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# Biology, Semiotics and Complexity: The Development of Mexican Notions of Person<sup>1</sup>

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## Abstract

This paper brings together concepts and perspectives from biology and cultural studies to explore different understandings of the meaning of being a person in Mexican society. It argues that the dominant concept of 'person' represents social tensions in intercultural contexts of socialisation and education in a nation strongly divided on class and ethnic lines. We focus on this concept to inquire into the implications of splitting the biological from social and cultural dimensions. The paper brings out the importance of emphasising the biocultural dimension of personal and social life. It applies two concepts from biology, *Evo-Devo* and *Epigenetics*, to explore some complexities of the Mexican situation. We connect *Evo-Devo* (an integration of theories of *evolution* and *ontogenesis*, the dynamic, species-shaping role of mechanisms of development of individual organisms and niches, connected to concepts of the emergence of social individuals) to Braudel's 'long history'. *Epigenetics* (the formative role of environments or 'epigenetic landscapes' in which genetic processes unfold), is considered as a model for interactions between biological and cultural inheritance and a series of formative contexts.

**Keywords:** Biocultural development, epigenetics, *longue durée*, deep Mexico, Mayan and Mestizo people

## Introduction

In this paper we examine concepts of 'person' in Mexico as they develop from childhood and are affected by different ideological perspectives and purposes. We argue that persons are complex products of biological forces interacting with social and cultural forces and processes. We use ideas from biology to show how dominant perspectives ignore or minimise the essential bio-cultural nature of human beings, and impose a reductive ideology of culture onto strategies of governance and social policy. We reframe concepts from biology to be more adequate to processes and problems from society, politics and culture in order to do justice to phenomena we claim are fundamentally biocultural, situated between biological development and a developing web of meanings, in environments that are always biological as well as social. We use critical discourse analysis of dominant discourses and discourses of resistance to give a broad-brush picture of contemporary Mexico. We supplement this data

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<sup>1</sup> This paper was the basis for the presentation by Dr Carlos Zavala at the Institute for Culture and Society Seminar Series on October 23, 2014.

with ethnographic and semiotic analysis. We look at concepts of the person from a biocultural perspective, in a complexity framework, and begin by explaining this biocultural perspective and why we see it as valuable and necessary for political and cultural analysis.

### **A biocultural framework for concepts of the person**

It is not in doubt that humans are biological beings, yet in a commonly accepted division of labour, social sciences typically study humans as social beings whose biological nature can be left to biological sciences to study. We use the basic proposition of complexity science, that different elements in a complex whole – biological and social forces in this case – cannot be understood in isolation from their interactions with each other. We take this approach to the study of humans and their environments. Each of these is itself a biocultural complex within an irreducibly complex larger biocultural whole. We do not assume that biological complexes are fixed entities. On the contrary, we see the biocultural as a complex field of unpredictable interactions in which biological and social forces are sometimes mutually reinforcing, but at other times opposed. The biocultural perspective does not carry a new over-riding analysis of the social or biological in itself, but rather it complements existing social and biological analysis. Its main value is heuristic, to point out the action and effects of factors that one or the other kind of theory commonly ignores or minimises.

Within this framework we explore the term person in two senses. ‘Person’ in English corresponds to ‘*persona*’ in Spanish, and less closely with the Mayan *uinic*. Independently of different meanings in the various languages, these terms have a common reference to what we term the biocultural person: human beings as individual organisms in their niches (i.e. the natural and sociocultural environment). We use the biocultural notion of person to see how far specific concepts include the systemic nature of bio-cultural persons, as always situated in social and cultural contexts, always uniting biological and cultural processes, in an environment which is always both biological and cultural. A biocultural person is not independent – an individual separated from other social beings or environments. In this concept of a person, individual existence incorporates society and culture in bodies through socialisation and learning how to live biologically and socially in society. These processes form the biocultural unity that we call ‘person’. A person is made in a biocultural process of development that brings together the individual, society and culture in a way of life. This understanding of person as always social links to Zubiri’s argument (1986) that persons are selfish altruists, that the constitution of a person is a process of becoming, being for oneself, giving oneself for society.

We see the cultural dimensions of the biocultural person as postulated in Harris (1977, 1999) and Geertz (1973): how we feel, think and behave in society in the web of meanings embedded in our cultural patterns. The sign *person* is at the same time a construction for communication and a representation of the person. The sign is not only verbal, it is the biological being showing what it is to be a person. As Cassirer (1945) argued, human beings are builders of signs and, with these signs, at the same time they build themselves.

