SOME APPLICATIONS OF SIT- ELEMENTS TO SETS THEORY AND OTHERS

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Sit – elements for continual sets
Definition 2. The set of continual elements \( \{a\} = (a_1, a_2, \ldots, a_n) \) at one point \( x \) of space \( X \) we shall call Sit – element, and such a point in space is called holding capacity of the continual Sit – element. We shall denote \( S_t^{\{a\}} \).

Definition3. The ordered continual self-consistency in itself as an element \( A \) of the first type is the ordered holding capacity containing itself as an element. Denote \( S_1 fA \) [3].

For example \( S_{\infty}^+ = \sin \infty \) has such type. It denotes continual ordered self-consistencies in itself as an element of next type—the range of simultaneous “activation” of numbers from \([-1,1]\) in mutual directions: \( \uparrow I \downarrow \uparrow \). Also we consider next elements: \( S_{\infty}^- = \sin(-\infty) \downarrow I \downarrow \uparrow \), \( T_{\infty}^+ = \tan \infty \uparrow I \downarrow \infty \), \( T_{\infty}^- = \tan(-\infty) \downarrow I \downarrow \infty \), don’t confuse with values of these functions. Such elements can be summarized. For example: \( aS_{\infty}^+ + bS_{\infty}^- = (a-b)S_{\infty}^- \). Also may be considered operators for them. For example: \( fS_{\infty}^+(t-t_0) = \left\{ \begin{array}{ll} S_{\infty}^+, & t = t_0 \\ 0, & t \neq t_0 \end{array} \right. \).

All continual holding capacities in self-space are continual self-consistencies in itself as an element by definition. The continual self-consistencies in itself as an element may to appear as continual Sit-holding capacities and usual continual holding capacities. In these cases there is used usual measure and topology methods.
Connection of continual Sit – elements with self-consistencies in itself as an element

Consider a third type of continual self-consistency in itself as an element. For example, based on \( S_{tx}^{[a]} \), where \( \{a\} = (a_1, a_2, \ldots, a_n) \), i.e. \( n \) - continual elements at one point. It’s possible to consider the continual self-consistency in itself as an element \( S_3f \) with \( m \) continual elements and from \( \{a\} \), at \( m < n \), which is formed by the form (1) that is, only \( m \) continual elements are located in the structure \( S_{tx}^{[a]} \).

Continual self-consistencies in itself as an element of the third type can be formed for any other structure, not necessarily Sit, only through the obligatory reduction in the number of continual elements in the structure. In particular, using the form (2)

Structures more complex than \( S_3f \) can be introduced.

Mathematics itself for continual elements

1. Simultaneous addition of a set of continual elements \( \{a\} = (a_1, a_2, \ldots, a_n) \) are realized by \( S_{tx}^{[au]} \).
2. By analogy, for simultaneous multiplication: \( S_{tx}^{[an]} \).
3. Similarly for simultaneous execution of various operations: \( S_{tx}^{[aq]} \), where \( \{q\} = (q_1, q_2, \ldots, q_n) \), where \( q_i \) - an operation, \( i = 1, \ldots, n \).
4. Similarly, for the simultaneous execution of various operators: \( S_{tx}^{[fa]} \), where \( \{F\} = (F_1, F_2, \ldots, F_n) \). \( F_i \) is an operator, \( i = 1, \ldots, n \).
5. For continual self-consistencies in itself as an element will be similar: addition \( S_{tx}^{[fa]} \) (or \( S_{tx}^{[aq]} \) for the third type), multiplication \( S_{tx}^{[fa]} \), \( S_{tx}^{[aq]} \).
6. Similarly with different operations: \( S_{tx}^{[fa]} \), \( S_{tx}^{[aq]} \), and with different operators: \( S_{tx}^{[fa]} \), \( S_{tx}^{[aq]} \).

7. \( S_{tx}^{[a]} \) – is the result of the holding operator action, the continual dynamical hierarchical set of null type \( S_{tx}^{[a]} \) – a kind of product of the sets \( A \) and \( B \). Let’s call it the PN – product. For sets \( A, B \) we have

\[
S_{tx}^{[a]} = \{ S_{tx}^{[A]} - A \cap B \} + \{ S_{tx}^{[B]} - A \cap B \}
\]

where \( D \) is self-set for \( A \cap B \). The measure: \( \mu(S_{tx}^{[a]}) = \mu(A) + \mu(B) - \mu(A \cap B) \). There is the same for structures if it’s considered as sets.

