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PEETERS

TABLE OF CONTENTS

Editorial	XI
G.R. TSETSKHLADZE	XI

Amélie Kuhrt	XIII
F. MILLAR (†)	XIII

ARTICLES

A. POLLINI, Inscriptions and People: Nuanced Readings on Cultural Interaction between Greeks and Italic Populations in Magna Graecia	1
G. COURTIEU, X / Z. Pastiches avestiques dans la <i>Cyropédie</i> de Xénophon	17
Tong WU, From Hunting to Military Success: Battle Descriptions and Ideal Generalship in Xenophon's <i>Cyropaedia</i>	41
J. BOUZEK, Relations between Greece and Central Europe Revisited: Early Iron Age, Imports of Attic Pottery in Bohemia and Possible Pythagorean Links of Celtic Art	61
M.A. COBB, Peoples of the Eastern Desert of Egypt and their Impact on the Red Sea Trade: 1st to 3rd Centuries AD	85
G.R. TSETSKHLADZE, An Achaemenid Inscription from Phanagoria: Extending the Boundaries of Empire	113
R. ROLLINGER and A. KELLNER, Once More the Nabonidus Chronicle (BM 35382) and Cyrus' Campaign in 547 BC	153
M. MENDOZA and J. VERDEJO MANCHADO, Sophytos, a Greek Name for an Enigmatic Ruler: A Reappraisal of an Onomastic Issue	177
P. EVERILL, Travellers' Tales of Mingrelia and of the Ancient Fortress of Nokalakevi	195

NOTES

S. GÜNTHER, Classics in China: An Update	225
M.B. BAŞTÜRK and A. AVRAM, A Newly Discovered Old Phrygian Inscription from Şarhöyük (Dorylaion)	231
J. BOARDMAN, The Yueh-Chi (from China to Gandhara), and 'Classical' Gandharan Arts	239
F.C. WOU DHUIZEN, Four notes on Luwian Hieroglyphic	245
<i>The Legacy of John Hind</i>	
Theseus and his Recognition in the House of Aigeus: The Scene on the Gold Amphora-Rhyton from Panagyurishte, Bulgaria	265
Phanagoria and Phanagoras – The Toponym and the Name of the Oikist (Founder)	277
Kepoi: A Milesian Colony on the Asian Side of the Cimmerian Bosphorus	285

