Khaled El-Rouayheb, *Relational Syllogism and the History of Arabic Logic, 900-1900*, Leiden & Boston: Brill, 2010. 295 pages. ISBN: 978 90 04 18319 3.

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Although Nicholas Rescher's book, *Development of Arabic Logic*, has been considerably respected as a resource book for both non-specialists and the researchers who want to read an introductory book on Islamic logic, recent scholarship has shown its deficiencies and shortcomings especially for its periodization of the history of the Islamic logic. While Tony Street's article titled *Arabic logic* seems to be the first *text* criticizing the idea that the Islamic logic has a tradition only until the twelfth century, Rouayheb's book *Relational Syllogism and the History of Arabic Logic, 900-1900* is a continuation of the answers addressed to these critiques. Contrary to Rescher's argument of "the absence of innovation" for the neglected literature of the Islamic logic during the later period, it is an accepted fact that it invalidates those arguments with its richly accumulated works. Although Rouayheb limits himself to a particular subject, he clearly explains why he has chosen a single subject to summarize a thousand-year long accumulated literature. Through the example of relational syllogism, Rouayheb shows how this accumulation took shape and how different and new ideas were grounded starting with al-Fārābī until the late Ottoman logicians in a large geography from Central Asia to North Africa and from Anatolia to India.

In the first chapter titled "The 'Classical' Period, 900–1200", Rouayheb starts with the figures who are closely associated with the Islamic logic because even if they were not interested in *relational syllogism* directly it would be odd to write on a subject of the Islamic logic without mentioning their opinions (p.7). The logicians mentioned in the first chapter are al-Fārābī, Ibn Zurʿa, Ibn Sīnā, Bahmanyār, al-Baghdādī, Ibn Rushd and Suhrawardī (d. 1191). Rouayheb intends to show how the works on relational syllogisms developed after the twelfth century and their transmission to later periods, thereby preparing the reader for later chapters. According to Rouayheb who asserts that the first Muslim logicians hardly brought ideas different from Aristotle and Alexander of Aphrodisias, thinkers of the classical period to a certain extent examined

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relational syllogisms especially on the syllogisms based on premises with equal terms. One can see the examples of these at the discussions on whether the syllogism consisting of premises of equality were syllogism or not in the Aristotelian sense. According to this, for example, Ibn Zurʻa's proposition to form a three-term Aristotelian syllogism by combining two statements in one statement and adding to this a universal statement of "All things that are equal to one thing are equal" is an attempt to fill the missing premise in the nature of syllogism. This gap lies on the discussion that the conclusion for a syllogism of "A is equal to B and B is equal to C, therefore A is equal to C" is not necessarily drawn from the premises. Ibn Sīnā describes this as a condition where one of the premises is not told and intends to show that the statement that is obtained from syllogism by changing the statements in the premises is actually directly derived from the premises. For this, instead of existing premises, new equivalent premises are added to the syllogism and thereby this makes it a valid syllogism. However, the obtained argument does not seem to be syllogism, because as Rouayheb states the conclusion is not always appropriately reached with combined premises. Ibn Rushd and Suhrawardī also examined syllogisms of equality by focusing on the "middle term" as an important element of syllogism even though they did not go further than what earlier logicians had said on relational syllogism.

