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TIME BANKING AS A SYSTEM CHANGE: THE SOFT SYSTEM METHODOLOGY APPROACH

Lukas Valek (a)*
*Corresponding author

(a) University of Hradec Kralove, Institute of Social Work, Rokitanskeho 62, Hradec Kralove, Czech Republic, Lukas.valek@uhk.cz

Abstract

The aim of this paper is to explore the possibility of a system change in an economic paradigm towards a community developing system through the use of what has been referred to time banking, a rigorous and tested methodology in which the main focus is on the human being. The scale of possible structured changes through this medium will be discussed, i.e. if the practical approach of time banking is applicable to an undefined range factors of economic reality, or should more usefully be geared toward a specific geographic location. In this respect, Soft Systems Methodology is introduced and discussed in this paper; a soft system version of the V-model is also touched upon, even though this process has not yet shown properties flexible enough to achieve the desired changes. Soft System Methodology is considered in all its seven steps, which are related and discussed within the frame of time banking. In the conclusion, possible ways of use as well as potential directions for further research are outlined, including the need for case studies to verify the findings.

Keywords: Time Banking, Soft System Methodology, System Thinking, System change, Complementary economy

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1. Introduction

This paper aims to search for methods to make a system change in a local economy environment with specific focus on community development. One of tools proven to be an igniting element for various community based projects is known as time banking (Boyle & Bird, 2014; Granger, 2013; TimebanksUK, 2005). This concept will be explored further in this paper.

Time banking (TB for both time bank and time banking; TBs for time banks) is an economic concept which is based on units of time as a currency. It is geared toward equality and reciprocity and, unlike the mainstream monetary system, it is designed to build community and social capital instead of monetary capital. An understanding of time banking within a particular environment determines in what particular ways social and trade communities and interact in that specific context (Valek, 2016). In TB, mainly services are exchanged, with almost any ethically valid (Frunza & Sandu, 2015) amenity possible as a medium of exchange, as the system is based on the assumption that every individual has something to offer. Mutually beneficial exchanges between participants, i.e. helping each other, is thus rewarded by the creation of social capital and the enhancement and growth of the community. A clear set of core values (originally 4, later updated to 5) which define TB and distinguish it from other complementary economic systems have been delineated by various researchers (Cahn, 2000; Granger, 2013; Ozzane, 2010):

- We are all assets.
- Redefining "work"
- Reciprocity
- Social Capital
- Respect

From an economic point of view in relation to its goals, TB should be viewed as a complement to the current economic paradigm rather than an alternative to it (Lietaer, 2001). TB offers a solid point of departure for community development. By the values mentioned above, TB introduces what has been called communitarian ethics, through which the specific responsibility for a group's social, health and educational services is transferred directly to the community itself (Sandu, 2012).

Since we are operating in the soft environment of human relationships, if TB is to be applied, many elements should be considered which entail various risks, generally related to cultural, managerial, financial, societal, project management and other issues (Valek, 2013; 2016). Any change in a system that will have a long term impact on stability should be carefully considered in a broad context not to create any delayed side effects (Senge, 2006) which would have a negative effects, an condition described in systems archetypes such as "Fixes that fail" (Kim & Lannon, 1997). As it focuses on the level of systemic structures, systems thinking is required in situations in which the greatest leverage exists for solving problems; this approach can help shed light on current problems by helping us reframe them in a fundamentally different light (Kim, 2000). Strategic changes should come gradually, so as not to negatively affect the capacity of the system (Senge, 2006) in order to be absorbed smoothly as a part of an economic reality. In this study, Peter Checkland (1999) approach regarding systems engineering in soft systems design will be followed, exploring possibilities of applying of this methodology to TB.

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2. Problem Statement

There are several reasons for conducting this short study about the possibilities regarding this methodology to conduct a systemic change. To start with, the TB concept has been known to bring many benefits to communities where it is implemented, but also carries potential risks. Secondly, as an economic concept in nature, TB will have an impact on economic reality as well as on the behaviour of a population within a particular economic environment. And finally, if the aim of the implementation of TB is a transformation in a community, it would be desirable to bring this about according to a proven and sound methodology.

