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Chapter 2 : BiobibliografÃ-a de Marcia Ascher, Sabine MacCormack y Peer Schmidt | Carmen Arellano - ra

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A pocos meses de haberse graduado, se casa con Robert Ascher, quien acababa de terminar su servicio militar. Como Urton lo ha expuesto claramente: Los Ascher siguieron publicando sobre el tema hasta principios del siglo XXI. Carmen Arellano Hoffmann Fuentes: Numbers and relations from ancient Andean quipus. Mathematical Ideas of the Incas. University of Texas Press. History of science A study in ethnomathematics. A study in ethnomathematics II. Archive for History of Exact Sciences En Quipu y Yupana, editado por Carol Mackey et al. Mathematics Magazine 65 4: Challenging Eurocentrism in Mathematics Education, editado por A. Labels, Structure, and Format. University of Texas Press Ascher, Marcia y Robert Ascher Code of Ancient Peruvian Knotted Cords: Nature New York Numbers and Relations from Ancient Andean Quipus. Archive for the History of Exact Sciences Berlin 8 4: The Quipu as a Visible Language. Visible Language [Detroit] 9 4: Code of the Quipu: University of Michigan Press. Code of the quipu: Annals of the History of Computing 5 3: Code of the Quipu. Su profesionalismo y obra fueron reconocidos y premiados muchas veces. Fue elegida miembro de la Academia Americana de Artes y Ciencias en Dio muchas conferencias alrededor del mundo. Sus propios colegas dan testimonio de su amplios conocimientos, como John McGreevy, I. Vergil in the Mind of Augustine En un sentido, ese fue el trabajo de su vida. Concise Encyclopedia of Greek and Roman Mythology. Art and Ceremony in late Antiquity. Religion in the Andes. Vision and Imagination in Early Colonial Peru. Princeton [paperback] On the Wings of Time: Rome, the Incas, Spain and Peru. Change and continuity in late antiquity. The ceremony of adventus. Antonio de la Calancha. The conversion of the Incas in the light of seventeenth century Spanish theology, culture and political Notas theory. Journal of Theological Studies From the Sun of the Incas to the virgin of Copacabana. Hispanic American Historical Review The fall of the Incas: History of European Ideas 6: Miracles, Punishments and Last Judgement: American Historical Review 93 4: Atahualpa y el libro. Revista de Indias 48 Dispositio , University of Illinois Press. Demons, Imagination and the Incas. History and Memory 4 2: How the Past is remembered: University of Notre Dame Press. Perceptions of Medieval Europe in Spanish America. University of Carolina Press. Revista Ecuatoriana de Historia 7 1: History and law in sixteenth century Peru: En Cultures of Scholarship, editado por Sarah C. Sin, Citizenship and the Salvation of Souls: Comparative Studies in Society and History Time, Space and Ritual Action: Art in a missionary context: En The Word Made Image. University Press of New England. The Incas and Rome. En Garcilaso Inca de la Vega. Ethnography in South America: Processions for the Inca: Andean and Christian ideas of human sacrifice, communion and embodiment in early colonial Peru. En The Construction of Minorities. Univer- sity of Michigan Press. Romans and Incas in the light of early modern Spanish scholarship. History, historical record and ceremonial action: Incas and Spaniards in Notas Cuzco. Comparative Studies in Society and History 43 2: Revista Andina [Cusco] Religion and Society in Inca and Spanish Peru. En The Colonial Andes. The Metropoli- tan Museum of Art. Visions of the Roman Past in late medieval and early modern Spain. En Genesis and Regeneration, editado por Shaul Shaked, pp. The Israel Academy of Sciences and Humanities. Las identidades de Paullu Topa Inca. University of Toronto Press. A House of Many Mansions: Aspects of Christian Experience in Spanish America. University Notre Dame Press. Gods, Demons and Idols in the Andes. Journal of the History of Ideas 67 4: Classical Traditions in the Andes. I, editado por Joanne Pillsbury, pp. University of Oklahoma Press.

