Preservation Model to Process 'La Bomba del Chota' as a living cultural heritage

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Abstract—This project focuses on heritage concepts and their importance in every evolving and changing Digital Era where system solutions have to be sustainable, efficient and suitable to the basic needs. The prototype has to cover the principal requirements for the case studies. How to preserve the sociological ideas of dances in Ecuador like "La Bomba" is the best example and challenge to preserve the intangible data. The same idea is applicable with books and music. The History and how to keep it, is the principal mission of Heritage Preservation.

The dance of La Bomba is rooted on a specific movement system whose main part is the sideward hip movement. La Bomba´s movement system is the surface manifestation of a whole system of knowledge whose principal characteristics are the historical relation of Choteños with their land and their families.

I. INTRODUCTION

Ecuador is a country located in the northwest part of South America with about fifteen million inhabitants. In the 2010 Ecuadorian census, mestizos were recognized as the majority (71.9%), followed by indigenous (8%) and Afrodescendant-Ecuadorians or Afroecuadorians (7.2%) (INEC, 2010). Mestizo-Ecuadorians occupy the highest social and economical status while Afroecuadorians rank as the lowest [11]. In the sixteenth century, the Jesuits, a Roman Catholic order of priests, first introduced African slaves in massive numbers to a valley located in the northeast part of the Ecuadorian territory known as Chota. From that time until the present, almost all of the inhabitants of Chota Valley have been Afrodescendants. Currently, Chota Valley is a rural area of approximately 80 km. It is composed of thirty-eight villages with about 25,000 residents representing approximately 2% of the Ecuadorian population. Is in this area where the dance named La Bomba was originated. La Bomba has been performed by Choteños since its origin approximately during the 16th century until the present period for reasons that La Bomba regenerates or revitalizes in Choteños a feeling of being "essentially us". The deeply felt sense of an "us" or of "being Choteño" is possible because the movement system of La Bomba is meant to provoke specific interactions rooted in a Choteño system of knowledge that has historically existed since the 16th century. Therefore, the permanence of the dance of La Bomba works as an indicator of the vitality and continued presence of a Choteño approach to "being Choteño" in Ecuador.

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1. BACKGROUND INFORMATION

A. Definition of La Bomba

Although hundreds of Africans were victims of the oppressive slavery system, since their arrival in Ecuador (16th century), they were also active agents of adapting to their new reality. For instance, enslaved people re-established their communities and reformulated their way of living through the creation of new cultural practices such as La Bomba. La Bomba can be defined as a creative expression generated by enslaved Africans in Ecuador –Choteños- and executed by them from enslavement up until the present day. The main characteristic of La Bomba is that it is always performed as a shared experience, this meaning, while executing La Bomba, Choteños are in constant interaction among each other. The shared experience of La Bomba is based on the historical formation of groups of solidarity on which a communal structure and emotional bonds based on reciprocity are generated through a gathering spirit that highlights their own way of interacting among each other.

B. Origin of La Bomba

There is no exact date for the origin of La Bomba. Although the first written description of a performance of La Bomba in Chota was done by Hassaurek (1868), other authors [1], [2], [3] affirm that La Bomba originated in Chota Valley much earlier, sometime at the beginning of the Ecuadorian slavery
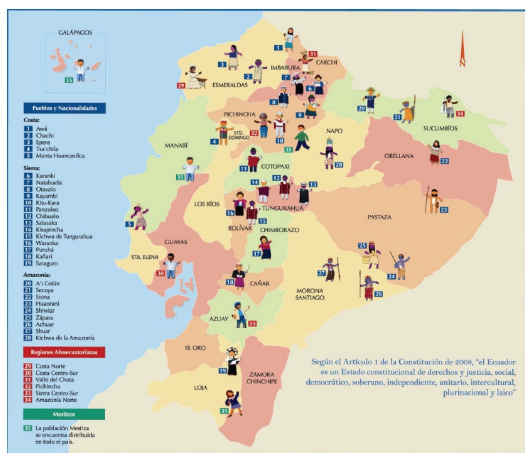
Fig. 1. Map of ethnic groups of Ecuador.

