US006061513A

United States Patent [19]

Scandura

[11] Patent Number: 6,061,513

[45] Date of Patent: *May 9, 2000

[54] **AUTOMATED METHODS FOR CONSTRUCTING LANGUAGE SPECIFIC SYSTEMS FOR REVERSE ENGINEERING SOURCE CODE INTO ABSTRACT SYNTAX TREES WITH ATTRIBUTES IN A FORM THAT CAN MORE EASILY BE DISPLAYED, UNDERSTOOD AND/OR MODIFIED**

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[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: **08/914,314**

[22] Filed: **Aug. 18, 1997**

[51] **Int. Cl.**[7] **G06F 9/44**

[52] **U.S. Cl.** **395/701**; 395/702; 395/705; 395/703; 395/708

[58] **Field of Search** 395/701–712

[56] **References Cited**

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Assistant Examiner—Todd Ingberg

[57] **ABSTRACT**

Disclosed herein is a method, which can be automated on an information processing device with memory, that dramatically reduces the effort required to create systems for reverse engineering source code in a plurality of structured languages into Abstract Syntax Trees (ASTs), which represent all of the information in said source code, and to automatically analyze, display and/or manipulate those ASTs. This method makes it possible to automatically construct systems for reverse engineering source code in any of a plurality of languages and for analyzing, manipulating and/or converting such code. This method also makes it possible to display and edit information as text in compressed ASTs in human understandable, pre-specified form.

10 Claims, 13 Drawing Sheets

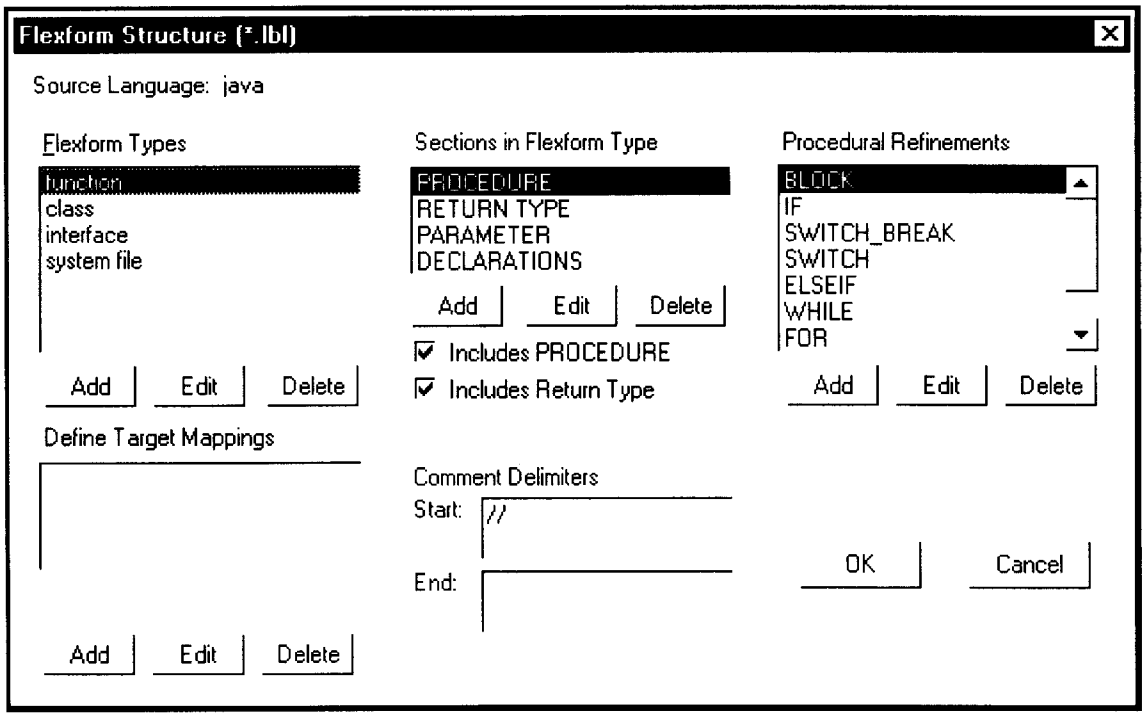

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Figure 1.

