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# Tangible Culture: Twelve Symbolic Objects

Juan Fernando de Laiglesia González*
University of Vigo, Spain

**Abstract**

Within the general theme Design as Cultural Heritage, developed by the 2018 European initiative on Tangible Culture, twelve symbolic elements have been proposed. The aim of this article is to address the depth and breadth of the meaning of Tangible Culture. These twelve objectual frames are organized in four main areas related to each other: Authorship, Project, Matter and Appearance. The definition of these areas has been built showing the multidisciplinary correspondence of the following dimensions: the areas of intangible cultural heritage, the UNESCO authenticity criteria on tangible heritage, the historical Greco-Latin management of causality, the Edgar Morin's tetralogical loop, the quadripartite distribution of university fields, and certain orientations of the artistic avant-gardes of the twentieth century.

Conclusions of this quadruple review of the meaning of Tangible Culture suggests the urgency of agreement with the current geopolitical situation of knowledge and diversity.

**Key words:** Tangible culture, Intangible Culture, Furniture, Authorship, Project, Matter, Appearance.

## Tangible/Intangible Osmosis

Tangible culture had historically been privileged focusing on the

*E-mail: jfdo@uvigo.es
Translation: Luz González Pedraza

preservation of the architectural, archaeological and ethnographic monumental Heritage. This is based on its immediate documentary visualization. However, from the *Nara Declaration on Authenticity* (Japan, 1994)[1], it was concluded that 'all cultures and societies are rooted in particular forms and means of both the tangible and the intangible'. The importance of this Declaration lies in including for first time historical, social, traditional and spiritual aspects as criteria for *heritage authenticity.*[2] Dawson Munjeri, Permanent Vice-Delegation of Zimbabwe to UNESCO, recalls that the International Council of Monuments and Sites (ICOMOS), the highest body responsible for monumental heritage, affirmed that 'the distinction between physical heritage is now seen as artificial. Physical heritage can only attain its true significance when it sheds light on its underlying values. Conversely, intangible heritage must be made incarnate in tangible manifestations'.[3]

The meeting of experts (UNESCO Paris, 1994) on World Strategy stated that the heritage interest would not only focus on 'single monuments in isolation but rather on considering cultural groupings that were complex and multidimensional, which demonstrated in spatial terms the social structures, ways of life, beliefs, systems of knowledge, representations of different past and present cultures in the entire world'.[4] The text continued as follows: 'each individual piece of evidence should therefore be considered not in isolation but within its whole context with an understanding of the multiple reciprocal relationship that it had with its physical (i.e. tangible) and non-physical (i.e. intangible) environment'.[5] However, not until 2003 the Cultural Intangible Heritage has been defined at the UNESCO General Conference, at its thirty-second meeting (Paris, 29 Sept./17 Oct. 2003). Its Article 2[6] states that 'intangible cultural heritage means the practices, representations, expressions, knowledge, skills, as well as the instruments, objects, artifacts and cultural spaces associated therewith, that communities, groups, ad in some cases individual, recognise as part of their cultural heritage'.

Perhaps because of the prestige of the obsolete objectivist thinking, the recognition of this tangible/intangible concurrency had to officially wait until the twenty-first century. Certainly, since the early decades of the twentieth century, Western discourse had far exceeded the severe norms of scholastic dualism. In other words, the Cartesian reason for fragmentary reductionism had been definitively overcome. This symbiosis was shown precisely in the artistic heritage of the first avant-gardes. Its identity had been based on this balance between the intangible and the object, the dreaming and the technique, the expression and the artifact, the most unusual meanings and the most everyday materials. These were definitely inseparable dimensions.

This great tangible/intangible symbiosis of the notion of *culture* announces that being-in the world is necessarily solved by manipulating subjects. This allows building by employing these materials, the objectual polymorph wrap, which is the 'furniture' as a symbolic interval that accommodates human beings to their existence. That is the Design space.[7] From this vital action/matter relationship, two parallel pathways are opened: (1) sociological urgency and (2) methodological proposal. The former (1) highlights the correspondence between Culture and Development[8] which regards culture as an essential element of articulation, however astonishingly ignored in the 17 SDGs of the United Nations 2030 Agenda.[9] The latter (2), -which this article will focus on- of methodological structure, to review, deepen and strengthen the authenticity criteria of that culture. The definition of this methodological structure will allow us to propose the future development of the notion of Culture.