Chapter 3 : Inca Khipu - String and Knot, Theory of Inca Writing

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Historia natural y moral de las Indias. On October 2, the Teatro Municipal de Lima burnt down to the bone. Without a roof, and the remains of walls darkened by fire and smoke, the venue acquired a new aesthetic value that could paradoxically put Lima, and by extension, Peru, at the same level of theatrical research than other better known cities. A monster of the industrial age ready to grant the passage from the era of the theater of the oppressed to the postmodern canonical eclecticism. In October 15, , after some delays due to the technical difficulties of the enterprise, the classical tragedy opened on an ambiguous Lima spring afternoon. The middle aged actor Alberto Isola impersonated Lear for more than a month among the burnt walls of the colonial rococo building. He decided to add to his regular physical appearance a greying beard and some hair extensions that he could wear in a tail. In an interview for the weekly magazine Caretas, he commented on his participation in the design of his costume. Isola, a theater director as well as an actor, spoke of the difficulties of being directed by someone else when one has such a defined vision of who his character is. In the context of this constellation of influences, one could be surprised by the absence of any Peruvian references in the Lear of Saba and Isola. Sarcoptes Scabiei The parasite that causes scabies, Sarcoptes scabiei, is a mite just visible to the unaided eye. Despite its small size, it has quite formidable mouthparts and eight very powerful legs. With its hind legs, the female of the species hitches itself perpendicular to the skin and, with its mouthparts thus closely applied to the skin, cuts its way down into the thicker layer. Altering its direction, the mite then tunnels horizontally and gouges out an easily recognizable burrow up to several inches long and rarely straight. If I include here the condensed live history of the itch mite -as the subspecies Sarcoptes scabiei hominis is commonly known- as the Encyclopaedia Britannica renders it, it is not necessarily with the intention to repulse readers. Rather, it is because unfortunately, the locks of hair that Isola had tied to his own hair infected him with scabies well before the premiere of the play, during rehearsals. The female mite, which attains a length of about 0. These burrows sometimes are visible as dark wavy lines. Larvae emerge from the skin after hours, moult several times, become adults in about 17 days, and mate. The initial lesion produced by the burrowing mite becomes intensely itchy after a few days to about a month, and the scratching usually leads to secondary skin lesions consisting of papules solid elevations , pustules, and crusted skin areas. Transmission of the mite is by skin-to-skin contact and by contamination of clothing or bedding. Among theater people in Lima at the time of the rehearsals, the admitted origin of the tufts of hair was jokingly attributed to a poor dead old indian woman. This was better left unmentioned to Isola, as it made him uneasy to think of the possibility. This unfortunate piece of gossip could very well remain that, some comment in passim, and yet it is revelatory. Somewhere the absence of the autoctonous was felt. As the return of the repressed, people around the play had found the way to add it to the Elisabethan representation. What made the performance of King Lear different from a version staged in Paris, Madrid or London would go unnoticed to the naked eye of the Peruvian audience. In this richly illustrated work, the author describes the old traditions of the populations under Spanish rule and the current conditions of those who suffer such abusive domination. Allegedly, lacking any written account of times past, he could only count on the memories of the wisest old men and women he knew and on the annotations kept on quipus. From the point of view of the invaders, quipus were the closest that the Incas had had to a system of writing. They consisted of a series of knotted strings attached to a main cord, using a combination of colors that is still to be deciphered. When they were first found in archeological excavations, they were thought to be mnemonic devices to facilitate mathematical calculations, a function fulfilled by several similar systems around the Mediterranean and in Asia during prehistoric times. Yet, through the Spanish chronicles of the time of the conquest, we know that quipus were considered conveyors of entire narratives and were not limited to numerical records. These depictions were recited by the quipukamayuqs, or keepers of the quipu, old men from andean communities, in charge of the correct recording of facts relevant to the everyday life of villages. The system predated the origin of the Inca empire, but it was under Inca rule that the strings and knots system was developed to the perfection that made