This paper has the following structure. After this introduction, a methodology will be outlined with regard to the engineering of soft systems. In the next part, Soft System Methodology (Checkland, 1993) is briefly introduced and followed up by a discussion of the possible adaptation/use of this approach using time banking. The conclusion of the article reiterates the most important points of this study as well as suggests further steps in the research.

3. Research Questions

The main research questions are, whether the SSM is applicable for a systemic change done by the TB approach, and if, under which conditions?

4. Purpose of the Study

To achieve a systemic change, a thorough and reliable methodology should be chosen. A simple yet functional method in the world of systems engineering is the so called V-model (Moreno, Pavon, & Rosete, 2009). This approach has been used mainly in the field of software development, with countless modifications having been adapted to meet particular needs. The V-model consists of two main parts, much like the "wings" of the letter "V." From the top of the first wing, the "project/problem definition" focuses "down" through the analysis of a problem, proceeding from the initial concept of the relevant system, through its requirements, to a detailed design, leading to the "base" of the "V," the implementation of the designed system. From there the focus is "up" the second wing, where the integration, verification and validation of a system should finally result in the successful operation of the system and its maintenance. This model is useful when making changes in hard systems in cases when the changes to be implemented are clearly defined. Although an adaptation of the V-model for soft systems has been implemented before, only one extra step has been added, or to be more precise, merely changes made in the first step, which in the adaptation does not begin with a particular hard system, but with a "problematic situation," in essence a much softer term. To offer even small-scale solutions toward systemic changes in many types of human-related systems, e.g. Economic, Community, Social, Educational, Healthcare, etc., TB has greatly extended the possibilities of the V-model at each stage of the approach. At this point it is necessary to select a methodology which would address such unstructured and vague questions as "Would one particular approach or another ensure community development in a certain geographically defined space?" or "Which system would allow the community itself to take greater responsibility for dealing with specific issues related to, e.g., elderly inclusion, healthcare,

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unemployment, etc.?" Peter Checkland's Soft System Methodology (SSM) (Checkland, 1993) seems to be eminently suitable for matters like this.

5. Research Methods

Later in this paper the seven steps of SSM will be outlined, including the determination of root definitions (the third stage), which involves an approach known as CATWOE. Establishing the parameters of these root definitions is one of most challenging elements of SSM, as these characterizations are to become key identifiers and references regarding what is to be changed in a system.

Since one of main advantages of the SSM is to attempt to bring a completely new point of view and not merely to superficially tweak already existing systems, it can be said that the TB concept is projected to bring about a systemic change. Nevertheless, with the anticipated power of TB as a tool to clearly define a specific systemic change, fundamental questions remain to be structured such as how to implement it correctly and how to anticipate possible consequences. So in broader sense this paper represents an attempt to show possible applications of SSM in situations in which a systemic change is already expected, and from very beginning of the process it is understood that the implementation of the recommended adjustments is likely to create other changes which are harder to anticipate. In other words, in combining this relatively new system of TB with SSM to prescribe and describe a change, we fully expect surprising positive and negative side effects, and managing these is a natural and anticipated part of this holistic process.

6. Findings

The SSM of Peter Checkland is divided into seven main steps/stages. Stages 1, 2, 5, 6 and 7 belong to the "real world," with 1 and 2 extracting information from the problem situation and 5, 6, 7 comparing and sketching out possible solutions for a change. Stages 3 and 4 pertain to the "systems thinking layer" where root definitions are defined and transformed into conceptual models.

