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Transdisciplinary Concepts in Light of Conceptual Blending *

Pojęcia transdyscyplinarne w świetle teorii amalgamatów pojęciowych

ANNA BAJEROWSKA
University of Warsaw, Poland
ORCID ID: https://orcid.org/0000-0002-2894-8165
e-mail: a.b.bajerowska@uw.edu.pl

Abstract. Transdisciplinary concepts have a particular cognitive value: they enable us to cross disciplinary boundaries and to establish new categories of the explored reality. This paper attempts to analyse conceptual relationships within the transdisciplinary concept *attractors of self-evaluation* which emerged at the intersection of social psychology and systems theory The analysis is based on the Conceptual Blending Theory. The genesis of the concept as well as salient relationships and cross-space mappings have been presented. Furthermore, explicative cross-space connectors in transdisciplinary knowledge transfer have been identified and described.

Keywords: conceptual blending, self-evaluation, attractor, connectors, cross-space mapping

Abstrakt. Pojęcia transdyscyplinarne mają szczególną wartość, pozwalają bowiem przekraczać granice dyscyplin i konstruować nowe kategorie eksplorowanej rzeczywistości. Niniejszy artykuł stanowi analizę związków konceptualnych konstytuujących zręby transdyscyplinarnego pojęcia *atraktory samooceny*, które powstało na styku psychologii społecznej i teorii systemów. Analiza bazuje na teorii amalgamatów pojęciowych. Ujęto w niej genezę pojęcia oraz istotne związki (*vital*

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relations) i odwzorowania międzyprzestrzenne. Ponadto zidentyfikowane i opisane zostały międzyprzestrzenne konektory eksplikatywne charakterystyczne dla transdyscyplinarnego transferu wiedzy.

Słowa kluczowe: amalgamaty pojęciowe, samoocena, atraktor, konektory, odwzorowanie międzyprzestrzenne

1. INTRODUCTION

Reinterpretation of static models in the paradigm of complex systems, across disciplinary boundaries, broadens the horizons of human understanding and enables us to reach a new knowledge synthesis (Jakimowicz, 2016, p. 11). It is best reflected in structural foundations of concepts emerging from transdisciplinary modelling, as confirmed by Anna Małgorzewicz (2021, p. 81): "Transdyscyplinarność […] pozwala uzyskać zupełnie nowe wartości poznawcze poprzez wyodrębnienie nowych kategorii badanej rzeczywistości w jej dynamice".[1] Analysing cognitive-semantic foundations of transdisciplinary concepts is indispensable to explore their generative potential. Drawing on the Conceptual Blending Theory by Gilles Fauconnier and Mark Turner (2019), I aim to analyse the concept **attractors of self-evaluation** which emerged at the intersection of social psychology and systems theory. The study provides insight into the interplay of conceptual entities/elements/relations originating from two different disciplines. In the ensuing analysis I intend to show how the topology, i.e. structure of the presented conceptual integration network made the transdisciplinary conceptualization process possible. It must be noted, that concepts with such a strong transdisciplinary background as **attractors of self-evaluation** have not been analysed on the basis of conceptual blending mechanisms so far.

This paper is based on preliminary research results presented in the article *Wybrane aspekty modelowania transdyscyplinarnego w świetle teorii mieszanin pojęciowych* [*Selected Aspects of Transdisciplinary Modelling in Light of Conceptual Blending*], submitted for publication in the journal "Roczniki Humanistyczne" by the Catholic University of Lublin in Poland. In the present article I used these research results to identify, conceptually distinguish and initially describe **explicative cross-space connectors** (ECSCs). ECSCs are specific expressions and phrases whose function is to indicate and decompress the complexity of meanings generated by transdisciplinary conceptualization. As such they have a strong explicatory background. Considering transdisciplinarity in general and the emergence of

[1] "Transdisciplinarity […] makes it possible to generate novel cognitive values by identifying new categories of the explored reality in its dynamics" (Małgorzewicz, 2021, p. 81; transl. A.B.).

transdisciplinary notions in particular, this kind of decompression is necessary to introduce emerging transdisciplinary meanings and to make readers familiar with analogies by which semantically distinct conceptual elements are interlinked and integrated into a new concept.

2. CONCEPTUAL BLENDING

Meaning is generated when selected elements of semantic frames are projected into the emerging conceptual blend. Specific links between these elements and conceptual compressions manifest themselves in specific (con-)texts. In terms of emergence, meaning exceeds the sum of its semantic components. To capture these links, it is necessary to refer to the Conceptual Blending Theory (henceforth: CBT) which makes it possible to analyse meanings of emerging concepts, including transdisciplinary (henceforth: TD) ones. CBT is grounded in the concept of mental spaces defined as "small conceptual packets construed as we think and talk, for local understanding and action" (Fauconnier and Turner, 2003, p. 58).

The analysis below will be based on a TD conceptual integration network containing metaphoric and non-metaphoric mappings. Two Input Spaces (henceforth: the inputs) represent salient elements of two distinct things or phenomena. In conceptual blending, respective counterparts in both inputs are linked by cross-space mapping and selectively projected into the Blended Space (henceforth: the blend). The structures of the inputs are therefore connected by two mechanisms: cross-space mapping and selective projection. This leads to the emergence of a new structure in the blend. The Generic Space represents a general cognitive structure (frame, conceptual scheme, scenario etc.) which contains elements both inputs have in common. This frame usually allows the speaker to mentally simulate (**to run**) the emerging blend.

