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University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Chapter 3

Aboriginal Digitalities: Indigenous Peoples and New Media

Armida de la Garza

1 **Abstract** This article goes beyond considerations of digital media sup-2
porting identity and community to discuss the ways in which digital technology 3
itself resembles and even parallels traditional indigenous means of producing and 4
sharing knowledge and of experiencing time and space. Drawing from examples 5
ranging from Aztec maps that represented time-space units simultaneously, through 6
discussing indigenous codex and glyphs in which visual language is able to convey 7
meaning using simultaneity rather than chronological narration, to the use of perfor-8
mance for durable cultural storage and transmission, this article points to the many 9
areas of convergence between the multimodal communication that digital media 10
increasingly enable and ancestral practices of indigenous peoples around the world.

11 **Keywords** Indigenous studies · Digital media · Philosophy of space and time

12 Introduction

13 Most research on digital media and indigenous peoples tends to focus on the affor-
14 dances these media provide to indigenous communities, allowing them to counter
15 stereotypes while also providing “innovative contexts and practices through which
16 new forms of indigenous solidarity, identity and community are created” (Grixti
17 2011, 344). This is a growing field of research, which I briefly summarize below
18 using examples from videogames, interactive documentary, new media art, and the
19 use of Internet in everyday life, while also discussing the way that indigenous peoples’
20 engagement with new media is expanding these media’s narrative, and sometimes
21 technical, capabilities.

22 The second part of the chapter goes beyond these considerations, to focus on
23 the ways in which digital technology itself resembles and even parallels traditional
24 indigenous means of producing and sharing knowledge and of experiencing time
25 and space. Drawing from various examples, this chapter points to the many areas

A. de la Garza (✉)
University College Cork, Cork, Ireland
e-mail: adelagarza@ucc.ie

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26 of convergence between the multimodal communication that digital media increas-
 27 ingly enable, and ancestral practices of indigenous peoples around the world. The
 28 examples include: Aztec maps that represented time-space units simultaneously;
 29 indigenous codex and glyphs in which visual language is able to convey meaning
 30 using simultaneity rather than chronological narration; and the use of performance
 31 for durable cultural storage and transmission, among others. The chapter concludes
 32 by suggesting that this convergence will become the ground for multiple and fruitful
 33 synergies.

34 **Digital Media and Indigenous Identity**

35 Video gaming and Aboriginal stories and storytelling techniques meet in AbTec, short
 36 for Aboriginal Territories in Cyberspace, a foundation aimed at training Aboriginal
 37 youth in new media production that reaffirms community and identity. Participants in
 38 AbTec’s workshops have designed video games that take advantage of the repetition
 39 structure of some Iroquois legends to build complex, multilevel gaming experiences
 40 like *The Otsi!*. Its narrative centers on an Iroquois hunter that is on a mission to stop
 41 the Flying Head, a monster terrorizing the territory where he lives. The game takes
 42 players from the story of the Flying Head’s origin through to its confrontation with
 43 the hunter. In each level, the player meets a creature from a different Kahnawake
 44 legend: the Tree People, the Monkey Dog, and the Hoof Lady, among others, so that
 45 the game also works as an immersive medium to learn about the legends. AbTec’s
 46 founders, Mohawk artist Skawennati Fragnito and Jason Edward Lewis of Cherokee
 47 ancestry contend the study of Aboriginal storytelling techniques is crucial, as this lays
 48 the groundwork for embracing networked technology as potential sites of cultural
 49 expression—and cultural expansion. In their words (Lewis 2014, 66):

50 It is important that participants learn that the storytelling techniques in their community lie
 51 on a continuum with those of digital media, and that they do not lie on either side of some
 52 insurmountable cultural or epistemological divide.

53 Quoting the success of video games such as *Braid* and *Passages*, games that ²
 54 have unexpected approaches to time and teleology, Lewis further suggests that the
 55 grammar for video games remains up for grabs, and we can still end up with tools
 56 that are better able “to accommodate substantially new systems and structures for
 57 computationally based approaches to communicating [Indigenous] stories” (Lewis
 58 2014, 72). This is what, in a different context, Srinivasan (2006, 513) calls “mapping
 59 a cultural discourse to an organization of databases” that serves the cultural needs of
 60 Indigenous communities.