Fig. 2. La Bomba Movements, Design Veronica Lopez [1]

Fig. 3. Slave ship

period (16th century). Hassaurek describes an Afro-Choteño performance called Bundi. This description is considered the first description of La Bomba since the author does mention the presence of a drum called La Bomba. Also, although the dance described – Bundi - does not appear to be the dance of La Bomba as it is performed in present days, neither has the name of La Bomba, it does have similarities. A special feature in the performance of La Bomba in Chota observed at the present and highlighted by Hassaurek in 1868, is the inseparable character of the dance, the music and the drum.

Regarding the origin of the name Bomba, in documents of the 18th century of Popayán, Colombia (country located next to Ecuador), Gutierrez (1971 in Valarezo, 2010) located slaves with a name that includes "Bomba". Gutierrez mentions the most remarkable case, a slave whose name was "José Bomba Arará," José of Spanish origin and Arará from a village near Dahomey . Valarezo (2010) suggests that the name Bomba could refer to a specific place within the village of Arará. There is another hypothesis for the origin of the name Bomba posited [4] In the Spanish language, bomba refers to a circle. The author relates the dance's name with the formation that dancers sometimes make, a circle, while dancing La Bomba. This version was also mentioned by Espinoza (2010) during a public conference. However, Bueno (1991) points out that if [4] is correct in his hypothesis, then a number of dances in Ecuador would also be named Bomba since many other dances are also performed in circles.

Map of ethnic groups of Ecuador. The numbers in red (29-34) show the peripheral geographic location of Afroecuadorians. With the exception of N°32 on which the strong Afroecuadorian presence in the province of Pichincha is showed. Within Pichincha, Afroecuadorians live in peripheral and almost exclusive Afroecuadorian neighborhoods.

In the performance of La Bomba in Chota, two sideward hip movements are executed on each side. 1) from the center, the hip jut out to the side (e.g. right), 2) the hip returns to the center, 3) the hip jut out again toward the same direction as 1 (e.g. right), 4) the hip return to the center, 5) the hip jut out
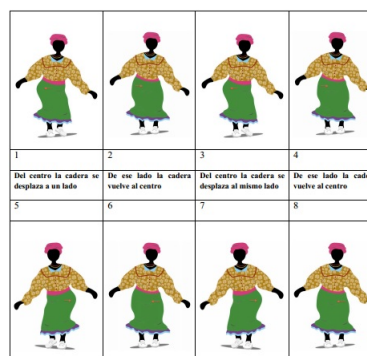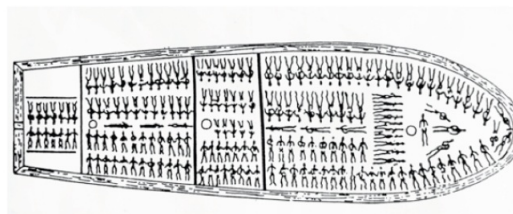
to the opposite side than 1 (e.g. left), 6) the hip returns to the center, 7) the hip jut out again toward the same direction as 5 (e.g. left) and 8) the hip return to the center. Design: Verónica López.

Slave ship. Cut of the boat that transported slaves in fetal position. Marta Goldberg Archives.[12][12]

C. The movement system of La Bomba

i. Moving the hips: Currently, the principal movement of the dance of La Bomba is a sideward hip movement. Choteño sideward hip movement is essential in the performance of La Bomba in Chota as can be observed in one of the lyrics of a song of La Bomba, "The chicha (fermented beverage) and the alcohol don't have anise, shake it shake it little plant of chili, as women shake it around here" (Coba, 1980; Costales & Peñaherrera, 1959; Hernández, 2005, 2010). While executing the sideward hip movement, the hip follows the percussive rhythm of the music of La Bomba.