**The three bipolarities.**

A complex and versatile formula, which relates the multidisciplinary spatial *Übersicht* (Aby Warburg), to the constellational experience of time of *Jetzteit* (W. Benjamin)[10], will make easier to understand the cultural dimension. The

notion of Culture is dynamically articulated in the diverse strata game. From this *higher point of view,* one could get the big picture, perhaps less detailed but more complete and complex when applying methodological similarities amongst disciplines.[11]

In the term 'culture' can be observed its dynamism in the form of internal tensions. The first bipolar tension, as has already been commented, is that of tangible/intangible. The interrelation of cognitive and operational systems is present in the term itself, as the second bipolarity also demonstrates. It is the dual use as (1) the cultural anthropology that deals with meanings (tangible culture: crossing economy-technology-habitat//values-customs in E.B. Tylor// nature-culture-society in Cl. Lévi-Strauss); and at the same time (2), the so-called mass culture, where results matter (opinion cycles in Sociodynamics of Culture of A. Moles// communication systems in the Cultural Industry in T.W. Adorno, M. Horkheimer).

How this versatility of meaning of the term 'culture' is also found in the historic debate about the dualism Humanities/Sciences. In that case it was not tangible/intangible bipolarity, or content/result, but subjective/objective confrontation in argumentation methods. More than sixty years ago, at the University of Cambridge, chemist Charles Snow delivered the prestigious Rede conference under the title *The Two Cultures and the Revolution* (1959); it highlighted the difference between Humanities and Sciences as historically conflicting fields of expertise. Four years later and due to the controversy raised, Snow himself proposed a unique symbiosis of Literature and Sciences under the name of 'third culture'.

On the 50th anniversary of that conference, a group of researchers used the term 'transversal' to address this epistemological fracture and to promote the gathering of artists and scientists. On that occasion, both systems of argumentation were defined: processes and results, transdisciplinary and synchronicity, chance and arbitrariness, recursion and surprise.[12]

**Mirror comparison of authenticity paradigms**

This section focusses on the first and the most general bipolarity of the three: tangible/intangible. This will observe official guidelines that have supported these definitions to verify their success and to build on moving forward on their possible future development.

The Convention for the Safeguarding of the Intangible Cultural Heritage (2003, art 2) proposes a variety of different fields in which this intangible[13] cultural heritage is present. This article organised them as:

- traditional craftsmanship techniques (F);
- usages related to nature and the universe (A);
- social, ritual and festive or entertainment usages (L);
- oral expressions, and language as a vehicle (S).

On the other hand, according to Dawson Munjeri[14] notions of authenticity related to the tangible heritage -question in permanent controversy- appear described in the Operational Guide to the Implementation of the World Heritage Convention (2012),[15] based on the Venice Charter (2004).[16] The document defined authenticity summarising it in four elements referring to the material attributes 'intrinsic' to the object, which this article organised as:

- work: 'material product carrying the creative genius'(F);
- framework: 'context fidelity, local and spatial values' (A);
- materials: 'physical or fidelity to the object' (L);
- design: 'the original creator intention' (S)

It is stimulating to observe the equivalence amongst these four scopes of intangible heritage and the four intrinsic attributes of tangible heritage. Reading them closely, it can be observed that these binaries join a generic paradigm of four:

- factory authorship: traditional techniques/material product of the work (F);
- contextual project: nature and universe/spatial framework (A);

- relationship material: social usages, rituals/material values (L);
- identity dimension: oral expression of the original idea/intention /S).

To each criterion, this study has assigned a capital letter which refers to (F): meaning the work of the *homo faber*; (A) naming *homo ambulans* its application to the setting; (L) differentiating the *homo ludens*' attitudes; (S) identifying what is related to *homo sapiens*.

From the conceptual articulation of this quadruple definition, this article aims to discover the background of 'our heritage' or in other words, 'where the past meets the future'.

In order to understand the technical skill of this work agent (efficient cause) who addresses the basic urgencies of space/changing time, it is necessary to identify the intentions of her/his project (final cause).[17] These two dimensions (who is the author and for what he/she has done so) coincide with the famous external causes of the Aristotelian ordination and complement each other with the two internal causes in the old hilemorhpism. In other words, with what materials the object has been constructed (material cause) and what recognisable shape it has, what it is, how it is called (formal cause). Happy coincidence between the old metaphysical causality of the substance and the quadruple institutional definition of 2003. So ordered, these four explanations of heritage existence (Authorship, Project, Matter and Aspect) can be cosidered as the basis for studying the criteria that have officialle underpinned tangible/ intangible culture.

These four dynamic factors appear in fruitful methodological harmony with the four vertexes of Edgar Morin's tetralogical loop (Organization, Interaction, Disorder, Order) where each term 'adquiere su sentido en relación con los otros. Es preciso concebirlos en conjunto, es decir, como términos a la vez complementarios, concurrentes y antagónicos'[18]. This maxim summarizes

a profuse argumentation developed in the six volumes of *La Méthode* (1977). In these four vertexes of the tetralogical loop, Organization can clearly be related to the manufacturing capacity of the Authorship; Interaction to the practical intention of the Project to be solved within its environment; and Disorder to the potential of the raw Matter of objects and its role in the social game of trade and rites; finally, Order to the formal Aspect that gives name and unmistakable identity to each object.