Guaman Poma write with admiration in his polemic work: As mentioned earlier, the signifiers remain largely mute about the multiplicity of meanings suspected to be attached to them. And it is precisely the mysterious character of the quipu as a pure signifier what made the Spanish writers be so prolific about this technology. Ultimately what made the quipu such an intriguing object was the inextricable physical connection between the beholder and the arborescent tufts of strings. Speech in inca times was inscribed in the body and its extensions, speech had a certain tactility, texts were read manually. From the first days of the colony, authors saw a parallel between the structure of the Tawantinsuyu -the inca realm- and the structure of a quipu. The kingdom was divided in four provinces related to each other through the capital Cusco by an astounding road system, with a striking resemblance to the branches of the mnemonic system. In this regard while the quipu was inscribed in the andean body, the andean landscape and its administrative and religious organisation -the ceques system- could be read as a quipu, with the sacred sites or huacas as crucial knots on a string. The Inca territory was pregnant with sacred venues of performance that were articulated by the ceques , the straight paths from a center point outward, connecting the sacred sites and serving as pilgrimage or dance path. They can be seen as records on the land of events sequences, just as the quipus operated on a different dimension. At the time of the major waves of catholic evangelization quipus were used during the sacrament of confession. The andeans who had been forced to convert to Christianity would transfer into the knotted script the series of sins that had to be reported to the catholic priests. Due probably to its similarity with european rosaries, the quipu was perceived as an artifact that without showing its content could be understood as a lived experience, or so the monastic orders seemed to think. Nevertheless, as we know, the function and method of the two were radically different. Guaman Poma in several pages of his manuscript represents them at the hands of andeans imitating christian iconographic models of saints holding a rosary. Quipus, although largely misunderstood by missionaries, were used by the andean population to learn new concepts and new narratives, fulfilling the function of notepads for catechism. They were preserved as the roots and warrants of andean life. However, all are equally developed so the general idea almost certainly derived from tradition founded in earlier phases of Andean history. The andean body and the foreign body. It is interesting to note how the quipus and the locks of hair of the andeans appear depicted in extremely similar ways in these illustrations, supporting the idea of the strings as extentions of the body of the holder of the quipu, as several authors have remarked. The representation of punishments performed by catholic priests, spanish soldiers and their wifes on andeans seems to focus recurrently on the hair of the victims[], the long hair that marks their difference with the foreigners. This depictions relate to the importance granted to hair in andean culture and to the care with which it was kept and disposed of. What the incas feared was, naturally, sympathetic magic. Hair was used for charms and devination, specifically in relation to love matters. It would take it to his home and would sleep on it. Of the interpretation of the dreams of the night should come the answer to the query. His method of divination to find stolen or lost objects was through dreams. An old woman in mourning or an old man dressed with hair or ashes would visit him in his dreams. These shadows were his malquis ancestors , and would answer the question asked to the moscoc by his client or would guide him toward an answer. The intrinsic logic of sympathetic magic was shared in both sides of the atlantic ocean, all things that a person has been in touch with or that belonged to her represent her by contagion of vital forces. Prospero indeed infected Caliban with speech, on a disappearing island. The Letter Slave, thou have slain me. Villain, take my purse. Seek him out Upon the English party. In his hand he carries a quipu. What is significant is that Guaman Poma places a caption in that same hand indicating what the young man is in charged of. That quipu is not only a message to the King of Spain asserting the legitimacy of quipus as a system of writing on the same level of complexity if not higher than the Spanish language that andeans were forced to learn. That letter as quipu can be read as a warning. What you may think is meaningless does have meaning. It creates signification by being interwoven to your body. That is why whether performers decide to engage or not on andean performative modes the quipu is when it is spoken that go beyond their enonciation the quipu does not need the language that speaks it , they have to acknowledge in their own bodies traditions they might ignore but that condition and alter their acting. Isola has inscribed in his body a message that he cannot read. He has grafted to his hair the hair of another body, which by contagion is speaking to him in symptoms. As a quipu that emanates from its

interpreter, the grafts might be transmitting to the body of the performer an old narrative of violence, forgetting and ignorance. As Lacan told us, the letter always arrives to its destination. Ethnography and History Among an Andean People. The University of Wisconsin Press, Madison, A Study in Media, Mathematics, and Culture. University of Minnesota Press, Minneapolis, The Macmillan Company, New York, Murra, John V et al ed. Historia 16, 3 vols. Mackey, Carol et al ed. Penguin Books, London, Silverblatt, Irene, Moon, Sun, and Witches. Stanford University Press, Stanford, Taussig, Michael, Mimesis and Alterity. A Particular History of the Senses. A Study in Terror and Healing. The University of Chicago Press, Chicago, First page of the manuscript. Acosta, , , quoted in Abercrombie, Thomas A. Ethnography and History among an Andean People. Madison, The University of Wisconsin Press. Austin, University of Texas Press.