Remark. We consider expression

\[
\binom{\mu}{\mu} S_{tx}^{[a]} (*)
\]

where \( A \) is contained into \( B \), \( R \) is expelled from \( Q \). If \( A, B, D, C \) are taken in the capacities of sets, then we shall call (*) the dynamical hierarchical set of null type. Necessity of (*) arised for processes description in networks. Threshold element \( \text{Sit} - (a_{\gamma}x)St(t)_{\mu}^{[ax]} \) – artificial neurons of type \( \mu \) (designation \( - mnSt \) ), \( x = (x_1, x_2, \ldots, x_n) \) – source signals values, \( a = (a_1, a_2, \ldots, a_n) \) – Sit-synapses weights, and output signals values [1]. May be considered more simple variant of dynamical set

\[
\binom{\mu}{\mu} S_{tx}^{[a]} (**)
\]

where the set \( A \) is contained into the set \( B \), or

\[
\binom{\mu}{\mu} S_{tx}^{[a]} (***)
\]

\( A \) is expelled from \( B \).

We consider the measure of external influence on \( b: \mu**(\binom{\mu}{\mu} S_{tx}^{[a]} = \mu(A), \mu(D) \) –usual measures of sets \( A, B \). One can introduce the concepts of \( \text{Sit-group:} \ S_{tx}^{[a]} \), \( A \) is usual group, \( S_{tx}^{[a]} \), \( B \) - usual groups, self-group: \( f_i A, i = 1, 2, 3 \) [1],...
A is usual group. We construct new mathematical objects constructively without formalism. The formalism by its contradiction may destroy this theory in accordance with Gödel's theorem on the incompleteness of any formal theory. But in next article we give back theory formalism properly: axioms and theorems proof.

The activation of all networks enters it on self level at the activation.

We introduce the concepts Cha—the measure of holding capacity and Cca—the cardinality of its contents. Cca coincides with cardinal number if contents of holding capacity is set. We consider compression powers of dynamical set: \( q_1 = S t^A_B \) answers I compression power of dynamical set A, \( q_2 = S t^{A1}_B \) —II compression power of dynamical set A,..., \( q_{n+1} = S t^{A_n}_B \) —\( n+1 \) compression power of dynamical set A. We introduce the designations: CoQ—the contents of the holding capacity Q, \( Q^* \)—empty holding capacity Q (without the contents). \( S t^A_{\text{activation}} \equiv A^S t \), as a result, there is a displacement from A to a higher level self: self-A. Axiom R1. \( B(S t^A_{\text{CoB}} = B) \). Axiom R2. \( B((B \cdot B^{-1}) \cdot S t \) is also great for working with structures, for example: 1) \( S t^A_{\text{R}} \)—the structure A containment to B, where by B you can understand any capacity, other structure, etc, 2) \( S t^Q_{\text{R}} \)—containment structure from Q into R. Similarly for displacement: 1) \( S t^A_{\text{R}} \) displacement of structure A from B, 2) \( S t^Q_{\text{R}} \) displacement of the structure from Q to B. You can enter special operator Ct to work with structures: \( C t^A_{\text{R}} \) structures B with the structure of A, \( C t^Q_{\text{R}} \) structures R with the structure from Q, \( S t^A_{\text{R}} \)

Definition 1. A structure with a second degree of freedom will be called complete, i.e. "capable" of reversing itself with respect to any of its elements clearly, but not necessarily in known operators it can form (create) any special operators (in particular, special functions). In particular, \( C t^A_{\text{R}} \) is such structure.

Similarly for working with models, each of which is structured by its own structure, for example, use Sit-groups, Sit-rings, Sit-fields, Sit-spaces, self-groups, self-rings, self-fields, self-spaces. Like any task, this is also a structure of the appropriate capacity. Since the degree of freedom is doubly, it is clear that the structure of the equation contains a solution or structures the inversion of the equation with respect to unknowns, i.e. the structure of the equation is complete

Self-H-(self-hydrogen), like other self-particles, does not exist in the ordinary, but in fact all self-molecules, self-atoms, self-particles are elements of the energy space.

**Dynamical continual containment of oneself with target weights**

Definition 4. Dynamical continual holding capacity Q(t)\(^{g(t)}\) with target weights \( \{g_1(t), g_2(t), \ldots, g_n(t)\} \) is called the process of a containment in Q(t)\(^{g(t)}\).

