

Connecting the Dots: Counting, Writing, and the Beginnings of Civilization





Denise Schmandt-Besserat at home in the 1980s.
Photograph by Beverly White Spicer.

ARCHAEOLOGICAL LIVES

Connecting the Dots

Counting, Writing, and the Beginnings of Civilization

The Secret Lives of Clay Tokens

A Memoir

Denise Schmandt-Besserat

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*To my grandchildren and great-grandchildren
who give me such pride*

Nicolaus

Danielle

Mike

Cyra

Henry

Dennis

Lily

Sabine

Arthur

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Foreword

Marcella Frangipane

Professor Emerita of Archaeology at the Sapienza University of Rome,
Member of Academia dei Lincei,
and Foreign Member of the British Academy and the National Academy of Sciences

This book is the story of a scientific and human adventure lived over the course of almost an entire lifetime by a passionate, creative, and courageous scholar, who quietly but determinedly asserted her right as a woman to pursue her passions against all the obstacles that still stood in the way of women's professional fulfilment in the 1960s and 1970s. Denise Schmandt-Besserat, following an attraction to the study of past societies that she discovered at a very young age, immersed herself in the world of archaeology as a student, a deeply interested and curious person, and finally a highly motivated professional researcher.

Denise experienced crucial moments of change and innovation in the development of archaeology as a science during these decades, and she experimented with the various approaches and trends that were developing in the different countries where she lived and worked, from Germany to France to the United States. The fascinating story narrated in this book follows both her personal scientific formation and the gradual construction of her research goals, passing through changing objects of interest—from Paleolithic rock art, to clay objects and material symbolic representations in early Neolithic societies, to different forms of social communication and their tangible expressions across millennia until the Bronze Age.

Denise started from some crucial insights of her own and other scholars that stimulated her curiosity, then, through in-depth study and detailed observations of archaeological materials in different museums and countries, went beyond those intuitions, transforming them into solid scientific hypotheses. Her encounters with leading archaeologists of the time, including Pierre Amiet and Robert Braidwood—to mention the two scholars who most profoundly influenced her education and thinking—strongly contributed to the development of her knowledge and brilliant analyses of past societies. In this way, her initial intuitions and hypotheses gradually became a new way of looking at and interpreting the material culture of these societies, revolutionizing knowledge of the origins and early forms of social communication in early Middle Eastern communities between the eighth and the third millennium BC. Denise's observations on some peculiar small clay items, or "geometric objects" as

she called them, led her to the discovery that they, made from the most common and widespread material available in that part of the world, were physical and tangible devices used for counting, accounting, and recording information relevant to the daily life of the populations using them, allowing them to manage economic transactions and ultimately leading to the emergence of writing.

Important studies on early pictographic and cuneiform tablets had already been published, but Denise's discoveries opened up new horizons, pushing back to the Neolithic the invention of basic accounting and formal communication tools, which allowed people in very early sedentary societies to transmit basic information on the movements and circulation of goods. These "tokens" constituted a sort of three-dimensional language.

Denise blends her scientific discoveries with stories about her private and family life, moving between different countries as the family followed her husband's career, adapting to new homes and new environments. Throughout, her passion for archaeology grew, as did her commitment to establishing her right, as a woman, to pursue this passion professionally and to thereby also claim her right to a place in the world. From her interest in ancient art, which first developed during lessons and fundamental training experiences at the École du Louvre, Denise moved to new research topics and objectives when she began to work in the United States, at the Peabody Museum at Harvard and the Radcliffe Institute. The variety of subjects she encountered in these various jobs was not a disadvantage to her, but rather enriched and expanded her knowledge and interests, offering her new food for thought for her own ideas and original research project.

Certain places and mentors were, however, constant landmarks in her personal and professional life. Among them were her interactions with Pierre Amiet. It was Amiet who offered Denise the first input to help her interpret those small geometric clay objects that would later become the main focus of her research and her extraordinary discoveries. But this initial stimulus remained forgotten for a long time, even by Amiet himself.

That initial idea returned to Denise's mind later on, following her increasingly in-depth studies and repeated trips to various countries and museums in the Middle East, which constituted an important part of her research. Denise realised that to truly understand the objects she was studying, she must observe them on a broad spatial and temporal scale and explore their many dimensions, from artistic and symbolic expression to practical functions. She thus examined a large number of variously dated objects, often disregarded by archaeologists, in terms of their type and manufacture, the repetitiveness of their forms, and the contexts in which they were found, all of which helped her to eventually grasp their nature and function.

It was after examining thousands of these objects and discussing them with colleagues that Denise reconsidered Amiet's initial intuition, enriching it with new observations of her own, and this finally gave rise to the theory of "tokens" as very early devices to transmit information on the quality and quantity of goods. The foundational books and papers published by her on this subject have changed our understanding of the origins of accounting and writing.