D. The knowledge system of La Bomba

i. The hip in La Bomba: A dancer's ability to move her or his hip as taught by the elders is considered a virtue among Choteños. For Choteños, hip are important as one of the most attractive body parts of males and females [4]. For instance, one of the virtues of a female Choteño is her ability to move her hip sideward with elegance, not just while dancing, but also while walking. "The way of walking is one of the characteristics of Choteños. They move their hips more than others" (L. Bolaños, personal communication, July, 2011). The ability to move the hip is intensified and more visible during the performance of La Bomba because this implies not only the ability to move the hip but also to have rhythm [5]

The central role of the hip movements in the performance of La Bomba is essential because these movements are a way that Choteños relate among each other. This becomes clear in one of the oldest descriptions of La Bomba in Chota written by Costales and Peñaherrera [5]. These authors describe in detail the Bottle dance, a dance highlighting the hip movement and the relation among participants in La Bomba.

In this description, the role of the dancer's hip movement as a way to relate among participants can be noticed. "Her hip begin to vibrate while chasing the black man... the black man avoids the hip shove..." (p. 192). Also, the hip movements serve as a way to gain the attention of participants "...lets see, who is the black man who can put up with me...! Slowly... the folds of the red skirt begin to shake... people break out of laughter and happiness... while Doña Custodia, putting her arms on her hip, makes a complete turn" ([5], p. 192).

ii. La Bomba as a space of freedom and creativity: La Bomba performed in Chota Valley represents a Choteño space of freedom and creativity (Peters, 2004). This sense of freedom and creativity while dancing La Bomba among Choteños appears to be historical as expressed through a song of La Bomba compiled by Chalá (2006), "Enough of cutting cane, freedom has arrived, freedom for the blacks, lets go to bombear [the action of performing La Bomba] " (p. 177).

I feel that there is a moment that just exists when we dance Bomba, not other rhythms that are also played in Chota. In that moment, what we do is just not rational. I remember once, it was the last day of the year. I had to work in Quito until the night. I just took the bus and arrived in Juncal [a village of Chota] at around three in the morning. When I saw how Choteños were dancing La Bomba, I just thought, these guys are crazy; it's not normal what they are doing. I was witnessing the best part of the party. The pure Choteños party. That is what I love about Chota. When they dance they are free. They don't measure anything, they don't calculate. It's just giving everything. The energy that they use when they dance, they just use all the energy they have.

Since slavery period, the performance of La Bomba in Chota is sometimes executed in an intimate environment, on which Choteños feel more the sense of freedom while dancing. The sense of generating an intimate environment to perform La Bomba was much stronger in previous generations than nowadays.

iii. La Bomba in Chota as a shared experience: The tight relation of Choteños with their land and their families: Bouisson (1997) names two principles that were imposed by the Jesuits and that would serve as a future reference for Choteños, to not split the members of each family and to not be transferred from one hacienda (estate) to another nor outside of Chota Valley. Because of this Choteño experience with Jesuits and in spite of their conditions due to slavery, Choteños got used to being among their families in their hacienda (estate) and never accepted any other reality (Bouisson, 1997; Savoia & Ocles, 1998).

The historical Choteño' notion of being among relatives, friends and compadres (godparents) in Chota is also reflected in most of Choteño daily activities. Pabón (2007) narrates, "before the electric light came to the villages of Chota Valley [1977], after dinner, while the elders gathered among each other to talk, youngsters used to go to play during the nights of full moon until a specific time, then they will go to sleep or to listen to stories from their parents and grandparents".

Male and female Choteños cooked, rested, cleaned and washed clothes and dishes in groups that included all ages. Several authors (J. Chalá, 2006; O. Chalá, 2004; Costales & Peñaherrera, 1959; De-La-Cruz, 2012; Franco, 2000; Guerrón, 2000; Hernández, 2005; Santillán, 2006; Valarezo, 2010) locate La Bomba as one of the usual activities that is performed by Choteños as a group, a shared experience.

