

Laying the Foundations

*Manual of the British Museum Iraq Scheme
Archaeological Training Programme*

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ARCHAEOPRESS ARCHAEOLOGY



ARCHAEOPRESS PUBLISHING LTD

Summertown Pavilion

18-24 Middle Way

Summertown

Oxford OX2 7LG

www.archaeopress.com

ISBN 978-1-80327-140-8

ISBN 978-1-80327-141-5 (e-Pdf)

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Foreword

In 2014, at the height of the monstrous damage and destruction wreaked upon archaeological sites, monuments and museums in Iraq at the hands of Daesh (the so-called Islamic State), and with the support of Neil MacGregor, the then Director of the British Museum, I devised a programme of training for colleagues in Iraq that would allow them to confront the challenges of the aftermath of this affront to their cultural heritage. Known originally as the ‘Iraq Emergency Heritage Management Training Scheme’, but more recently as just ‘the Iraq Scheme’, it attracted the attention and support of the British Government’s Department of Culture, Media and Sport (DCMS), and the British Museum was fortunate in receiving a substantial grant to finance the project. Between 2015 and 2020, we welcomed a total of 50 employees of Iraq’s State Board of Antiquities and Heritage (SBAH), both men and women, to the British Museum where, in groups of six to eight at a time, they received state-of-the-art training in all aspects of field archaeology from some of the world’s leading practitioners.

But field archaeology, by definition, is not a theoretical undertaking – it is a practical discipline. For this reason, from the outset, the Iraq Scheme employed two senior archaeologists, not only to supervise the UK training programme and act as mentors for the Iraqi participants, but to direct major excavation projects in Iraq where the participants would put into practice what they had learned in the classroom. For the benefit of our Iraqi colleagues it was essential that these excavations were not merely ‘training digs’ but fully developed research projects to which the participants would contribute in every aspect, from field operations to publication.

So it was that sites were selected in what were then seen as ‘safe’ (Daesh-free) areas of Iraq. In the North in Iraqi Kurdistan, John MacGinnis, an experienced field archaeologist who had previously worked on numerous projects in the Kurdish Region of Iraq, chose a small group of threatened sites disposed around the north-eastern shore of Lake Dokan. In southern Iraq, Sebastien Rey, similarly experienced from his work at Tello, the immensely important Sumerian site of Girsu, and for which he already held the excavation permit, chose to continue his operations and incorporate the training activities there. Both directors assembled formidable dig teams, populated with many of the same experts who had provided the training in London. By this means it was possible to construct a comprehensive programme for our participants which combined the teaching of hands-on excavation skills with the sophisticated techniques available to modern archaeology, such as MultiStation 3D surveying, geophysical mapping, geographical information systems, photogrammetry and the use of drones and satellite imagery.

Both of the excavation projects have produced scientific results that have been highly significant and, in some cases, spectacular. They have been achieved, in no short measure, through the dedicated and enthusiastic engagement of our Iraqi participants, and the fruits of their contributions will be seen in the numerous publications that have appeared, or will appear in due course.



The result of the overall project has been to substantially build capacity within SBAH by adding a cohort of more than fifty highly trained practitioners to an already well-established nucleus of experienced Iraqi field archaeologists. This contribution, involving professionals in every province of Iraq, will be an enduring legacy of the Iraq Scheme.

The other legacy of the Scheme is this manual. It would have been a tragic waste if the wealth of expertise gathered for the Iraq Scheme had not been captured and preserved, to be drawn upon by future archaeologists, students and those concerned with the protection and preservation of cultural heritage. I am indebted to John MacGinnis for taking the initiative to do just that, and by bringing together those experts responsible for the training scheme, for producing a comprehensive and authoritative guide to the nuts and bolts of conducting archaeological fieldwork. Although based on our work in Iraq, the principles are applicable to projects throughout the Middle East and beyond. The following pages cover every aspect of archaeological fieldwork from conception and initiation to execution, post-excavation analysis and publication, with additional sections on reconstruction and site management. A very important intention from the outset was to ensure

The first group of Iraqi participants received by His Royal Highness, Prince Charles, the Prince of Wales, at Clarence House

Group 5 at the
British Museum



that the manual should be fully accessible to our Iraqi colleagues, an aim achieved by the Arabic and Kurdish translations which accompany this English version.

My thanks go, of course, to all those involved in the manual, but especially to St John Simpson, John MacGinnis, Sebastien Rey, Suzy Minett and Claudia Da Lanca, who have edited and shaped the contributions into a coherent whole. Special thanks are also due to the State Board of Antiquities and Heritage in Baghdad, the General Directorate of Antiquities of Kurdistan, the UK's Department of Culture, Media and Sport and our outstanding Iraqi participants, without all of whose enthusiastic involvement the Iraq Scheme could not have been such a stunning success.