Each mental space is linked with the blend. In the blend, a new structure emerges from selected elements projected from the inputs. This structure is then mentally simulated to choose the most suitable framing. The blend generates meanings which are non-derivable from the meaning of respective elements originating from the Inputs. Significantly, the blend does not **contain** any emergent meaning. In the elaboration process, it activates dynamic online simulation processes by which a relatively fixed meaning emerges. This fixed frame activates the blend's meaning only in relation to a specific context (Augustyn and Prażmo, 2020, p. 214).

The structure of each mental space is determined by a set of conceptual relationships called vital relations, such as analogy, cause-effect, identity, uniqueness, property, etc. Vital relations link corresponding elements, i.e. counterparts from the

inputs, providing a conceptual template for selective projection into the blend. In the process of conceptual integration vital relations are compressed. This determines the creativity of the blend and the ultimate way of its elaboration.

The recursive process of conceptual integration allows the speaker to refer to the inferences, which emerged in the blend, to the subject of the discourse. Thus, it enables us to update the existing conceptual system on the basis of the emergent structure of the blend. Selected aspects of conceptual integration in a transdisciplinary context will be presented in the ensuing analysis.

3. ATTRACTORS OF SELF-EVALUATION: THE GENESIS OF THE CONCEPT

The human **Self** constitutes a cognitive structure comprising schemes which correspond to different aspects of the way a given person thinks about oneself (Krejtz, 2009). According to dynamic social psychology, the human **Self** should be described as a complex dynamic system, i.e. as a set of interrelated variables that show regularity in their interactions over time. As a result of these interactions, the emergence of new systemic structures occurs (Nowak and Vallacher, 1998).

Andrzej Nowak and Robin R. Vallacher (1998) developed a model of the **Self** in the cellular automaton paradigm, illustrating the relationships between structure and internally generated dynamics of the self-system. This makes it possible to predict dynamics from knowledge of structure – and *vice versa*: to infer structure from observed variability in system behavior (Krejtz, 2009, p. 27).

The differentiation of self-knowledge determines the dynamics of thoughts occurring in the stream of self-awareness. A strong differentiation, which clusters together similar elements, involves less dynamics than in a system combining different elements in the same clusters. In the cellular automata model cells are placed on a two-dimensional grid. Tiles representing elements of self-knowledge in the self-structure, having a binary evaluation, adopt one of two states corresponding to a positive or negative thought. Each element influences the evaluative state of its eight neighbouring elements while changing their own evaluation under the influence of their neighbours. This means that the valuation process creates a system within which each element adjusts to its immediate neighbours by weighing their valence. If the outweighed valence of neighbouring elements differs from the valence of a given element, the latter adjusts its valence. According to computer simulations, the system seeks to organize itself into clusters of coherent valence which reduces its dynamics, allowing it to reach an equilibrium:

[…] różnice indywidualne w strukturze *Ja* dają się przedstawiać jako różnice w zakresie złożoności tego schematu, stopnia jego organizacji oraz spójności lokalnej i globalnej. Z różnic w organizacji tak rozumianej struktury *Ja* mogą wynikać rozmaite własności dynamiki myśli dotyczących siebie samego: czyni to wspomniane różnice ważnym regulatorem zmienności strumienia myśli na swój temat.[2] (Krejtz, 2009, p. 27)

The equilibrium reached by weighing the value of the elements of a system is an attractor of this system (Krejtz, 2009, p. 28). Defining attractors, it is necessary to refer to the phase space reached by the system. In the theory of complex systems, a phase space is a set of variables defining the possible values for a given system. Coordinates of the phase space reflect variables necessary to describe the instantaneous state of the system. Analogous to the cellular automaton model, where elements form clusters carrying identical valence, the system begins to selectively pursue a small number of states, while pursuing a particular pattern of behaviour. Values, toward which the system tends to evolve, are called its attractors. Regardless of its starting conditions, the system evolves to its attractor, i.e. it tends to reach an equilibrium. Hence, an attractor is defined as a state of temporary stabilization of the system.

In the context of self-evaluation, an important property of attractors is a basin of attraction, i.e. an area of the phase space to which the system evolves as well as the strength of the attractor, described as the depth of the basin of attraction. A strong attractor quickly stabilizes the system in a given state. The pattern of system dynamics can be determined by attractors and repellers, i.e. areas of values which destabilize the system.

In the self-system attractors cluster among the values of self-evaluation. The scalar nature of thoughts about oneself makes it possible to describe their flux as a set of values defining a phase space (Krejtz, 2009, p. 31). The attractor denotes the values most commonly adopted by the system. When the stream of self-awareness is dominated by positive thoughts about oneself, it conceptually corresponds to an area of the phase space in which positive valence of self-evaluation is predominant. On this basis, the conclusion was drawn that self-esteem determines the valence of the basin of attraction, i.e. the values that the system adopts most often and in which the stream of self-awareness stabilizes.