### **Key ideas from biology for biocultural analysis**

We introduce next some ideas from biology that are especially useful for analysing cultural situations, and the interactions between biological and cultural phenomena. Biologists have

pointed to close links between the biology of development in individual organisms and developments in and of species: between evolution and development, or between phylogeny (development of phyla or species) and ontogeny (development of individual organisms through the extraordinarily varied stages from fecundation to death). This synthetic field is known as Evo-Devo (Evolutionary Developmental Biology). *Evo-Devo* establishes systematic relations between evolutionary and developmental processes. It links feedback processes in development and evolution of every living being:

Evo-devo seeks to understand, as a minimum: the origin and evolution of embryonic development; how modifications of development and developmental processes lead to the production of novel features; the adaptive plasticity of development in life-history evolution; how ecology impacts on development to modulate evolutionary change; and the developmental basis of homoplasy and homology (Hall, 2000: 177).

The interest of this concept, for social and cultural analysis as well as for science, is that it distinguished two different processes and time-scales – development of the species, development of individual organisms – yet established a rigorous relationship between the two, as well as a relationship with a third process and a third time-scale. Genetic processes are active throughout the life of every organism, presiding over the ongoing everyday production of individual organisms through genetically-given developmental processes.

From a biocultural perspective, Evo-Devo is linked to the knowledge of “evolutionary elements in the species in the process within the life cycle, which support the possibility of the development of cultural diversity” (Zavala, 2012a: 98<sup>2</sup>). Among these elements, the biocultural person functions as an evolutionary unit (Zavala, 2012b), and can be regarded as a complex three body system, spread across three different time-scales and corresponding different conditions of being. At the same time it participates in evolutionary processes, in ontogenetic processes and in significant existential moments. The use of the Evo-Devo perspective allows us to incorporate historical perspectives linked to the development of persons and their meaning systems, as a framework for looking at events and meanings on a more compressed scale.

In this article we will show one use of this concept by applying it to the situation of Mexico and its history, bringing in Braudel’s concept of the *longue durée* ‘long time’, within a biocultural framework in which ideas from Evo-Devo play a role. We begin with a use of Braudel’s ideas by a major Mexican anthropologist, Lopez-Austin (1994: 11):

Braudel introduced the concept *longue durée* as a property of every history which approaches secular processes. This focus permits us to understand the Mesoamerican religious complex – and with it the myth, the magic, and in broader terms the cosmovision – as a structured conjunction of social processes, beliefs, practices, values and representations which continue to be transformed across the centuries<sup>3</sup>.

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<sup>2</sup> “Conocer los elementos evolutivos de la especie que en su proceso dentro del ciclo de vida sustentan la posibilidad del desarrollo de la diversidad cultural”. Our translations here and throughout, unless otherwise indicated.

<sup>3</sup> Braudel introdujo el concepto “larga duración como propio de toda historia que abarca procesos seculares. Este enfoque nos permite entender el complejo religioso mesoamericano –y con él el místico, el mágico y en

Lopez-Austin here uses only one aspect of Braudel's framework, the idea of a long history, but it is invaluable for him to establish the legitimacy of what he would see as a historical fact: the continuity of this cosmovision across at least two millennia. As an anthropologist, Lopez-Austin has a complexity perspective on culture, specifically seeing it as a 'complex', using this word in a sense that agrees with complexity theory. The religion forms an irreducible complex whole constituted by religion, myth, magic and cosmovision, none of which can be fully understood without reference to the other. We may note one disturbing element in this complex - 'magic'. Accepting myths and cosmovisions does not present problems for Western social sciences, but 'magic' does precisely because it brings in biocultural beliefs about health and bodies, sick and well, which the Western cosmovision prefers to see as no longer tenable or tolerable.