Therefore enriched the four criteria of tangible/intangible culture (Authorship-Organization; Project-Interaction; Matter-Disorder; Aspect-Order) the spectrum can be expanded to observe how intellective and symbolic knowledge are also organized around.

**The confluence of knowledge and the horizon of arts**

These four major axes of identification of the cultural dimension (Authorship, Project, Matter and Aspect), can respectively correspond to many other spheres of the historical construction of knowledge[19] current university programmes have distributed by themselves regarding those sections. In parallel, from this overview, it is of interest to observe how some artistic avant-gardes are also closely related to this particular approach.

- Authorship-Organization. (Work for habitability)

The immense and permanent industriousness of mankind has been mainly aimed at turning the setting into living space. Achievements were collected in the disciplines of Technology, Engineering (Public Works, Mechanical, Industrial, Aeronautics) and Architecture, which strongly define strategies in extreme physical situations. That is why their innovation exponentially grows at historical crossroads of urgency and conflict. These sciences deal with the 'know-how', which bring together inventiveness in the construction of tools,[20] attention to the logistics of environmental quality and world habitably. This is the polymorphous operating system itself, as a result of the statute of the

man who manufactures (H. Bergson) or who makes tools (B. Franklin). The history of machines and their colossal development goes in line with the operational knowledge in the immediate resolution of setbacks or unforeseen events; in other words, as if it were the permanent crisis cabinet facing limit situations in need of immediate resolution. Railways, ports and airports, world fuel conductions, housing developments, damps and reservoirs, and all its variety of machinery form the cultural support of this cabinet. On the other hand, historical avant-gardes have developed these concepts in many ways, showing the value of effort and work. Combative manifestos of Mayakovski's Constructivism claiming to the extreme the identity of tool and vital pulse, or the idea of Tatlin's Utilitarianism and Realism in Gabo and Pevsner, constitute outstanding samples. In Gropius Bauhaus' project, following the British model of W. Morris and the Arts and Crafts, architects, craftsmen, printers and designers met in 'everything coherent'. The passion of Futurism in its *Technical Manifesto* or the industrial results of *Minimal Art* can also be revisited.

- Project-Interaction. (Structural reason of settings)

The resolute will of action and problem-solving adaptability implies the intimate knowledge of the structure of the setting where that action takes place. The technical scaffolding of the aforementioned Technological disciplines seems inseparable from the enclave they are to be applied. The ship is built in the shipyard by the sea, the architectural wall is erected knowing the slope of the terrain, the surgical instrument is manufactured from the anatomy, or the telescope is improved from the updated map of the stars. Experimental disciplines, those that progress experimenting in the respective spaces they explore, have always needed the tools that have been provided by Technological disciplines. Thus, Biology and Medicine, Geography and Astronomy, governed by the three historical, Physics, Chemistry and Mathematics, explore space throughout their spectrum, micro or macro, from the composition of physical bodies to the celestial ones. Experimental knowledge delves into the rules of

its structural articulation, to progressively develop more accurate criteria of material reality.

Besides, artistic avant-gardes have monographically developed this approach. Art has studied the possibilities of the body in Body Art and the environmental setting, overflowing the boundaries of the painting or sculpture in the so-called housing 'installation' (from K. Schwitters to Chr. Boltanski), urban planning (D. Buren) or geographically in the Land Art (R. Long, R. Smithson, Walter de Maria). The convulsive social territory of migrations (C. Suárez Fernández), citizen psycho-geographic drifts (G. Debord), or autobiographical (Sophie Calle), even the virtual space of Net Art, have also been artistic argumentations.

- Matter-Disorder. (Intersubjective opportunity)

Amongst disciplines, the Socio-judicial one covers another large field; this monitor and regulate intersubjective traffic representing, therefore, sciences which study the opportunity of decisions and the movement of goods and messages, namely, the market risks, the opportunity for the collective exchange of discoveries and values. They analyse the skills to know the subject matter of which things are made and their convenience. They detect and control the relationship between value and price. The experiential field is that of intuition and suggestion, haggling and betting, emotion and sensitivity, conflict and agreement, norm, punishment or prize, and all possible ways to express them at the right time. They dominate emotion and surprise and it is the territory of the *homo ludens;* this has been proposed by Johan Huizinga in 1938 as a common line of events. The vast documentary corpus historically accumulated by the triad Law, Economy and Politics has been branched into other practical knowledges defining rules of communication, managing shifts of opinion and, therefore, intervening in the value system. These agendas are organised by Didactics and Journalism.