In the field of dynamic social psychology self-evaluation is perceived as an attractor of the self-system (Nowak and Vallacher, 1998). Thoughts about oneself located within attractor boundaries show low variability, i.e. they are stable. Thoughts contrary

[2] "[…] individual differences within the self-structure can be grasped as differences within the complexity of this scheme, its organisation as well as local and global coherence. From the differences in the organisation of the self-structure understood in this way, various properties of the dynamics of thoughts about oneself may arise. This makes these differences an important regulator of the stream of thoughts about oneself" (Krejtz, 2009, p. 27; transl. A.B.).

to the dominant self-evaluation act as repellents of the self-system, as they occur rarely, are quickly eliminated and destabilize the system only temporarily. In the systemic approach, self-evaluation is perceived as a state of equilibrium in which it stabilizes and to which the stream of thoughts about oneself, when destabilized, evolves.

4. SEMANTIC-COGNITIVE ANALYSIS

The analysis of the concept **attractors of self-evaluation** has not revealed any untypical structure of the relevant conceptual integration network. Thus, it has been proven how its structure made the transdisciplinary conceptualization process possible.

Two conceptual integration networks can be distinguished here whose inputs are linked by metaphoric and non-metaphoric cross-space mappings. The first input in the first network, Cellular Automata, represents a model of system dynamics on a binary scale. It should be noted that Nowak and Vallacher's model of **attractors of self-evaluation** (Krejtz, 2009) does not include any explicit reference to the *intrinsic dynamics* of psychological processes:

> In the absence of external influence, a process can evolve because of internal mechanisms of a psychological system. Once a mental or behavioral event is initiated, it generates a sequence of subsequent events, resulting in a pattern of changes in mental or behavioral experience. The person's initial anger in response to an insult, for example, may intensify, diminish, promote self-affirmation, or give way to self-criticism. Internally generated patterns of change represent the *intrinsic dynamics* of psychological process. (Vallacher, Van Geert and Nowak, 2015)

Krejtz (2009) notes that thoughts about oneself may arise either under the influence of respective statements made by other people or their emergence may be caused by other thoughts previously present in the **Self**. Nevertheless, the analysed concept itself is not based on the intrinsic dynamics of the **Self** and therefore it has not been considered an element of the ensuing conceptual integration network.

The second input, Social Psychology, comprises knowledge concerning the human **Self**. An important role is played by a non-metaphoric mapping between the inputs Cellular Automata and Social Psychology where analogy compresses the role **stabilizing the stream of self-consciousness** to the valence of a relevant phase space of the self-system. The first conceptual integration network comprises the input Systems Theory (ST) as well as the input Cellular Automata (CA), constituting a specific pattern of relationship dynamics within the self-system.

Significantly, between the two mental spaces ST and CA, a natural, i.e. non-metaphoric cross-space mapping occurs: regions which permanently determine the system's behavior by changing the valence of the tiles/elements, become

counterparts of the attractors. In the cross-space mapping, the role **stabilizing the stream of self-consciousness**, played by these elements, is compressed into the valence taken on by the relevant phase space of the self-system by the rule of analogy. Therefore, they ultimately become attractors in the blend. The inputs ST and CA are linked by a cause-effect relationship – the attractor emerges as an effect of valence change by the system elements. Through non-metaphoric references to the cellular automaton the relationship between self-regulation and the role of attractors becomes clear. In addition, and of utmost importance, the non-metaphoric mapping makes it possible to bring inferences from the blend into the inputs where new psychological knowledge based on systemic properties of self-evaluation is generated.