61 In the realm of film making, advantage is taken of the many traditional Indigenous
 62 narrative structures in which simultaneity is a feature of characters and beings. Char-
 63 acters are fluid and capable of transforming, and they are also capable of occupying
 64 multiple states at once. (Foster 2014, 103) From this perspective, interactive digital
 65 technologies with potential for layering, for simultaneous and multiple variations,

66 can take advantage of non-Western narrative forms, incorporating their strategies
67 into their structure and thus expanding what is traditionally understood as a mode or
68 genre. Indigenous film maker Steven Foster's interactive documentary *Prince George*
69 *Métis* is a vivid example of this. It shows the Elders discussing technology along with
70 indigenous traditions. Although it can be viewed by one single person on a computer
71 at a time, it really comes to life when played simultaneously on multiple screens
72 controlled by various members of the audience, thus challenging the individualized
73 authorship and linear structure of most documentaries.

74 In a similar vein, installations such as the one by Cree new media artist Archer
75 Pechawis also hybridize media forms and contents. In this case a traditional hand
76 drum is wired to a digital audio sampler, thus incorporating sound bites into tradi-
77 tional powwow songs that were meant to communicate with the dead. As put by
78 the artist, "the protocols that govern the ceremonial use of drums are as specific
79 as the protocols that govern traffic on the Internet" (Pechawis 2014, 41). Notably,
80 indigenous new media artists frequently use digital technology that is regarded as
81 futuristic to address the past, to put forward versions of history from indigenous per-
82 spectives. The exhibition suggestively entitled "If History Moves at the Speed of its
83 Weapons, then the Shape of the Arrow is Changing" (2010), featured graphic scores
84 representing the trajectory of each weapon used in the Great Southwest Rebellion
85 in 1680, when the tribes of what is today Santa Fe, New Mexico, resisted Spanish
86 colonialism. The artists used an algorithm to transform ballistic data of the revolt-
87 era weapons into sound, so that the spear-thrower became a square tone, the rock
88 and sling, a sawtooth tone and so on. The speed of each weapon was transformed
89 into the speed of the sound tone traveling through the air. Digital technology was
90 instrumental in both the analysis and modeling of the weapons, in that it allowed the
91 weapons as sound to be highly accurate renderings of the originals, and to have a
92 palpable impact: "the weapons' piercing tones were acutely heard and felt while the
93 armaments themselves remained unseen" (Hopkins 2014, 122).

94 Beyond the realm of digital art, the use of the Internet on a day to day basis
95 also provides evidence of the way digital technologies support indigenous identities
96 and cultures. Laurel Dyson's comprehensive overview of the use of the Internet by
97 indigenous communities identified some 350 million indigenous peoples living in 70
98 countries around the world, many of whom have some sort of online presence, and
99 notably with quite a few counted among the early adopters who first set up websites
100 in the late 1980s (cf. Dyson 2013). The Cherokee, Zapotec, Sami, Mapuche, Yoeme,
101 Wendat, Tonga and Maori are among the groups discussed by Dyson, who notes
102 as the main uses of the online presence the reaffirmation of indigenous identity, in
103 both in-reach and outreach modalities; reconnecting with the indigenous diaspora;
104 indigenous cyberactivism; and fostering language learning (Dyson 2013, 259–265).
105 To reaffirm their cultures, indigenous peoples use message boards and chat facilities
106 to transform the sites from purely information-providers into tools for communi-
107 cation, creating virtual spaces for shared meanings and providing information to
108 outsiders that includes even some e-commerce and the promotion of tourism, thus
109 realizing the potential of the Internet "to simultaneously generate income and [to
110 try to] control the outsider view of their identities" (Dyson 2013, 260). Further,



111 the Internet is credited with enabling forms of collective organization within and
 112 between indigenous communities to raise issues such as land rights, rights to self-
 113 determination, environmental issues and so on, creating pan-indigenous movements,
 114 and organizations that would not have been possible before.