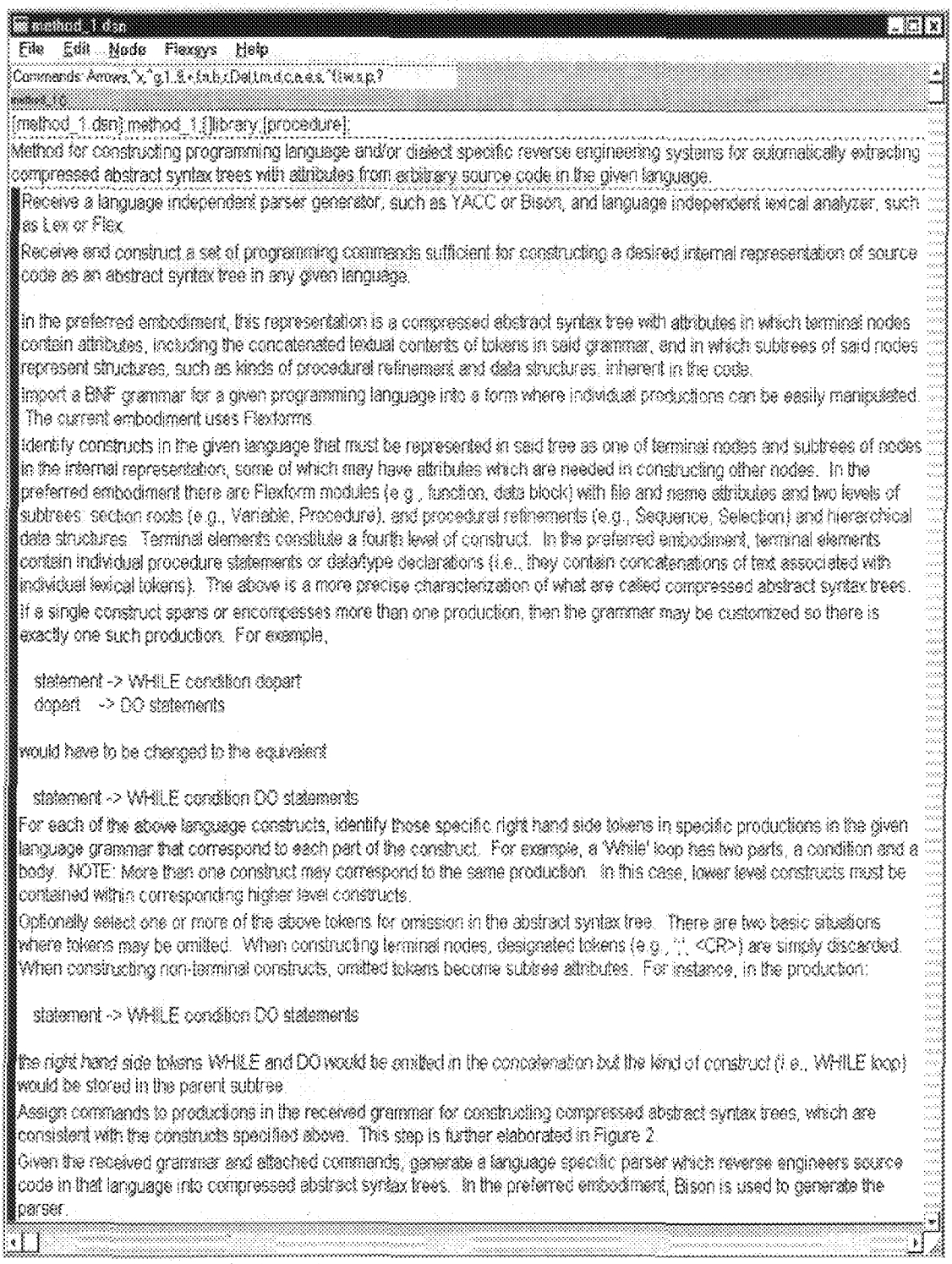

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Figure 2.