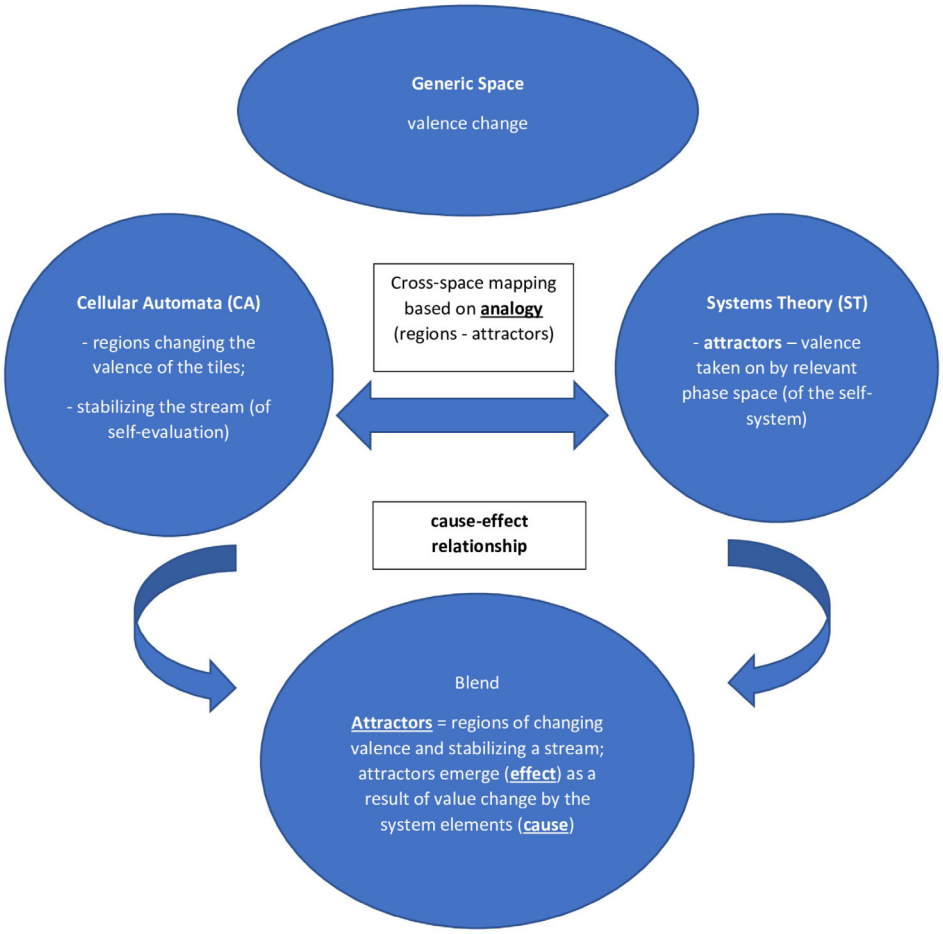

Fig. 1. Non-metaphoric cross-space mapping between the Inputs Cellular Automata and Systems Theory reflects a specific pattern of relationship dynamics of the self-system

Source: Author's own study.

When it comes to the concept **attractors of self-evaluation**, the relationship of analogy connects fragments of reality belonging to two distant domains. Therefore, it exceeds the material-morphological dimension due to the lack of elements which were identical to each other. A certain number of isomorphisms within the relationships linking these fragments of reality allows us to specify structural differences within the self-structure as differences within the complexity of the cellular automaton model. The following analysis will enable us to grasp these relationships in the cognitive-semantic perspective and explicate their impact on the meaning of the concept under study.

The multiple conceptual integration network which illustrates the adaptation of selected aspects of the systems theory to specific properties of the self-system, has a classic global architecture structured in a specific way. The excerpt describing self-evaluation as an attractor of the self-system enables us to trace the complexity of conceptual integration within the concept **attractors of self-evaluation**:

W dynamicznych systemach złożonych funkcje regulacyjne pełnią między innymi atraktory. Są to stany, do których system asymptotycznie dąży. Niezależnie od tego, jaki stan zostanie przez system wykazany na początku, ostatecznie znajdzie się on w stanie określanym przez atraktor […] samoocenę możemy opisywać jako tę ocenę siebie, do której dążą myśli jednostki na swój temat, niezależnie od tego, w której chwili myśli te uczyni się przedmiotem badania. Samoocena wyznacza więc afektywny obszar stabilizacji właściwy dla strumienia autorefleksji.[3] (Krejtz, 2009, p. 23)

The first input in the second network is Systems Theory (ST) which is the shared input space of both networks.ST comprises selected properties of attractors and laws by which the system stabilizes in their region. The second input is Social Psychology (SP). The structure of SP results from the interdependence between self-evaluation and the stream of thoughts about oneself. In the cross-space mapping, the equilibrium / reduced dynamics of the stream of thoughts about oneself is a counterpart of an attractor.

[3] "In complex dynamic systems, regulatory functions are performed, among others, by attractors. They are states to which a dynamical system asymptotically evolves. Regardless of the initial state of the system, it will eventually reach the state determined by the attractor [...] self-esteem can be described as the evaluation of oneself for which an individual's thoughts about oneself strive, regardless of the moment at which these thoughts are made the subject of examination. Thus, self-esteem determines the affective region where the stream of self-reflection becomes stabilized" (Krejtz, 2009, p. 23; transl. A.B.).