115 But if video games, interactive documentaries, artistic installations, and exhibi-
 116 tions and the daily use of the Internet already show very fruitful interactions
 117 between indigenous communities and new digital media, there is a much deeper
 118 affinity between them that becomes evident when the forms of producing, storing,
 119 disseminating, and transmitting knowledge are taken into account. This perspective
 120 is rarely discussed, and it is to these elements of convergence that we now turn.

121 **Convergence Between Multimodal Communication** 122 **and Indigenous Epistemologies**

123 To begin with, the material basis of the digital network must be discussed. There is
 124 an argument that it can in fact be traced back to the knowledge systems of the First
 125 Nations of the world. In one account the story begins with hunter-gatherers exploring
 126 the field for food and resources, including of course information on the terrain, other
 127 tribes in the vicinity and so on. With time, the paths they followed became trade
 128 routes, as they established networks and trade languages and built a knowledge base
 129 around what they knew about each other. So,

130 When the first Europeans came to ‘explore’ the land, our ancestors naturally led them along
 131 these well-established paths, which, over time [...] became roadways and thoroughfares.
 132 With the advent of the telegraph and the telephone, wire was hung along these thoroughfares
 133 that literally became the beginnings of the physical network that now allows more and more
 134 packets of information to move as freely as our ancestors [did before] (L’Hirondelle 2014,
 135 153).

136 Others have pointed to the practice of Potlatch common among North American
 137 Indians, particularly in the Pacific Northwest coast of Canada and the United
 138 States,¹ which proved fundamental to Marcel Mauss’s influential theorisation of
 139 what he termed “the gift economy” (Mauss 1950 [2001]). Potlatch involves indige-
 140 nous aristocrats competing for power and prestige by holding annual competitions
 141 to redistribute their wealth among the people; or, if in winter, to destroy a larger
 142 proportion of their goods in bonfires to warm the tribe, the winner being the one who
 143 can part with the most goods. The status of a given family is raised not by having
 144 the most resources, but by distributing the most resources. This behavior has been
 145 compared to the altruism of hackers, open software developers, wiki editors, and
 146 ‘answer persons’ in usernet groups (Berger 2012), and indeed to the whole digital
 147 commons project, in which sharing is crucial.

¹Comprising the Heiltsuk, Haida, Nuxalk, Tlingit, Makah, Tsimshian, Nuu-chah-nulth, Kwak-
 waka’wakw and Coast Salish cultures. It must be stressed that the use of potlatch varied widely
 among the different tribes.

148 *Visual Language, Indigenous Codex and Glyphs*

149 Apart from the material basis of the network and the behaviors it fosters, the content
 150 itself is also often encoded using visual languages, which were crucial to indigenous
 151 peoples. Digital media foreground the screen. Space, size, color, shape, and a variety
 152 of icons comprise the new tools for communication. As recent research on color
 153 has shown, it is increasingly entering even the previously monochrome world of
 154 written text: the structure of texts in websites, magazines, and other media is now
 155 signaled by means of layout, typography, and color. Color helps to segment text by
 156 creating frames, provides salience, cohesion, and can signal genre, as when a text is
 157 designed for children (Van Leeuwen 2011, 93). Color schemes have become a source
 158 of meaning, more than individual colors.

159 Moreover, visual language is often perceived as instantaneous, perhaps on account
 160 of its nonlinearity. Photography, for instance, is said to be moving away from being a
 161 means of recording memories, to become more like spoken language, as photographs
 162 are turning into “the new currency for social interaction” (Yamada Rice 2012, 162),
 163 heightening the sense of immediacy. Especially among the young, more and more
 164 images and less and less words are now exchanged by SMS. A hypothesis is even
 165 being advanced that screen media are a better fit to globalized societies, since their
 166 speed and reliance on the visual can easily overcome language and geographical
 167 barriers. Moreover, modes of communication are no longer viewed only as repre-
 168 sentations of phenomena in which each one brings specific affordances, but also as
 169 tools that mediate thinking. It is useful to recall that as trans- and interdisciplinary
 170 frameworks replace the old discipline-centered terms of reference to pursue research
 171 in academia, it is figures like Leonardo Da Vinci who are becoming the new models.
 172 Using mainly drawings and sketches as tools to think through, Da Vinci was able to
 173 advance fields of knowledge that later became separated into ‘arts’ and ‘science’, but
 174 which the most cutting-edge approaches today are once again seeking to bridge (Grey
 175 and Malins 2004, 93). It can be argued that the capabilities for visual expression and
 176 its attendant modes of thinking that the digital media are promoting is instrumental
 177 in fostering these changes.