Avant-garde artists have also developed unsuspected formulas for the

emergence of surprise, breaching the rules of the game and provoking the unexpected in the notions of 'matter', 'market' and 'intersubjectivity'. Thus, A. Warhol turned art into a factory (Pop Art), M. Pistoletto proposed any life material as an art material (Art Povera), J. Pollock spilled rivers of paint on fabrics arranged on the floor (Action Painting), A. Kaprow run 'events that simply happen' unexpectedly without distinction between artist and spectator (Happening).

- Appearance-Order (Cognitive processes of identity)

The four main axis of culture is related to identity protocols and their representation in a varied labyrinth of languages. This legacy, so-called 'intangible' gives meaning to the previous three axes and has been sedimented in the historical document of collective memory. Humanities seek to focus on the *quidditas*, the why, as a central issue related to the *homo sapiens*.[21] This central issue is the collective self-awareness, which in the case of Europe was located by G. Steiner at the Athens/Jerusalem **axis**. Cognitive procedures, syllogistic in Western tradition or synchronic in the Eastern one, directedly address not the emotional *doxa*, but to the *episteme* of the order. The aim is to protect the name that things have by offering a definition, bringing together the immeasurable with the concrete. These tasks are respectively support by History, Philology, Philosophy, Cognitive Psychology and the Arts and can be discriminated as: arguing that the facts are as such, the that languages mean what they say, that thoughts articulate the reliability of existence and images imply their appearance. It is known the enormous flow of discursive arts that provide colour and meaning to all thought (literature, music, film theatre, choreography) and, also, that Fine Arts in the twentieth century have produced images monographically showing cognitive processes, such as, amongst others, Surrealism (A. Bréton), Neoplasticism (P. Mondrian), Dadá Movement (M. Duchamp), Conceptual Art (R. Morris).

**Four simultaneous sequences of culture**

The special process, sensible enough to progress and to establish itself, acts through the fusion of the symbolic and the functional, the cognitive of the metaphor and the seduction of the artefact. Mario Perniola[22] argues that good judjement discovers 'qué elementos dispares son susceptibles de ser remitidos a una unidad';[23] and he adds 'el poeta, el historiador, el artista y el filósofo proceden del mismo modo: todos ellos descubren el significado de la vida a través de la elaboración de conexiones dinámicas'.[24] This illuminating expression recalls C.G. Jung's reflection in his Preface (1949) to *I Ching* [25] on the categories of synchronicity and concurrency as criterion of certainty. This also appears in the preamble of G. Perec in his book *La Vie Mode d'Emploi* (1978) on the creator role of puzzles. Therefore, so framed these four authenticity criteria in tangible/ intangible culture, they could be translated into sequences of symbolic objects being activated as *mental images*[26] of a program to be more widely developed.

- Authorship-Organization. (Work for habitability)

FARMING TOOL/ MACHINE/ SCREEN sequence

The **farming tool (fig. 1)** is the model utensil of the effort to survive, and summarises the mechanical program of the first 'five simple machines'.[27] This farming tool shows that type of interval between the wise fragility of the hand[28] and the natural setting in raw state; or it is also present between the body and the cold clay that Martin Heidegger observed in the boots of Van Gogh's painting, this 'trustful being' that this tool is.[29] It represents work but, but also suffering and sometimes torture. Subsequently, the **machine** born from the implement, is configured by an articulated succession of elements locked together forming a complicated system of angles, levers and pulleys, which expresses the matrix principle of ergonomics, the 'turning game'.[30] It is a multiplier turn that will replace the limited muscle capacity motorising traction, lift, drilling and displacement.[31] The colossal construction of air, sea,

