Correspondence

Erratum and Corrigendum for "Structured Programming With and Without GO TO Statements"

CALVIN C. ELGOT

ERRATUM

The author wishes to thank J. C. Shepherdson for calling to his attention that, in the above paper,1 Theorem 7.1 is false with Fig. 19 witness to its falsity. Since the proof of Theorem 7.2 depends on Theorem 7.1, it is rendered invalid. Fortunately, Theorem 7.2, the point of the section, remains valid as the proof given below shows. An independent proof, based upon the same idea but different in detail and logical organization, was found by Shepherdson.

CORRIGENDUM

The proof we give of Theorem 7.2 actually proves much more. Before stating the stronger result embodied in the Lemma and Theorem below, we make some preliminary observations.

If $F \in \mathcal{F}(\Pi, \Omega)$, where $\Pi$ is finite, is a flowchart scheme, $v$ is a vertex of $F$ and $a$ is an atom (i.e., an evaluation sequence) in $\mathcal{R}(\Pi)$, let $p(F, v, a)$ be the path (cf., Section 6: "The evaluation sequence determines a path in $F \cdots")$ in $F$ starting with $v$ which is compatible with $a$ (i.e., "determined by $a"$). Let $t(F, v, a)$ be the terminal vertex (either an operation vertex or an exit of $F$) $p(F, v, a)$ if it is finite, otherwise $t(F, v, a) = \infty$.

Observation 1: If $v$ is a vertex which occurs, nonterminally, in the path $p(F, v, a)$, then $p(F, v', a)$ is a suffix of $p(F, v, a)$ and $t(F, v, a) = t(F, v', a)$.

Observation 2: If $\Pi$ is a set of scalar schemes in $\mathcal{F}(\Pi, \Omega)$ closed under the CASCI operations (composition, alternation, separated conditional iteration) and $B(\Pi)$ is the set of all bi-

Corollary: No CASCI scheme is weakly equivalent to the scheme of Fig. 23.

Proof: Suppose $F$ is a biscalar scheme weakly equivalent to Fig. 23. By the lemma there is an $a_1, a_2, a_3$-circle in $F$. By Observation 2 and the fact that the atomic schemes $\omega \in \Omega$ and trivial scheme $a_1$ are in $\delta$, it follows from the Theorem that every biscalar CASCI scheme is in $\delta$. Thus, $F$ is not a CASCI scheme.

ACKNOWLEDGMENT

The author wishes to thank J. D. Rutledge and J. B. Wright for their helpful comments in the preparation of the above material.