178 Visual languages in which color played a large part also constituted the main
 179 means of expression in some indigenous societies. Before the arrival of the Spaniards
 180 to what is today Central and South America, Indigenous people used pictorial and
 181 iconic documents, the Codex (3.1), to preserve and transmit knowledge. Highly
 182 flexible in nature, for they acted as templates on which either narrative content,
 183 maps or mathematical operations could be recorded, Codex frequently employ visual
 184 language to convey meaning using simultaneity rather than chronological narration.
 185 The materials used were various dyes and pigments and deer leather or ‘amate’ paper,
 186 folded into as many pages as necessary. Before the conquest, the painted books, or
 187 Codex, could be divided into three broad categories: religious books and guides for
 188 living, practical documents, and historical books. Nearly all Codex in the former
 189 category, especially the ones related to prayers, songs, divination or dreams, were
 190 destroyed during the Conquest. However some of the latter—around five hundred—



191 survived, and new genres were developed under Spanish rule, since the Spaniards
 192 initially promoted them and the Indigenous people thought in mainly visual terms.
 193 These were Catholic catechisms, legal suits and the Codex Tudela, an encyclopedia.
 194 Indeed, it is said Catholic priests initially accepted only painted confessions, or, as
 195 put by the priests, indigenous people were told “to bring their sins written down
 196 in figures, because writing in figures is something they know and understand” (Hill
 197 1998, 159). The way the grammar of the Codex changed before and after the Conquest
 198 continues to be the subject of study today. Although language written in words was
 199 originally absent from the pre-conquest Codex, several of the surviving Codex were
 200 later annotated. In 2003 when CD-ROMs were still widespread, it was noted that
 201 they shared some similarities with Codex: both aimed to store, preserve, transmit,
 202 and disseminate knowledge with a mainly iconic, pictorial, and oral language, and
 203 both allow different entrance paths, nonlinear, determined by the user (Leon Portilla
 204 2003).

205 The Mendoza Codex (c. 1541)² for instance, post-conquest, contains a history of
 206 Aztec rulers and their conquests along with a description of daily life. Each plant icon
 207 represents a place, each human figure a ruler, and other icons depict tributes and dates.
 208 Perhaps on account of its perceived kinship with digital media, the Mendoza Codex
 209 has recently been digitized, taking advantage of the zooming functions and hypertext
 210 to further its study. The digital version is open to users’ annotations, sharing, and
 211 discussions, and it is also being hailed as a means to ‘virtually repatriate’ the Codex,
 212 which has been located at the Bodleian Library at Oxford University since 1659.
 213 On the other hand, the Codex of the Mixtec, from the region of Oaxaca in Mexico,
 214 tended to depict a series of events in narratives that could move around easily in time
 215 and space, as they relied on signs that changed when protagonists, places or dates
 216 changed. In other words, it was the sequence of events that provided the backbone
 217 of the story, not the place nor the time. This approach to storytelling has been called
 218 the ‘res gestae’ (Hill 1998, 243) as it is an event-oriented way of narrating, quite
 219 different from the linear narration.