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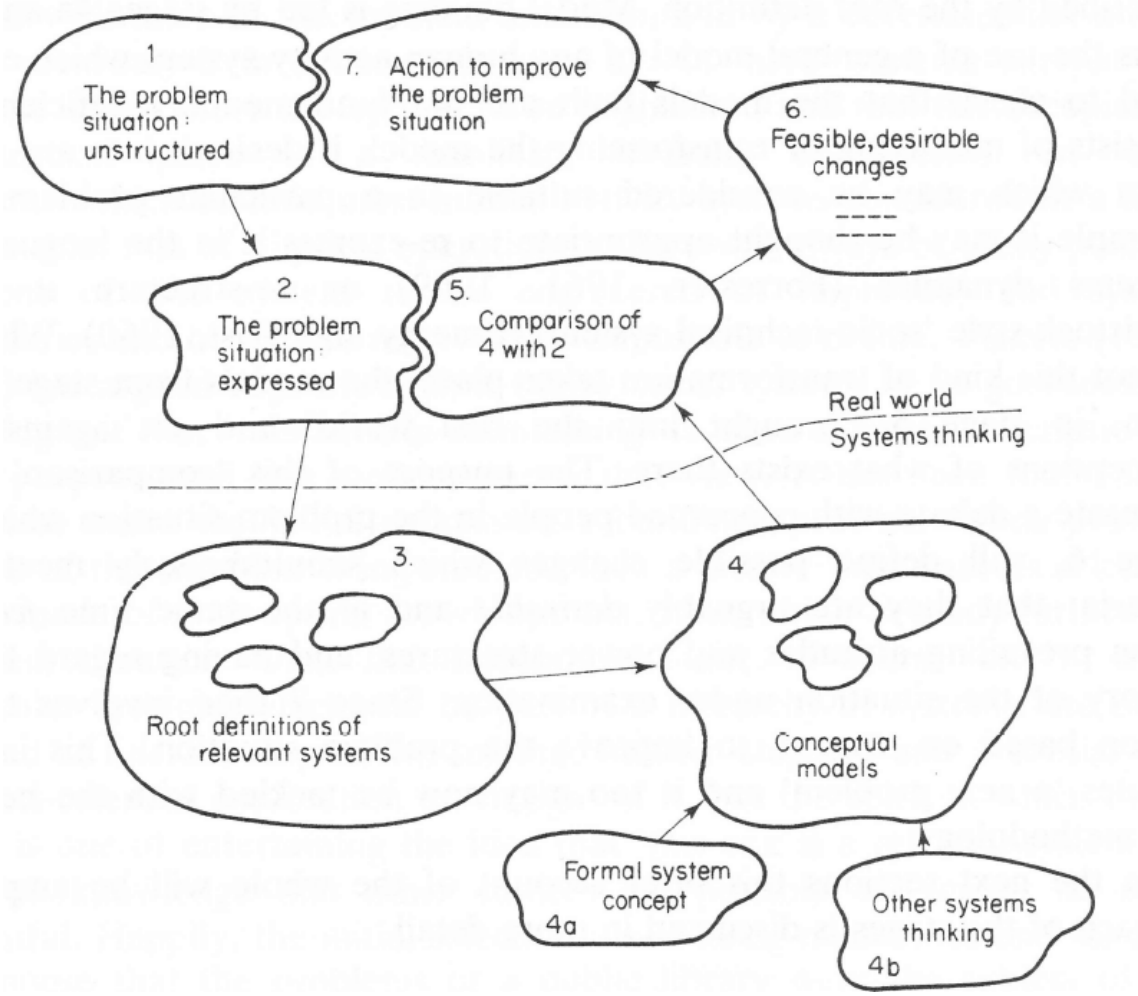

Figure 01. Structure of Soft System Methodology (Checkland, 1993)