Jonathan N Tubb
Director of the Iraq Scheme and Keeper of the Department of the Middle East at the British Museum

Preface

The compilation of this manual has been a long and rewarding process running hand-in-hand with the training of the Iraq Scheme delivered in the UK at the British Museum and in Iraq at the two excavations initiated for this purpose. There is a huge amount to learn in archaeology, and it would be impossible to cover every single aspect of the profession. Rather, our aim has been to provide a framework of the key components needed for a field programme. The emphasis is on practicality – the basic skills and approaches at the core of an excavation project. We are well aware that other people might have written a different text with differing emphases – of course, they are welcome to do so! As Diakonoff famously said, there are as many conceptions of Sumerian grammar as there are Sumerologists, and the same is true of archaeological field methodology. We have striven to find a balance between the many competing approaches to recording and post-excavation processing. A guiding principal has been to produce a work of genuine practical use to our Iraqi colleagues working in the field, to which end the production of the openly available translations into Arabic and Kurdish has been a fundamental objective from the outset.

The list of people to thank is vast, but we must start with the commitment of the Government of the United Kingdom which has made this endeavour possible, and in particular the members of the Department of Digital, Culture, Media and Sport who have steered the project through its many challenges: Tracy Crouch, John Glenn and Michael Ellis, successive Ministers at the Department, together with Rebecca Clutterbuck, Ritvik Deo, Harriet Hoffler, Dominic Lake, Keith Nichol, Joseph Rowlands, Giles Smith, Lucien Smith and Kate Snelson. We are likewise grateful to Tim Loughton MP, Tom Tugendhat MP, Nick Abbott, Jaimie Bowden, Tim Clayden, Simon Hayes, David Livingstone, Marc Owen, David O’Toole, Tim Purbrick and Stephen Spittle. Nor can we fail to record our appreciation for the support from the top levels of the British Museum, from the Trustees, the Chairman George Osborne and his predecessor Sir Richard Lambert, the Director Hartwig Fischer, and the Deputy Directors Jonathan Williams and Chris Yates, as well as the many other staff listed further below.

The Iraq Scheme has from the beginning been a collaborative venture with the State Board of Antiquities and Heritage in Baghdad and the General Directorate of Antiquities of Kurdistan. We express our



Group 7 of the archaeologists participating in the Iraq Scheme



Group 2 on a visit to the London Mithras Temple

deep gratitude to Laith Majeed Hussein, Director General of the State Board, as well as his predecessors in this office, and also to the many previous and current SBAH officials in Baghdad who have provided much appreciated help and support, including Haider Abd al-Wahed al-Mamori, Saleem Khalaf Anaeed, Mohammad Saleh, Mahdi Ali Raheem, Mohammad Sabri, Adil Jabour Diwan, Ahmad Kamel, Hussain Ali Habib, as well as to the new director of excavations, Ali Shalgam; and to Kaify Mustafa Ali, Director General of Antiquities of Kurdistan, his predecessor Abubakr Othman Zainadin (Mala Awat), Barzan Baiz Ismael, Director of Antiquities of Raparin, Kamal Raheem Rashid, Director of Antiquities of Sulaimaniya, and Hashim Hama Abdullah, Director of the Sulaimaniya Museum.

The work at Tello, ancient Girsu, would not have been possible without the determination, guidance and help of the project's Deputy Director, Fatma Yassir Husain; of Qais Hussein Rashid, former Deputy Tourism and Antiquities Minister, who was instrumental in the launch and early delivery of the Iraq Scheme; of the SBAH office in Nasiriya (Thi Qar province) and its Director Amer Abdul Razzaq and his predecessors Thaer Queen Amjad Nahma Shabib; of Colonel Fuad Karim Abdullah, former commanding officer of the Nasiriya Archaeology Police, and its new commander General Shaker Hilal, as well as the whole archaeological police force, who ensured the security and well-being of the expedition in southern Iraq; and of the archaeologists of the Nasiriya office, and especially the inspectors who participated in the different seasons carried out at Tello: Karar Abde Kwali, Abd al-Hadi Kraydi Jabr, Ahmad Khadim, Abbas Saheb, Saad Ali Danoun, Abd al-Hassan Maktouf Sayah, Aqeel Sfayyih, Mohammad Sahdi, Mohamad Ali Khalaf and Hiba Sabah. The contribution of the SBAH guards and the hundred or so friends and colleagues from Nasriya and its environs who have worked with us at the site has been absolutely central. Last but not least, a special word of thanks to Amir Doshi, who translated the annual reports on the seasons at Tello into Arabic, as well as for his work on translating this manual. To all of these we extend our profound gratitude.