REVIEWS

West and East: A Review Article (18) (G.R. Tsetskhladze)	299
<i>Cityscapes</i>	
(E. Mortensen and B. Poulsen [eds.], <i>Cityscapes and Monuments of Western Asia Minor</i> ; T. Fuhrer et al. [eds.], <i>Cityscaping: Constructing and Modelling Images of the City</i>) (R.A. Tomlinson)	326
<i>Achaemenid Egypt</i>	
(M. Wasmuth, <i>Ägypto-persische Herrscher- und Herrschaftspräsentation in der Achämenidenzeit</i> ; H. Sternberg-el Hotabi, <i>Ägypter und Perser</i>) (M. Weiskopf) .	330
<i>The Levant</i>	
(M. Konrad, <i>Emesa zwischen Klientelreich und Provinz</i> ; H.-P. Kuhnen [ed.], <i>Khirbat al-Minya</i>) (A.G. Skinner)	334
<i>Aktuelle Forschungen an Gräberfeldern des 1. Jahrtausends n. Chr.</i> (C. Aamodt) . . .	335
B.V. Andrianov, <i>Ancient Irrigation Systems of The Aral Sea Area</i> (B. Genito)	337
S. Atasoy and Ş. Yıldırım (eds.), <i>Tios</i> (J. Bouzek)	341
S. Avetisyan and Y.H. Grekyan (eds.), <i>Bridging Times and Spaces</i> (M. Weiskopf) . .	341
S. Balatti, <i>Mountain Peoples in the Ancient Near East</i> (M. Weiskopf)	343
T. Bekker-Nilsen and R. Gertwagen (eds.), <i>The Inland Seas</i> (J.G. de Boer)	346
F. Berger, <i>Inszenierung der Antike</i> (M. Weiskopf)	347
B.N. Berressem, <i>Die Repräsentation der Soldatenkaiser</i> (A. Lichtenberger)	349
G. Biard, <i>La représentation honorifique dans les cités grecques</i> (A. Avram)	351
K. Bolle et al. (eds.), <i>The Epigraphic Cultures of Late Antiquity</i> (A. Avram)	352
I. von Bredow, <i>Kontaktzone Vorderer Orient und Ägypten</i> (A.-M. Wittke)	354
A. Bresson, <i>The Making of the Ancient Greek Economy</i> (A.J. Domínguez)	356
H. Bru and G. Labarre (eds.), <i>L'Anatolie des peuples, des cités et des cultures</i> (R.A. Tomlinson)	359
S.L. Budin and J.M. Turfa (eds.), <i>Women in Antiquity</i> (C. Aamodt)	362
A. Coşkun and A. McAuley (eds.), <i>Seleukid Royal Women</i> (C. Grigolin)	363
G. Delley et al. (eds.), <i>History of Archaeology</i> (J.F. Hargrave)	366
Ş. Dönmez, <i>Anadolu ve Ermeniler/Anatolia and Armenians</i> (M. Badalyan; K. Abdullaev)	367
Ş. Dönmez, <i>Amasya – Oluz Höyük</i> (J. Bouzek)	373
L. Donnellan et al. (eds.), <i>Conceptualising Early Colonisation</i> (S.M. Burstein)	374
N.T. Elkins, <i>Monuments in Miniature</i> (S.A. Kovalenko)	376
S. Elliott, <i>Empire State</i> (U. Scharrer)	379
K.G. Evers, <i>Worlds Apart Trading Together</i> (M.A. Cobb)	381
M.L. Ferruzza, <i>Ancient Terracottas from South Italy and Sicily</i> (F. Gallart Marqués)	383
D. Fishwick, <i>Precinct, Temple and Altar in Roman Spain</i> (A.C. González-García) . .	385
T. Fögen and R. Warren (eds.), <i>Graeco-Roman Antiquity and the Idea of Nationalism</i> (J.F. Hargrave)	387
C. Föllner and F. Schulz (eds.), <i>Osten und Westen 400–600 n. Chr.</i> (J. Wiesehöfer) .	388
N. Fröhlich, <i>Bandkeramische Hofplätze</i> (R.A. Tomlinson)	390
L. Gallo and B. Genito (eds.), « <i>Grecità di frontiera</i> » (J. Boardman)	392
J.D. Grainger, <i>Great Power Diplomacy in the Hellenistic World</i> (A. McAuley)	392
H.B. Grob, <i>Die Gartenlandschaft von Pasargadaï und ihre Wasseranlagen</i> (M. Weiskopf)	394
S. Günther et al. (eds.), <i>Marburger Beiträge zur Antiken Handels-, Wirtschafts- und Sozialgeschichte 34</i> (R.A. Tomlinson)	396