Chapter 4 : Quipu - Wikipedia

Although he was a party to conquest, the victor is of less interest to him than the vanquished. 2 The first part of the writings of Pedro Cieza de LeÃ³n was published in , the second part in , and the third part was published as late as

Possible usage Many uses that are known today for the khipu are: Inca administrators seemed to be the primary users of the khipu, using it as a way to keep track of their resources like livestock and farming. These administrators would be in charge of certain districts that divided up the empire. Marcia and Robert Ascher, after analyzing several hundred khipus, have shown that most information on the khipus is numeric, and these numbers can be read. Each cluster of knots is a digit, and there are three types of knots: A number is represented as a sequence of knot clusters in base Powers of ten are shown by position along the string, and this position is aligned between successive strands. Digits in positions for 10 and higher powers are represented by clusters of simple knots e. Digits in the "ones" position are represented by long knots e. The digit 1 cannot be shown this way, because of the way the knots are tied; instead it is represented by a figure-of-eight knot. Zero is represented by the absence of a knot in the appropriate position. One strand on a khipu can therefore contain several numbers. For example, if 4s represents four simple knots, 3L represents a long knot with three turns, E represents a figure-of-eight knot and X represents a space: The number would be represented by 7s,3s,E The number would be represented by 8s,X,4L The number followed by the number 51 would be represented by 1s,X,7L,5s,E This reading can be confirmed by a fortunate fact: For instance, a cord may contain the sum of the next n cords, and this relationship is repeated throughout the khipu. Sometimes there are sums of sums as well. Such a relationship could not exist if we were not reading the knots correctly. Some data items are not numbers but what Ascher and Ascher call number labels. They are still composed of digits, but the resulting number seems to be used as a code, much as we use numbers to identify individuals, places, or things. Other aspects of the khipu would have communicated information as well: Some have argued that far more than numeric information is present and that the khipu are a primitive writing system. This is especially important as there is no surviving record of a written Quechua from before the Spanish invasion, something which is extremely rare for such an advanced civilization. Brezine for the first time identifying a khipu element for a non-numeric concept, a toponym for the city Puruchuco near Lima , represented by three figure-of-eight knots at the start of a khipu. Quipucamayocs Quipucamayocs Quechua khipukamayuq, "khipu-authority" , the accountants of Tahuantinsuyu, created and deciphered the khipu knots. Quipucamayocs were capable of performing simple mathematics such as adding, subtracting, multiplying, and dividing information for the indigenous people. This included keeping track of mita, a form of taxation. The Quipucamayocs also tracked the type of labor being performed, maintained a record of economic output, and ran a census that counted everyone from infants to "old blind men over 80". The system was also used to keep track of the calendar. Conquest Quipucamayocs were not the only members of Inca society to use the khipu. Inca historians used the quipu when telling the Spanish about Tahuantinsuyu history whether they recorded important numbers or actually contained the story itself is unknown. Members of the ruling class were usually taught to read the khipu as part of their education. Inca education In the early years of the Spanish conquest of Peru, Spanish officials often relied on the khipu to settle disputes over local tribute payments or goods production. Also, Spanish chroniclers concluded that quipus were used basically as mnemonic devices to communicate and record information in the numerical format. Quipucamayocs could be summoned to court, where their bookkeeping was considered legal documentation of past payments. Suppression and destruction The Spanish quickly suppressed the use of the khipu. The Conquistadors realized the Quipucamayocs often remained loyal to their original rulers rather than the King of Spain, and Quipucamayocs could lie about the contents of a message. The Conquistadors were also attempting to convert the indigenous people to Catholicism. Anything representing the Inca religion was considered idolatry and an attempt to disregard Catholic conversion. Many Conquistadors considered khipu to be idolatrous and therefore destroyed many of them. Status today Today only Incan khipu survive. More primitive uses of the khipu have also continued in the Peruvian highlands. Some historians believe only the Quipucamayocs that made the specific khipu could

read it. If this is true it cannot be considered a form of writing, but rather a mnemonic device. Many historians, however, have attempted to convert the khipu into a decipherable language because the Tahuantinsuyu was such a powerful Empire prior to its conquest by Spain; learning more about the Inca side of the story could possibly reveal an entirely new link to the past.