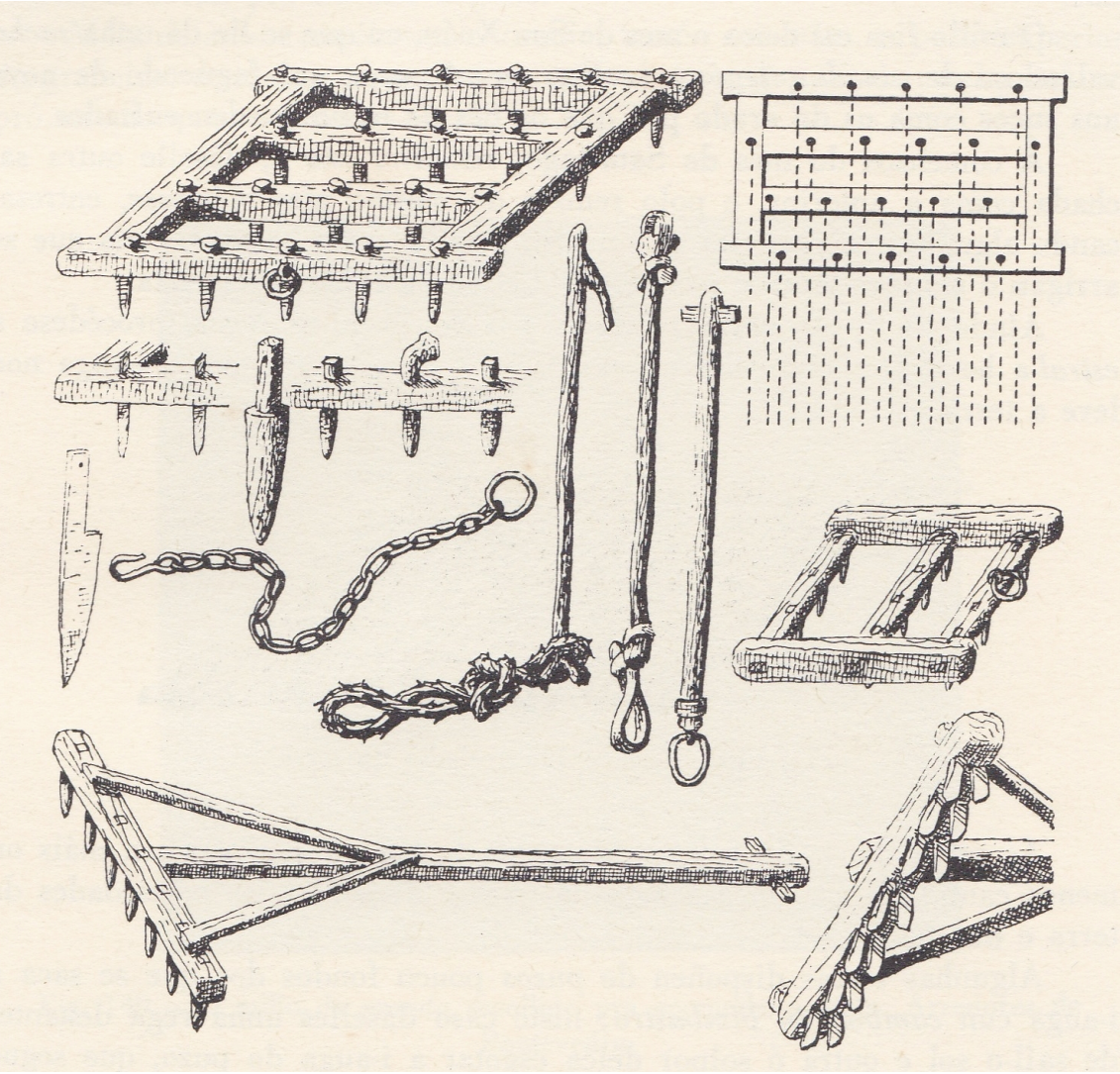

**Fig. 1:** *Farming Tool*. Historia de Galiza. Ramón Otero Pedrayo coord..

Editorial Nos. Buenos Aires 1962 vol II, p.201.

land and space displacement systems is now the new notion of the world. And this is because the offset is no longer physical, but by **screen**, the third symbolic object of this sequence.[32] The *homo screen* (I. Márquez) manages through the TICs the entire communication of voice/data, cancelling any distance.

- Project-Interaction. (Settings structural reason)

REFUGE/ FURNITURE/ SATELLITE Sequence

The *homo ambulans'* cultural sequence can be established from the **refuge** as being-in-the-world, which H. J. Albrecht pertinently relates to the triad: technology of flight /architectural structure/anthropology of language.[33]