In Kurdistan we were privileged to receive the support and encouragement of Sasan Othman Awni Habib, Minister of Municipalities and Tourism; Amal Jalal, the Head of the General Board of Tourism; Jihan Sindi, Advisor at the Presidency of the Council of Ministers; Kaify Mustafa Ali,

Director General of Antiquities of Kurdistan, and his predecessor Abubakr Othman Zainadin (Mala Awat); Barzan Baiz Ismael, Director of Antiquities of Raparin; Kamal Raheem Rashid, Director of Antiquities of Sulaimaniya; Hashim Hama Abdullah, Director of the Sulaimaniya Museum; Dr Abdullah Khorsheed, Director of the Iraqi Institute for the Conservation of Antiquities and Heritage; Hiwa Qarani Abdulla, Governor of Raparin; Hussain Mohammed Ibrahim, mayor of Rania; General Hassan Swara, head of Rania Police; Hazhar Mohammed Bapir, the head of local Security (Asaish); Dr Mufaq Khalid Ibrahim, President of Raparin University; our representatives, Sami Jamil Hamarashid, Halkawt Qadir Omer and Awaz Jihad Hedan; Ismail Mohamed Ali, who helped us with his huge local knowledge; Ramazan Qadir Ismael and his family, who kept us well-fed in an orderly house; and to all the many local men and women who participated in the work. A special word of thanks goes to Halala Aki Omer, who translated for our training sessions in Rania into both Arabic and Kurdish, and to Dilshad Abdul-Mutalib Mustafa, who translated this manual into Sorani Kurdish.



Group 4 in the Great Court of the British Museum

In London we owe an enormous debt to His Excellency Dr Salih Husain Ali Al-Tamimi, former Ambassador of the Republic of Iraq to the Court of St. James, and his successor His Excellency Mr Mohammad Jaafar Mohammad Bakr Al-Sadr, for facilitating the progress of the Iraq Scheme in every way, supported by their unfailingly helpful staff at the Iraqi Embassy, including Wael Al-Robaaie, Nazar Mirjan Mohammed, Sufyan Abbas, Razaq Al-Mashkooor, Dr Hassan Al-Alak, Mushtaq Sultani, Atheer Alsaedy, Aseel Mirza and Hamailok Dizayee; to Dr Ghassan Saddawi, Iraqi Consul General, and his predecessor Mr Mushtaq Sultani, together with Mostafa Al-Hassani and all the staff of the Iraqi Consulate; and to Karwan Jamal Tahir, High Representative of the Kurdistan Regional Government to the United Kingdom, together with Legaa Firas, Khasro Ajgayi and all the staff of the Kurdish delegation.

We are similarly grateful for the support of Stephen Hickey, British Ambassador to the Republic of Iraq, his predecessors Frank Baker and Jonathan Wilks, and all the staff at the British Embassy in Baghdad; and to David Hunt, British Consul in Erbil, his predecessors James Thornton, Angus McKee and Martyn Warr, and to all the staff of the Consulate. We are also deeply indebted to Brian Brivati, David Fairbank, Nick Jariwalla, Ghassan Jawad, Paul Kramer, Eileen Laca, James Rickard and Hayley Williams for their assistance with visa applications, both for our Iraqi colleagues coming to the UK and British Museum staff travelling to Iraq.

The London-based component of the training provided a very wide-ranging introduction to the theory and practice of cultural heritage management, as well as an introduction to key archaeological concepts and technical skills. We owe an immense debt of gratitude to the huge number of individuals who taught sessions in the course of this training. From within the British Museum this included Wendy Adamson, David Agar, Stefka Bargazova, Gemma Barlow, Mark Bates, Gareth Brereton, Megan Bristow, Duygu Camurcuoğlu, Caroline Cartwright, Sarah Collins, Vesta Curtis, Claudia Da Lanca, Sophie Dave, Andrew David, Simon Denham, Valeria Di Tommaso, Tony Doubleday, Adrian Doyle, Amy Drago, Joanne Dyer, Nicola Elvin, Irving Finkel, Sally Fletcher, James Fraser, Christos Gerontinis, Alberto Giannese, Darwin Goodridge, Bill Greenwood, Angela Grimshaw, Hannah Gwyther, Carine Harmand, Nathan Harrison, Duncan Hook, Dudley Hubbard, Imran Javed, Judy Joseph, Brian Kerr, Zeina Klink-Hoppe, Dimitra Kountiou, Lawrence Leason, Benedict Leigh, Michael Lewis, Denise Ling, Kevin Lovelock, Janine Marsh, Rocio Mayol, Andrew Meek, Amandine Merat, Suzy Minett, Kate Morton, Laura Phillips, Venetia Porter, Shezza Rashwan, Philippa Ryan, Niki Savvides, Margaret Sax, Antony Simpson, St John Simpson, Michela Spataro, Rebecca Stacey, Ruth Stone, Jo-Anne Sunderland, Tracey Sweek, Nigel Tallis, Jonathan Taylor, Roberta Tomber, Mathilde Touillon-Ricci, Jonathan Tubb, Julia Tugwell, Rosalind Wade-Haddon, Quanyu Wang, Emma Webb, Derek Welsby, Harriet White, Craig Williams, John Williams, Jonathan Williams, Barbara Wills, Hannah Woodley, Adele Wright and Holly Wright.