An important aspect that emerges from this memoir, which I think teaches us a lot even today, is Denise's resistance to those who urged her to publish her work as she went along in order to advance her career. Denise was firm, insisting that "I will publish when it is ready." In fact, she worked for twenty years before the publication of her seminal first book, *Before Writing*. That book has been an important reference since its publication in 1992 and its significance has not diminished.

I have to highlight chapter 12 as particularly interesting and significant; in it, Denise retraces, like a true storyteller, the path taken by human societies over time by representing it in the journey of an imagined person (to whom she gives the name Yahya) tasked with counting incoming and outgoing goods, who progressively acquires new knowledge on the way to the discovery of writing and the invention of numbers. This conclusion, in using a kind of literary expedient to summarize the long process of social change that Denise discovered, also somehow reflects the intense personal involvement that was a substantial part of her lifelong research.

A Note from a Student

Michael Erard

It has been a delight to read about Denise's first encounters with the tokens and other aspects of her travels and scholarship in this memoir. It has filled out what I know about her life and career, since I met her in 1994.

At the time, I was a new graduate student at the University of Texas at Austin, slowly coming to realize that my interest in written representations of language and their histories did not fit the formalist linguistics program I was enrolled in. When I went looking for someone on campus who worked on this topic, I found exactly one: Denise Schmandt-Besserat, who was housed at the time in the art history department. Eventually I would come to appreciate that, at the time, she was dealing with intense media interest and both substantial praise and criticism for her two volumes of *Before Writing*, which had come out two years earlier. She greeted me enthusiastically in her office and suggested that we do an independent study together. I left with a list of things to read, thrilled at having met someone making bold arguments about real discoveries in the world.

One memory from the independent study stands out: handling a clay cuneiform tablet at the Harry Ransom Center. The thought that this small, dainty object, more like a biscuit than a text, had nevertheless survived five thousand years was overwhelming. From this encounter I have never forgotten Denise's lesson that writing is a material practice as much as a cognitive one. When she learned that I was interested in the cognition of reading processes (I was taking a course on the psychology of reading with Philip Gough), she wondered how it might explain the shape, size, and arrangement of written symbols in ancient texts, and she encouraged me to investigate this. It was an intriguing question, one bound up in cognitive preferences, cultural evolution, and the interactions between the two, but one that proved too huge for me.

Academics often talk about their intellectual family trees. I have moved around so much that I don't feel it applies to me, but I do hold some ideas that can be traced to Denise's influence. One is the insight that in order for a writing system to work as a form of communication over distance, and in order for it to truly realize its functional purpose, an understanding of what written symbols mean must be non-local, with many implications for understanding aspects of ancient societies. Another is the intense materiality of writing, which I learned holding the clay tablet and from listening to her talk about the tokens. In its contemporary forms, composed of pixels on screens, writing seems intangible. But Denise traced some of the roots of two-

dimensional written signs to their three-dimensional material forebears, objects of clay that people made with their hands. Writing involved not only brains, but hands and eyes as well. To me, a writer who worked for a long time on a manual typewriter, the muscular effort made sense.

One final point of influence is the allure of the ancient as a source for the origin point of some activity in the human past, and the possibility of locating those moments—and then, rather than letting the story close with the origin, you ask, “What came before that?” With one’s evidence and arguments, a continuous human story can be created.

When Denise asked me to coauthor an article on the history of writing for a book edited by Charles Bazerman, *Handbook of Research on Writing: History, Society, School, Individual, Text* (2007), I was pleased for the opportunity to connect her work with some of what I had been working on, mainly the future of writing through universal character encoding. In that piece, Denise covered Mesopotamia and Egypt while I took on Chinese and Mesoamerican histories (in very high-altitude form) and mused about the writing of the future. We updated the material for Rosalind Horowitz’s edited volume *The Routledge International Handbook of Research on Writing*, published in 2023.

Also special to me personally was Denise’s interest in my eldest son, who attended French schools in the US. It was special because it connected us personally, beyond our professional ties. On one visit to Austin, my son and I visited Denise, and she gave him a copy of her children’s book *The History of Counting*. Later I explained to him that Denise felt that this topic was her major academic contribution. As I sit here writing, I can see that very book on my shelf. It has come a long way.

Preface

My fascination with tokens began with my first project on the beginning of the use of clay in the Middle East. But the fact that I concentrated on the small counters of multiple geometric shapes during my thirty-year-long career as a Middle Eastern archaeologist did not limit my research. On the contrary, tokens led me to investigate vast topics, such as the genesis of writing, the interaction of writing and art, and especially, the evolution from concrete to abstract counting. The present volume is meant to illuminate my work by showing how, having not been trained in the United States, I mostly worked alone, without a mentor or fellow archaeologists; how I coordinated my work with my family life; how I, as a woman, survived the ups and downs of my “dispensable” career; and how each subject I treated led to the next. However, the goal I had most at heart in writing this book was sharing the passion I had for my work and the pleasure I derived from it.