J.W. Hanson, <i>An Urban Geography of the Roman World</i> (G. Woolf)	398
G. Hedreen, <i>The Image of the Artist in Archaic and Classical Greece</i> (T. Mannack) . .	400
A. Heinemann, <i>Der Gott des Gelages</i> (T. Mannack)	402
P. Herrmann, <i>Kleinasien im Spiegel epigraphischer Zeugnisse</i> (M. Riel)	404
T. Howe, S. Müller and R. Stoneman (eds.), <i>Ancient Historiography on War and Empire</i> (K. Smoláriková)	405
Y. Kanjou and A. Tsuneki (eds.), <i>A History of Syria in One Hundred Sites</i> (H. Jackson)	407
L. Khatchadourian, <i>Imperial Matter</i> (M.C. Miller)	410
C.G. King and R. Lo Presti (eds.), <i>Werner Jaeger</i> (M. Weiskopf)	414
T. Klär, <i>Die Vasconen und das Römische Reich</i> (C. Degelmann)	415
H. Klinkott and N. Kramer (eds.), <i>Zwischen Assur und Athen</i> (A.-M. Wittke)	417
A. Kolb and M. Vitale (eds.), <i>Kaiserkult in den Provinzen des Römischen Reiches</i> (M. Patzelt)	420
E. Kozal, <i>Fremdes in Anatolien</i> (A.-M. Wittke)	423
V. Kozlovskaya (ed.), <i>The Northern Black Sea in Antiquity</i> (S.M. Burstein)	425
J. Lipps (ed.), <i>Transfer und Transformation</i> (R.A. Tomlinson)	427
M. Manoledakis (ed.), <i>The Black Sea</i> (J.G. de Boer)	430
R.W. Mathisen, <i>Ancient Mediterranean Civilizations</i> (J.D. Lerner)	432
M. Melfi and O. Bobou (eds.), <i>Hellenistic Sanctuaries</i> (A. McAuley)	434
J.M. Miksic and G.Y. Goh, <i>Ancient Southeast Asia</i> (Qiong Zhang)	436
N.J. Molinari and N. Sisci, <i>ΠΙΟΤΑΜΙΚΟΝ</i> (S.A. Kovalenko)	439
J. Monerie, <i>L'économie de la Babylonie à l'époque hellénistique</i> (C. Debourse)	441
F. Müller, <i>Menschen und Heroen</i> (A. McAuley)	443
S. Müller, <i>Perdikkas II. – Retter Makedoniens</i> (M.I. Vasilev)	445
S. Müller et al. (eds.), <i>The History of the Argeads</i> (M. Weiskopf)	447
K. Nawotka and A. Wojciechowska (eds.), <i>Alexander the Great and the East</i> (M. Weiskopf)	449
V. Nikolov and W. Schier (eds.), <i>Der Schwarzmeerraum</i> (J.G. de Boer)	452
L. Nováková, <i>Tombs and Burial Customs in the Hellenistic Karia</i> (R.A. Tomlinson)	453
J. Pearce and J. Weekes (eds.), <i>Death as a Process</i> (C. Aamodt)	455
E. Perego and R. Scopacasa (eds.), <i>Burial and Social Change in First Millennium BC Italy</i> (C. Aamodt)	456
L.P. Petit and D. Morandi Bonacossi (eds.), <i>Nineveh, The Great City</i> (A.-M. Wittke)	458
R. Pirngruber, <i>The Economy of Late Achaemenid and Seleucid Babylonia</i> (M. Weiskopf)	460
P. Pitkänen, <i>A Commentary on Numbers</i> (F. Hagemeyer)	462
K. Prag, <i>Excavations by K.M. Kenyon in Jerusalem 1961–1967</i> (A. Winderbaum) . .	464
C. Ratté and A. Commito, <i>The Countryside of Aphrodisias</i> (R.A. Tomlinson)	467
P. Reinard, <i>Kommunikation und Ökonomie</i> (W. Clarysse)	468
L. Roeten, <i>Chronological Developments in the Old Kingdom Tombs</i> (J. Krejčí)	471
R. Rollinger (ed.), <i>Die Sicht auf die Welt/Looking at the World View</i> (M. Weiskopf)	473
C.B. Rose and G. Darbyshire (eds.), <i>The Golden Age of King Midas</i> (L.E. Roller) . .	475
C. Schäfer (ed.), <i>Connecting the Ancient World</i> (G. Woolf)	478
E. Schaub, <i>Geschichte des römischen Ägypten und Studien zur Lebenssituation der Bevölkerung Ägyptens</i> (M. Weiskopf)	479
J. Scheid, <i>The Gods, the State, and the Individual</i> (A.G. Skinner)	482
J.M. Schlude and B.B. Rubin (eds.), <i>Arsacids, Romans, and Local Elites</i> (E.L. Wheeler)	484

J. Schneider, <i>Ländliche Siedlungsstrukturen im römischen Spanien</i> (B. Weissová)	487
M. Simonton, <i>Classical Greek Oligarchy</i> (R.W. Westall)	489
P. Steinkeller, <i>History, Texts and Art in Early Babylonia</i> (R. Pirngruber)	491
S. Stevens, <i>City Boundaries and Urban Development in Roman Italy</i> (M.M. McCarty)	492
R. Strootman, <i>The Birdcage of the Muses</i> (S.M. Burstein)	495
A. Tomas, <i>Inter Moesos et Thraces</i> (L. Mihailescu-Bîrliba)	496
S.V. Tracy, <i>Athenian Lettering of the Fifth Century B.C.</i> (N. Vujčić)	498
S. van der Vaart-Verschoof, <i>Fragmenting the Chieftain</i> (J. Bouzek)	500
R. Varga and V. Rusu-Bolindeț (eds.), <i>Official Power and Local Elites in the Roman Provinces</i> (C.D. Dawson)	500
A. Verlinde, <i>The Roman Sanctuary Site at Pessinus</i> (R.A Tomlinson)	503
K. Waldner <i>et al.</i> (eds.), <i>Burial Rituals, Ideas of Afterlife, and The Individual</i> (F. Coppens)	505
M.W. Waters, <i>Ctesias' Persica and Its Near Eastern Context</i> (M. Weiskopf)	507
B.D. Wescoat, <i>Samothrace 9</i> (R.A. Tomlinson)	509
C. Whately, <i>Exercitus Moesiae</i> (E.L. Wheeler)	512
U. Wicenciak, <i>Porphyreon</i> (U. Scharrer)	515
J. Wiesehöfer and S. Müller (eds.), <i>Parthika</i> (M. Weiskopf)	517
A. Wissing, <i>Die Bestattungen der Frühen und Mittleren Bronzezeit</i> (C. Felli)	520
A.-M. Wittke (ed.), <i>Frühgeschichte der Mittelmeerkulturen and The Early Mediterranean World, 1200–600 BC</i> (G.R. Tsetsckladze)	522
S. Yamada and D. Shibata (eds.), <i>Cultures and Societies in the Middle Euphrates and Habur Areas</i> (Z. Simon)	524
K.L. Younger, <i>A Political History of the Arameans</i> (P. Pitkänen)	526
<i>Books Received</i>	529
List of volumes of <i>Colloquia Antiqua</i> , the monograph supplement to <i>Ancient West and East</i>	539