In the second chapter, Rouayheb examines the period from the thirteenth century until first half of the fourteenth century. This period was marked with gradual disappearance of the Aristotelian logic on some particular subjects and new ideas seemed to enter into Islamic logic. Rouayheb begins his analysis with Fakhr al-dīn al-Rāzī and continues with Naṣīr al-dīn al-Ṭūsī, Khunajī, Najm al-dīn al-Qazwīnī and Quṭb al-dīn al-Rāzī by analyzing their works about syllogism of equality (*qiyās al-musāwāt*). Especially Fakhr al-dīn al-Rāzī's critique on the categorical syllogism with three terms one of which is shared (middle) term can be seen as the first step of his departure from the Avicennan logic. Rouayheb states however that al-Rāzī's ideas on relational syllogism do not have consistency (p. 47). In the section that discusses whether two forms of syllogism which are exemplified as [(i) "A is equal to B and B is equal to C; therefore A is equal to C" (ii) "A is equal to B and B is equal to C; therefore A is equal to what is equal to C"] are considered as relational syllogisms or not, for al-Rāzī (i) is not syllogism both because it does not have middle term and because the conclusion is necessarily derived from the premises, while (ii) is only to be syllogism because the conclusion is necessitated from the premises. Rouayheb states that along with Ibn Khaldūn's *Muqaddima*, al-Rāzī's new perspective on logic is adopted by later logicians who headed towards working directly on the problems instead of writing commentaries on Aristotle or Ibn Sīnā. As one of post-al-Rāzī period logicians, al-Āmidī, states that the syllogism of equality has neither middle

term nor major term, whereas Naṣīr al-dīn al-Ṭūsī seems to criticize al-Rāzī on the syllogisms of equality and adopt the Avicennan perspective (p. 52).

In the third chapter titled "Epitomes, Commentaries and Glosses, 1350–1600" and the fourth chapter titled "The Christian-Arabic, North African, Indo-Muslim and Iranian Traditions of Logic, 1600–1900" are the chapters where Rouayheb, before going into discussion on Ottoman logic, provides the reader a clear summary of the works of logic related to *relational syllogism* in a vast geography from Africa to India. The dense content of these chapters is examined in five subtitles for each chapter. Rouayheb repeats his claim that Rescher's appraisal for this period of Islamic logic as lacking innovation and inactive due to spread of commentaries and glosses and also regressing due to rephrasing of the existing texts is no longer tenable and shows the number of thinkers and their works that he examines in order to negate Rescher's argument. To give a simple example for the accumulated tradition between fourteenth and seventeenth centuries, certain thinkers such as al-Tilimsānī and Saʿīd al-ʿUqbānī, while examining relational syllogisms parallel to syllogisms of equality, do not only look at the structure of premises but also take into consideration the syllogisms proving the correctness of the premises. Rouayheb who criticizes the perspective of Rescher throughout the book rightly shows the strength of his argument by giving examples only in two pages (pp. 74-75). In addition, Ibn Mubārak Shāh al-Bukhārī's inference that the phrases appearing like the middle term between the missing premise and the original premise should be in different structures like subject-predicate (p. 81), Fanārī's efforts to direct the discussion on the middle term through Ibn Sīnā and al-Rāzī's ideas (p. 83), Dawānī and Ṣadr al-Dīn Dashtakī's inclusion of the quality and quantity of the premises into the discussion on specifying the middle term by making some part short or adding something further (pp. 92-104) and the ideas of many more logicians clearly show the depth of the subject. The fourth chapter explores the thoughts of important logicians by classifying culturally the tradition of logic in the Muslim world from the seventeenth century until the beginning of twentieth century (or more appropriately the late nineteenth century) and it excludes the Ottoman logicians who are to be examined in the last three chapters. The three-century-long accumulated tradition related to syllogisms of equality through the middle term inherited from the earlier generations become known thanks to Rouayheb's meticulous work. Although certain logicians such as Ibn al-Mutrān, Yūsī, Shīrī, Khwansārī, Ibn Yaʿqūb and Hilālī, follow to a certain extent al-Rāzī and Dawwānī the issue of middle term seems to keep its priority and this fact, as Rouayheb indicates, leading Ottoman logicians to develop the theory of unfamiliar syllogism.