Definition 5. Dynamical continual Sit-holding capacity with target weights \( \{g_1(t), g_2(t)\} \) \( S t(t)_{Q(t)_{\text{R}}(t)} \) is called the process of a containment R(t) in Q(t) with relevant target weights.

Definition 6. Dynamical continual holding capacity Q(t) with relevant target weights is called the process of a containment in Q(t) with relevant target weights.

Definition 7. Dynamical continual Sit-holding capacity \( S t(t)_{Q(t)_{\text{R}}(t)} \) with relevant target weights is called the process of a containment R(t) in Q(t) with relevant target weights.

Definition 8. The dynamical containment of oneself continual A(t) of the first type is the process of putting A(t) into A(t). Denote \( S t f(t)A(t) \).

Definition 9. The dynamical continual partial containment of oneself continual C(t) of the second type is the process of a containment of the continual program that allows C(t) to be generated. Let's denote \( S t f(t)C(t) \).
Definition 10. Dynamical continual partial containment of oneself B(t) of the third type is the process of partial containment of continual B(t) into oneself or continual program that allows B(t) to be generated partially. Let us denote $S_3 f(t) B(t)$.

Connection of dynamical continual Sit – elements with dynamical continual containment of oneself.

Consider a third type of dynamical continual partial containment of oneself. For example, based on $St(t)^{a(t)}_{x}$, where $\{a(t)\} = (a_1(t), a_2(t), \ldots, a_n(t))$, i.e. $n$ - continual elements in one point x, it is possible to consider the dynamical containment of oneself $S_3 f(t)$ with m continual elements and from $\{a(t)\}$, at $m < n$, which is process to be formed by the form (1) [1], that is, only m continual elements from $\{a(t)\}$ are located in the structure $St(t)^{a(t)}_{x}$.

Dynamical containments of oneself of the third type can be formed for any other structure, not necessarily Sit, only through the obligatory reduction in the number of continual elements in the structure. In particular, using the form (2) [1].

Structures more complex than $S_3 f(t)$ can be introduced.

Dynamical mathematics itself with target weights

1. The process of simultaneous addition of a set of continual elements $\{a(t)\} = (a_1(t), a_2(t), \ldots, a_n(t))$ with target weights $g(t)$ are realized by $St(t)^{a(t)g(t)}_{x}$.
2. By analogy, for simultaneous multiplication: $St(t)^{a(t)g(t)n}_{x}$.
3. Similarly for simultaneous execution of various operations: $St(t)^{a(t)q(t)}_{x}$, where $\{q(t)\} = (q_1(t), q_2(t), \ldots, q_n(t))$. q(t)-an operation, $i = 1, \ldots, n$.
4. Similarly, for the simultaneous execution of various operators: $St(t)^{F(t)a(t)}_{x}$, where $\{F(t)\} = (F_1(t), F_2(t), \ldots, F_n(t))$. F(t) is an operator, $i = 1, \ldots, n$.

5. The dynamical arithmetic itself for containments of oneself will be similar: dynamical addition - $S_1 f(t)^{a(t)+1}$, or $S_3 f(t)^{a(t)+1}$ for the third type, dynamical multiplication $S_1 f(t)^{a(t)+1}$, $S^2 f(t)^{a(t)+1}$.
6. Similarly with different operations: $S_1 f(t)^{F(t)a(t)}$, $(S_3 f(t)^{F(t)a(t)}_{x})$, and with different operators: $S_1 f(t)^{F(t)a(t)}_{x}$, $(S_3 f(t)^{F(t)a(t)}_{x})$.

7. $St(t)^{A(t)}_{B(t)} = \left\{ St(t)_{A(t)} = St(t)_{B(t)} + St(t)_{A(t) \cap B(t)} \right\}$, where $D(t)$ is self-set for $A(t) \cap B(t)$. The measure: $\mu(St(t)^{A(t)}_{B(t)}) = \mu^S(A(t) \cap B(t)) + \mu(B(t)) - \mu(A(t) \cap B(t))$. There is the same for structures if it’s considered as sets.

9. Let’s denote dynamical self-(dynamical self-Q(t)) through dynamical self$^2$-Q(t), $fS(t) \cap Q(t)$ = dynamical self-(dynamical self-...(dynamical self-Q(t))) = dynamical self$^n$-Q(t) for n-multiple dynamical self.