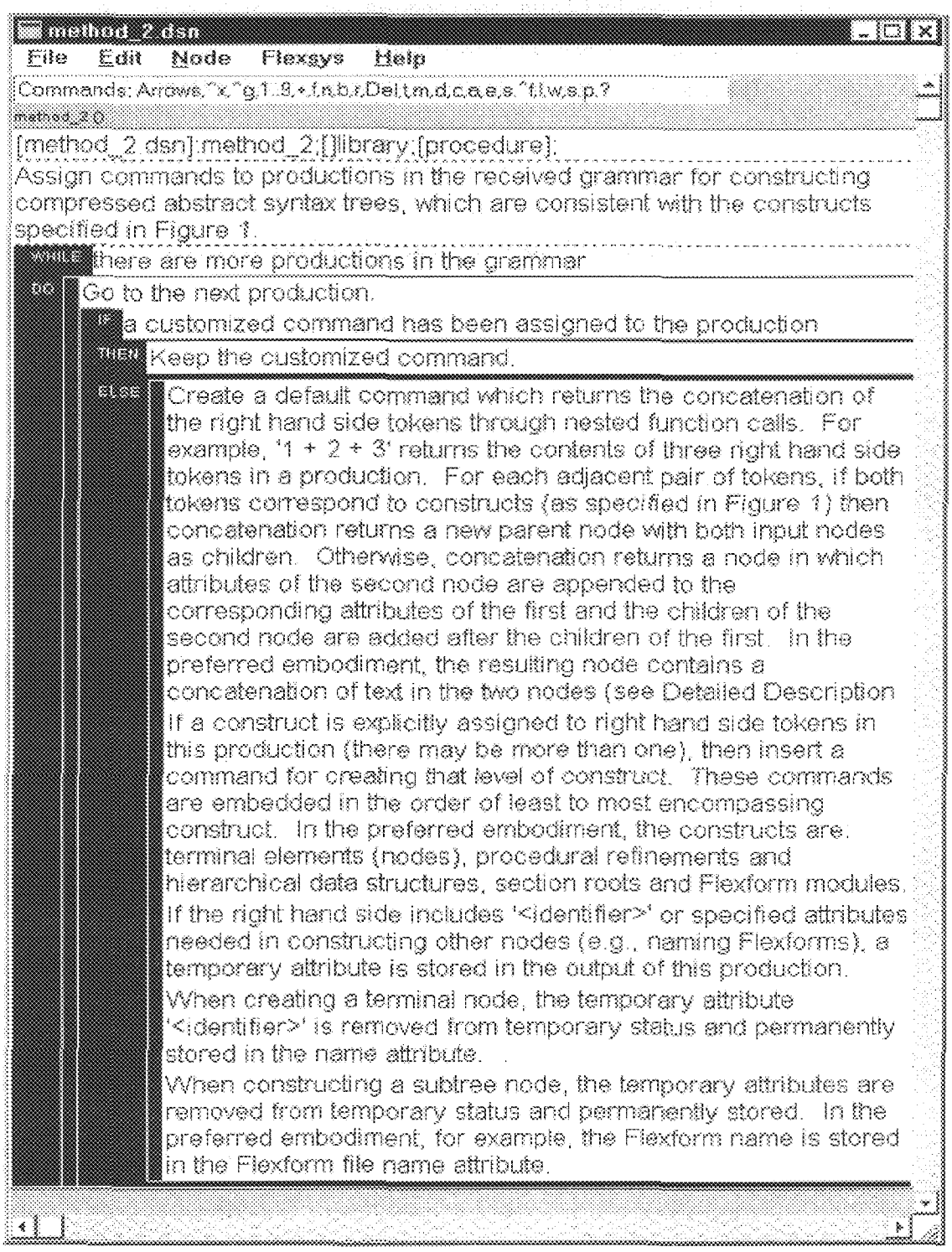

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Figure 3.

