The Notion of Affinity in Semantic Structures

Example:
Semantic structure S_1:
"I live in and my name is."
$ssig(S_1) \; = \; [\mathbf{V}_1 \; \mathbf{A}_{1,2} \; \mathbf{V}_2 \; \mathbf{A}_{1,3} \; \mathbf{V}_3 \; \mathbf{A}_{1,4} \; \mathbf{V}_4 \; \mathbf{A}_{4,5} \; \mathbf{V}_5 \; \mathbf{A}_{5,6} \; \mathbf{V}_6 \; \mathbf{A}_{6,7} \; \mathbf{V}_7]$
$text(V_1)$ = "live"
$text(V_S)$ = "a car"
$text(V_T)$ = "Sofia"
$text(V_P)$ = "Dimitar"
$text(V_Q)$ = "Poison"

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   V1________
  /  \       \
V2   V3       V4
     |       /
     *      V5
           / \
VS  VT   V6   *
         /       VP  VQ
       V7
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We have semantic particles which demonstrate affinity for specific properties. This means the particle attracts unconnected V-particles with specific combination of properties in their signature. It also demonstrates anti-affinity i.e. repels unconnected V-particles which have different combination of properties in their signature.

Affinity field of the semantic structure S – a discrete field which defines affinity / anti-affinity force $F(V_i)$ between the particle V_i of the semantic structure S and a test particle $V_{test}(P)$
$F(V_i, V_{test}) = F_i(P), i \in \mathbb{v}(S)$
$\mathbb{v}(S)$ denotes the set of indices of the V-particles in the semantic structure S
P is the properties tree $ptree(V_{test})$ of the test particle V_{test}. We will assume general form of P.

The affinity force $F_i(P)$ is a function which maps a subtree $\mathfrak{T} \subset P$ or a set of properties $\mathcal{S} \subset P$ to a signed real number. Note that F_i has implicit dependence on S as well i.e. in a context different than S F_i could have different values for the same P.