And we also owe an equal debt to the many external colleagues who taught sessions either in the scope of the London training or on visits to their host institutions: Mark Altaweel, Steve Aucott, Nick Bateman, Graeme Barker, Andrew Bevan, Paul Bennett, Robert Bewley, Andrew Brown, Sheena Browne, Stephen Bull, Paul Bryan, Felicity Cobbing, Darren Crimes, John Darlington, David Divers, Mike Dunn, Emma Dwyer, Rand Eppich, Peter Guillery, Cordelia Hall, Andrew Hann, Mahmoud Hawari, Teresa Heady, Tricia Hillas, Sophie Jackson, Nicola Kalimeris, Brian Kerr, Heather Knight, Nineb Lamassu, Dan Laurence, Liz Jones, Matthew Law, Fiona Macalister, Steve Macaulay, John MacDermot, Roger Matthews, Wendy Matthews, Iain McCaig, Debbie Miles-Williams, Henry Owen-John, Andreas Pantazatos, Graham Philip, Leigh Reuss-Daters, Bijan Rouhani, Andrew Skellern, Nigel Smee, Stephen Spittle, John Stewart, Dani Tagen, Richard Thomas, Kathy Tubb, Faith Vardy, Angela White and Marek Ziebart.

A very special thanks goes to Peter Dinshaw, who expertly translated the highly technical language of a broad range of specialised subjects, materially contributing to the effective delivery of the training; and also to Annabel Jackson, our external evaluator, whose monitoring and feedback was likewise immeasurably beneficial.

The Iraq Scheme has benefitted from the truly extraordinary resources of the British Museum, with the support and expertise of a very wide range of staff beyond those who taught modules of the training. While this list cannot possibly be comprehensive, we would like to express our thanks to Mohamed Ahmed, Philip Baxter, Dean Baylis, Jill Beardon, Nabilah Begum, Mica Benjamin-



Mannix, David Bilson, Hannah Boulton, Anna Buelow, Gladser Carvalho, Wei Kiat Chen, Jill Cook, Anna Cottle, Glenn Cumiskey, Graham Dunkley, Melissa East, Joe Edwards, Nicola Elvin, Joanna Fernandes, Iain Fishpool, Achilleas Fontivero, Laurie Frey, Valentina Gasperini, Fleur Gatineau, Nick Harris, Carl Heron, Peter Higgs, Amy Hitchcock, Rebecca Horton, Ruth Jones, Abida Kassam, Ivor Kerslake, Thomas Kiely, Janet Larkin, Nicholas Lee, Mhairi Letcher, Celia Lloyd-Davidson, Joanna Mackle, Antonio Marin Fabra, Henrietta Martin-Fisher, Freddie Matthews, Emma Meekings, Claire Messenger, Martin Meyler, Sunil Mir, Thorsten Oppert, Georgi Parpulov, Steven Pasquale, Beth Penny, Laura Phillips, Jane Portal, Nadja Race, Imma Ramos, Tansy Ratcliffe-James, Lee Roberts, Seonaid Rogers, Harriet Rose, Sarah Saunders, Sophie Shepherd, Allison Siegenthaler, Bryony Smith, Sandra Smith, Suzi Smith, Sophie Stead, Shakira Stevens, Fahmida Suleman, Michael Tame, Jonathan Teer, Olivia Threlkeld, Bradley Timms, Sian Toogood, Russell Torrance, Lucy Wallace, Tania Watkins, Jane Whittaker, Jonah Wilberg, Hilary Williams, Evelyn Wood and Angela Wright.

Group 6 in the forecourt the British Museum

We would like to say a particular thanks to the following who have contributed chapters to this manual: to Mary Shepperson for the sections on laying out trenches, use of the dumpy level, drawing plans and sections, and Harris matrices; to Mathilde Touillon-Ricci for the sections on databases and registration; to Guy Hazell and James Fraser for the section on surveying with a total/multi station, and to James Fraser again and Ricardo Cabral for the section on the use of drones; to Kate Morton, Faith Vardy and Claudia Da Lanca for the section on the illustration of small finds; to Elisa Giroto for the section on the illustration of ceramics; to Duygu Camurcuoğlu, Amy Drago, Ewout Koek and Joanna Skwiercz for the section on conservation; and to Rand Eppich for the section on photogrammetry. We would, additionally, like to thank the following who have contributed on specific aspects and, in many cases, also generously granted the right to use the images which they provided: Tomáš Chabr, Petra Creamer, David Filipický, Peter Miglus, Sophie Mills, Daniele Morandi Bonacossi, Karel Novaček, Gwil Owen, Rocco Palermo, Leesa Vere-Stevens and Jason Ur.

