók fejlesztése 2013/1. Pécs: Pécsi Tudományegyetem Kiadó, 437-446.
- Carayannis, E.G. and Campbell, D.F.J. (2014): Developed democracies versus emerging autocracies: arts, democracy, and innovation in Quadruple Helix innovation systems. *Journal*

- of Innovation and Entrepreneurship **3**:12, 23pp. <http://dx.doi.org/10.1186/s13731-014-0012-2>
- Dax, T., Strahl, W., Kirwan, J. and Maye, D. (2013): The Leader programme 2007-2013: Enabling or disabling social innovation and neo-endogenous development? Insights from Austria and Ireland. *European Urban and Regional Studies*, published online 26 July 2013. <http://dx.doi.org/10.1177/0969776413490425>.
- Dinwoodie, D.L., Criswell, C., Tallman, R., Wilburn, P., Petrie, N., Quinn, L., McGuire, J., Campbell, M. and McEvoy, L. (2014): *Transformational Change: An Ecosystem Approach*. Greensboro NC: Center for Creative Leadership.
- Dockès, A., Barjolle, D. and Bourdin, D. (2013): The 'SOLINSA approach' to support LINSAs. Innovation brokers training course, Paris, France, 21-24 October 2013.
- Estrin, S., Korosteleva, J. and Miskiewicz, T. (2013): Which institutions encourage growth aspirations? *Journal of Business Venturing* **28** (4), 564-580. <http://dx.doi.org/10.1016/j.jbusvent.2012.05.001>
- EC (2014): European Innovation Partnerships [www document]. http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=eip (accessed June 2014).
- Forsyth, M. (2014): Rural Innovation through Knowledge Transfer. Presentation at the conference 'European Innovation Partnership (EIP) in Hungary and in CEE countries, a chance to link the resources of Rural Development and Research, Development and Innovation', Budapest, Hungary, 6 May 2014.
- Hagel, J. III, Brown, J.S. and Davison, L. (2010): *The Power of Pull: How small moves, smartly made, can set big things in motion*. New York: Basic Books.
- Hausmann, R., Hidalgo, C.A., Bustos, S., Coscia, M., Chung, S., Jimenez, J., Simoes, A. and Yildirim, M.A. (2011): *The Atlas of Economic Complexity. Mapping Paths to Prosperity*. Cambridge MA: The MIT Press.
- Hilbert, M. and López, P. (2011): The World's Technological Capacity to Store, Communicate, and Compute Information. *Science* **332** (6025), 60-65. <http://dx.doi.org/10.1126/science.1200970>
- Johnson, B.D. (2013): *Vintage Tomorrows*. TEDx talk at TEDxDanubia. www.tedxdanubia.com/eloadok/BrianDavidJohnson (accessed September 2013).
- Jokinen, P., Järvelä, M., Paloviita A. and Puupponen, A. (2010): Do local food supply chains meet the target of sustainable livelihood? A case study in Central Finland, in A. Fieldsend (ed.), *Linking competitiveness with equity and sustainability: new ideas for the socio-economic development for rural areas*. *Rural Areas and Development* **7**. Warszawa: IERiGŻ-PIB, 141-154.
- Katona Kovács, J., Fieldsend, A.F., Alderson, M., and Szabó, G. (2006): Human and social factors as endogenous factors stimulating the Leader programme in Hungary, in Z. Floriańczyk and K. Czapiewski (eds), *Endogenous factors stimulating rural development*. *Rural Areas and Development* **4**. Warszawa: IERiGŻ-PIB, 169-184.
- Katona Kovács, J. and Bótáné Horváth, N. (2012): Rural Team-Entrepreneurs: An Answer to Innovative, Multi-Disciplinary Human Capital Education. *International Food and Agribusiness Management* **15**, special issue A, 93-97.
- Katona Kovács, J., Kalmár Hollósi, E. and Bótáné Horváth, N. (2012): Possible role of the Universities in Shortening the Timescale of Change of Social Embeddedness through participatory actions, in D. Cvijanović and Z. Floriańczyk (eds), *Rural development policies from the EU enlargement perspective*. *Rural Areas and Development* **9**. Warszawa: IERiGŻ-PIB, 195-204.
- Katona Kovács, J. and Bótáné Horváth, N. (2014): Corporate innovation a missing success factor of rural development – lessons learned from the past. Paper presented at the 142nd EAAE Seminar 'Growing Success? Agriculture and rural development in an enlarged EU', Budapest, Hungary, 29-30 May 2014.
- Kühne, B., Lambrecht, E., Vanhonacker, F., Pieniak, Z. and Gellynck, X. (2013): Factors Underlying Farmers' Decisions to Participate in Networks. *International Journal on Food System Dynamics* **4** (3), 198-213.
- Marti, I., Courpasson, D. and Barbosa, S.D. (2013): "Living in the fishbowl". Generating an entrepreneurial culture in a local community in Argentina. *Journal of Business Venturing* **28** (1), 10-29. <http://dx.doi.org/10.1016/j.jbusvent.2011.09.001>
- Malhotra, N.K. (2005): *Marketingkutató [Marketing research]*. Budapest: Műszaki Könyvkiadó.
- Schucksmith, M. (2013): *Future Directions in Rural Development. Executive Summary*. Dunfermline: Carnegie United Kingdom Trust.
- Senge, P.M. (1990): *The Fifth Discipline. The Art and Practice of the Learning Organization*. New York: Doubleday.
- Senge, P.M., Kleiner, A., Roberts, C., Ross, R.B. and Smith, B.J. (1994): *The fifth discipline fieldbook. Strategies and Tools for Building a Learning Organization*. New York: Doubleday.
- Stanford University (undated): The Triple Helix concept [www document]. http://triplehelix.stanford.edu/3helix_concept (accessed February 2015).
- Piirto, J. (2011): *The Piirto Pyramid of Talent Development*. Madison WI: Sisu Press.
- Vincze, I. and Verbanova, M. (1993): *Nem paraméteres matematikai statisztika. Elmélet és alkalmazások [Non parametric mathematics. Theory and practice]*. Budapest: Akadémiai Kiadó.
- Wellbrock, W. and Roep, D. (2015): The Learning Rural Area Framework: A Heuristic Tool to Investigate Institutional Arrangements which Support Collaboration in Rural Areas. *Sociologia Ruralis* **55** (1), 106-124. <http://dx.doi.org/10.1111/soru.12049>
- Wirwich, M. (2013): Can socioeconomic heritage produce a lost generation with regard to entrepreneurship? *Journal of Business Venturing* **28** (5), 667-682. <http://dx.doi.org/10.1016/j.jbusvent.2012.09.001>