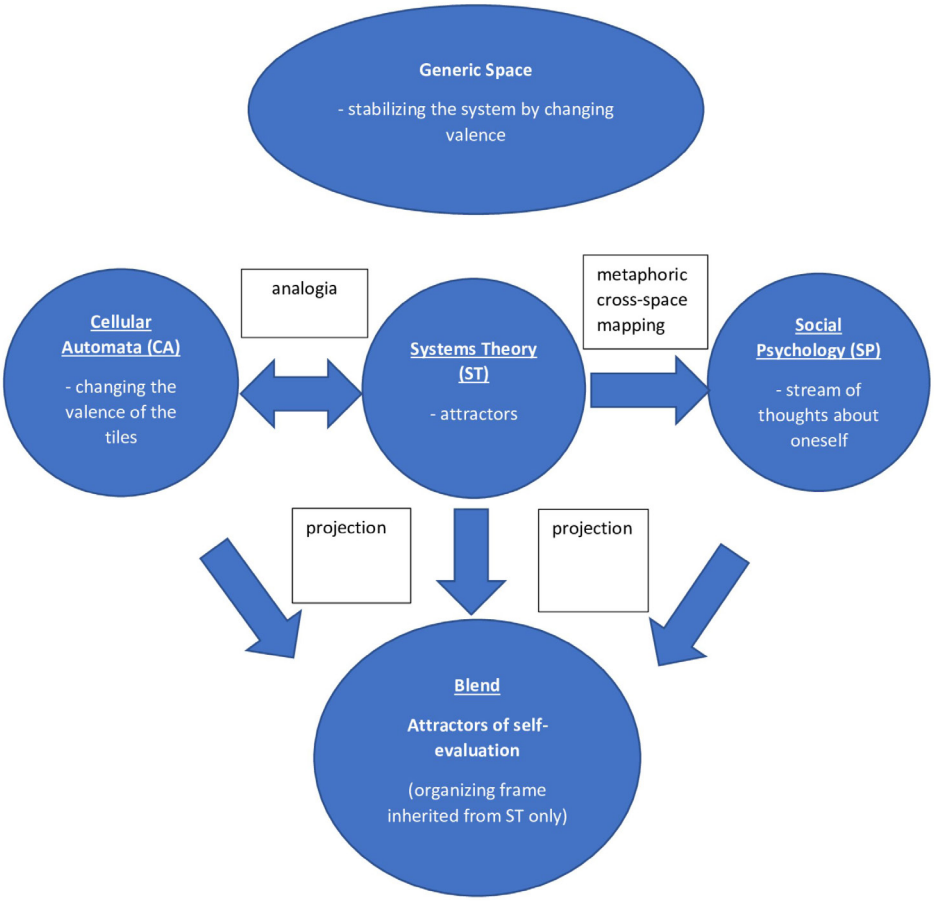

Fig. 2. A general scheme of metaphoric and non-metaphoric cross-space mapping processes

Source: Author's own study.

The metaphoric nature of cross-space mappings is indicated by the fact that significant counterparts in the inputs, i.e. attractors and the stream of thoughts about oneself, are compressed in the blend by projecting them on one and the same element – on attractors of self-evaluation. One element in the blend corresponds to relevant elements in each input. This type of projection is referred to as **fusion** (Fauconnier and Turner, 2019, p. 75). Moreover, metaphors involve asymmetric topicality of the inputs – the topicality of SP is more important for the emergence of the blend. This kind of asymmetry is both an important but not indispensable characteristic of metaphors (Coulson, 1997, p. 252) and a specific property of transdisciplinary blends. This is because in transdisciplinary blends a more important role is played by the input of the domain which benefits from the fact that

a blend has emerged, in which this kind of mapping generates new knowledge or contributes to organizing already existing knowledge (Grucza, 2008). The input ST, functionally corresponding to the source domain of metaphors, is supposed to set up a new frame (a new dynamics of relationships) for the blend, thematically embedded in the field of social psychology. This will enable us to **run** the blend within semantic boundaries set by this frame in order to compute new inferences not in the field of systems theory but in the field of social psychology.

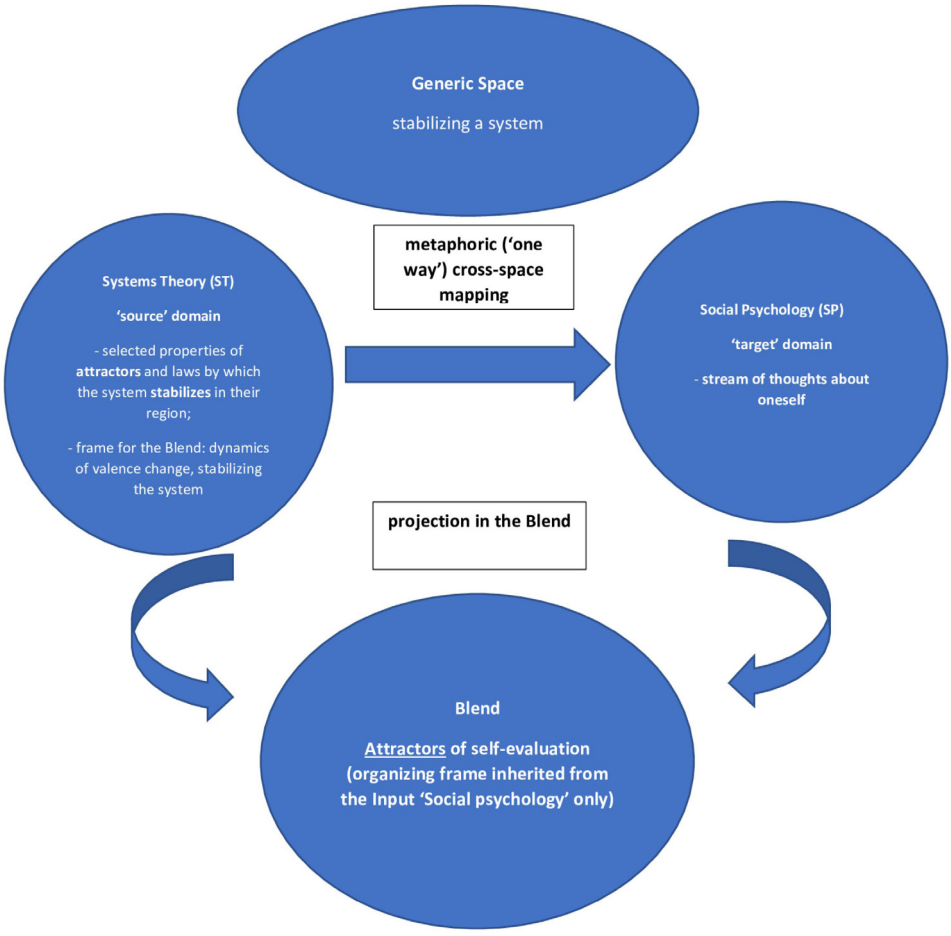

Fig. 3. Metaphoric cross-space mapping between the Inputs Systems Theory and Social Psychology

Source: Author's own study.

