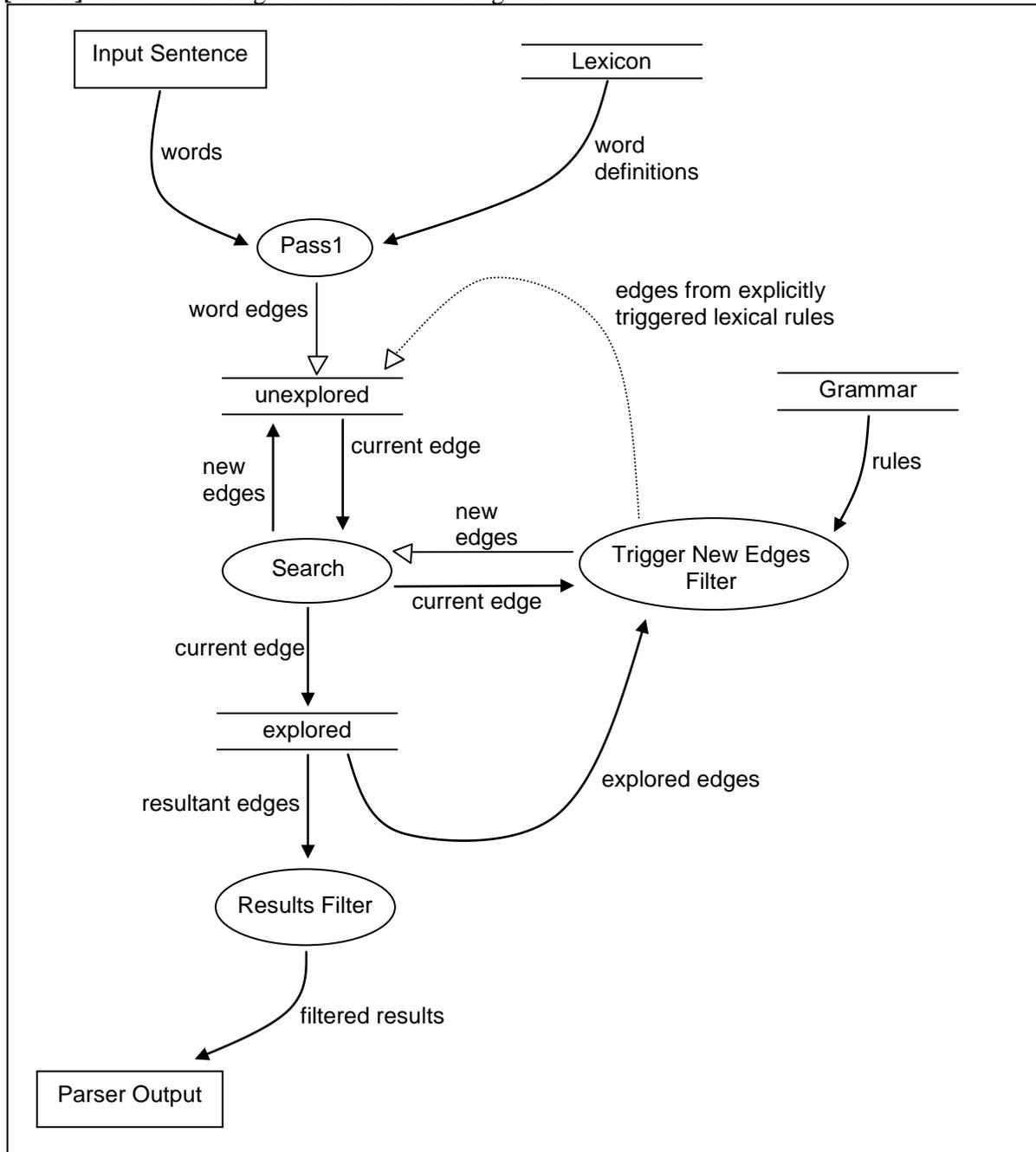# Appendix 3.   Design Documents

A3.1.   Phase 1: the chart parser (objects, events, DFDs, Z specifications)

A3.1.1   Data Flow Diagrams, Object & Event Models

[A3D1] Chart Parser: High level Data Flow Diagram

See following page for an explanation of terms.

