

Notation and Formalism of Hard Science Linguistics

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This document briefly lists the notation used by Hard Science Linguistics (HSL) researchers when constructing their models. The notation listed here is current as of the date of this writing (2007). It is based on Yngve 1996 and works by Professor Yngve and other researchers subsequent to this book. This document does not replace a careful reading of the original sources.

In general, square brackets ([]) indicates systems; pointed brackets (< >) indicate properties. In some instances this may seem counterintuitive. Linkages and participants are certainly systems: they have properties. Channels, props and other terms may, at first, seem to refer to systems too. However, HSL thinks of them as properties often, but not always, of linkages.

Term	Description	Notation
Assemblage	"...we will use the more specific term <i>assemblage</i> to mean 'group of people together with their linguistically relevant surroundings involved in particular communicative behavior'" Yngve 1996:86	none
Surroundings	"...all the other real-world objects [excluding people] including energy flows that are involved in the communicative behavior" Yngve 1996:86	none
Linkage	"A <i>linkage</i> is a representation in linguistic theory of an assemblage that includes just those properties that are required to account for the communicative behavior associated with the assemblage. Yngve 1996:126	[<i>name</i>]
Communicating individual	"A <i>communicating individual</i> is a representation in linguistic theory of a person that includes just those properties that are required to account for that person's communicative behavior." Yngve 1996:124	none

Participant	“A <i>participant</i> is a representation in linguistic theory of a person that includes just those properties that are required to account for that person’s communicative behavior in a particular assemblage. ” Yngve 1996:125 (emphasis added)	[<i>name</i>]
Channel	“A <i>channel</i> is a representation in linguistic theory of the physical means of energy flow and the energy flow itself in an assemblage that includes just those properties that are required to account for the communicatively relevant energy flow in the assemblage.” Yngve 1996:128	< <i>name</i> >
Prop	“A <i>prop</i> is a representation in linguistic theory of a real object, instrument, or device in an assemblage that includes just those properties that are required to account for its communicative relevance in the assemblage.” Yngve 1996:129	< <i>name</i> >
Setting	“A <i>setting</i> is a representation in linguistic theory of Other parts of the physical surroundings of a group in an assemblage that includes just those properties that are required to account for their communicative relevance in the assemblage.” Yngve 1996:129	none
Linguistic property	“In science, properties, strictly speaking, are constructs in a theory of the real object. So the linguistic properties of a person would, strictly speaking, be linguistic properties in a representation of a person.” Yngve 1996:123	< <i>name</i> > or < <i>name/value</i> >
Set of properties	We use a similar notation for a set of inputs	{ $P_1, P_2, P_3 \dots P_n$ }
Set of properties at instant <i>i</i>	Yngve 1996:147	{ $P_1, P_2, P_3 \dots P_n$ } _{<i>i</i>}
Set of inputs and properties	Yngve 1996:147	{ $l_1, l_2, l_3 \dots l_m; P_1, P_2, P_3 \dots P_n$ }
Interval	Yngve 1996:148	Δt
Time delay	Yngve 1996:148	Δt_{i+1}
Transition from <i>i</i> to <i>i+1</i>	Yngve 1996:148	{ $l_1, l_2, l_3 \dots l_m; P_1, P_2, P_3 \dots P_n$ } _{<i>i</i>} →

		$\{l_1, l_2, l_3 \dots l_m; P_1, P_2, P_3 \dots P_n; \Delta t\}_{i+1}$
Component expression – component transition	See the principle of continuity of component properties; Yngve 1996:153	$\{l_1, l_2, l_3 \dots l_m; P_1, P_2, P_3 \dots P_n\}_i \rightarrow \{P_k; \Delta t\}_{i+1}$
Setting expression	An abbreviation for the above with a double colon replacing the arrow Yngve 1996:154. This notation is more common than the above	$\{l_1, l_2, l_3 \dots l_m; P_1, P_2, P_3 \dots P_n\}_i :: \{P_k; \Delta t\}_{i+1}$
List of reduced setting expressions (example)	These properties are binary; time delays are arbitrary. Yngve 1996:159. “Each setting expression in a reduced list is tantamount to a dynamic causal law of communicative behavior.”	$\{-p_a, -p_b, p_c\}_i :: \{p_k; 7\}_{i+1}$ $\{-p_a, p_b, p_c\}_i :: \{p_k; 7\}_{i+1}$ $\{p_a, -p_b, p_c\}_i :: \{p_k; 4\}_{i+1}$ $\{p_a, p_b, p_c\}_i :: \{p_k; 7\}_{i+1}$
Conjunction and alternation	a. Read “ p_a and p_b and p_c ” b. Read “ p_a or p_b or p_c ” Yngve 1996:163	a. $P_a \times P_b \times P_c$ b. $P_a \vee P_b \vee P_c$
Negation	not p Yngve 1996:162	-p
Setting procedure	A group of setting expressions which collectively set all possible values of a property Yngve 1996:163-164	$\{p_a \vee -p_b \times p_c\}_i :: p_k$ $\{-p_a \times -p_c\}_i :: -p_k$

Laws, Principles and Rules of HSL

Componential partitioning	“A communicating individual or a linkage can be represented in terms of a set of component properties in respect to which different individuals or linkages show partial sameness and differences and in respect to which the same individual or linkage shows partial sameness and differences at different times.” Yngve 1996:136
Small changes	“Most of the properties of a communicating individual remain stable and unchanged over considerable periods of time; thus only a relatively small number of properties are changed during each transition” Yngve 1996:153
Principle of the continuity of component properties	“A component property will remain the same unless caused to change from time to time by transitions occurring at those times.” Yngve 1996:154
Restricted causation	“Although the number of possible inputs and component properties is very large, the number involved as causes in any component expression is small.” Yngve 1996:157
Principle of	“A component property or group of properties represents in

equivalent componential histories	a compact fashion any one of all those different possible histories or different sets of relevant past events that would influence current communicative behavior in a certain way.” Yngve 1996:170