Metaphoric character of the mappings is indicated by the asymmetric selective projection of some significant knowledge elements from the input of the target

domain (SP) into the blend, while there is no possibility to feed the inferences back from the blend into the inputs. For example, in contrast to high self-esteem, low self-esteem stabilizes negative thoughts about oneself neither in the region of negative thinking about oneself nor in the region of positive thoughts about oneself: "[…] wysoka samoocena powoduje chwilową stabilizację pozytywnych myśli na własny temat. W wypadku niskiej samooceny oczekuje się więc konsekwencji analogicznych: stabilizacji negatywnego myślenia na własny temat. Jednakże natura niskiej samooceny wydaje się bardziej złożona"[4] (Krejtz, 2009, p. 32).

Consequently, in the sentence quoted the element "low self-esteem" from the input SP is not directly projected into the blend "attractors of self-evaluation", so that the inferences are not fed back from the blend into the inputs. This asymmetric projection results from the fact that the organizing frame of the blend is brought in exclusively from the input ST (Fauconnier and Turner, 2019). Therefore, selected elements from SP may be incompatible with it to an extent that makes conceptual integration impossible.

The designates of the expression "cognitive structure of the self-system" can be perceived as a non-thing, as a gap in the real world from a systems theory perspective (Fauconnier and Turner, 2019, p. 363). This is because we do not have a quantitative description of this structure, i.e. a description based on measurable entities, e.g. constitutive components of the self-system. The structure of the self-system which from the level of systems theory was a gap, in the blend thus appears as a **thing**, i.e. as a result of adaptation of appropriately selected model fragments and respective compressions. In the blend, self-esteem, as a relatively fixed property of the self-system, takes on properties of an attractor. As such, it becomes identical to the valence in a particular coordinate system. This is because the dynamics of self-system regulation has been reinterpreted from the perspective of systems theory. This reinterpretation enables us to see conceptual gaps in the self-system taking on the form of lacking quantitative structure which would describe the stabilization of the stream of thoughts, i.e. its systemic properties.

While filling in the gaps in the process of conceptual integration, all the elements from input SP and numerous organizational aspects of ST are projected into the blend. Projected are positive and negative thoughts about oneself and self-esteem from SP as well as stabilization and destabilization of the system, basins of attraction and strength of the attractor from ST. Elements compressed in the blend belong to the category **cognitive structure of the self-system**. As a result of this

[4] "[…] high self-esteem temporarily stabilizes thoughts about oneself. Thus, in the case of low self-esteem, the consequences are expected to be analogous: the stream of thoughts about oneself is expected to stabilize in the region of negative thoughts. However, the nature of low self-esteem seems more complex" (Krejtz, 2009, p. 32; transl. A.B.).

reinterpretation, systemic elements of the blend (in the case of people with high self-esteem the self-system stabilizes in the region of prevailing valence) seem to fill in the gaps within the static concept of the self-system (the regulatory function of self-evaluation in relation to the stream of self-awareness has not been specified in a detailed way). Elements of the self-structure which, by cross-space mapping, gain a counterpart in the form of valence in the system phase space, are conceptually fused with this valence in the blend-they can represent it. The vital relation of representation, which emerges between the function of attractors and the equilibrium for which the stream of self-awareness strives under the influence of thoughts about oneself, is compressed into **uniqueness** in the blend. For this reason, in the concept **attractors of self-evaluation**, the element with a specified meaning (**attractors**) replaces striving for equilibrium by the stream of self-awareness which, from the perspective of psychology, is unmeasurable.

In the concept **attractors of self-evaluation** the valence of an attractor in the system phase space is compressed to the **uniqueness** of self-evaluation. If one of the inputs contains positive thoughts about oneself and the other one specific regions of values in the system phase space, in the blend all these thoughts will be compressed to valence. The mechanism of compression in the blend enables us to conceptually transform a non-thing into a thing: a quantifiable dynamic structure. If we **run** the blend in the process of elaboration (Fauconnier and Turner, 2019), i.e. operationalise it in an appropriate context of expertise, we can manipulate the concept of self-evaluation as a concept embedded in systems theory. This interdependence is illustrated by the reference of the verb **stabilize** to the noun **self-evaluation** in the following example: "Samoocena definiuje obszar przyciągania myśli na własny temat […]. Tym samym powoduje stabilizację strumienia samoświadomości we wspomnianym obszarze"[5] (Krejtz, 2009, p. 32). This is how boundaries of the **Self** category shift.

To understand cross-space mapping between the inputs, a more profound analysis is needed. The structure, of SP is based on static models of the **Self** which consider the regulatory function of self-evaluation in relation to thoughts about oneself. Between SP and the space of knowledge about attractors (ST) a specific disproportionate mapping is performed: each thought about oneself has a relatively precise counterpart in the input of attractors, i.e. on the coordinate system describing the system phase space each thought about oneself can be assigned a specific value. The reverse process does not occur with equal precision, because evaluation of mental states in psychology is not quantitative. Therefore, from the systems theory perspective, they represent a conceptual gap. This is the actual reason for the mapping disparity.

[5] "Self-evaluation determines basin of attraction of thoughts about oneself. Thereby, it stabilizes the stream of self-awareness in the aforementioned region" (Krejtz, 2009, p. 32; transl. A.B.).