At the very heart of this enterprise have been the Iraqi and Kurdish colleagues who participated in the field training after first completing the London-based component of the course. It has been an immense privilege to work with such talented and dedicated individuals. Their experiences, insights and inputs have been an inspiration. And so we would like to express our warm gratitude to: (Group 1) Faleh Ghadawi Noman Almuturb, Hayder Isan Abdulrasool, Hemin Naman Kawes, Kovan Ihsan Yaseen, Mohammed Jasem Abd al-Elayawi, Tareq Khaleel Othman Al-Salihi; (Group 2) Adil Amin Sharif, Ali al-Hmeda, Halkawt Omer, Jabbar Libawi, Saad Jassim Hamoodi al-Khazraji, Zaid Saadallah; (Group 3) Nawzad Abdullatif Abdulkarim Al-Jaf, Dilshad Abdul-Mutalib Mustafa, Mehdi Ali el-Rahim, Ali Kamel Ghazal, Zahed Mohammed Eleywi, Toufik Abd Mohamed Muthuan, Osama Muhammad Khorshit, Qasem Rashid Hamid; (Group 4) Anas Abdalsattar Zaidan Zaidan, Birnadet Hanna Matti Al Maslob, Estabraq Ghazi Younus Alzuabidi, Nadia Suhail Mohamedbsher Al-Ghadhanfri, Nadia Fadhil Saleem Saleem, Rana Bashar Saleh Saleh, Rana Zuheir Ibrahim Naati, Zinah Naziyah Abdulrazzaq Alabdali; (Group 5) Awaz Jihad Ghedan, Diman Sadraldin Mohammed Ali, Sara Sulaiman Younis Younis, Ahlam Jabbar Ali Al-Kareem, Suad Obaid Hussein Yasari, Dhuha Dheyaa Sabeeh Sabeeh; (Group 6) Ahmad Smail Hamad Ameen, Awder Nasralddin Hamasalim, Aymen Jasim Mohammed, Hayder Mohammed Ali Abdulhussen, Ihsan Lafta Enad Al-Ghanimi, Ali Ahmed Abdulateef Al-Tameemi, Mhmood Mohsin Hachim Al-Saedi, Saad Ahmed Abed Abed; (Group 7) Ethar Qasim Mashkoo Al-Agoobee, Faeza Mohammed Jumaah Al-Rubaye, Hadeel Miri Jumaah Jumaah, Majida Hatif Dawood Battah, Muntaha Adheem Kadhim Al-Shuwaili, Saya Halko Fattah Agha, Valentina Abdulrahman Ali Ali and Zinah Mohammed Abdullah Abdullah; (Group 8) Ala`a Karim Da`ach, Ahmed Abdullah Dahham Al-Mamoori, Ahmed Ibrahim Salmami, Fouad Dalil Mahmood, Karwan Ismael Awrahman, Taher Queen Aneed; and (Group 9) Hero Hassan Khidhr, Zhakaw Piroot Rasul, Halala Saleh Ahmed, Hiba Sabah Muter, Huda Nassir Abd Mosa, Noorah Ahmed Hantosh, Ranya Mohammed Abdul Wahid, Taisser Mahmud Hame and Tufoof Mohammed Dahham.

Carrying out archaeological fieldwork in Iraq is very demanding. We owe an incalculable debt to the members of the excavation teams who worked for protracted periods under often difficult conditions in order to share their own skills and expertise in a spirit of international co-operation: at Tello, Fatma Yassir Husain (Deputy Director), Sila Akman, Eleanor Atkins, Dita Auzina, Stefka Bargazova, Anthony Baxter, Gareth Brereton, Helene Canaud, Angelo Di Michele, John Darlington, Ella Egberts, Charlotte Faiers, Caterina Fantoni, Adam Fraser, James Fraser, Andrew Ginns, Elisa Giroto, Tina Greenfield, Cordelia Hall, Luke Jarvis, Jaafar Jotheri, John MacDermot, Hilary McDonald, Ashley Pooley, Uxue Rambla-Eguilaz, Thea Rogerson, Joanna Skwiercz, Dani Tagen, Jon Taylor, Ebru Torun, Faith Vardy and Lisa Yeomans; and in Rania, Barzan Baiz Ismael, Sami Jamil Hamarashid, Halkawt Omer, Awaz Jihad Hedan, Mustafa Ahmad, Bahzad Mohammed, Fidaa Almehho, Fereidoun Fayaq, Stefano Bertoldi, Gemma Barlow, Julie Bessenay, Megan Bristow, Ricardo Cabral, Jan Čibera, Raghda Dagher, Claudia Da Lanca, Liam Devlin, Amanda Dusting, Maria Gajewska, Alberto Giannese, Tina Greenfield, Guy Hazell, Floor Huisman, Achilles Iasonos, David Kertai, Hero Hassan Khidr, Ewout Koek, Ben Leigh, Tom Lyons, Timothy Matney, Andy