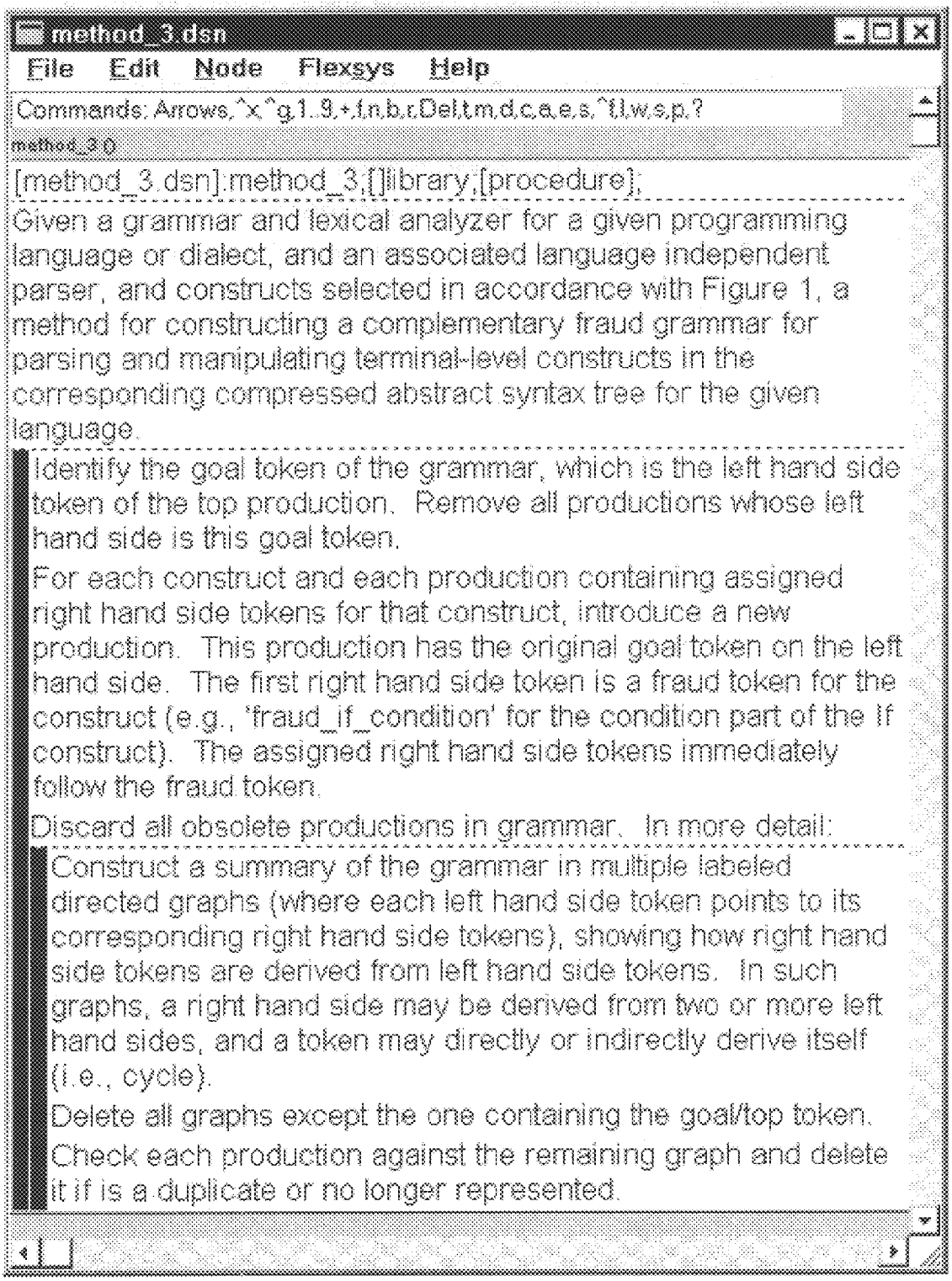

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