220 Maps were another genre of Codex. But in contrast with medieval Western maps,
 221 which rendered space as a continuous and given surface, and as an expanse to be
 222 traveled across, Aztec Codex for maps represented time-space units simultaneously,
 223 as ‘place-moments,’ enabling the perception of space as a meeting point of histories,
 224 as processes not frozen in time (Massey 2008, 5–7). This is exactly the perception of
 225 space that GIS mapping and GIS-based applications that rely on satellites now enable:
 226 space as a meeting point of histories that can be discovered, a stock that in fact keeps
 227 growing with users’ additions. The map-based history of the Aztecs systematically
 228 arranged places on the painting surface with respect to their geographic location,
 229 attaching in this way the events to the places where they happened (Fig. 3.1).

230 Many of the cartographic Codex combined this tableau with a single line of
 231 events leading to the map, as a tour. This arrangement is exactly what features like
 232 storytelling with Google Maps allow users to do today. Further, in her account of the

²An app can be downloaded at <http://www.codicemendoza.inah.gob.mx>, accessed 8 November 2015.



Fig. 3.1 Tloltzin map, featuring the arrival of the Chichimecas, early sixteenth century, pictorial, and iconic. Courtesy of Dorothy Sloan Rare Books, Austin, Texas, USA

233 origins of modern cartography, Karen O'Rourke has remarked upon the fact that it
 234 developed out of the rectilinear marking out of itineraries in antiquity, adding that
 235 the Aztec maps of the period, which show "footprints and sketches [of] each day's
 236 meals, battles and river crossings,' working as much as history books as geographical
 237 maps, are strikingly similar to the itinerary maps that computers generate these days"
 238 (O'Rourke 2013, xix). Locating the origin of the footprints and deciphering the icons
 239 for the various places as registered on the itineraries allows for the maps to be read.

240 *Epistemological Convergence*

241 Although the visual language employed by the Codex is long lasting in relation
 242 to oral speech, and can be read by anyone who shares the code, both of which are
 243 features of writing, it was not considered as such. It is only alphabetic writing that has
 244 long been recognized as writing proper; and further, credited with allowing scientific
 245 knowledge to emerge. The argument states that so-called oral cultures transmitted
 246 culture predominantly through face-to-face interaction, and therefore had a more
 247 pragmatic approach to language, with knowledge not related to maintaining tradition
 248 quickly discarded. A large body of knowledge could thus not emerge. Alphabetic

249 writing on the other hand allowed the objectification of culture, and this created the
 250 conditions for its critique and the hierarchies of knowledge which eventually resulted
 251 in science being granted the status of truth (Goody 1968). Under this paradigm,
 252 indigenous knowledge was long awarded the status of belief or worse, superstition.

253 However, the present turn away from the written word and into the visual image,
 254 another site of convergence, and the raising awareness of alternative systems of writ-
 255 ing that have long prevailed in the East, such as ideograms, have increasingly put
 256 these views into question. The positivist paradigm that reigned unchallenged in sci-
 257 ence for the past 300 years is giving way to views that take uncertainty and chance
 258 into account, such as chaos and complexity theory. In particular, the advent of West-
 259 ern science's awareness of quantum mechanics has resulted in scientists, physicists,
 260 philosophers, and academics coming to terms with views long held by indigenous
 261 peoples; or, as Cheryl L'Hirondelle puts it, "increasingly meeting with the Elders and
 262 indigenous thinkers." The Western world is finally coming to understand "how our
 263 [indigenous] ancestors embedded and encoded [...] ceremonies, languages, world-
 264 views, and metanarratives as complex algorithms that refer back to the very creation
 265 of the universe" (L'Hirondelle 2014, 170). In this regard, the latest discoveries in
 266 physics, such as the Higgs boson particle and the superstring theory would seem to
 267 scientifically validate knowledge that indigenous peoples have long taken for granted.
 268 The Higgs boson particle, sometimes dubbed 'the God particle,' accounts theoret-
 269 ically for the conversion of mass to energy and vice versa. The Superstring theory
 270 postulates ten dimensions—that is, an extra six to the readily observable dimen-
 271 sions of length, width, depth, and duration. Both these theories provide examples
 272 of convergence between the scientific knowledge that makes digital media possible
 273 and indigenous knowledge, as indigenous languages sometimes included words for
 274 concepts similar to these. Leroy Littlebear, former Director of the American Indian
 275 Program at Harvard University and Professor Emeritus of Native Studies at the Uni-
 276 versity of Lethbridge, puts it thus (quoted in Pechawis 2014, 43):

277 English, because of its structure, can't explain certain things, [and] therefore [has] a reliance
 278 on a foreign language, [mathematics, which] does not happen in Navajo. In other words the
 279 language is rich enough that it can explain those seeming paradoxes. That's where I see the
 280 collaboration taking place, that's where I see partnerships occurring in science.