6.1. Stage 1 - Unstructured problem situation and 2 - The problem situation expressed

At this point it will be necessary to create a picture of the problematic situation, not only merely perfunctorily stating a problem (Checkland, 1993). From this point of view, the problematic situation would be the implementation of TB itself. In this context, the word "problematic" might seem confusing, as it often has a negative connotation (Checkland, 1993). At this point, however, the term is being used neutrally simply to describe a situation which must be resolved. This situation should be expressed in richest possible way, also with the help of a method called "rich pictures." At the second stage, the precise structure of the problematic situation must be absolutely clear, for example even outlining possible sub-problems within the situation as well as uncovering processes which are present within these. The structure might be diagrammed in terms of physical layout or examined in terms of power hierarchies, reporting structures, and the patter of communications both formal and informal (Checkland, 1993). Processes may be examined in terms of the basic activities of deciding to do something and doing it, along with the close monitoring of both these steps. Then, once a particular measure is undertaken, the external effects are examined and corrective action(s) taken. The relationship between structure and process has often been found to be a core characteristic of situations in which problems are expected (Checkland, 1993).

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6.2. Stage 3 - Root definitions of relevant systems

With the focus on what the systems are (i.e. elements of the problematic situation), not on what they do (Checkland, 1993), the definitions have to be broad enough as well as include possible restrictions in order to for them to provide a firm foundation on which to base further actions to be taken. It is desirable to create quality definitions which would allow the production of suitable conceptual models. To assure the connection between these definitions and models to reality, it is recommended to use the so called CATWOE model (Checkland, 1993). The acronym comes from C – customers: the entity for which the change is made and those who are affected by it. A – actors: the agents who carry out the main activities of the system, especially its transformation. T – transformation: the means by which defined inputs are transformed into defined outputs. W – weltanshauung: an outlook, framework or image which makes this particular root definition meaningful. O – ownership: an entity which manifests the prime concern over the system and can cause the system to cease to exist. E – environmental constraints: features of system's environment which must be taken as "given" (Checkland, 1993).

6.3. Stage 4 - Conceptual models

Building conceptual models on the basis of root definitions is the most important and demanding step in the whole SSM framework. Root definitions describe a system in terms of *what it is*. A conceptual model should be framed in terms of its primary function in order to manifest the precise characteristics described in its root definition. One key phase of this process is a compiling a description based on verbs in a logical order which would lead to the transformation in question. It is recommended to start with about six verbs which cover the main activities as defined in the root definitions. It may be beneficial to advance to the higher "resolution level" of sub-systems which might emerge as a part of the change. At this point when defining a system, indeed particular features of what we can formally call a system must be reflected upon: it must have an ongoing purpose or mission; it must entail a measure of performance; it contains decision-taking processes; it consists of components which are themselves systems, having all the properties thereof; it has components which interact; it exists within wider systems and/or environments with which it interacts, but also has a boundary separating it from them; it has resources, both physical and abstract through, e.g. its human participants; it maintains some guarantee of continuity and long-term stability, being able to recover stability after some degree of disturbance (Checkland, 1993). Stage 4 - Conceptual models

6.4. Stage 5 - Comparison of 4 with 2

This stage might entail several approaches, but four are employed most often. The first approach is to use the conceptual models formulate key questions related to the existing situation. As these questions are addressed, light should be shed on the differences between the model in question and the real circumstances of the situation. The second approach is to reconstruct events from the past and compare what would have happened if this conceptual model had been used at various points in history. The third approach is to discuss the conceptual model with an appropriate stakeholder who can identify key differences. Finally, the fourth approach is based on creating a model of what now exists and comparing this model of reality with the conceptual one.

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6.5. Stage 6 - Feasible desirable changes and 7 - Action to improve the problem situation

The changes can be now outlined and proposed based on the previous comparison. These can take three forms: changes in structure, in procedures and in attitude. As first two are in comparison relatively easy to achieve, changing attitudes might prove the greatest challenge. In addition, it has to be noted that the changes must be shown to be systematically desirable as a result of root definitions, as well as culturally feasible given the characteristics of the situation and people who encompass it (Checkland, 1993).