Appendix 3 (edited from original)

Explanation of terms used in [A3D1] above

unexplored: a set of edges awaiting search exploration.

explored: set of edges which have been explored by search.

Pass 1:   takes a series of words and creates one or more edges for each according to their
                lexical definitions.

Search: implements a state space exploration of unexplored edges. New edges created during
                this search process are initially placed with other unexplored edges.

Trigger New Edges Filter: acts as a filter over all explored edges for possible grouping with the
                edge currently under exploration by the search process; identifies grammar rules
                which can be triggered by the current edge; controls independent firing of lexical
                rules (in some cases these can cause new edges to be directly added to the set of
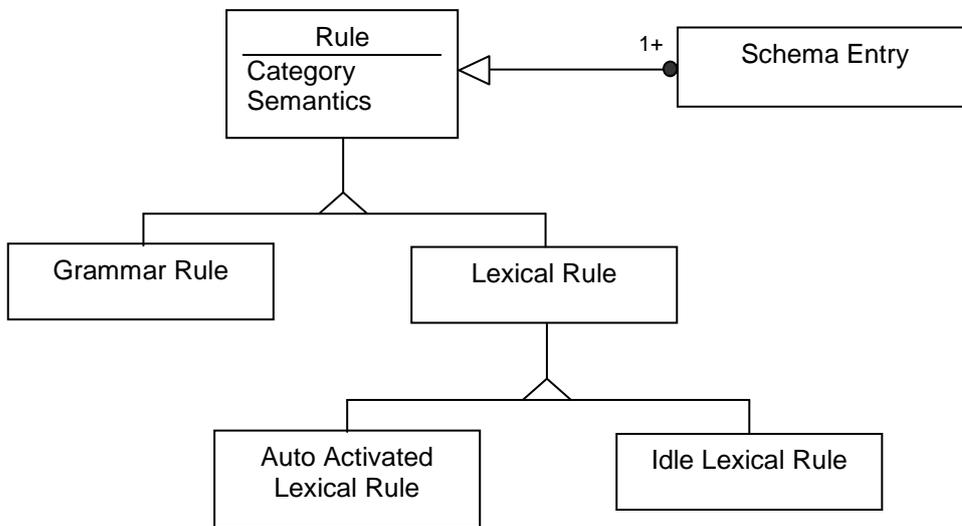   unexplored edges.

Results Filter: filters all resulting edges over a results criteria. Typically such a criteria would only
                be interested in complete edges encompassing all words in the original input sentence.
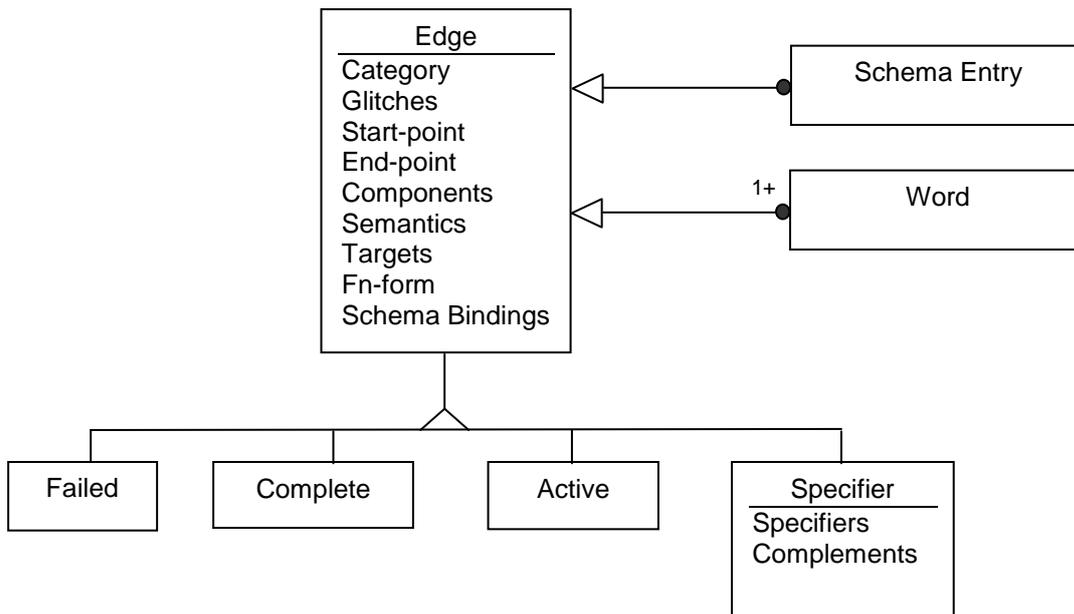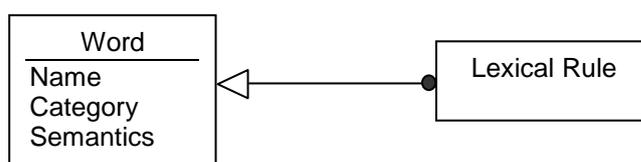
Objects Models for Rules, Edges & Words