E. Performing "our" Bomba from Chota

Most Choteños refer to La Bomba as something that has historically belonged to them. Within this Choteño sense of belonging with La Bomba two elements are recognized. First, there is an association of La Bomba with what Choteños call "being black", and secondly with their ancestors.

Regarding La Bomba related with Choteño people's ancestors, Karla Aguas, an adult female who is a dancer from the village of Chota, asserts that "La Bomba is from our ancestors..." (Ruggiero, 2009, 45 min 24 s). Gualberto Espinoza says, "La Bomba is passed down, and little by little is gets embedded within the bodies. The ear becomes familiar with the rhythm. It does not matter how strong the influence of other rhythms. La Bomba is always going to be in our memory because it is from our families, from our ancestors, from our parents. The paternal rhythm is always going to be more important" (personal communication, November 2013).

The results show that for Choteños, La Bomba belongs to an "us" as a group. This "us" is Choteño. Choteños refer to themselves as a group of people with African roots, and with ancestral roots traced to Afrodescendants who were born in Chota Valley.

F. The socializing function of La Bomba

The characteristic of La Bomba in Chota that is most often mentioned by Choteños is it's gathering or socializing function. This characteristic appears to be as old as La Bomba itself since. As pointed out by Medina (1996), "during the slavery period Choteños were destined to only do repetitive and tiring works, even surpassing their physical strength, enslavers took from slaves any possibility of developing abilities within their group and almost all possibilities of human interaction where annulled. In this context, La Bomba acted as perhaps the only space in which they could gather and share together" (p. 108). Until the present days, La Bomba integrates and unifies the entire community.

G. Learning La Bomba

Choteños in Chota Valley learn La Bomba from a very young age (See fig. 15) through careful observation of the elders. None of the interviewees affirmed having been taught how to dance or play La Bomba. Some of the interviewees

shared that at times they even had to hide themselves while watching elders in order to learn the dance since elders were not always willing to let younger Choteños see their techniques.

Regarding the age at which La Bomba is learned, Teodoro Mendez, an old male Choteño, says, "Before learning how to walk, when we are babies, we are moving our bodies while sitting down, we are hitting the tables, the chairs with a rhythm. We actually learn how to dance La Bomba before we learn how to walk". Nelly Calderón Chalá, a woman approximately 50 years old of Chota Village says, "We learned to dance La Bomba when we were kids, with that we also learned to speak and to sing" (Ruggiero, 2009, 40 min 58 s).

Regarding the way of learning to dance La Bomba, Belermina states that, "I, by myself, got interested on learning, so I used to look at the elders, to my mom or her friends" (Pabón, 2010). "Nobody told my friends, or me, look! This is how you dance! do this! Do that! No! It wasn't like that! We learned by ourselves. One used to look at the elders and imitate them" (B. Congo, personal communication, December 2013). Similarly, Eudocia Chalá narrates, "I used to chase my older cousin to watch her dancing, she knew how to dance, so I learned, just by looking at her" (personal communication, December 2012).

H. The current status of La Bomba in Chota

At the present, La Bomba still occupies a central role within the daily group activities of Choteño people (J. Chalá, 2006; O. Chalá, 2004; Costales & Peñaherrera, 1959; De-La-Cruz, 2012; Franco, 2000; Guerrón, 2000; Hernández, 2005; Santillán, 2006; Valarezo, 2010). La Bomba is still being danced very frequently among children, adult and old Choteños in Chota Valley and even in Choteños' neighborhoods in the main cities of Ecuador, on which each neighborhood usually has a specific disco-bar exclusively for the performance of La Bomba and Salsa. La Bomba is very often performed in Chota Valley. The frequency of performance is each week. In some communities La Bomba is performed during specific times two or three days per week as part of religious celebrations, marriages, baptisms or as a weekend activity. "Any occasion is good to dance La Bomba (, p. 191).