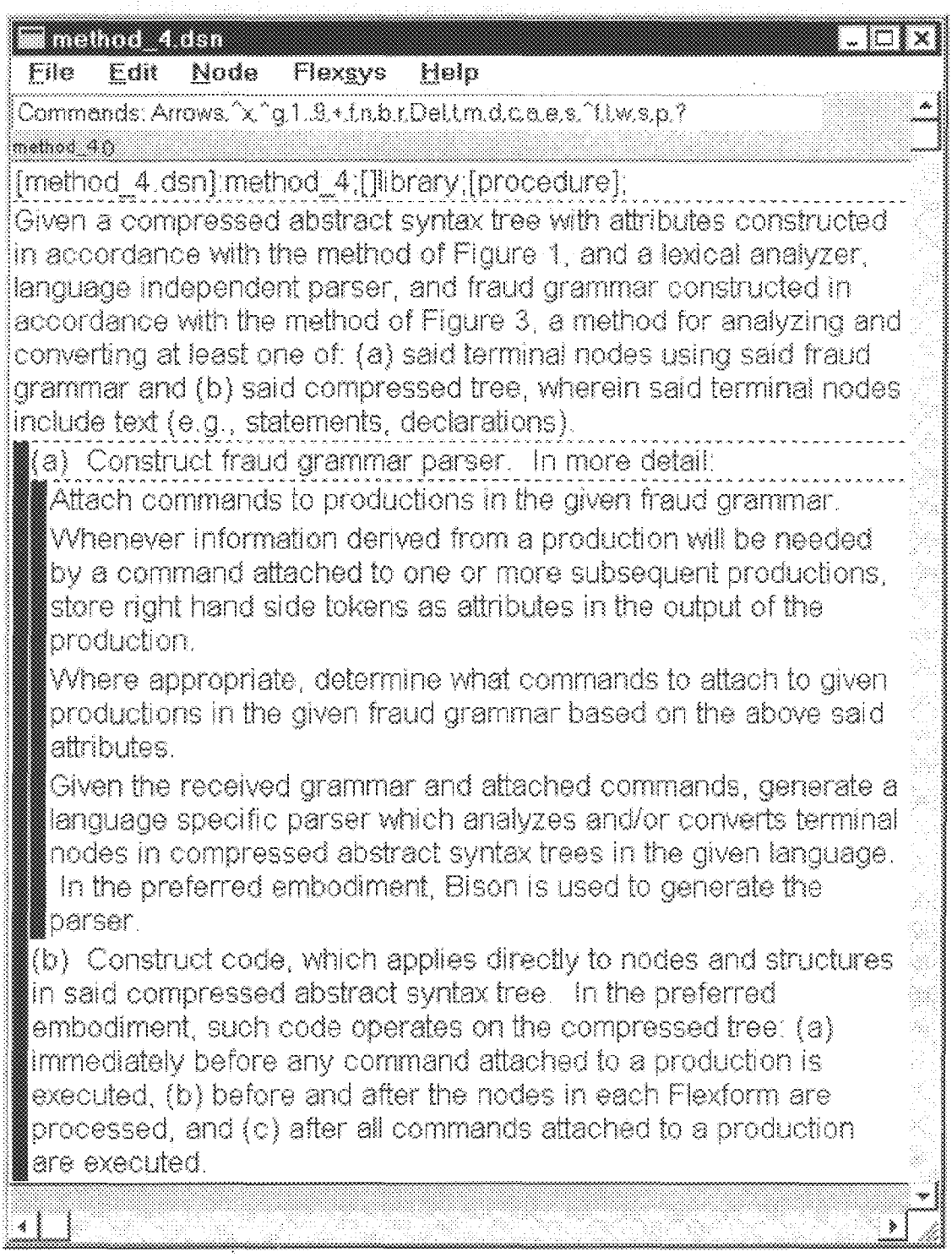
Figure 4.



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