Last three chapters are devoted to Ottoman logic, which is important because such a comprehensive research on Ottoman logic has not been done before. Rouayheb starts the fifth chapter by arguing that the overall appraisal on the decline in Ottoman culture and intellectual life is wrong and states that Ottoman Empire was in cultural and intellectual dynamism especially from the middle of the seventeenth century until the second half of the eighteenth century (p. 157). We can see the footprints of Dawwānī's discussion whether syllogisms of equality are to be considered syllogism or not in the author's examination of Khalkhālī and Shirwānī. Looking at these discussions from the angle of the problems originating from the semantic dependency of syllogisms of equality, in other words from using a term in one premise as subject-predicate in another premise, leads especially Shirwānī to pass an important stage. Shirwānī, who stipulates that the premises should share the same predicate in order to qualify for syllogism of equality, names the condition, which seem to be similar to a syllogism of equality and is not considered as syllogism of equality because of the difference of predicates and also has the conclusion been necessitated by the premises, as "unfamiliar syllogism." Rouayheb considers this innovation as the move that would change the course of Ottoman logic (pp. 161-163). Similarly, Pehlewānī and his student Ṭāwūskārī, in their studies on the unfamiliar syllogism and the syllogism of equality, bring new interpretations on how these two resemble each other. Pehlewānī examines unfamiliar syllogism under the figures, which are basically similar with the ones of categorical syllogism. He also thinks that the conclusion of syllogisms of equality is not derived from the premises of it whereas the conclusion of unfamiliar syllogisms is produced without the need of an additional premise. Besides, Ṭāwūskārī thinks syllogisms of equality can produce a conclusion (p. 174). In addition to this, Pehlevānī examines the forms of unfamiliar syllogism in detail. These are only a small part of the total innovations. Rouayheb presents the ultimate level of research on logic by adding to the end of fifth chapter the argument that every syllogism of equality is unfamiliar syllogism by ʿOṣmān Ālāshehrī from the second half of the eighteenth century (p. 183), ʿAbd ul-Raḥmān Izmīrī's ideas converging to applied logic and Abū Saʿīd Khādimī's views on what can be considered as syllogism as someone from leaving the discussion on unfamiliar syllogisms (p. 192). The sixth chapter is devoted to Ismāʿīl Galanbawī who has not been mentioned in this period and to the discussion of his understanding on unfamiliar syllogisms in detail.

Rouayheb's allocation a chapter for Ismāʿīl Galanbawī, the author of the book titled *al-Burhān fī ʿilm al-mīzān*, which was the most influential works on logic in the eighteenth century, proves the importance of Galanbawī as prominent thinker. Rouayheb criticizes Ottoman logicians, because of their failure to pay sufficient attention to the unfamiliar syllogisms although they initiated an important step to

create it and mentioned in their works. He states that Galanbawī left the custom of writing a commentary, for example he stepped out of this line in his manuscript on modality propositions (p. 225). He attributes Galanbawī's limited discussion on the unfamiliar syllogism to his less interest in it. However, Rouayheb, in his analysis on *al-Burhān*, examines whether Gelenbevī's examples for shapes and modes of unfamiliar syllogisms are valid or not. In the appendix to the chapter, he also help us see the equivalents of the symbolized versions of the first-order predicate logic of the propositions in the modern logic first degree predicates. In the seventh and last chapter titled "The Ottoman Tradition: the Nineteenth Century", Rouayheb seeks the reasons for calling the nineteenth-century Ottoman logic as "decline" and argues that this naming is a mistake rather than reflecting the reality. Although some Ottoman logicians certainly left the three-term categorical syllogism since the eighteenth century and adopted unfamiliar syllogism among syllogisms of equality; Rouayheb thinks it would be unfair to describe dozens of works produced in this period as "decline". Lastly, under the subtitle *new principles*, his examination of Khōjāzāde 'Abd-Allāh Kilisī's examples on the applied logic seems to warn those who intend to use the word "decline" for the late periods of Ottoman logic.

In conclusion, Rouayheb's this invaluable book while on the one hand, presents a summary of the thousand-year venture of logic through a single subject, and on the other hand, disproves carefully in every chapter Rescher's argument on the absence of innovation in Islamic logic after the sixteenth century. Besides, the fact that relational syllogisms is an original and developing subject can be seen by the ideas of more than seventy thinkers and hundreds of books furnished with examples examined in the book. In short, the book *Relational Syllogism and the History of Arabic Logic, 900-1900* fills the gap in the literature on logic and has the potential to be an inspiration for researches of Islamic logic.