Chapter 5 : Ethnomathematics by Marcia Ascher

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Each cluster of knots is a digit, and there are three main types of knots: A number is represented as a sequence of knot clusters in base Digits in positions for 10 and higher powers are represented by clusters of simple knots e. Digits in the "ones" position are represented by long knots e. Because of the way the knots are tied, the digit 1 cannot be shown this way and is represented in this position by a figure-of-eight knot. Zero is represented by the absence of a knot in the appropriate position. Because the ones digit is shown in a distinctive way, it is clear where a number ends. One strand on a quipu can therefore contain several numbers. For example, if 4s represents four simple knots, 3L represents a long knot with three turns, E represents a figure-of-eight knot and X represents a space: The number would be represented by 7s, 3s, E. The number would be represented by 8s, X, 4L. The number followed by the number 51 would be represented by 1s, X, 7L, 5s, E. This reading can be confirmed by a fortunate fact: For instance, a cord may contain the sum of the next n cords, and this relationship is repeated throughout the quipu. Sometimes there are sums of sums as well. Such a relationship would be very improbable if the knots were incorrectly read. They are still composed of digits, but the resulting number seems to be used as a code, much as we use numbers to identify individuals, places, or things. Lacking the context for individual quipus, it is difficult to guess what any given code might mean. Other aspects of a quipu could have communicated information as well: This would be an especially important discovery as there is no surviving record of written Quechua predating the Spanish invasion. Possible reasons for this apparent absence of a written language include an actual absence of a written language, destruction by the Spanish of all written records, or the successful concealment by the Inca peoples of those records. It could be a toponym for the city of Puruchuco near Lima , or the name of the quipu keeper who made it, or its subject matter, or even a time designator. Beynon-Davies considers quipus as a sign system and develops an interpretation of their physical structure in terms of the concept of a data system. This manuscript consists of nine folios with Spanish, Latin , and ciphered Italian texts. Owned by the family of Neapolitan historian Clara Miccinelli, the manuscript also includes a wool quipu fragment. Miccinelli believes that the text was written by two Italian Jesuit missionaries, Joan Antonio Cumis and Giovanni Anello Oliva, around â€”, and Blas Valera , a mestizo Jesuit sometime before Along with the details of reading literary quipus, the documents also discuss the events and people of the Spanish conquest of Peru. However, the authenticity of these documents is highly questioned, and they seem to be inspired freely by a writing of Prince San Severo. In the text of these documents, Cumis states that there are quipus which accounted for uses other than accounting. Since so many quipus were burned by the Spanish, very few remained for Cumis to analyze. Following the analysis of the use of "Pacha Kamaq", the manuscript offers a list of many words present in quipus.

Chapter 6 : Project MUSE - Algebra in Context

Sherlock Holmes in Babylon: and other tales of mathematical history / edited by Marlow Anderson, Victor Katz, Robin Wilson.

Of all the major Bronze Age civilizations, only the Inca of South America appeared to lack a written language, an exception embarrassing to anthropologists who habitually include writing as a defining attribute of a vibrant, complex culture deserving to be ranked a civilization. The Inca left ample evidence of the other attributes: The only possible Incan example of encoding and recording information could have been cryptic knotted strings known as khipu. The knots are unlike anything sailors or Eagle Scouts tie. In the conventional view of scholars, most khipu or quipu, in the Hispanic spelling were arranged as knotted strings hanging from horizontal cords in such a way as to represent numbers for bookkeeping and census purposes. The khipu were presumably textile abacuses, hardly written documents. But a more searching analysis of some of the surviving khipu has called into question this interpretation. Although they were probably mainly accounting tools, a growing number of researchers now think that some khipu were non-numerical and may have been an early form of writing. A reading of the knotted string devices, if deciphered, could perhaps reveal narratives of the Inca Empire, the most extensive in America in its glory days before the Spanish conquest in If khipu is indeed the medium of a writing system, Dr. Gary Urton of Harvard says, this is entirely different from any of the known ancient scripts, beginning with the cuneiform of Mesopotamia more than 5, years ago. Urton, an anthropologist and a MacArthur fellow, suggests that the Inca manipulated strings and knots to convey certain meanings. By an accumulation of binary choices, khipu makers encoded and stored information in a shared system of record keeping that could be read throughout the Inca domain. Urton said he had for the first time identified the constituent khipu elements. The binary coded message is sent to another computer, which translates it back into the more familiar script typed by the sender. The Inca information, Dr. Urton said, appeared to be coded in seven-bit sequences. Each sequence could have been a name, an identity or an activity. With the possible variations afforded by string colors and weaves, Dr. Urton estimated, the khipu makers could have had at their command more than 1, separate units of information. By comparison, the Sumerians worked with fewer than 1, cuneiform signs, and Egyptian hieroglyphs numbered under Urton concedes that his interpretation of a khipu writing system may be hard to prove. No narrative khipu has been deciphered. Spanish conquerors, who suspected the knotted strings might contain accounts of Inca history and religion, destroyed those they came across as idolatrous objects. The few existing descriptions of the khipu by explorers and missionaries lack enough detail for an understanding of the way the Inca made and "read" them. Other Inca scholars generally agree that the khipu may have served as more than accounting devices or memory aids, and may have been a medium for recording historical information. But they reserved judgment on Dr. He was quoted in an article about the khipu in the June 13 issue of the journal Science. If that was the case, the khipu would not be a form of writing because they would have been understood only by their makers, or someone familiar with the same memorized accounts or narrative. Urton said in an interview that others would soon be able to test his theory and possibly find other patterns and clues in the khipu he studied. A detailed khipu database, financed by the National Science Foundation and prepared with the help of Dr. Carrie Brezine, a Harvard mathematician and weaver, is expected to be ready this fall and will eventually be available online. Experts in the culture of early Peru think it understandable that textiles would have been the chosen medium for writing. The Sumerians and Babylonians wrote on clay, the Egyptians on stone and papyrus. The Inca may have used cloth, though, to store and communicate knowledge because to them cloth was a widely used marker of status, wealth and political authority. A drawing of a khipu maker in an Inca storehouse seemed to reflect the view that the knotted strings involved record keeping. A Jesuit chronicler said the khipu were like ledgers or notebooks that overseers and accountants used "to remember what had been received and consumed. Under questioning, the Indian claimed the khipu recorded the activities of the conquerors, "both the good and the evil. Leland Locke, a science historian, concluded that they did not represent a conventional scheme of writing but signs recording columns of numbers. Khipu makers must have