281 *Haptic Codes and Hyperlinks*

282 In his seminal study of the way that communication technology affects cognitive
 283 organization, McLuhan (1962) famously hailed the advent of electronic culture as a
 284 means of liberation from four hundred years of print culture, which he later defined
 285 as modern, national, characterized by mass production of writing, the dominance of
 286 perspectival images, scientific methods of observation and seeking linear chains of
 287 causation. Importantly, he argued, print culture, with its focus on the eye, had brought
 288 about sensory alienation. Electronic culture would instead bring about conditions of
 289 sensory plenitude, stimulating the haptic and the tactile, and focusing on simultaneity



Fig. 3.2 An Inca Khipu, a knot-based record-keeping mobile device seemingly based on binary code. With kind permission by Prof. Gary Urton, Harvard University

290 and indivisibility. It is undeniable that the digital age is foregrounding the body and
 291 that there is renewed interest in the nature of knowledge as embodied as well as in
 292 experiential, practice-based learning that involves all senses. Touching the screen is
 293 the main means of interaction with mobile phone and tablet interfaces.

294 This focus on the haptic and the tactile and the material basis for the transmission
 295 of knowledge recalls the Khipu (Figs. 3.2 and 3.3), knotted textile record-keeping
 296 devices used by the Inca in what is today called 'South America.' Although they had
 297 no written or visual language like the indigenous peoples of Central America, the
 298 Inca consolidated a vast empire, Tawantinsuyu or 'The Empire of Four Directions'
 299 between 1438 and 1533. This endeavor was greatly facilitated by the use of Khipus.
 300 Although they were at first considered simply mnemonic devices for data storage or
 301 narration, further study has revealed them to embody a quite complex mathematical
 302 language, apart from being light and mobile, easily transportable media that fit what
 303 Innis (1951) described as 'space-biased'.

304 Khipus were frequently organized around a central black cord, the color used
 305 to represent time. Crimson red was the color of the emperor, purple was used for
 306 other chiefs, blue for priests, and religious matters, and so on. But while the work
 307 of Ascher and Ascher (1997) has already rendered very interesting interpretations
 308 of the ways in which they were used by warehouse keepers and even by narrators,
 309 as a kind of three dimensional language, it is the hypothesis put forward by Gary
 310 Urton, Professor of Anthropology at Harvard, that is more relevant to us here. Indeed,
 311 Urton contends that khipus encoded language in a similar way to the binary code
 312 employed by today's computers. Weavers could choose between a number of yes/no
 313 conditions to be met, such as using cotton or wool, a spin or a ply direction for a