I enjoyed retracing the good fortune I had when, at the beginning of my career, Robert J. Braidwood, of the Oriental Institute of the University of Chicago, broke away from the study of Biblical sites and antiquarianism to transform archaeology into a scientific discipline. The whole world was fascinated, myself included, by the stratigraphic excavations Bob and his many disciples conducted, going far deeper than anyone had previously dared. Unknown artifacts were unearthed in these profound strata that, according to V. Gordon Childe, gave us a glimpse into the Agricultural Revolution, the event that precipitated our own civilization. What an opportunity it was to come across, in this stimulating context, the small geometric objects that were to captivate me all through my career.

It was a privilege to have the chance to invent my own approach to archaeological fieldwork. After participating in 1967 in a three-month archaeological survey in Kerman, Iran, and in 1971 in a summer-long excavation campaign in Kermanshah, Iran, I knew that the long absences imposed by traditional excavations did not suit a mother of three. I therefore devised a new way of researching archaeological data, one that was better aligned with my family responsibilities. My method consisted of visiting previously excavated collections in the institutions where they were kept. I located the assemblages I wanted to examine; requested permission from the excavators and the institutions involved to gain access to the artifacts; flew to a given country; and, once there, navigated my way through its usages and customs, traveling alone by bus or in shared taxis.

Today I am a fervent fan of artificial intelligence, and I had fun looking back on earlier technological developments that I navigated in collecting, recording, communicating, and storing my data. In the eighties, I mastered the overwhelming transition from the

typewriter to the personal computer. However, on my research trips my equipment was reduced to pencils, a pencil sharpener, a measuring tape, and an eraser, all carried in a small plastic bag, as well as a Munsell color chart and stacks of self-designed half-page file cards. It sometimes happened that I had to navigate between systems. I once organized the typology of 8,000 clay tokens, divided into 16 types and over 300 subtypes, in two ways: first by noting them on a yellow pad with a pencil, and later, within months, by codifying the same data for loading on a server.

Reflecting on my work, I am thankful that my curiosity about tokens never waned. I find solace in remembering my perseverance as I followed, over millennia and through the entire Middle East, the ways in which the Mesopotamians and their neighbors molded the clay counters that fostered the manipulation of data in always greater abstraction, from concrete to abstract numbers.

Acknowledgments

The story of my memoirs started in 2008, when Mary Ray and I first got together, at a meeting on writing in New Orleans; we then shared an afternoon inspecting the devastation left in the city by Hurricane Katrina. Years later, in 2014, Mary joined a study tour of Iran on which I was a lecturer. On our first morning in Tehran, Mary and I sat at the same breakfast table, and she asked me whether I intended to write my memoirs. I answered that I had no intention of doing so. We visited many magnificent Iranian sites and moved from hotel to hotel, but the breakfast scenario never ceased to repeat itself. Every day, over coffee and dates, Mary discussed with me the 1,001 reasons why I ought to write my memoirs. She even promised that she would help me with this and that task. My response remained invariably negative until our very last breakfast, back in Tehran, when I told Mary that I was ready to write my memoirs just for the pleasure of keeping in touch with her.

It took a village to write my memoirs. Starting in 2015, I began writing about big and small episodes of my career in separate installments of a few pages each. I am a slow writer. The episodes were not completed in a matter of days, but rather over weeks or months. When one episode was finally to my liking, the first recipient of the text was Jurgen, my husband of over fifty years. He dropped everything, took a pencil, and read the pages with great attention. He improved some of my vocabulary; synchronized verb tenses; added a comma here and there; and spotted every single typo. Then, I was summoned to discuss each change at length, after which he never missed a chance to enthusiastically congratulate me for writing such a great opus. Jurgen was somewhat chagrined that his corrections were not the last word.

Joan Rubin, in her capacity as a native English speaker, was the second editor. When she lived in Austin, Joan was my research assistant. We met frequently, with her delivering to my home, in a large rolling suitcase, the many heavy books she ordered for me from the University of Texas Library. After she moved to California, I emailed her the episodes, which she returned, with a variable number of excellent corrections and helpful suggestions, including making sure the capitalization of letters was right—that is to say, not done in the French way!

It has now been more than ten years since Mary and I first began to discuss by telephone, every couple of months, the ups and downs of the memoirs. She was third in line to receive the episodes, with the mission of carefully storing them—which she did, in an exemplary manner.

Lynne Ferguson, an editor at the University of Texas Press, then joined us, after the lone episodes had been consolidated into twelve chapters. She expertly softened my

French accent while putting our manuscript of well over 200 pages into the proper publication format.

Finally, my son Alex, our family bookworm and writer, came for a visit to Austin, and he had the last word in giving to the chapters their quirkier titles. Alex, Lynne, Mary, Joan, and Jurgen, I realize how much each of you contributed to the memoirs. Thank you for lending me your expertise, time, and patience, and most of all, your care and friendship. I also offer my deepest gratitude and appreciation to Mike Schurer and Erin McGowan at Archaeopress.