

Al-Sijzī's Treatise on *Geometrical Problem Solving*. Translated and annotated by Jan P. Hogendijk. With an Arabic Text and a Persian Translation by Mohammad Bagheri. Tehran (Fatemi Publishing Co.) 1996. xiv+36 pp. English, 12+28 pp. Persian, 18 pp. Arabic. ISBN 964-318-114-6.

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Al-Sijzī's treatise on problem-solving strategies in geometry (whose exact title Hogendijk translates as *Book on Making Easy the Ways of Deriving Geometrical Figures*) was apparently written between 979 and 981 AD. An uncritical edition of the Arabic text based on an unidentified manuscript was published by A. S. Saidan as an appendix to his edition of *Rasā'il Ibn Sinān* (Kuwait 1983). The present volume builds on Saidan's text and on a privately owned manuscript from Lahore which omits many of the diacritical signs (in Hogendijk's opinion probably the manuscript used by Saidan). Without being a critical edition, the volume under review includes a list of the points where its readings and interpretations differ from those of Saidan.

Al-Sijzī's treatise is an early parallel to Polya's *How to Solve it*. After presenting the author and his works in general, the preface discusses this parallel in some depth and detail on the basis of al-Sijzī's introductory summary. The most important difference between the two works may be al-Sijzī's more explicit reference to the deductive structure of mathematics, which Polya presupposes as self-evident; al-Sijzī also refers to the *Elements* as the direct basis for geometric reasoning in a way a twentieth-century work cannot do.

After a general introduction which speaks about the topic "abstractly, in a deceiving and illusory manner" (al-Sijzī's own words) follows in the treatise itself a number of examples illustrating concretely the meaning of the general prescriptions. Some of these concern constructions, others the derivation of special properties of figures. Most examples illustrate the use of analysis; some of them also exemplify less tangible techniques such as the use of figures belonging to the same species and the transformation of a problem into another problem.

The commentary is informative and solid. One problem in translating a treatise dealing with geometry and its metatheory from the Arabic into English is the non-overlapping semantic range of key terms (in some connections, e.g., *ṣakl* should be translated *figure*, in others *proposition*). Such problems are well explained, not only at their first occurrence but also later when needed.

In view of the place of publication it deserves mentioning that typographical errors in the English text are much less abundant than in many European and US publications. A few errors in the English text can be corrected as follows by means of the Arabic: P. 11, line 12: "angles *ABF*", read "angles *ABG*".

P. 14 line 14: “to triangle AHB ”, read “to triangle AHT ”.

P. 14 line 16, “triangles AGB ”, read “triangles AGH ”.

P. 26 line 21, “square BT ”, read “area BT ”.

P. 27, line 18, “line ED ”, read “line EB ”.

P. 31, line 27 (headline included): “ HGA to angle AGL ”, read “ GHA to angle AHL ”.

(in general, the reviewer has only considered the English text).

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