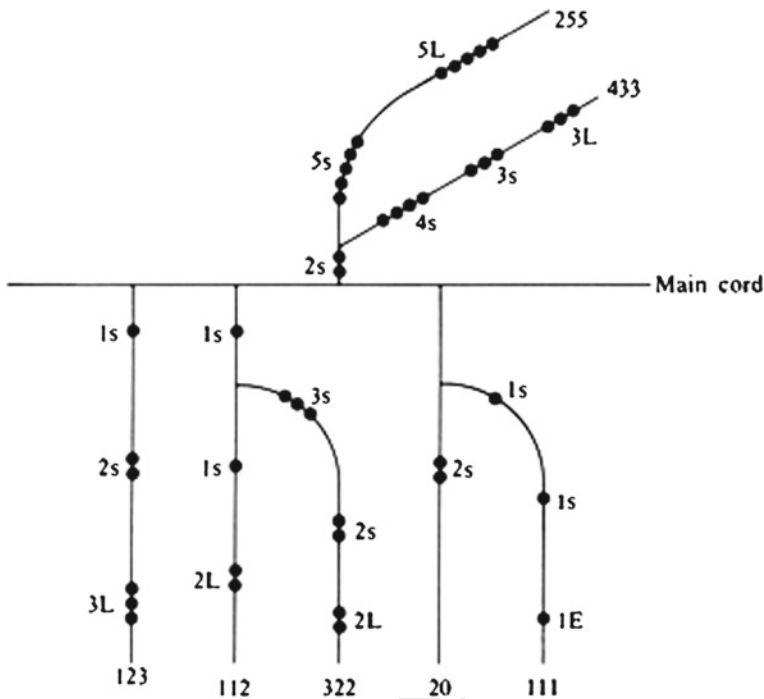


Fig. 3.3 The Mathematical language of the Khipu. Source <https://quipus.wikispaces.com/How+It+Works>, accessed 15 Apr 2016, CC BY-SA 3.0

314 string, the direction of the knot attaching the pendant string to the primary one, which
 315 could be from the front or from the back, and the direction of the slant of the main
 316 axis of each knot. This would provide a seven-bit binary array for each knot, which
 317 is enough for 128 permutations (Urton 2003). These could increase to 1536 if the
 318 24 colors that were employed were also considered as part of the coding. Although
 319 only 600 khipu's survive, ongoing research is compiling a database of patterns in the
 320 arrangements of knots.

321 In a similar way, Angela Haas has persuasively argued that the wampum, shell
 322 beads usually shaped into belts by indigenous peoples of North America, and which
 323 were frequently used as money, were also used to record important events or treaties
 324 in a three dimensional way. For instance the Two Row Wampum Treaty of 1613
 325 between representatives of the Dutch government and the Iroquois, made in what is
 326 today the state of New York. It declared the mutual respect and peaceful coexistence
 327 of the two parties, which should from then on be regarded as brothers, and not as
 328 fathers (the Dutch) and sons (the Iroquois), as the Dutch had proposed before. It
 329 features two parallel purple lines in a white background. Of this system of recording,
 330 Haas (2007, 19) writes:

331 In order for wampum to be communicative, a hybridization of the oral tradition and sym-
 332 bolism is woven into the material rhetoric. [...] the technologies woven into the belt have
 333 communicative agency, as with the colors of the shells and the design patterns. The cultural
 334 context and community where the wampum resides is yet another source of meaning that
 335 gets encoded [...]. Thus wampum is a hypertext of communicative modes—all of which
 336 contribute to cultural knowledge production and preservation.

337 The importance that indigenous peoples accorded to embodied knowledge leads us
 338 to the next section, namely the use of performance as a means to preserve knowledge,
 339 that is proving most suitable for digital media.

340 *Social Memory: Storage and Performance*

341 Social memory refers to what and how societies remember. Museums, libraries, and
 342 archives, with their focus on formal or canonical social memory, suited the relatively
 343 slow pace of change of analogue media. But as cultural production increasingly
 344 becomes ‘born digital,’ and the tools and means by which we keep social memory do
 345 so as well—such as documentation, records, storage, object management systems,
 346 and so on—a crisis of memory is being triggered.

347 Initially, in the realm of digital art, ephemerality was embraced with references to
 348 Navajo art: “one could ask if a lot of what is by some classified as ‘Net Art’ should
 349 not be seen as [...] art just for the moment itself [like] the ceremonial sand drawings
 350 of the Navajo, only meant to exist during the ceremony” (Van Tijen 1999). However,
 351 when dealing with knowledge rather than with specific artistic products, the crisis in
 352 remembering that new media have created can also be regarded as an opportunity to
 353 revisit models and practices of social memory, since the means traditionally used by
 354 indigenous peoples to store and disseminate knowledge, namely, proliferation and
 355 performance, are again proving to be profoundly germane to the needs of digital
 356 media cultural production.

