# Pragmatic Metavocabularies—A Syntactic Example

Bob Brandom

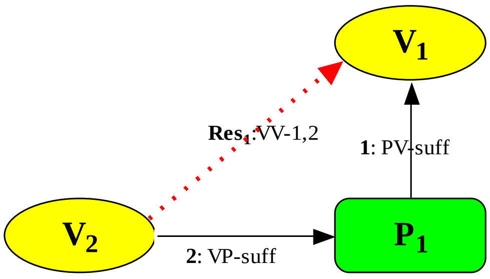
Outline:

1. The classical project of philosophical analysis
2. The pragmatist challenge
3. Extending the project of analysis: pragmatically mediated semantic relations
4. Automata: syntactic PV-sufficiency and VP-sufficiency
5. The Chomsky hierarchy: a syntactic example of pragmatic expressive bootstrapping
6. Semantic examples of pragmatic expressive bootstrapping and further basic and resultant meaning-use relations

Analytic philosophy seeks to use *logical* vocabulary to make sense of the meanings expressed in some *target* vocabulary in terms of the meanings expressed in a *base* vocabulary.
Some candidates for the key kind of semantic relation between vocabularies include: analysis, definition, paraphrase, translation, entailment, reduction of different sorts, truth-making, supervenience.
Two core programs of analytic philosophy are empiricism and naturalism.

In addition to traditional (1930s) syntactic and semantic metavocabularies, Sellars (in the '50s) introduced the idea of *pragmatic* metavocabularies. These allow one to *say* what it is one must *do* in order thereby to be engaging in discursive practices, and so *saying* anything.
We can decompose pragmatic MVs into the composition of two relations:
To be a pragmatic MV, a vocabulary $V_2$ must be **VP-sufficient** to *specify* practices-or-abilities $P_1$ that are **PV-sufficient** to *deploy* the base vocabulary $V_1$.

**Meaning-Use Diagram #1: Pragmatic Metavocabulary**



The conventions of this diagram are:

- Vocabularies are shown as ovals, practices-or-abilities as (rounded) rectangles.
- Basic meaning-use relations are indicated by solid arrows, numbered and labeled as to kind of relation.
- Resultant meaning-use relations are indicated by dotted arrows, numbered, and labeled as to kind and the basic MURs from which they result.

The idea is that a resultant MUR is the relation that obtains when all of the basic MURs listed on its label obtain.

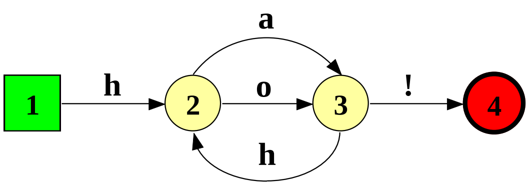
**My basic suggestion for extending the classical project of *analysis* so as to incorporate as essential positive elements the insights that animate the *pragmatist* critique of that project is that alongside these classical semantic relations between vocabularies we consider *pragmatically mediated* ones, of which the relation of being a pragmatic metavocabulary is a paradigm.**

<u>Example of a pragmatic MV for a very simplified case</u>:
A vocabulary in a purely *syntactic* sense is a proper subset of the *universe* of strings generated by concatenating elements of some finite *alphabet*.
The ability to 'read' that vocabulary is the ability to tell, of any given string, whether or not it is in the privileged vocabulry.
The ability to 'write' that vocabulary is the ability to produce only (and each of) the licit strings of the vocabulary.
The theory of *finite-state automata* (FSA) offers pragmatic MVs for specifying automata that can read and write vocabularies (in this syntactic sense) of various kinds.
Such automata are presumed to have the primitive ability to read and write (when prompted) arbitrary letters from the alphabet, and the primitive rule-following abilities needed to implement conditional branched-schedule algorithms: to exercise its abilities differently depending on what state it is in, and to move between states as the algorithm specifies.

The laughing Santa vocabulary includes not only his trademark "Hohoho!", but also all other finite strings consisting of a sequence of 'ha's as well as 'ho's, finished with an exclamation mark: "Hahahoho!" and "Hohahoha!" and so on.

Here are specifications of the Laughing Santa automaton in three different pragmatic MVs:

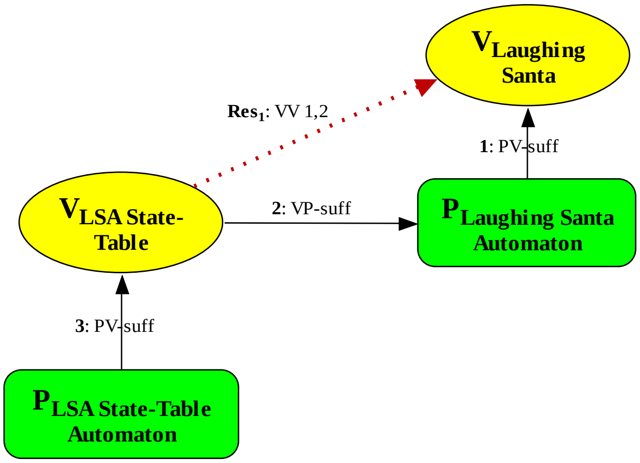
**The Laughing Santa Automaton**



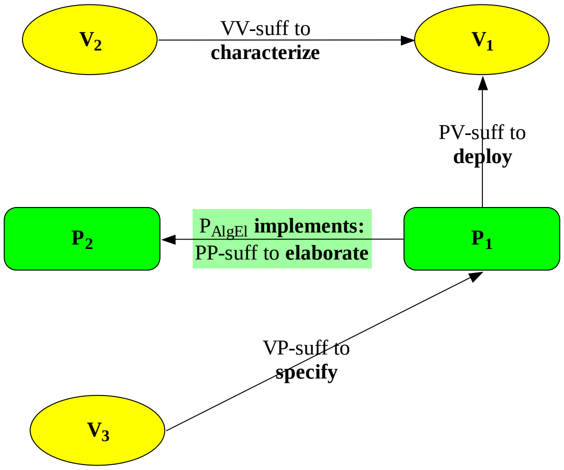
| | <u>**State 1**</u> | <u>**State 2**</u> | <u>**State 3**</u> |
|---|---|---|---|
| **a** | Halt | 3 | Halt |
| **h** | 2 | Halt | 2 |
| **o** | Halt | 3 | Halt |
| **!** | Halt | Halt | 4 |

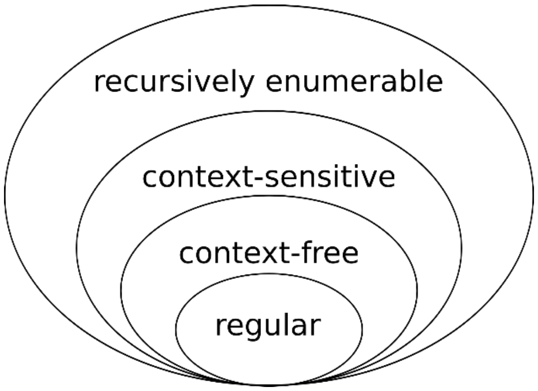
aHalt3Halth2Halt2oHalt3Halt!HaltHalt4.

**Meaning-Use Diagram #6:
Specifying the Automaton
that Deploys the Laughing
Santa Vocabulary**


$V_{\text{Laughing Santa}}$
**Res$_1$**: VV 1,2
**1**: PV-suff
$V_{\text{LSA State-Table}}$
**2**: VP-suff
$P_{\text{Laughing Santa Automaton}}$
**3**: PV-suff
$P_{\text{LSA State-Table Automaton}}$

## MUA Terminology





The Chomsky Hierarchy

| Vocabulary | Grammar | Automaton |
|---|---|---|
| Regular | A→aB<br>A→a | Finite State Automaton |
| Context-Free | A→<anything> | Push-Down Automaton |
| Context-Sensitive | $c_1Ac_2$→c1<anything>$c_2$ | Linear Bounded Automaton |
| Recursively Enumerable | No Restrictions on Rules | Turing Machine<br>(= 2 Stack PDA) |

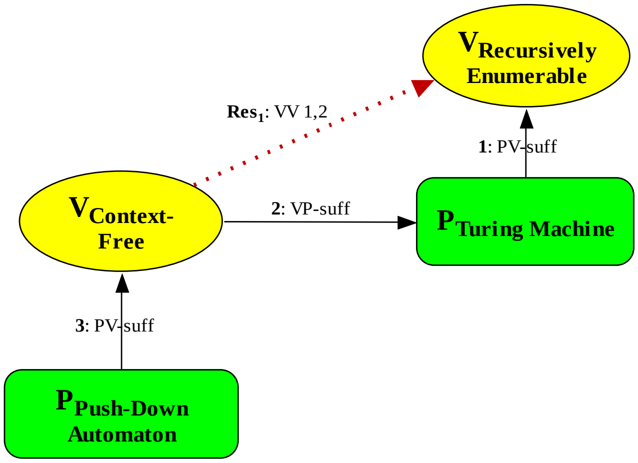
The surprising fact is that **the abilities codified in Turing Machines—the abilities to recognize and produce recursively enumerable vocabularies—can quite generally be specified in *context-free* vocabularies.**

**This is *pragmatic expressive bootstrapping*.**

By contrast, classical Tarskian semantic metavocabularies must be expressively *stronger* than their base vocabularies.

**Meaning-Use Diagram #7:**

**Syntactic Pragmatic Expressive Bootstrapping**


V Recursively Enumerable
Res1: VV 1,2
1: PV-suff
V Context-Free
2: VP-suff
P Turing Machine
3: PV-suff
P Push-Down Automaton