II. HERITAGE CONCEPTS

The heritage term is defining as the crucial and central part of the research, we can refer it to 'heritage is those items and places that are valued by the community and is conserved and preserved for future generations' [8]. The concept is much wider than historical buildings. It iDemosntrate, Validate, Benefits Human do different activities, how well includes items and places with natural heritage significance and Aboriginal heritage significance. 'The heritage value of a place is also known as its cultural significance which means its aesthetic, historic, scientific, social or spiritual value for past, present or future generation'[8].

One of the principal keywords in this research is Heritage. UNESCO is one of the Entities that refers in an accurate

way to this denition. The expert meeting dened a heritage route as 'composed of tangible elements of which the cultural signicance comes from exchanges and a multi-dimensional dialogue across countries or regions that illustrate the interaction of movement, along the route, in space and time'[9]

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What is heritage? Defining the term like the crucial and central part of the research. People commonly equate heritage with historic buildings but the concept is much wider and includes items and places with natural heritage significance and Aboriginal heritage significance. Although these categories are covered by different pieces of legislation, in reality they often overlap. Heritage is what we inherit, but more specifically what we retain of this inheritance. The concept is much wider than historical buildings. It includes items and places with natural heritage significance and Aboriginal heritage significance. 'The heritage value of a place is also known as its cultural significance which means its aesthetic, historic, scientific, social or spiritual value for past, present or future generation'[8].

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Heritage is not mechanic things. It is related to the syntax, context, meaning and behaviour. This is a misunderstood concept of the Heritage. It is always to pass to the future generations. There is a value to keep in the future generations and it should not be as a issolated element.

Tha data is often in issolation. But the data needs to be with the connections and relationships. It gives the meaning of the information. If that heritage is not preserve in the future the information can be lost.

Ther is an effective serendipituos use. In context of Big Data is a problem. We have the metadata, how I can incorporate in metdata context? The problem of Big Data because the more data we have, we can get with or without Heritage. The most data we can get, the most data could be lost. There are a large Data Sets and they are the new knowledge in the future.

Can have value in the future? That is why the need of the definition of Congnitive, Contextual and Physical

A. General frameworks for heritage

The development of the preservation framework is related with the value of information. 'Value has always been the reason underlying heritage conservation. It is selfevident that no society makes an effort to conserve what it does not value"[8]. The Value of the information is located in the second level of importante after the concept of Heritage. If we can define the result that we want, how we can manage and measure the value of that information? The principal ways are the perception, interpretation and contextualization.

III. INTERPRETATION

Modelling Theory

This chapter demonstrate general background of digital preservation and data structure.
- MODEL DRIVEN APPROACH
- HYPOTHETIC TESTBED
- BUILD THE TOOL
- USE THE TOOL
- SIMULATION

It involves case studies and action studies. Primary Study qualitative research Observation, Data Collections.

In terms of Quantitive evaluation there are following proposals:
- Empirical Experiments
- Testing the ideas
- Case studies propose model

On the other side Qualitaive evaluation is based on:
- Running Experiments

The use os the Tools will be UML, Archimate, Bonita Soft.

IV. GENERAL RESEARCH METHODOLOGIES

The three known basic patterns in software development are the waterfall, spiral, and prototyping. A software development method is a method you used in software development. This is known as software or software lifecycle process called. Software Development Methodologies

Why are there so many software development methodologies? Are circulating even estimated that 50% of the software goes wrong. A well-known, road pricing mistake. Therefore one is looking for a method that works. For decades they try to find predictable processes to improve productivity and quality. Some models try to systematize and formalize software development. Others apply project management techniques to writing software. Various Software Development Methods.