Miller, Sophia Mills, Suzy Minett, Kate Morton, Sandra Mularczyk, Mathilde Mura, Virág Pabeschitz, Andrew Petersen, Stephen Porter, Lucas Proctor, Morgan Revels, Sarah Ritchie, Saleh Salimi, Alice Salvador, Christoph Schmidhuber, Mary Shepperson, Ruth Stone, Mathilde Touillon-Ricci, Necmi Yaşar, Ramazan Qadir Ismael, Charly Vallance, Craig Williams and Zozik Sabah Noori.

We would like to express our very great thanks to David Davison, Ben Heaney and all the staff of Archaeopress, both for seeing through the publication of this printed version of the manual and for providing open-source access to the PDFs of the English, Arabic and Kurdish versions on the Archaeopress website.



Group 3
outside the
British Museum

Last but absolutely not least, it is our deepest pleasure to thank our colleagues in the Iraq Scheme Core Team: Angie Grimshaw, whose knowledge, practicality and common sense has been a linchpin from the outset; Gemma Barlow, Megan Bristow, Claudia Da Lanca, Suzy Minett and Ruth Stone, at the helm of the project management, without whose seemingly fathomless abilities, unlimited patience and unfailing assistance none of this could have ever been achieved; St John Simpson, Deputy Director of the Iraq Scheme, whose immense knowledge of the archaeology of the near east (and beyond), equally comprehensive mastery in negotiating the pitfalls of institutional and government procedures and protocols, unrivalled feeling for the material artefact, and wry good humour have held us in awe; and, lastly, our esteemed leader, Jonathan Tubb, Keeper of the Department of the Middle East and Director of the Iraq Scheme, whose vast archaeological experience in the Middle East guided his vision and determination in bringing the Iraq Scheme into existence, and the leadership with which he has led it, with ceaseless humour and encouragement, through its many evolutions. It has been a privilege to work with you.

To all the above we extend our profound gratitude.

John MacGinnis
Sebastien Rey

Chapter 1

Initiating a Field Project

Initiating an archaeological field project is an exciting, yet challenging, prospect for an archaeologist. Our job is the recovery, preservation and interpretation of the past through its material remains, and the contribution from field projects has been, and continues to be, immense. Of course, excavation is one part of this – but it is only one part. This has always been true. In the case of Iraq, the earliest excavations were accompanied, and indeed preceded, by evaluation of written sources and mapping projects. The range of methods now available to modern archaeologists is very extensive – study of documentary sources, regional and topographical survey, remote sensing through overhead imagery and geophysical prospection, surface collection and, finally, excavation. These methods go hand in hand. It will be evident that a huge amount can be learnt without putting a trowel in the ground. And when an excavation does take place, as many of these

Figure 1.1 The Season 4 team in Rania



approaches as possible should be combined to form an integrated picture of the site – ideally even before the digging begins.

Nowadays, nobody digs just for the sake of digging. Excavation is, by its nature, destructive. It should only be undertaken with careful consideration and the justification should be clear. Sometimes this is in response to a threat, such as dam construction, road construction, urban expansion or agricultural attrition – the list is not exhaustive, and applies to every part of the world. In these cases, the aim is to recover as much information as possible before a site is destroyed. In other cases, excavations are initiated as part of a research programme of a department of antiquities, museum or university. But in all cases, it is important that the project takes place within the framework of a clear research agenda. The starting point may be an archaeological or historical period of obvious importance – or indeed which forms a gap in the record of a region – and a focus on one or more aspects which will contribute to our understanding of the past.

To get the most meaningful results, archaeologists need to arm and prepare themselves with probing questions. What led to this occupation or that expansion? Why is evidence for this period lacking? How was this society or community organised? How did it relate to larger political units? How was rule maintained? What was the subsistence strategy? How was this shaped by the environment? Our raw materials are the remains of buildings, deposits, artefacts and eco-factual data. We interrogate this material. Our task is to tease out an eloquent response from these mute remains. Approaching a site or a landscape with such questions allows the archaeologist to design a project so that the recovered material can help to provide answers. This may be more evident in the case of research excavations. But it is equally, or even more, important with rescue excavations, where the opportunity to address such issues is limited and hard choices will, inevitably, have to be made about what to prioritise. In the following pages we take a look at the components that can constitute a programme of archaeological field investigation – the many techniques for non-invasive research, as well as the techniques and methodology for carrying out stratigraphic excavation.