357 Friars that arrived in the ‘New’ World in the fifteenth century claimed indigenous
 358 peoples had no past because they had no writing. Knowledge, such as the carving
 359 of masks, playing music, tying knots in robes to signify marriage and so on, with its
 360 embodied and performed nature, was not regarded as requiring or signaling exper-
 361 tise. Yet Diana Taylor contends the rift did not lie “between the written and the
 362 spoken word, but between the archive of supposedly enduring materials (i.e., texts,
 363 documents, buildings, bones) and the so-called ephemeral repertoire of embodied
 364 practice/knowledge” such as spoken language, ritual or dance (Taylor 2003, 19).
 365 The analogy with the repertoire rightly conveys the way that each performance both
 366 repeats and modifies the scripted notation, making each performance at the same time
 367 a repetition and a unique iteration, an event. In like manner, it can be argued that
 368 those programming open software, contributing to Wikipedia, or using YouTube as
 369 raw material for their own videos, constantly engage in the scripting and rescripting
 370 of what we can call the digital repertoire.

371 This means that many of the ‘bodies’ that perform new media—a browser running JavaScript,
 372 a Playstation running C++, an Intel CPU running machine language—can be modified and
 373 distributed inside emulators and other virtual environments [...] as outlandish as preservation
 374 through proliferation may sound to civilised ears, it is the practice native to indigenous and
 375 new media creators (Rinehart and Ippolito 2014, 169).

376 It is for this reason that where Taylor claims that books can be burned, but
 377 “the performative traditions of indigenous people from Oaxaca to Okinawa live on”
 378 (Taylor 2003, 20), Rinehart and Ippolito (2014, 170) add that “the twenty first century
 379 may never know the remarkable luminescence of [Eva] Hesse’s sculptures³ but
 380 the future of the mapping⁴ and Mario is assured.” 1

381 Conclusions

382 It seems only fitting to end this chapter with a quotation that summarizes both the
 383 kinship of digital media and indigenous cultural practices which I have argued is
 384 so close, and the place of originality as another category that has changed meaning
 385 when viewed through the prism of computer language (L’Hirondelle 2014, 148):

386 I do not invent or claim to be the creator of the information contained here. I am like a compiler
 387 who assembles information collected from other sources in order to produce something—
 388 this essay is one such result. A compiler, though, is also a computer program that transforms
 389 code written in one language into another to translate and transform the original source code
 390 to both create an executable program and/or to parse data that may become meaningful.

391 This chapter, hopefully, has also performed these assembling and translating oper-
 392 ations to convey the close kinship between the indigenous epistemologies discussed
 393 and the new digital media. Indigenous people communicated orally and with per-
 394 formances, and used visual or haptic ‘written’ languages that might not have led to
 395 establish hierarchies of knowledge or separate ‘arts’ from ‘science,’ but that certainly
 396 allowed a deep understanding of the world and humanity’s place in it. Digital media
 397 seem to be bringing about some of these epistemological changes. The many con-
 398 vergences outlined above propound a vast and fertile territory for cross-fertilization.
 399 Not only is computer science bound to shed light on the nature of the knowledge
 400 stored in Khipus, for instance, and thereby extend our knowledge of the past, but
 indigenous worldviews may well have a deeper impact on their emerging hardware

³ ‘Expanded Expansions’ (1969) by Eva Hesse, is what the Guggenheim catalog describes as ‘a sculptural embodiment of opposites united. Both permanence and deterioration operate in the piece: fiberglass poles—rigid, durable entities—are juxtaposed with fragile, rubber-covered cheesecloth’ (Guggenheim 2015). Highly acclaimed in its hayday, today it is a rigid skin, wrinkled and decomposing in a wooden sarcophagus at the museum.

⁴ A creature that can be considered Brazil’s Big Foot, extinct long ago but surviving on the oral accounts of Amazonian indigenous tribes. Paleontologists are allegedly beginning to accept other indigenous stories as valid sources of information on extinct species (Rinehart and Ippolito 2014, 168).

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401 and software, extending into the future. Clarke (1973, 21) once famously said that
 402 “any sufficiently advanced technology is indistinguishable from magic.” Or, I would
 403 add, from lore of the First Nations of the world.

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