

Meaning Used in the Descriptive Names for Computer Resources

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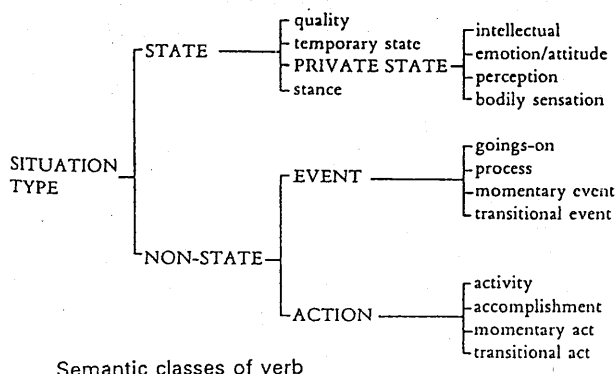
1 Introduction

To distinguish computing resources correctly is not so easy in the present evolving environment for computers. This is because we cannot always obtain the correct identifiers, which may be modified as resources are changed. A solution for this is to use descriptive names to distinguish them.

Our goal in this paper is to try to extract the components of meanings which are to be used in the descriptive names for computer resources. To do this, we have paid attention to the description of commands, system calls and libraries, in the manuals of computers. These are explanations for computer resources. If we can use these explanations as identifiers of such resources, we can regard these explanations as descriptive names for identifying them. For this reason, what we do here is to examine these explanations to look for the meanings used in them. Our next goal is to construct a meaning system of the computer resources based on these examinations, which will be conveniently used to treat descriptive names. However, this is beyond the scope of this paper.

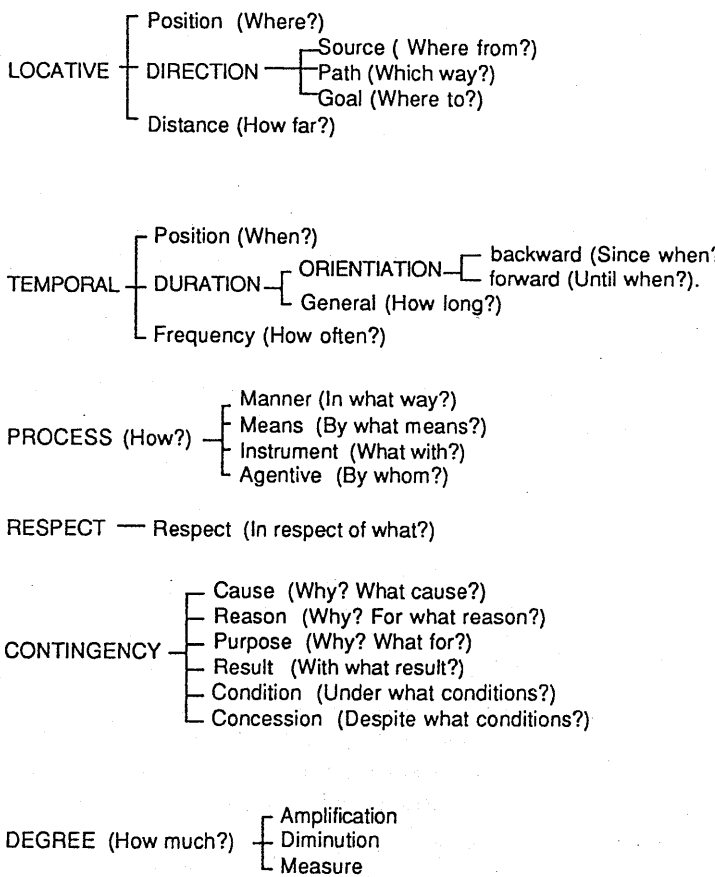
2 Meaning and Grammar

Howard Jackson[Ja90] identifies the essential elements of propositions or sentences: the situation types, which refers to state, events and actions that we want to talk about and which is represented grammatically by verbs; the participants in these states, events and actions which are represented grammatically by nouns; the circumstances attendant on the state, event or action and which are represented grammatically by adverbs and prepositions. In the situation types, action and event have two features; one is the feature of involving 'change of state' or not, the other is the view as lasting through a period of time contrasted the view as taking place in a moment of time. For these features terms conclusive, non-conclusive, durative and punctual are used, respectively. The situation types are summarized in the following diagram ( from page15 in [Ja90] ):



Participants are distinguished as having the roles of Agentive, Affected, Attribute, External causer, Recipient, Instrument, Positioner, Resultant and Eventive.