Field staff

Running an excavation is a complex business involving bringing together a team with many skills, who can between them deliver the repertoire of expertise demanded by modern archaeological practice.

Director

The director needs to be an experienced field archaeologist familiar with working in the local conditions and with the archaeology of the region, and able to handle the logistical challenges of an archaeological excavation. The latter includes setting up the dig house and excavation, hiring workmen, working with the representatives of the State Board of Antiquities & Heritage (or equivalent), managing the budget, writing reports, and dealing with the many other issues that emerge during a field season.



▲ Figure 1.2
Modern survey
methods can
integrate all
the various sets
of spatial data
generated by
the fieldwork

Surveyor

The capacity for accurate electronic survey is at the heart of any field project as it provides the framework for setting up the field operation, the recording of results and the processed output for the final record. To achieve this, a trained surveyor is required, familiar with and adept at using a total station and/or multi station to carry out tasks such as topographic surveys; marking out transects for surface surveys and grids for geophysical prospection; integrating and geo-referencing data from satellite imagery, drone imagery and geophysical mapping; laying out excavation trenches; planning the excavated remains (in collaboration with the site supervisors), producing orthophotos as required; processing the data and distributing output imagery to the site supervisors and director, as required.



► Figure 1.3
Site supervisors
discussing
laying out a
trench

Archaeological supervisors

The project will need experienced field archaeologists familiar with the local archaeology and living and working conditions of an excavation. They will also need to be adept at the full range of skills pertaining to excavation fieldwork – actual excavation with pick, trowel and brush; understanding stratigraphy, excavating by context and maintaining proper context recording; maintaining a written record with sketch plans and daily logs; taking environmental samples; keeping a photographic record of the progress of the excavation; drawing plans and sections; and, back in the dig house, entering context information into the database;

downloading, labelling and archiving site photographs; writing weekly and final reports on the areas under their direction; digitising plans and sections; and, as necessary, assisting with other tasks such as flotation, processing ceramics and small finds, and so on.

Registrar/Database manager

It is essential for a major excavation project to have a well-designed and functioning database. At a minimum, this should have sections for recording stratigraphic contexts (with photographs) and for small finds and environmental samples. These are separate sections, but they can, and should be, linked. In addition to this, the database could have other sections for recording ceramics, epigraphic finds and so on, and again, linked to the stratigraphic record. The database therefore forms the centre of the excavation record. In the field it enables the efficient tracking of ceramics, small finds and environmental or other samples as they move between registrar, conservator, ceramicist, photographer, illustrator and others, and allows these specialists to add their contributions. During the post-excavation phase a properly functioning database enormously facilitates the process of writing up. The structure of the database and the creation of the programme need to be carefully planned prior to the commencement of work. Therefore the database manager will be needed to design and create the database, set it up in the excavation house and deliver it via an internal Wi-Fi system; instruct and assist field staff in its use; monitor functioning through the season, solving problems as they arise; maintain regular (or continuous) back-up of the data; create catalogues of samples and small finds; and ensure that the project is in possession of a full set of records at the end of the season. For an operation of any size it is highly desirable that the project has a full-time member of staff dedicated to this. In practice, it works well for the database manager to also be responsible for registering small finds and samples as they come in from the field, ensuring that they are registered and then sent to the conservator, photographer, illustrator and other specialists, as required.

Ceramicist

Excavations generate huge amounts of ceramics. Keeping on top of this is a massive task. The job of the ceramicist entails supervising the material coming in from the field and processing it, from washing and initial sorting through to recording and successive levels of analysis – examining production methods, establishing typologies, working out dating and function, and so on. The ceramicist needs to be in constant dialogue with the director and archaeologists on-

Figure 1.4
The systematic registration of finds, contexts and other data lays the foundations for the process of research and writing up



Figure 1.5 In addition to their use for dating, ceramics can help us understand the function of different parts of a building or site, as well as shedding light on social and economic organisation



site, feeding information back to them on the dating of deposits, room function and so on. Every project will need at least one ceramicist, and very often more than one, or at least one or more assistants to the ceramicist.

Conservator

Every excavation should have a trained professional conservator. The tasks will include lifting fragile objects on-site, stabilising them in the laboratory, ensuring that they are ready to be handled by the photographer and illustrator, restoring them, preparing them for transport to a museum or storage magazine, and preparing them for museum display. To achieve all of this, the conservator will need to advise on and co-operate in the creation of a conservation field laboratory equipped with the appropriate equipment and chemicals. Depending on the size of the operation, or the particular requirements (such as removing wall paintings), more than one conservator may be required.