7. Conclusion

7.1. Stages 1 and 2

These two steps are will be key, as the perception of a particular problem situation will vary in different locations and points of view. In broader scale, a problem situation could be identified as the growing distances among people in urban areas, after which we would impose TB as a solution. To apply SSM we must proceed further and deal with all aspects of a situation in which TB will be implemented as a tool to describe possible systemic changes. One example might be how the implementation of a TB in a particular region will have an impact on several elements in the environment where it happens, with these consequences forming an unstructured problematic situation. Therefore, our unstructured problem would be uncertainty, both positive and negative, brought forth by these impacts. To grasp the situation in as comprehensive a way as possible, it would need to be examined from several points of view, with potential procedures and outcomes most likely re-iterated a few times before a clear picture emerges and root definitions can be defined. The problem situation would be very broad, entailing numerous root definitions, thus the primary focus must be on structures and processes within the problematic situation.

7.2. Stage 3 and CATWOE

The formulation of root definitions will depend on the nature of problem situations created by the implementation of a TB. These resulting situations and elements thereof which would be subject to change must be determined only when the initial real situation has been explored fully. This stage along with the next one will be key for the change. Nonetheless, at this point in the process it may be useful to identify the components of CATWOE.

- Customers: in a broad sense, entire target groups of the potential TB members, but also organizations who could possibly be involved in a TB.
- Actors: various stakeholders involved in the founding and running of a TB. This will be mainly the coordinator, the possible base institution, funders, local administration, etc.
- Weltanshauung: a populated area with a lack of interaction within a community or communities.
- Ownership: the primary entity who founds and runs a TB as well as possibly, but not necessarily, funds it as well. This might be the base institution itself or a separate entity.
- Environmental restraints: the physical characteristics of a geographically defined area as well as its laws, shared ethics, etc.

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One possible root definition might be: the current situation will be transformed by introducing a system which supports the local economic reality in the social sphere, with a focus on community development and the support of other community based projects. The economic exchange system is only a medium to achieve its mission of community development driven by the community itself on an autopoietic basis, ensuring the sustainability of positive impacts along with containing and resolving any negative ones.

The above is only one example of the creation and development of a root definition. From this context, more root definitions will likely follow; these should be re-iterated and closely evaluated in as much detail as possible in terms of potential ramifications to the real situation to allow the efficient formation of conceptual models.

7.3. Stage 4

The development of conceptual models regarding various potential impacts of the implementation of a TB will be very dependent on the previous stage, as these are tightly interconnected. The TB system and its sub-systems will follow all the points mentioned above. This stage has the long-term goal of correcting flaws in the mainstream economic system at a social level. This entails a measure of performance, with the economic element of the exchange of time currency serving as a tool for evaluation of its outcomes. The TB has governing body which allows the taking of decisions as well as its own sub-systems such as groups of people, organizations, interests, workgroups and even sub-systems of relations to other important institutions (governmental, etc.). People create a TB, thus those involved are the main nuclear components interacting among themselves and community members, but all the mentioned sub-systems – both inside and outside of a TB system – are interacting with the surrounding environment. These parameters are, however, strictly defined by statutes and descriptions, thus boundaries separating the TB from its surroundings are clear. It has its own resources, consisting mostly of its members, who by their activities provide a resource with which to run a TB, along with abstract resources to develop it further. In an ideal case, the TB also has an external resource in the form of funding. The TB possesses the guarantee of continuity provided by its mission and the fact it is designed as a long-term endeavor. Yet even it functions (depending on the will of community) and begins producing desirable results, it may to a certain extent encounter resistance to disturbances in the status quo.

Conceptual models at the initial state can also contain as many as six verbs per definition and, as indicated earlier, more root definitions will certainly follow. But to illustrate the next step using the definition outlined above, the verbs might be: support, develop, transform, (community) driven, ensure (sustainability), resolve.

Transforming a current situation by introducing a system which supports local the economic reality within the social sphere with a focus on community development as well as support other community based projects in which the economic exchange system is only a medium for the TB to achieve its transformative mission of facilitating autopoietically driven community development and to ensure the sustainability of positive impacts as well as contain and resolve any negative impacts.