The participants are obligatory elements in a proposition. Circumstances, on the other hand, cannot generally be said to be necessary for the completeness of a proposition. They are additional, gratuitous information about a situation, which we may include or not, as a matter of choice. ( mainly quoted from pp.46-47 in [Ja90] ) The types and their subtypes of the circumstances are summarized in the following:



3 How we Make a Search

As described in the Introduction, we choose the SunOS manual as the source of descriptions. We examine descriptions of command, system calls and libraries, which are described in INTRO(1), INTRO(2) and INTRO(3), respectively, because these are general descriptions about computer resources which we can manage. We check the meanings used in these manuals, based on the classification of section 2.

We sort these contents in order, classify type of verbs, role of participants and circumstances and then extract the meanings.

## 4 Results and Discussion

### 4.1 Results

1. **Grammatical Factors:** The target descriptions are either noun phrases or sentences having no subjects. We consider the latter as eliminating subjects because these descriptions are for the labels of commands, system calls and libraries, which roles in the sentences are subjects. Thus, we call such a sentence verb-sentence here.

Verb-sentences are constructed by either a single clause or compound clauses. Compound clauses in the target descriptions are all co-ordinate, and only 'and' and 'or' conjunctions are used. The tense and aspect of verbs used in the target descriptions is simple present. The verbs are not with any auxiliary verbs.

2. **Meaning Factors:** The situation types used in the verb-sentences are mostly action, especially, having conclusive features. The number of different verbs in these descriptions are 38 for activity, 63 for accomplishment, 6 for momentary act, and 56 for transitional act. The verbs for process type in EVENT are three and those of stance in STATE is one. Other types of verbs are not revealed.

The verbs which are used many times in the descriptions are "display, remove, return, change, and create" in the command lists, "get, set, examine, wait for" in the system call, "get, convert, generate, manipulate, read" in the libraries.

The roles of participants used in the descriptions are Agentive, which do some action, Affected, Recipient, Resultant, Attribute and Eventive. Affected relates to any action type, while Resultant or Recipient does transitional act, or accomplishment.

Circumstances used in the descriptions are Purpose, Position, DIRECTION ( Source, Goal ), Manner, Means, Respect, Temporal Position, forward, Frequency, Result and Condition.

The proposition patterns used in the verb-sentences of the system calls are:

```
( ( act Affected ) + ( stance Purpose ) )
( ( acc Affected ) ( tran Affected ) )
( ( tran Affected ) + ( tran Affected ) )
```

```
( acc tran ) Affected Position
( mmta tran ) Affected
( tran tran ) Affected
( tran tran ) Affected Purpose
( tran + tran ) Affected
( act + tran ) Affected
( Recipient ) acc Affected
( Recipient ) tran Affected
( Recipient ) tran Affected Attribute
( Recipient ) tran Affected Position
( Recipient ) tran Resultant
( Recipient ) tran Resultant Attribute
```

```
acc Affected
acc Affected Purpose
acc Resultant
acc Resultant Position
act Affected
act Affected Goal
act Affected Manner
act Affected Position
act Affected Source
stance Affected Purpose
tran Affected
Manner tran Affected
tran Affected Manner
tran Affected Position
tran Affected Position Manner
tran Affected Purpose
tran Affected Recipient
tran Eventive Goal
tran Resultant
```

In the above lists, all the Agentives in the action type and the subject of 'stance' are eliminated. '+' shows 'and' conjunction and ( xx yy ) shows 'or' conjunction.

### 4.2 An Example

A description of 'bind' in the system call is classified in the following:

```
bind | a name | to a socket
      |         |
      | Affected | Recipient
where tran means a transitional act.
```

### 4.3 Discussion

From the above list, we may say that a descriptive name has action part, several participant parts and circumstances. Each part may have several components, and can be combined by 'and' or 'or' relation.

Noun phrases are considered to show STATE ( = be, belong ) so that they have no verbs.

The verbs that are used many times will be classified in many sub-types. Thus, we must pay attention to these words when we construct a meaning system of descriptive names: "display, remove, return, change, create, get, set, examine, wait for, convert, generate, manipulate, read"

## 5 Conclusion

Computer resources can be explained relatively simple forms ( See proposition pattern lists ). In the descriptions of computer resources, the components of participants, situation types and circumstances are used. The verb-sentences have the situation type of action in many cases.

Detail analysis of these factors are for further study.

### References

- [Ja90]: Jackson, H., Grammar and Meaning, Longman, p.292 ( 1990 )  
 [Su88]: Sun Release 4.0, 26 January 1988