Assigning values to thoughts about oneself in a coordinate system becomes possible through the prior projection of the dynamics of cellular automaton on the regulatory function of self-evaluation in the stream of self-awareness.

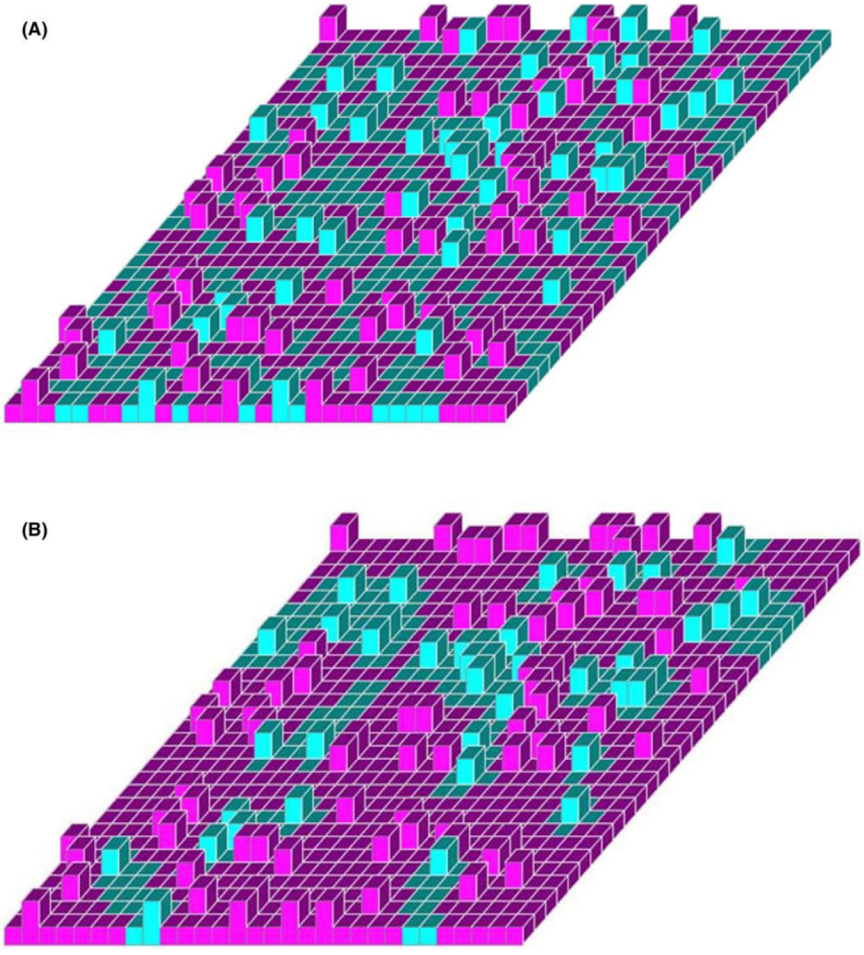

Fig. 4. Simulation of self-organisation process. Disordered (initial state – A) and differentiated/ordered (final state – B) self-system as represented by Cellular Automata

Source: (Krejtz, 2009).

In the process of projection, the range of values adopted by thoughts about oneself was restricted to zero and one. However, in reality, thoughts about oneself may be neither positive nor negative, i.e. take on values between zero and one and greater, e.g. the thoughts "my hair has grown darker recently", "I haven't felt like eating

vegetables lately" and "yesterday I was quite tired" are neither positive nor negative. Thus, the actual scale of self-evaluation values turns out not to be fully translatable into the scale of values attributed to variables in the coordinate systems on which states of systems are described in the cellular automaton paradigm. The adaptation of the scale here only takes place at an elementary, not sufficiently nuanced level. Precision of the evaluation scale in relation to the qualitative differentiation of self-evaluation is insufficient. For this reason, the analysed mapping enables one model's relational structure to be **anchored** in the other ones' structure from the level of the less detailed frame only. An asymmetric **level of detail** of the frames of adapted models makes it impossible to describe self-evaluation from the perspective of systems theory in a more precise way and to adapt more systemic aspects in the field of psychology.

Discrepancies within frame precision exert an immense influence on the selection of elements useful in transdisciplinary adaptation in terms of achieving a particular objective, e.g. to describe the regulatory function of self-evaluation in the systemic paradigm. Therefore, these discrepancies have a limiting effect on the mechanism of syncopation which is crucial to transdisciplinary modelling and which involves incorporating selected elements into the blend. A diffuse structure in an input or in many inputs can be compressed during projection into the blend by removing nearly all salient elements and leaving the necessary ones (Fauconnier and Turner, 2019, p. 486). Syncopation is activated when the bivalent scale for values assigned to the tiles in the cellular automaton is mapped on different thoughts about oneself. In order to map the scale, it was necessary to reduce the range of the scale to an elementary level, not because of a lower level of research development in the field of psychology but due to relatively imprecise values used in the cellular automaton paradigm. Therefore, syncopation determines the extent of model adaptation and the depth of transdisciplinary cross-references within the TD model of **attractors of self-evaluation**. From the above considerations, it is clear that precise transdisciplinary adaptation depends on the **level of detail** of the frames which organize the structure of counterparts in the inputs.