[A3D2] Rule Object Model

```
                    ┌──────────────┐
                    │     Rule     │                        ┌──────────────────┐
                    ├──────────────┤      1+                │                  │
                    │ Category     │◁────────────●          │  Schema Entry    │
                    │ Semantics    │                        │                  │
                    └──────┬───────┘                        └──────────────────┘
                           │
                    ┌──────┴──────┐
          ┌─────────┘             └─────────────┐
   ┌──────────────┐              ┌────────────────────┐
   │ Grammar Rule │              │    Lexical Rule    │
   └──────────────┘              └─────────┬──────────┘
                                  ┌─────────┴─────────┐
                          ┌───────────────┐    ┌──────────────────┐
                          │ Auto Activated│    │ Idle Lexical Rule│
                          │ Lexical Rule  │    │                  │
                          └───────────────┘    └──────────────────┘
```

[A3D3] Rule Object Model

```
                    ┌──────────────────┐
                    │      Edge        │
                    ├──────────────────┤          ┌──────────────────┐
                    │ Category         │◁────────●│  Schema Entry    │
                    │ Glitches         │          └──────────────────┘
                    │ Start-point      │
                    │ End-point        │      1+  ┌──────────────────┐
                    │ Components       │◁────────●│      Word        │
                    │ Semantics        │          └──────────────────┘
                    │ Targets          │
                    │ Fn-form          │
                    │ Schema Bindings  │
                    └────────┬─────────┘
         ┌──────────┬────────┴────────┬──────────────┐
   ┌──────────┐ ┌──────────┐  ┌──────────┐  ┌──────────────────┐
   │  Failed  │ │ Complete │  │  Active  │  │    Specifier     │
   └──────────┘ └──────────┘  └──────────┘  ├──────────────────┤
                                             │ Specifiers       │
                                             │ Complements      │
                                             └──────────────────┘
```

[A3D4] Rule Object Model

```
        ┌──────────────┐
        │    Word      │
        ├──────────────┤              ┌──────────────────┐
        │ Name         │◁────────────●│  Lexical Rule    │
        │ Category     │              └──────────────────┘
        │ Semantics    │
        └──────────────┘
```

[A3D5] Event Model for Edges

created by grouping
[edge not complete]

created by Pass1
[created from word]

created by idle
lexical rule

created by grouping
[edge is complete]

created by Pass1
[created by auto lxr]

waiting on
unexplored

semantics under
modification by
parent rule

semantic
processing finishes

selected for
exploration

focus for
grouping
filter

grouping finishes
[edge is complete]

focus for
grammar rule
filter

grouping finishes
[edge not complete]

rule filter
finishes

edge inspected
by filter

processed, on
explored

filtered for results
[edge fits criteria]

member of
results list