A. Top Down

The top-down methodology has been recently developed to produce probably perform designs relative to what is achieved in classical centralized control theory. The design process consists of three steps: modeling, synthesis and analysis/optimization.[10]

Traditionally, two alternative design methodologies, called top-down and bottom-up, have been used in building complex systems. Under these conditions the properties of a classical centralized solution to the global specification are expected to

(a) Top-down design cycle

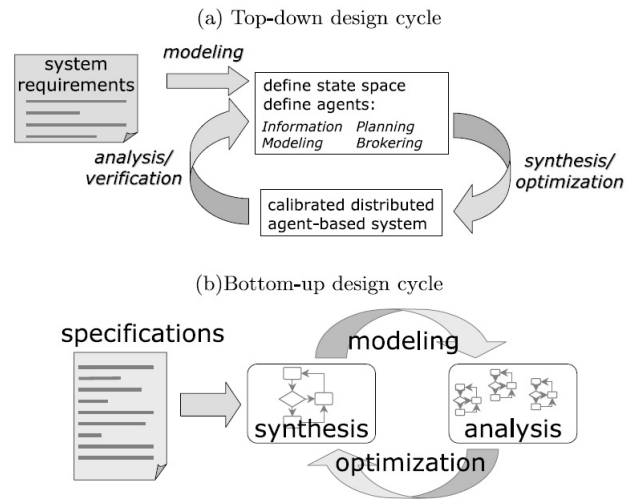(b)Bottom-up design cycle

Fig. 4. Conceptual representation of the two design methodologies top multi agent [9]

hold, up to some tolerable performance degradation, also in a decentralized environment.

V. COST MODEL FOR DIGITAL PRESERVATION

We have applied the OAIS functional entities Ingest, Archival Storage, Data Management, Administration, Preservation Planning, Access, and Common Services. Furthermore we have included the OAIS roles of Producer, Consumer, and Management, as placeholders for external cost factors, which influence the cost of preservation.

- Producer who performs the dance La Bomba
- Entities cost-critical activities
- The basic formula for an activity is the effective time required to complete an activity (measured in pw) multiplied by the wage level, plus purchases (monetary value). [11]

Bottom–Up The bottom-up design methodology is known for producing autonomous, scalable and adaptable systems often requiring minimal (or no) communication. The design process consists of three steps: Synthesis, Modeling and Analysis, and Optimization.

1) Cost equations:

$$Costperactivity = (Time \times Wage) + Purchase \quad (1)$$

$$c(a) = \sum_{i-0}^{N1} t_i * \sum_{i-0}^{N1} W_i + P \quad (2)$$

Costing Preservation Planning and Digital Migrations while the goal is to model the whole lifecycle of digital preservation. The first version of the model only deals with the cost of Preservation Planning and digital migrations.

- The amount of documentation (number of pages) is one of the principal factors

- The complexity of the documentation (low, medium, high)
- The quality of the documentation (low, medium, high),

FI means Formal Interpretation.

$$FI = \#pages \times timeperpage \times complexity \times quality. \quad (3)$$

VI. Conclusion

- Detailed infomation related with La Bomba give us a brief understanding of sociological issues around this dance. The best methodology is how to represent the entities and its interpretation.
- The context, relation and situation of the Serendipitous Heritage are impressive relevant in the research because it gives the sense of the future of the Knowledge in the World. Through the Socio - Technical, Cultural fields, the process of Preservation will do a contribution for the Memories of the World.
- The Business Process Management give us a good approach to the development of Performance and Data Preservation. Through process the increase of data can be justified.
- According to this consideration it is important to mention the type and structure of data. Through the time preserving digital information has a process for designing a practical system for managing massive amounts of critical data. The way to improve the understanding of the methodology, the information has to consider two dimensions: access dimension and cognitive dimension. Both of them have the level of importance in terms of the results. As a methodology of treatment digital preservation, it could be risky even when the strategy could develop a clear idea of digital resources and digital artefacts. The approaches related with other authors have similarities and differences in opinion.

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