7.4. Stage 5

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This stage can most appropriately be compared to the fourth one. When a TB system is introduced, it will be beneficial to create a model of reality which is accurate for today and which will describe the transformation as well as compare present circumstances with the projected future situation. This is accomplished before the transformation is made in order to assess possible impacts. Another possibility is a return to the very first stage, in which a set of questions to be answered would be devised based on the conceptual model, and by this contrast between present and projected reality certain important issues might be addressed. This approach would be more appropriate regarding some of first iterations to make root definitions more precise, whereas the fourth approach – comparing model to model – would make more sense when we have more complete set of root definitions and fuller conceptions of possible models.

7.5. Stage 6 and 7

As the introduction of TB here is conceived, feasibility has already been tested in environments where TBs have been functioning for the past thirty years. Nevertheless, the conceptual models described in the present paper will consider all local, cultural, economic, social and other issues, with many of possible changes found in fact not to be feasible or/and desirable. At this point, impacts on society might be evaluated and the final planning decisions made about the precise form the implementation will take.

7.6. Final discussion

The aim of this paper was to explore the possibility of the use of a tested methodology to facilitate systemic change in an economic paradigm within a socio-economic context. The approach chosen to bring about the change by igniting community development in various directions is time banking employed through Peter Checkland's Soft Systems Methodology.

Accomplishing a systemic change is not an easy task, and it ought to be noted that we neither anticipate nor desire radical changes regarding any complete economic paradigm. Nevertheless, the implementation of the concept of the sharing economy has been proven to be beneficial, as is clearly evidenced from the 30-year history of TB (Boyle & Bird, 2014; Cahn, 2000; Ozzane, 2010; TimebanksUK, 2005). The problem is scale and variety in local conditions, so that along with the (granted) extremely ambitious idea of a paradigm shift, the focus can be turned to more manageable small changes in certain areas where the introduction of a TB system would bring about the most concrete benefits. By means of these gradual, small steps a bigger change can be achieved following David Holmgren's expression "Slow is sane and small is beautiful" (Holmgren, 2011) as well as the projection that the system should also tend to autopoiesis (Holmgren, 2011; Checkland, 1999). At any rate, in making a transition in any location, a systemic SSM should be followed. This methodology offers an overview of the situation which is itself decomposed and restructured, before comparing it with the reality. This can all be done well in in advance to anticipate and predict impacts on the society, stakeholders and environment where a TB will be introduced.

One of rubrics of SSM is to bring about completely new points of view and not predestinate nor impose any existing structure in the solution (Checkland, 1999). On one side, using an existing system such as TB might seem like an unwieldly imposition. But from the perspective of an imminent

implementation, using SSM is the most efficient and effective way to plan and predict a change, as unstructured problematic situations can be more readily predicted throughout the process of design and implementation. TB depends on human beings sharing, cooperating and exchanging through a community and from this point of view it is super soft system with a high level of entropy. Of course it might be said that many TBs have been established without the use of SSM and they continue to maintain functionality; still, a high rate of failure remains an unwelcome reality for several reasons (Shih, et al., 2015; Valek, 2013). Risky aspects of the implementation of any change large or small could be foreseen, thus either wide-scale or detailed adaptations can be instituted throughout the entire TB in question. This is in fact almost always the case, with the suitable adaptation of a TB to local conditions determining its degree of success. The modifications and adaptations made to earlier plans could be drastic, but the core values determined at the inception of the TB should be still served and preserved. On the other hand, even these core values might be found to require reconsideration, modification or extension, so consequently in using SSM a new approach to community development is derived. Beginning from the initial concepts of a TB to the implementation of concrete plans, the mission of defining and achieving desired changes is greatly facilitated.

This paper has been only a preliminary probe to determine the fundamental feasibility of using SSM in TB and to outline possible uses of this approach. The problematics have here been sketched out in a general way, with case studies necessary not only to verify these findings, but also to focus the steps of SSM and bring them closer to reality, or more precisely to "a reality." Unique variables and other circumstances within a specific environment will sharpen the focus of each particular case study, the design and execution of which should be the next step in this research.

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