

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BICH-CAU LE

Appeal No. 2001-0682
Application No. 09/003,572

ON BRIEF

Before THOMAS, JERRY SMITH, and RUGGIERO, Administrative Patent Judges.
RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-52, which are all of the claims pending in the present application.

The claimed invention relates to an emulator which dynamically translates instructions in original code written for a first architecture into native code for a second architecture. Various checkpoints in the original code are designated and the placement of the translated code instructions are speculatively reordered according to optimization procedures. If a trap occurs during execution of the reordered code, the emulator resets the original code to the most recent checkpoint and

executes the original code section in a line-by-line manner until the section is branched out of or completed.

Claim 1 is illustrative of the invention and reads as follows:

1. A method for dynamically translating instructions in original code written for a first architecture into native code for a second architecture, the method comprising the steps of:

analyzing a section of the original code;

designating at least one checkpoint in the section;

translating the instructions into native code instructions; and

reordering, speculatively, placement of at least one native code instruction.

The Examiner relies on the following prior art:¹

Robinson	5,432,795	Jul. 11, 1995
Sites	5,507,030	Apr. 09, 1996

Claims 1-3, 6, 9-19, 21, 24-29, 32, 35-45, 47, and 50-52 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by Sites. Claims 4, 5, 7, 8, 20, 22, 23, 30, 31, 33, 34, 46, 48, and 49 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Sites in view of Robinson.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the Brief (Paper No. 8) and Answer (Paper No. 9) for the respective details.

¹ Although a total of 9 references are listed in the "Prior Art of Record" section of the Examiner's Answer, only the Robinson (5,432,795) and Sites (5,507,030) patents are applied as references in the rejections of the claims on appeal.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner, and the evidence of anticipation and obviousness relied upon by the Examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellant's arguments set forth in the Brief along with the Examiner's rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the Sites reference does not fully meet the invention as set forth in claims 1-3, 6, 9-19, 21, 24-29, 32, 35-45, 47, and 50-52. With respect to the Examiner's obviousness rejection, we are also of the view that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as recited in claims 4, 5, 7, 8, 20, 22, 23, 30, 31, 33, 34, 46, 48, and 49. Accordingly, we reverse.

We consider first the rejection of claims 1-3, 6, 9-19, 21, 24-29, 32, 35-45, 47, and 50-52 under 35 U.S.C. § 102(b) as being anticipated by Sites. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W. L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

With respect to independent claims 1, 19, 27, and 45, the Examiner attempts to read the various limitations on the disclosure of Sites. In particular, the Examiner directs attention to the illustration in Figure 8 of Sites along with the accompanying description at column 13, lines 3-67.

Appellant's arguments in response assert a failure of Sites to disclose every limitation in independent claims 1, 19, 27, and 45 as is required to support a rejection based on anticipation. At pages 6 and 7 of the Brief, Appellant's arguments focus on the contention that, contrary to the Examiner's interpretation of Sites, there is no disclosure of the speculative reordering of the placement of at least one native code instruction as claimed. In Appellant's view, Sites discloses only the address conversion of CISC and RISC instructions and, specifically, merely the correlation of the addresses of CISC instructions in an original program with the addresses of RISC instructions in a translated program.

After reviewing the Sites reference in light of the arguments of record, we are in general agreement with Appellant's position as expressed in the Brief. We find no support for the Examiner's conclusion (Answer, page 12) that Sites' re-addressing of original instructions related to conditional branches such as "Jump," or "Call," which the Examiner has interpreted as being "speculative" conditions, satisfies the speculative reordering feature of the independent claims 1, 19, 27, and 45. While the Examiner is correct that claims are to be given their broadest possible interpretation, any such interpretation must be consistent with the specification.

In the present factual situation, we simply find no basis for the Examiner interpreting the "speculative reordering" language of the appealed claims in the manner articulated in the Answer.

In reaching this conclusion, we construe the claimed “speculative reordering” feature to be very narrowly defined, as argued by Appellant and disclosed in the specification, as meaning “...to schedule an operation before its control dependencies are resolved.” (Brief, pages 6 and 7; specification, page 8, lines 24-25). In our view, the re-addressing of conditional “Jump” or “Call” instructions, as asserted by the Examiner, would not satisfy the control dependency resolution requirements of the “speculative reordering” feature as defined by Appellant. An inventor’s definition and explanation of the meaning of a term, as evidenced by the specification, controls the interpretation of that claim term, as opposed, for example, to dictionary definitions. Serrano v. Telular Corp., 111 F.3d 1578, 1581, 42 USPQ2d 1538, 1541 (Fed. Cir. 1997).

In view of the above discussion, since all of the claim limitations are not present in the disclosure of Sites, we do not sustain the Examiner’s 35 U.S.C. § 102(b) rejection of independent claims 1, 19, 27, and 45, nor of claims 2, 3, 6, 9-18, 21, 24-26, 28, 29, 32, 35-44, 47, and 50-52 dependent thereon.

Turning to a consideration of the Examiner’s 35 U.S.C. § 103(a) rejection of dependent claims 4, 5, 7, 8, 20, 22, 23, 30, 31, 33, 34, 46, 48, and 49 based on the combination of Sites and Robinson, we do not sustain this rejection as well. In addressing the limitations in these dependent claims, which are directed to the details of “trapping” and “checkpoint resetting” operations, the Examiner looks to Robinson to remedy these deficiencies in Sites (Answer, pages 9-11). For all of the reasons discussed supra, however, the Examiner has failed to establish a prima facie case of obviousness since we find no teaching or suggestion in Robinson that would overcome the innate

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deficiencies of Sites in disclosing the speculative reordering of the placement of a native code instruction, a feature present in each of independent claims 1, 19, 27, and 45.

In summary, we have not sustained either of the Examiner's rejections of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 1-52 is reversed.

REVERSED

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Application No. 09/003,572

JAMES D. THOMAS
Administrative Patent Judge

JERRY SMITH
Administrative Patent Judge

JOSEPH F. RUGGIERO
Administrative Patent Judge

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