Remark. Dynamical Sit-displacement of A(t) from B(t) will be denote through $B(t)^{A(t)}_{A(t)}st(t)$. Then the notation $C(t)^{B(t)}_{D(t)}st(t)^{A(t)}_{B(t)}$ is dynamical Sit-containment of A(t) in B(t) and dynamical Sit-displacement of D(t) from C(t) simultaneously. Let’s denote $B(t)^{A(t)}_{A(t)}st(t)^{A(t)}_{B(t)}$ through $TS(t)^{A(t)}_{B(t)}$, $A(t)^{A(t)}_{A(t)}st(t)^{A(t)}_{A(t)}$ – through $TS(t)^{A(t)}_{A(t)}$.

We can consider the concept of dynamical Sit - element as $St(t)^{A(t)}_{B(t)}$, where A(t) fits in dynamical holding capacity B(t). Then $St(t)^{B(t)}_{B(t)}$ it will mean $S_1 f(t)$ B(t). Let’s
denote $\text{St}(t \frac{B(t)}{A(t)})$ through $L(t)(B(t))$. $\frac{A(t)}{A(t)}\text{St}(t)$ denotes the dynamical expelling oneself $A(t)$ out of oneself $A(t)$. $\frac{A(t)}{A(t)}\text{St}(t)$ — simultaneous dynamical containment of oneself $A(t)$ in oneself $A(t)$ and dynamical expelling oneself $A(t)$ out of oneself $A(t)$. $\text{St}(t)$ will be called anti-capacity from oneself. For example, “white hole” in physics is such simple anti-capacity. The concepts of “white hole” and “black hole” were formulated by the physicists proceeding from the physics subjects — usual energies level. The mathematics allows to find deeply and to formulate the concepts singular points in the Universe proceeding from levels of more thin energies. The experiments of Nobel laureates in 2022 year Asle Ahlen, Clauser John, Zeilinger Anton correspond to the concept of the Universe as its self-containment in itself. The connection between the elements of self-containment in itself is a property of self-containment in itself and therefore does not disappear when their location in it changes. The energy of self-containment in itself is closed on itself.

Hypothesis: the containment of the galaxy in oneself as spiral curl and the expelling her out of oneself defines its existence. A self-consistency in itself as an element $A$ is the god of $A$, the self-consistency in itself as an element the globe — the god of the globe, the self-consistency in itself as an element man -- the god of the man, the self-consistency in itself as an element of the universe -- the god of the universe, the containment of $A$ into oneself is spirit of $A$, the containment of the globe into oneself is spirit of globe, the containment of the man into oneself is spirit of the man (soul), the containment of the universe into oneself is spirit of the universe. We may consider next axiom: any holding capacity is capacity of oneself in itself. This is for each energy capacity. The chinese book of Changes “I Ching” uses a structure similar to (*) implicitly.

Supplement

For an element from flora or fauna, one can try to consider the following energy distribution $R=Q+D$. $Q$ - internal energy, $D$ is the energy of its interaction with the external environment: $\text{St}(R)=\text{St}(Q)+\text{St}(D)=\text{St}(Q)+\text{St}(Q)+\text{St}(D)+\text{St}(D)+\text{St}(D)+\text{St}(D)$. Internal self-energy, $\text{St}(D)$ - the external self-energy, $\text{St}(D)$ - object component of an element, $\text{St}(D)$ - usual energy component of an element. For operator $X_1 \rightarrow X_2$: $X_1 \rightarrow X_2$ is holding capacity for $X_1$, $\text{St}(X_1 \rightarrow X_2)$ -- self-consistency in itself as an element for $X_1$. More complex for implicit operator: $F(X_1, X_2)=0$. Then $\text{St}(F(X_1, X_2))=0$ forms self-consistency in itself as an element for $X_1$ relatively of $X_2$ or for $X_2$ relatively of $X_1$, $x$ obtains more power of the liberty and in this is direct decision (i.e. self-consistency in itself as an element for $x$). Self-equation for $x$ has its decision for $x$ in direct kind. Self-task for $x$ has its decision for $x$ in direct kind. Self-question has its answer for $x$ in direct kind. $x$ acquires more degree of liberty and in this is direct decision.