The fourth section ('Neue spätsächsische Gräberfelder in Nordwestdeutschland') consists of five papers that focus on north-western Germany. Schön and Peek ('Early medieval grave finds near Dorfhagen, Municipality of Hagen, Ldkr. Cuxhaven') present the evidence from an Early Mediaeval cemetery uncovered near Dorfhagen. With the use of phosphate analysis, they were able to determine the presence of cremation burials and mortuary houses. Insight into the burial practices of the Early Middle Ages in Lower Saxony is provided for the area of Visbek ('The late Saxon cemetery of Visbek-Uhlenkamp II': Hummel), including 40 animal burials, and Hamburg ('The late Saxon cemetery of Neu Wulmstorf-Elstorf District of Harburg': Brandt). Finck and Schäfer ('The early medieval cemetery of Riensfröde, Hanseatic city of Stade') emphasise the presence of family plots in the extensive Early Mediaeval cemetery of Riensfröde. An interesting insight on the manufacture of metal finds with the use of digital computed tomography is presented by Brieske and Lehmann ('A prime location with a view to the River Weser – Detailed analysis of selected finds from the early medieval cemetery of Porta Westfalica Barkhausen, District of Minden-Lübbecke'). The finds were uncovered in the cemetery of Porta Westfalica/Barkhausen and date to the Carolingian period.

Finally, the papers of the fifth section ('Naturwissenschaftliche Analysen an frühmittelalterlichen Bestattungsplätzen') focus on the examination of the Early Mediaeval cemetery of Dunum. Both contributions ('A pilot study on selected cremation burials from the early medieval cemetery of Dunum, District of Wittmund, East Frisia – an interim report', by Peek and Siegmüller; 'The anthropological analysis of selected cremation remains from the early medieval cemetery of Dunum, District of Wittmund', by Grefen-Peters) present examinations of selected material from the cemetery with the use of scientific methods, such as radiocarbon dating and osteological analysis. Finally, a particularly intriguing topic is examined by Hähn and Halle: the visibility of disability in skeletal remains from cemeteries of Germany ('Dis/ability History on Burial Grounds in Germany – examples from the Southwest, Problems in the Northwest').

The book presents the particularly rich funerary material from various areas of the southern North Sea region, which provides insights into the social and economic setting during the 1st millennium AD. It is an interesting and thought-provoking contribution, and well edited.

Thessaloniki, Greece

Christina Aamodt

B.V. Andrianov, *Ancient Irrigation Systems of The Aral Sea Area: The History, Origin, and Development of Irrigated Agriculture*, edited by S. Mantellini with the collaboration of C.C. Lamberg-Karlovsky and M. Tosi, American School of Prehistoric Research Monograph Series, Oxbow Books, Oxford/Philadelphia 2016, xxxv+393 pp., illustrations. Cased. ISBN 978-1-84217-384-8

The volume is a critical re-edition and translation into English of *Drevnie orositelnye sistemy priaralya v sviazi s istoriei vozniknoveniya i razvitiya oroshaemogo zemledeliya* published in 1969 in Moscow. The translation by Gian Luca Bonora and Giò Morse, has been funded by the Segretariato Europeo per le Pubblicazioni Scientifiche, Bologna.

The long introductory section includes lists of contributors, figures, tables, abbreviations and a glossary by Bonora; a Preface, 'Boris V. Andrianov and the Archaeology of Irrigation',

and notes on translation, references and transliteration, and acknowledgments are all by Simone Mantellini.