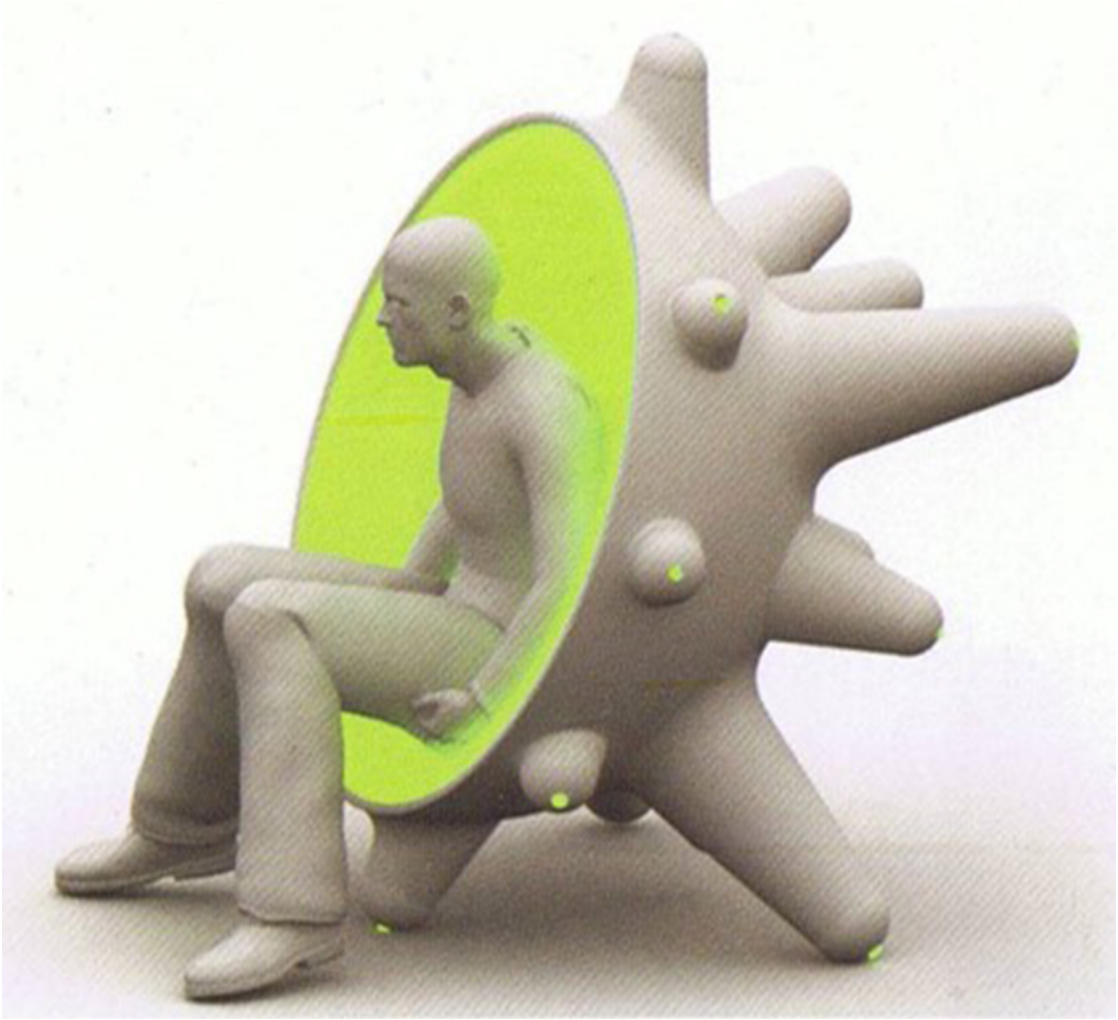

**Fig. 2 -** *Neoaldeanos.* José Ramón Méndez Salgueiro. 2005. Concept Furniture – El Mueble del Futuro. (file image: author's use permission)

Adjusting to the setting perhaps requires dexterity before the four main difficulties, which the U.S.A. Army War College framed around 1990 as Volatility, Uncertainty, Complexity and Ambiguity. An attempt to highlights the changing.

Cultural operations of the space installation/habitability are directly related to the sequence of the objectual design of the changing room/**furniture**/car; this interconnects the body with the space, first terrestrial **(fig. 2)**, and then celestial, thanks to the **satellite,** cultural object par excellence. Besides, it must be taken into account that, according to J. Baudrillard 'quel type nouveau d`habitant se propose comme modèle: l´homme de rangement n´est ni propiétaire ni simplement usager, c´est un informateur actif de l´ambiance'.[34]

**Fig. 3:** *Amber Licht***.** Fernando Barredo Valenzuela.

Mallnitz, Austria, 2009. (File image: author's use permission).

**Fig. 4:** "FAINOS". Juan Luis Moraza Pérez, 2003. Mirror flag on 30m.mast. Pre-project for the sculpture public contest for D. Fernando Buesa Blanco's homage, terrorist attack victim. (File image: author's use permission)

- Matter-Disorder (intersubjective opportunity)

TOTEM/ TOWER/ OUNCE

The surprise (*tó thaumázein*) before new things, a reason for experimentation and, at the same time, of commercial exchange, implies the commitment to the group better future. The amount of desires poured into the immediate future has always needed to materialise itself by turning rites into things, bodies into costumes, parties into banquets, the setting in *umbilicus mundi*, and the tribal guarantee in **totem (fig. 3)**. As a sacred axis, it will remain installed in the centre as a collective archetype (C.G. Jung). The **tower**, a sign of economic hierarchy from medieval Regensburg to the 2001 New York twins, draws on the obelisk culture to arrange -or to feed- the orgy, the chaotic tumult, the unstoppable speed of the perfect storm of every financial crisis that brings into play the gold-value, the **ounce**, as a dystopian refuge.

- Appearance-Order. (Cognitive processes of identity)

FLAG/ SIGNAL/ HARDWARE sequence

'Around the flag' syndrome appears when the siege to a particular territory occurs, emphasising the urgency of the cultural identity. It is no longer the dance around the totem but the signage of the perimeter to be defended. Coats of arms, banners and **flags** acts as notarial deeds which registered each identity. Flags **(fig.4)** or words represent meanings of counties, names of people and things. Words have always signalled memory by offering immediate knowledge. However, today the great agreements of the twentieth century (League of Nations 1919/United Nations 1942/UNESCO 1945) demand new **signals** to regulate the passage from 'disciplinary societies' (M. Foucault) to the planetary adjustment of migrations, or devices capable of recording as culture the vast interconnected forest of languages and images. Therefore, it is possible to define and to geolocate the valuable throughout– the camouflage with which digitalisation has dressed objects and ideas, because **hardware** –the new object/packaging of tangible/intangible culture– has settled the standardised

appearance of bodies and machines, art works and appliances.

The twenty-first century could place the notion of Culture in these four simultaneous sequences. The semantic force of the twelve proposed symbolic elements - i.e.: mental images - could join the effort of work and ritual feasting, the exchange of projects and the speed of signals, the organization of identity flows and the meaning of languages, cognitive processes and the caring for the planet.

## NOTES

1 Dawson Munjeri, "Patrimonio Material e Inmaterial: de la Diferencia a la Convergencia", *Museum international: Intangible Heritage,* 221-222 (2004), 13-21.
2 Munjeri, "Patrimonio Material e Inmaterial", 12-20.
3 Munjeri, "Patrimonio Material e Inmaterial", 15.
4 Munjeri, "Patrimonio Material e Inmaterial", 14.
5 Munjeri, "Patrimonio Material e Inmaterial"
6 Francesco Francioni, "Defining Intangible Cultural Heritage" in Janet Blake and Lucas Lixinski (eds.), *The 2003 UNESCO Intangible Heritage Convention: A Commentary*, (Oxford: Oxford University Press 2020) 52.
7 Cfr.: Verónica Ariza (coord.) *La investigación en Diseño: una visión desde los posgrados en México* (Mexico: Univ. Autónoma Ciudad Juárez, 2012).
8 Alfons Martinell (coord.) *Cultura y desarrollo: un compromiso para la libertad y el bienestar* (Madrid: Fundación Carolina and Siglo XXI de España Ediciones, 2010).
9 Jon Hawkes still wrote in 2001 *The Fourth Pillar of Sustainability. Culture's Essential Role in Public Planning,* st culture, as a powerul instrument of rooting ans sustainability, has not been incorporated amonst the seventeen Sustainability Development Goals (SDCs) of the United Nations.
10 Georges Didi-Humberman in his book-catalogue *Atlas Cómo llevar el mundo a cuestas?* (Madrid: Reina Sofía National Museum of Art, 2010-2011), 165-177; refers to Mnemosyne's synoptic effort that W. Hoffmann calls 'constellation'.
11 Something similar to what Luis Racionero in *Leonardo da Vinci* (Barcelona: Ediciones Folio, 2014), 29: 'Lévi-Strauss concibió la idea del estructuralismo al constatar que las mismas leyes lógicas formales que Jakobson había enunciado para las estructuras sintácticas, se podían aplicar a la descripción de las relaciones de parentesco en sociedades primitivas'. 'Lévi-Strauss conceived the idea of structuralism by finding that the same

formal logical laws that Jakobson had enunciated for syntactic structures could be applied to the description of kinship relationships in primitive societies' [translation, Luz González].

12 J. F. de Laiglesia et al. (eds.) *La cultura transversal: colaboraciones entre arte, ciencia y tecnología* (Vigo: Universidad de Vigo, 2010)

13 '(a) oral traditions and expressions, including language as a vehicle of the intangible cultural heritage; (b) performing arts; (c) social practices, rituals and festive event (d) knowledge and practices concerning nature and the universe; (e) traditional craftsmanship' in "The Convention for the Safeguarding of the Intangible Cultural Heritage, art2, 2003", UNESDOC. Digital Library, https://unesdoc.unesco.org/ark:/48223/pf0000132540 (accessed May 2020)

14 Munjeri, "Patrimonio Material e Inmaterial".

15 "Operational Guidelines for the Implementation of the World Heritage Convention, July 2012", UNESDOC. Digital Library https://whc.unesco.org/archive/opguide12-en.pdf (accessed May 2020)

16 "The Venice Charter (1964-2004)" Documentation Centre UNESCO-ICOMOS, https://www.icomos.org/venicecharter2004/ (accessed May 2020)

17 Konrad Lorenz had concluded four fundamental impulses of living beings, as seeking for food, reproducing, assaulting, and scaping the treat. The Galician psychologist Rof Carballo had added in 1977 a fifth impulse that gives meaning to the other four, the creative activity.