been bookkeeping bureaucrats. This remained the prevailing opinion until the last two decades. Husband and wife researchers, Dr. Robert Ascher, a retired Cornell archaeologist, and Dr. Marcia Ascher, a mathematician at Ithaca College, reopened debate by pointing out that khipu seemed to use numbers as both numbers and labels. They estimated that about 20 percent of existing khipu were "clearly nonnumerical" and could have been examples of an early form of writing. Urton has carried the idea further. A creator of khipu, he posits, made a series of choices involving the type and color of string and each knot. Each choice contributed to creating a binary signature. A certain string configuration could represent signs that stood for a value, object or event, much as graphic signs do in familiar forms of writing. Emboldened by this insight, Dr. Urton said in his book that the Inca "may well have been recording full subject-object-verb notations in the khipu. Urton based his research primarily on khipu specimens at museums in the United States, Germany and Peru. A discovery in in northern Peru, at a burial site of the Chachapoya culture, yielded 32 khipu with exceptionally elaborate and varied types of string patterns. Strands hanging from the horizontal cord had their own secondary and tertiary pendants. These complex pendant attachments, he wrote, "must have been an important mode of binary coding in the khipu. More definitive would be the discovery of an Inca "Rosetta stone. A colonial governor had khipu makers "read" some strings and scribes record the accounts in Spanish. This could have been a start toward decipherment, if only the khipu had been preserved. A prospective Rosetta stone was announced in by an Italian amateur historian, who claimed to have found a translation into Spanish of a song encoded in a khipu. But other researchers have not been allowed to examine the material, and Dr. Urton said that many questions had been raised about its authenticity. Urton holds out more hope of making a breakthrough discovery in the Chachapoya material. Most of the khipu there appear to be from the early colonial period. For that reason their encoded messages are more likely to have been transcribed in Spanish documents as the sought-after Rosetta stone of Inca writing. If, that is, the Inca wrote with strings and knots. The only possible Incan example of encoding and recording information could have been cryptic knotted strings. Notes This article was brought to my attention by Steve Stephenson. Further Reading Mathematics Elsewhere: Learn more about ancient Mesopotamia and cuneiform writing. The Cuneiform Digital Library Initiative , which began in , catalogues artifacts found in Uruk, a city in ancient Babylonia present-day Iraq. Luis Fernandes elf ee.

Chapter 7 : Sherlock Holmes in Babylon : and other tales of mathematical history - ECU Libraries Catalog

Ethnomathematics has 23 ratings and 2 reviews. In this truly one-of-a-kind book, Ascher introduces the mathematical ideas of people in traditional, or s.

Chapter 8 : Project MUSE - Toward Deciphering the Khipu

In the early years of the Spanish conquest of Peru, Marcia and Robert Ascher, a mestizo Jesuit sometime before

Chapter 9 : Who can read a quipu ?

Marcia Ascher and Robert Ascher, Code of the Quipu: Databook, University of Michigan Press, Ann Arbor, ASIN BX3SV4. Marcia Ascher and Robert Ascher, Code of the Quipu: A Study in Media, Mathematics, and Culture, University of Michigan Press, Ann Arbor,