Supplement for Quantum Mechanics and through Sit-elements: Self-equation Schrödinger type

$$\frac{\delta^{\frac{\delta}{\delta \hat{\rho}}}}{\delta^{\frac{\delta}{\delta \hat{\rho}}}} + \frac{\hat{\rho}}{\delta^{\frac{\delta}{\delta \hat{\rho}}}} = 0, \quad \hat{\rho} = \exp(i\hat{H}_0 t/\hbar)\rho \exp(-i\hat{H}_0 t/\hbar), \quad \hat{W} = \exp(i\hat{H}_0 t/\hbar)\hat{W} \exp(-i\hat{H}_0 t/\hbar).$$

Hamilton operator $\hat{H} = \hat{H}_0 + \hat{W}_0$. $\hat{H}_0$ — considered quantum system energy, consisting of two or more parts, without their interaction with each other. $\hat{W}_0$ is the energy of their interaction, $\hat{\rho}$ — statistical operator $[3]$. Self-energy $\text{St}(\hat{H}) = \text{St}(\hat{H}_0 + \hat{W}_0) = \text{St}(\hat{H}_0 + \hat{W}_0) + \text{St}(\hat{W}_0) + \text{St}(\hat{H}_0 + \hat{W}_0) + \text{St}(\hat{W}_0)$. $\text{St}(\hat{W}_0)$ — considered quantum system self-energy, $\text{St}(\hat{W}_0)$ — energy of their interaction, $\text{St}(\hat{W}_0)$ — object manifestation of the
energy of the system in an external field, \( St_{\hat{H}} \)- the manifestation of the energy of the system in the energy interaction with the external field. Variants of the Schrödinger equation \( \frac{\delta}{\delta t} + [\hat{W}, \hat{\rho}] = 0 \) of the form \( S_2f, S_3f \) [1] are possible, using the form (1) or form (2) [1]. The carrier of the measure of objectivity-mass should be objectivity-elementary particle graviton, i.e. look like \( St_{\text{objectivity}} \), therefore it is a self-particle and is not an element of the level of objectivity, but is an element of the level self.

The carrier of the measure of objectivity-mass should be objectivity-elementary particle graviton, i.e. have the form \( St_{\text{objectivity}} \), therefore it is a self-particle and is not an element of the level of objectivity, but is an element of the level self. Therefore, it cannot be found at our level. In fact, the theory of Sit-elements helps to form a unified field theory on a qualitative level, because it is not possible to create a quantitative unified field theory. Supplement for string theory: May be to try represent elementary particles in the form of continual self-elements of the type \( S_\infty = \sin(-\infty) - \int I^{\frac{1}{1}}_1, T_\infty = \tan(\infty) - \int I^{\infty}_1, f_1 \perp g \) for any \( f, g \) etc.

For Sit-coding and Sit-translation may be use high-intensity, ultra-short optical pulses laser of Nobel laureates 2018 year Gerard Mourou, Donna, Strickland. Sit – structure or eprogram if one is present of needed «target weight» are taken in target block at Sit – activation of the networks. \( St_{\text{activation}} \) derives \( S_{mnst} \) to the self level boundary with target weight \( f \). It’s used an alternating current of above high frequently and ultra-violet light, which are able to work with Sit – structures in Sit – modes by it’s nature for an activation of the networks or some of its parts in Sit – modes and at local using Sit – mode. Above high frequently alternating current go through mercury bearings that overheating does not occur. The power of the alternating current of above high frequently increase considerably for target block. The activation of all network is realized to indicative “target weights”. We consider \( St_0 \), D-block over execution subject in \( S_{mnst} \) for networks [1]. Then we have self-consistency in itself as an element D, where full realization requires correspondent self-energy. \( St_{S_{mnst}} \)

The entire neural network as instantaneous simultaneous RAM in Sit-elements and self-elements. \( \text{self}_{s\text{elf}} \), \( f_1 \perp I^{\frac{1}{1}}_1, f_2 \perp f_1 \), \( f_1 \) \( \text{activation} \), \( S_{mnst} \), \( \sin(\infty) \), \( \sin(\infty) \).

When activated in a neural network, the entire neural network becomes a working memory. Use of self-energy as activation or from outside. \( Q_0 = St_{S_{mnst}} \rightarrow St_{S_{mnst}} \)

self-RAM, \( Q_0 = St_{S_{mnst}} \rightarrow St_{S_{mnst}} \cdot Q_0 \), \( Q_0 = St_{S_{mnst}} \rightarrow St_{S_{mnst}} \cdot Q_0 \).

References:

