ADDENDUM

Bart, H., Gohberg, I. and Kaashoek, M.A.: The coupling method for solving integral equations. In: *Topics in Operator Theory, Systems and Networks, The Rehovot Workshop* (Ed. H. Dym, I. Gohberg). Operator Theory: Advances and Applications, Vol. 12, Birkhäuser Verlag, Basel, 1984, pp. 39-73.

The method in this paper consists of finding for a complicated operator, T say, a simpler operator S (called indicator) such that T and S are coupled in the following operator matrix way:

$$(1) \quad \begin{pmatrix} T & * \\ * & * \end{pmatrix}^{-1} = \begin{pmatrix} * & * \\ * & S \end{pmatrix}.$$

Here the stars denote operator entries, which one has to find also. As soon as the relation (1) has been established explicitly and all entries have been identified (which is the main problem and in the paper it is solved for several classes of integral operators), then the invertibility properties of T may be read off from those of S by using the equivalence relation:

$$(2) \quad \begin{pmatrix} T & 0 \\ 0 & I_1 \end{pmatrix} = E \begin{pmatrix} S & 0 \\ 0 & I_2 \end{pmatrix} F$$

in which I_1, I_2 are identity operators and E and F are invertible operators which together with their inverses are given explicitly in terms of the entries appearing in (1).

This addendum is to remark that the step from (1) to (2), which is the first theorem in the paper, was known and, in fact, appears in the theory of Wiener-Hopf equations often in the following form:

$$\begin{aligned}(3) \quad PAP + Q &= (I - PAQ)(P + QA^{-1})A \\ &= (I - PAQ)(I + QA^{-1}P)(P + QA^{-1}Q)A,\end{aligned}$$

where A is an invertible operator and P and Q are complementary projections (see, e.g., [DS]). However the idea to use this identity to reduce complicated operators to simpler ones seems to be new. We also like to add a reference here to the paper [L] of S. Levin which uses (3) in a manner which is close to the spirit of our paper.

We thank dr. F.-O. Speck who reminded us of the literature about (1), (2) and (3).

REFERENCES

- [DS] Devinatz, A. and Shinbrot, M.: General Wiener-Hopf operators. Trans. A.M.S. 145 (1969), 467-494.
- [L] Levin, S.: On invertibility of finite sections of Toeplitz matrices. Appl. Anal. 13 (1982), 173-184.