We are then offered a sequence of specialist contributions, starting with that by Dolukhanov (p. 1) entitled 'Central Asian Archaeology: The Russian and Soviet Times'; by Bolelov (p. 7), 'Boris Vasilevich Andrianov and the Study of Irrigation in Ancient Khorezm'; by Francfort and Lecomte (p. 11), 'Map of the Main Archaeological Sites of Khorezm published in 2002 after S.P. Tolstov'; by Betts and Yagodin (p. 13), 'The Karakalpak-Australian Expedition in Khorezm 50 years after B.V. Andrianov'; by Galieva (p. 17), 'Memories of Boris Vasilevich Andrianov'; by Lamberg-Karlovsky (p. 23), 'Irrigation Among the Shaykhs and Kings'; and by Arjantseva (p. 55), 'References and Bibliography of Boris V. Andrianov'.

The translated text of A.'s book then starts with a short foreword by Merpert, a page from the author and an Introduction. Part I, 'Ancient Irrigation Study Methods', considers the origin and development of irrigated agriculture (two chapters); Part II, 'The Lands of Ancient Irrigation of the Aral Sea Area' houses three chapters focused on specific regions. Then a Conclusion (p. 245), figures (p. 255), tables (p. 317), endnotes (p. 329), editor's notes (p. 344) and references in Russian (p. 347), and the original references in other languages (p. 377).

The effort made by Mantellini is one that deserves special applause, not least because of the importance already gained by A.'s volume, and the indispensability of its translation into an accessible language, above all. Placing the book in an up-to-date methodological perspective through essays of high specialist content by outstanding scholars gives the reader the sensation of being confronted by a completely new book.

The task was not easy. To translate a book is a technically difficult operation, and here it is necessary to thank Bonora and Morse. To edit and update its content is a different, more sophisticated operation, and above all, very useful. Those who have been dealing with Central Asia in recent decades have certainly complained that without a thorough knowledge of Russian, they were limited in their work.

There is another particularly significant aspect in this critical update proposed by Mantellini, i.e. the relocation of the volume in the epoch in which it was conceived, permeated with the political and ideological values of the time; these elements, today might bring a smile, but have their place in the history of archaeological research in Central Asia of the Soviet era.

The setting of the book is provided by the introductory articles, first Dolukhanov, with a general outline of Russo-Soviet archaeology in Central Asia, then a description of the main investigations carried out in the former Soviet republics (including a very short piece on Samarkand-Afrasiab provided by Frantz Grenet).

Bolelov focuses on the importance of research of ancient irrigation systems carried out by A. in Khorezm and in the Lower Syrdarya. He provides a brief history of the Khorezm Archaeological Expedition, its different topics and targets, and remarks on the advanced multi-disciplinary approach given to it by Tolstov.

The map presented by Lecomte and Francfort (2002) summarises the main discoveries of the expedition, showing major settlements, their chronology and function, graveyards, the main irrigation networks, as well as the aerial and car routes used during field work.

Galieva deals mostly with A. himself, her principal supervisor when, in the early 1980s, she moved from Tashkent to Moscow to obtain her doctorate. Yagodin and Betts provide an up-to-date archaeological view of the area formerly investigated by the expedition in light of recent discoveries by the Karakalpak-Australian Archaeological Expedition.

Lamberg-Karlovsky develops his theoretical essay on the role of irrigation, and water management more generally. Based on archaeological data, written sources and different schools of thought on this matter, he provides a comprehensive analysis of the role of water in ancient civilisations with numerous references to the contemporary situation.

Part of the bibliography is specifically devoted to all the works published by A. throughout his career, those mentioned in the book but also all the geographical-archaeological research, particularly on irrigation and water management, that he published later.

The translation begins with a page about Bukinich, the engineer and irrigation specialist whose work marked the beginning of the study of Central Asia ancient irrigation systems.

The Introduction focuses on the main aspects of ancient irrigation systems and their socio-economic implications. Starting from the climate-environmental situation of Khorezm A. seeks to outline an historical interpretative line that takes into account both the geo-environmental setting and human interventions through channelling operations, necessary for agricultural control of the territory. In particular, he underlines the double aspect of irrigation systems: on one hand, they play a major role in the development of arid regions; on the other, they are difficult to study and to be dated. A. presents previous studies on the ancient irrigation in Khorezm, started in the early 1930s with Voevodskii. Gulyamov continued this research pre- and post-war, that A. considered 'the most important step in studying the history of irrigation in Khorezm'.