18 Edgar Morin, *El Método: 1-La naturaleza de la naturaleza* (Madrid: Cátedra, 2006), 75: 'takes its meaning in relation to the others. They need to be conceived together, that is, as complementary, concurrent and antagonistic terms'[translation, Luz González].

19 The distritution of knowledge and their interrelationship is a historical task, according to Ramon Llull's *El Àrbol de la Ciencia* (1296), or Leibniz's *De Arte Combinatoria* (1660). Francis Bacon had opened the way with *Partitiones Scientiarum* (since 1605). The encyclopedist project of the sciences unit has been developed by Professor Olga Pombo in *O Círculo dos Saberes* (Lisbon 2012). For the quadripartite distribution of university knowledge see: J. F. de Laiglesia, "A Universidade é un Tetraedro" in *Teoría bruta de la forma frágil* (Pontevedra: Editions do Castro, 1999), 127-152.

20 Bruno Munari, *¿Cómo Nacen los Objetos? Apuntes para una Metodología Proyectual* (Barcelona: Gustavo Gili, 1983). In 37-64 he describes the tool deliveration process.

21 Carl Linnaeus, *Systema naturæ*, 1758

22 Mario Perniola, *La estética contemporánea* (Madrid: Machado Grupo de Distribución, 2016)

23 'What odd elements are likely to be forwarded to the unit' [translation, Luz González].

24 'The poet, the historian, the artist and the philosopher proceed in the same way, they all discover the meaning of life through the elaboration of dynamic connections' [translation, Luz González].

25 Carl Gustav Jung, "Foreword" to Richard Wilhelm, *I Ching* (Barcelona: Edhasa, 1981 [1949])

26 Alfredo Campos and Mª Ángeles González, "Importancia de las imágenes mentales del pensamiento", *Revista Mexicana de Investigación en Psicología*, Vol.9, no.2, (1998), 113-11, as follows: 'la "teoría de la codificación dual "de Paivio (1969, 1971, 1977) sostiene que las personas tienen dos formas de representación, o dos códigos en los que almacenan la información, que son el sistema verbal y las imágenes mentales. Estos dos sistemas están interconectados entre sí y actúan conjuntamente'. ('Pavio's "Dual Coding

Theory" (1969, 1971, 1977) affirms that people have two forms of representation, or two codes by which they store information, which are both verbal system and mental images. These two systems are interconnected and act together') [translation, Luz González].

27 Sigvard Strandh, *Máquinas: una historia ilustrada* (Madrid: H. Blume Ediciones, 1982), 25.

28 Henri Focillon, *Éloge de la main* (Paris: Presses Universitaires de France, 1981 [1934])*:* 'Elles sont presque des êtres animés. Des servantes? Peut-être. Mais douées d'un génie énergique et libre, d'une physionomie – visages sans yeux et sans voix, mais qui voient et qui parlent–' ('They are almost animated beings. Servants? Maybe. But endowed with an energetic and free genius, a physiognomy – faces without eyes and without voice, but that see and speak–') [translation, Luz González].

29 Martin Heidegger, *El origen de la obra de arte (Der Ursprung des Kunstwerkes*) (Mexico: Fondo de Cultura Económica,1958 [1936])

30 J.F. de Laiglesia, "El juego del giro: Oriente- Occidente" in *Teoría bruta de la forma frágil: escritos adverbiales de arte, estética y enseñanza* (Pontevedra: Edicións do Castro, 1999), 274-288.

31 Strandth, *Máquinas. Una historia ilustrada*, 6.

32 Israel Márquez, *Una genealogía de la pantalla. Del cine al teléfono móvil* (Barcelona: Anagrama, 2015).

33 H. J. Albrecht, *Escultura en el siglo XX* (Barcelona: Ed. Blume, 1981), 21. See graphs about Reflect, Act Experiment and about the four spaces: natural, colinisation, culture and civilisation (76-77).

34 Jean Baudrillard, *Le système des objets* (Paris: Éditions Gallimard. 1968) 37. 'The new type of inhabitant proposed as a model is the "placing man" who is neither owner nor just a user, but is an active informant of the environment' [translation, Luz González].

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