Figure 1.6 A well-equipped conservation studio is essential for the proper treatment of small finds



Photographer

The photographic archive is a core part of the excavation record. On any project with a significant volume of finds, the project needs the skills of a dedicated photographer to create a full photographic record of the small finds and key ceramics. In the case of large-scale projects this will often be a full-time member of staff. Additionally, while day-to-day photographs of the excavation in progress can be taken by the excavators, having a professional photographer to take final photographs of the excavations for publication can be hugely beneficial.



Figure 1.7
Every small find
needs to be
photographed

Illustrator

The illustration of small finds is another key part of the excavation record. If there is a large number of finds it is best to have a professional illustrator to do this. With certain classes of artefact (e.g. coins, sculpture) the illustration should, if possible, be done in consultation with relevant specialists. Depending on arrangements, and the quantity of material, illustrators may also assist the ceramicist in the illustration of ceramics. On larger projects it may be desirable to have more than one illustrator.



Figure 1.8
Illustrator
at work on
a ceramic
drawing which
will in due
course be
digitised for
publication

Archaeobotanist

Archaeobotanical remains constitute a highly important element of the material generated by excavations. There will be very few sites which, properly managed, do not yield significant archaeobotanic data. Every site needs a protocol for archaeobotanical recovery, including

Figure 1.9
Flotation of
soils samples is
used to recover
archaeobotanic
remains (the
'light fraction'),
as well as
microdebris
of other
materials such
as ceramics
and stone ('the
heavy fraction')



both a sampling strategy and a procedure for flotation. To achieve this, a trained archaeobotanist is needed to design and implement the programme of flotation for recovering archaeobotanical remains and study the material recovered. Whether the archaeobotanist needs to be present on site for the full length of the excavation season will depend on the volume of material generated, and also on whether or not it is possible to study the material in a laboratory elsewhere. See further details in the section on environmental sampling below.

Archaeozoologist

Likewise, the archaeozoological remains constitute an important element of the excavation material. While hand selection of larger bones is one part of the recovery process, the project needs a protocol for recovery of archaeozoological remains based on a consistent sampling strategy supported by dry sieving and flotation. Hand recovery alone will miss smaller diagnostic elements (such as bird or fish bones or milk teeth), cannot be easily quantified, and leads to interpretation biased in favour of larger mammals. An archaeozoologist is required both to design and implement such a programme and to study the material recovered. Whether the archaeozoologist needs to be present on-site for the full length of the excavation season will depend on the volume

of material generated, and also on whether or not it is possible to study the material in a laboratory elsewhere. See further details in the section on environmental sampling below.

Physical anthropologist

Most excavations will encounter burials at some stage. The excavation of these can be undertaken by experienced excavators, but it is important that they follow a set procedure of both recording and environmental sampling. The scientific study of the human remains needs to be undertaken by a trained physical anthropologist. The amount

of input required will of course depend on the volume of material in question. All stages of this process, from excavation to final resting place, need to be guided by a clear ethical code. See further details in the section on burials below.



▲ Figure 1.10
Archaeozoological analysis can yield a huge amount of data on social, economic and environmental aspects of ancient societies



◀ Figure 1.11
Osteologist examining a human skeleton



▲ Figure 1.12
Epigraphist
working on
bricks inscribed
in cuneiform
writing

Epigraphist

If working on a site of an historic period, one or more epigraphists may be required, whether this be for inscriptions in cuneiform, Aramaic, Greek, Arabic, Kurdish or any other language and script.

Other specialists

In addition to this, the input of other specialists may be required according to the nature of the finds. For example, if significant finds of sculpture, seals, ivories or coins are made, you may need to involve specialists in these fields. To understand the processes of site formation and the use of individual spaces you may want to employ specialists in geoarchaeology and/or micromorphology (the microscopic study of sequences of soils and sediments through the analysis of ‘thin sections’ made from blocks of undisturbed deposits carefully cut out from the excavation). Furthermore, analyses may need to be conducted off-site after the completion of the excavation season. This might include the analysis of charcoal, first of all for species identification and then for radiocarbon dating, and the material analysis of artefacts involving techniques such as X-raying, X-ray fluorescence, scanning electron microscopy, gas chromatography, etc.

► Figure
1.13 A well-
run kitchen is
at the heart of
a successful
expedition



House staff

It is essential that the project has a dedicated house staff. At minimum this should consist of a cook and a housekeeper. It is not reasonable or efficient to ask the professional team members to take turns cooking. They are exhausted from being in the field, and it takes them away from the proper work which they need to do in the dig house – and they may not know how to cook! Similarly, the project needs a housekeeper to keep the house clean and tidy and to do the laundry – laying these tasks on the professional staff will again only result in detracting them from their proper work, and ensure that these tasks are not properly done. Depending on the size of the expedition, both the cook and the housekeeper may need one or more assistants.



Figure 1.14 The 2019 team at Tello