The first Part of the book is more general and theoretical; the second focuses on specific field work and results achieved by A. and the archaeological-topographical unit.

Chapter 1 describes the approach employed by the archaeological-topographical unit in researching the historical dynamics of irrigation systems and their relation to settlement pattern. A. argues that such a study 'requires an interdisciplinary approach combining natural geography and human sciences'. He provides a summary of aerial archaeology history and its application in studying ancient irrigation systems and hydraulic devices. A. summarises the main publications and pioneer scholars in aerial archaeology, such as Beazley, Crawford, Poidebard and Chevallier in the West, and the early experience in Russian archaeology and the Khorezm expedition.

Chapter 2 deals with the 'Origin and Development of Irrigated Agriculture' in different areas of the world. A. shows a very good grasp of research throughout the world, from the main ethno-archaeological studies of the American Indians by Steward, Forde and Haury, to archaeological survey in Mesopotamia by Adams, and excavations in the Near East (Jericho, Jarmo, Ali Kosh, Çatal Huyuk, Hacilar, etc.), which allowed the appearance of irrigated agriculture in the Old World to be dated as early as the 8th–6th millennia BC. A. recalls the theory of 'hydraulic societies' advanced by Wittfogel, where the development and maintenance of large-scale irrigation systems were possible only through a strong centralist state, with a bureaucratic structure and the wide use of forced labour.

Chapter 3 concerns 'The Southern Delta of the Akchadarya', the first area investigated by the archaeological-topographical unit. Irrigation works are described according to their

chronology and location. Although the data available for the Bronze Age are poor, it is highly possible that the inhabitants of Khorezm practised irrigated agriculture at that time: there is evidence of the introduction of some important devices in the development of irrigation technologies. The 6th–5th centuries BC were the building period of massive irrigation systems both on the right and left banks of the Amudarya. In that period, canals heads were moved into the major river channel rather than in one of its lateral branches showing the great ability of Khorezmians in building ‘artificial rivers’ and small ‘artificial deltas’.

Research in ‘The Sarykamysh Delta’ is presented in Chapter 4. Here the Bronze Age finds are even poorer than in the Amudarya, thus A. argues that irrigated agriculture and hydraulic facilities appeared in this region somewhat later. In the 6th–5th centuries BC, the construction of important irrigation systems on the Chermen-yab and Daudan was connected with the strong state formation developed in Khorezm. As on the right bank of the Amudarya, progress in irrigation technology was considerable, and the water supply pattern was: riverbed–head works–drainage–main canal–feeder–field.

The fifth chapter describes the results achieved during work in ‘The Lower Syrdarya’, in particular on the left bank of the river. A. provides an overview of the natural conditions of this area. The Lower Syrdarya has less water than the Lower Amudarya and it was a huge deltaic area, with numerous swamps and lakes, before the development of irrigated agriculture. The Bronze Age sites have not been sufficiently studied and irrigation systems of that period are poorly identified. The hydraulic works of antiquity (4th–2nd centuries BC), are better preserved, especially in the environs of Babish-Mulla and Chirik-Rabat along the Middle Inkardarya.

In the Conclusion, A. retraces the stages of development of irrigation systems and water management after the research of the archaeological-topographical unit in Khorezm and in the Lower Syrdarya. In Khorezm, the development of irrigation techniques started in the Bronze Age, with the first attempts of wetland reclamations, flood controls and primitive forms of *kair* and estuary agriculture. During the Amirabad (9th–8th centuries BC) and Archaic (6th–5th centuries BC) periods regulated riverbeds and former riverbeds began to be turned into small artificial main canals.

Based on some ethnographical studies in the Khiva Oasis, A. evaluates the high cost of labour investment required for such work and introduces his hypothesis on the emergence and development of the slave-owning mode of production. In an attempt to consider the origin and development of Khorezm irrigated agriculture in a wider perspective of other Old World arid zones, A. used the most recent ethno-archaeological (Childe, Forde) and palaeobotanic (Helbaek, Flannery, Vavilov) studies. He asserts that the spread of irrigated agriculture was not a simple mechanical transfer of skills in farming and irrigation methods from one area to another, but rather a complex historical-cultural process, varied in different ecological conditions of natural vegetation and water resources. Supporting the theory of the geographers Berg and Voeykov, and their criticism against the determinism of Huntington, A. suggests that the decline of the Khorezmian and Central Asian oases was primarily due to socio-economic factors, such as wars and feudal fragmentation, which contributed to the movement of people and abandonment of cultivated lands and irrigation systems.