5. ROLE OF EXPLICATIVE CROSS-SPACE CONNECTORS IN TRANSDISCIPLINARY KNOWLEDGE TRANSFER

Distinctive elements of texts concerning TD concepts / TD knowledge transfer are expressions which have a specific function from the perspective of conceptual integration. These expressions usually take the form of verbs, verbs with prepositions, modal verbs and participle constructions, as indicated by the following examples: "The second determinant is the proximity in space or time between the target and the

source of influence. It might be described as distance in the social space, reflecting the ease of communication and is called immediacy" (Nowak and Vallacher, 2013, p. 6), "the units in an attractor network may be neurons, as in the example above, but can be mental identities" (Nowak and Vallacher, 2013, p. 4), "each tile represents individual pieces of self-knowledge" (Nowak and Vallacher, 2013, p. 12). Semantically, these phrases most often refer to cognitive distance expressed by description: "can be described as", representation: "to represent", interpretation: "[…] is interpreted as representing a variety of […]" (Nowak and Vallacher, 2013, p. 4), perception: "might be perceived as", identification: "can be identified with".

In light of CBT, the aforementioned expressions decompress and demetaphorise complexity of meaning generated by TD mappings, i.e. mappings between inputs representing knowledge from two distinct disciplines, such as social psychology and systems theory. This kind of decompression is necessary to introduce novel TD meanings and to familiarize the readers with analogies linking counterparts from inputs which seem incompatible in terms of their contents. Because of the function these structures perform from the perspective of CBT, they will be referred to as explicative cross-space connectors (henceforth: ECSC or ECSC connectors).

In sentence constructions, ECSC connectors are in close proximity to expressions denoting elements from the inputs SP and ST, e.g."[…] each tile on a two-dimensional grid represents an individual element of self-awareness", "[…] to treat global self-evaluation as a point attractor […]" where the noun phrases "tile" and "two-dimensional grid" semantically belong to the field of cellular automata, whereas the noun "self-awareness" transfers psychological knowledge. The verb "to represent" directly indicates and therefore decompresses the vital relation of representation linking these two distinct elements by analogy resulting from changing valence.

The above example demonstrates that ECSC connectors reveal the nature and background of relationships on which TD cross-space mappings are based. By compression and emergence of a new cognitive structure in the blend, ECSC connectors are reduced to the verb "to be" and to other verbs from the field of ST, i.e. from the field of knowledge on systems dynamics. In general terms, it can be said that, in the blend, ECSC connectors are replaced by verbs from the more developed discipline – the one whose elements fill the cognitive gap in the less developed discipline, e.g. knowledge transferred by verbs typical for ST fills a cognitive gap concerning dynamics of self-evaluation within SP. In the following example, the terms "positive/negative attractors" and "system" refer to self-evaluation and verbs "to stabilize", "to switch to", "to return to" refer to self-evaluation in the systemic approach:

> Due to the working of the attractors in this system, this system tends to stabilize in the vicinity of the positive attractor. When perturbed by external forces, it may switch to the negative attractor;

however, because this attractor is more shallow than the positive attractor the system is likely to return to the positive state over time. (Strawińska, 2013, p. 43)

Urszula Strawińska specifies the above interpretation in light of the psychological approach to self-evaluation as follows:

To bring this reasoning on the level of self-evaluation, a person whose self-concept could be illustrated with this energy landscape would most of the time have positive self-evaluation. In the face of failures, critical remarks or any other event that has negative implications for their self-view, the self-evaluation might become less positive, but it will return to its dominant attractor state with time. (Strawińska, 2013, pp. 43–44)

The occurrence of ECSC connectors is not restricted to any specific segments of texts. Explicative excerpts containing this type of connectors are often intertwined with these denoting a fixed TD blend. The prevalent structural pattern comprises one or more sentences followed by a relevant several-sentence explicative elaboration, as in the example above (Strawińska, 2013).

In conclusion, ECSC connectors are specific to text passages in which the authors wish to emphasize the transfer of the dynamics of the relationships between two distinct domains like ST and SP, i.e. the relationships between the functioning of systems and the dynamics of change in the stream of thoughts about oneself. They clearly indicate the object of compression, as a result of which a new cognitive structure emerges in the blend. Their task is therefore to enable a proper understanding of the logical relationships constituting the blend.

6. CONCLUSIONS

Frames concerning dynamics can be drawn from the complex systems theory to unify the interpretation of regulating the stream of self-awareness. However, the expansion of the human **Self** category only becomes possible with the emergence of a new conceptual structure **attractors of self-evaluation**, i.e. with the emergence of properties non-derivable from the inputs.

Furthermore, it has been shown that the possibility of TD modelling depends on the (a)symmetry of the **level of detail** demonstrated by respective frames which organize the structure of the inputs. Frame precision is essential for the selection of elements useful in transdisciplinary model adaptation. The decisive factor is therefore not the pattern of structural-functional complexity of the modelled section of reality itself but the way in which this pattern is conceptualized, according to the structure of respective frames.

Moreover, explicative cross-space connectors have been identified and conceptually distinguished. Their role is to indicate, decompress and possibly demetaphorise the complexity of meanings generated by TD cross-space mappings. In relation to TD modelling, decompression is indispensable to introduce emerging TD meanings and to familiarize the readers with analogies by which semantically distinct counterparts from the inputs are conceptually interlinked.

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