There is more to Braudel's framework than his insistence on 'long time'. Braudel's *longue durée* offers 'a picture in which all the evidence combines across space and time, to give us a history in slow motion, from which permanent values can be detected' (1995: 23). He introduced the idea of multiple time schemes for multiple factors, and his continual reference to geography and geology included biological factors and forces. In a sense it can be said that his discovery of the importance of the *longue durée* followed his recognition of the different factors operating in the creation of human history - not exactly a biocultural theory of history but a complementary development. This biological awareness applied only to the environment, as a hitherto unrecognised agent of history, not to the evolution of people or species. Nor did he focus on individual development as in EvoDevo theory. His main distinction was between the history of events and the other histories on other time scales. EvoDevo poses the challenge and possibility of drilling down deeper into the social history of individuals as agents of history, and into micro-moments in that process. Braudel exposed the limited assumptions about complex constitutive relations encoded in the dominant practices of the history of his time. His revolution in historiography could go further within a fully biocultural framework, which also includes evolution, biogeography and the concept of the Anthropocene.

*Epigenetics* is another transformative idea from biology which has recently emerged from the shadows of illegitimacy. The triumph of genetics since the mid-20<sup>th</sup> century is well known, promoting the dream that the genetic code contains all the information needed to produce every organism. Yet, along with the triumph of genetic analysis, it came to be realised that there are fundamental processes at work which are not in the genes themselves but are crucial to their operation. For instance, how does a cell which contains the full genetic code know that it is meant to be part of an elbow, not part of an eye? These problems are part of the developmental biology included in the epigenetic processes (that is, *epi* (on top of) *genetics*):

Epigenetics: changes that influence the phenotype without altering the genotype. These consist of changes in the properties of a cell that are inherited, but that do not represent a change in genetic information (Krebs, Goldstein and Kilpatrick, 2013: 757).

The environment in which genes are realised has profound effects on what those genes do or become. The mechanisms of inheritance are not genes alone, but systems of genes, systems

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*términos más amplios el de la cosmovisión – como un conjunto estructurado de procesos sociales, creencias, prácticas, valores y representaciones que se van transformando a lo largo de los siglos”.*

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of regulation and their interactions, among them and with their environments. Jablonka, a leading authority on epigenetics, offers a broad account of epigenetics. Along with the immediate genetic environment, she includes other levels, including language and culture. From her extensive work we selected five aspects of her conceptualisation of epigenetics that are significant to apply to social and cultural phenomena:

- “Epigenetic inheritance occurs when environmentally-induced and developmentally-regulated variations, or variations that are the result of development noise, are transmitted to subsequent generations of cells or organisms (Jablonka and Lamb, 2008: 390).
- In general, it seems that the transition to a stable social group requires that the individuals that form it have to inherit the same behavioural information, but this information need not be transmitted through DNA; it can also be transmitted through social learning (Jablonka and Lamb, 2006: 242).
- Social learning, especially early learning, can have very strong, long-term effects: some traditions are very stable, and they can evolve through cumulative additions and alterations, with one behaviour being the foundation on which another is built (Jablonka and Lamb, 2008: 392).
- ... as with all other transitions, it is impossible to understand the evolution of the new type of individual (the community of linguistically endowed humans) without accepting that non-genetic information transmission (in this case cultural transmission) played a significant role (Jablonka and Lamb, 2006: 243).
- Such social learning, like most of learning, requires a nervous system, so the evolution of the nervous system and the processing of neural information were preconditions for the transitions that depended on behavioural transmission [...] Both the transition to social groups and the transition to linguistic communities are based on the evolution of neural individuals” (Jablonka and Lamb, 2006: 243).

Epigenetic effectors or ‘noise’ can be seen in external factors in the environment which support a people’s history as a biocultural unity, including nutrition, health conditions, safety and equal or unequal access to existing resources (Tollefsbol, 2012), and contribute to children’s success or failure in school. What an Epigenetic framework adds to those empirical facts is the idea that these distortions in the environment detract from the development of each child as their right, as their genetic-epigenetic inheritance, to realise the package of abilities of which they could have been capable. Epigenetic conditions can provide a new rationale in a discourse of human rights.

Interactions in epigenetic processes also function as sensors of natural and cultural conditions whose significance lies in the generation of emerging patterns of gene expression regulated by the social and cultural environment as a complex developmental system. This process has parallels in semiotics, where ‘semiosis’ can be seen as involving stages which play a similar role to epigenetics: “the process and effects of the production and reproduction, reception and circulation of meaning in all forms, used by all kind of agents of communication” (Hodge and Kress, 1988: 261). The pattern of gene expression and the environment of development that is biologically and culturally defined by living conditions can be understood as an epigenetic process guided by semiosis.

Being a human being in Mexico, as everywhere, is a process where epigenetic processes are decisive. Education itself can be seen as a product and source of epigenetic processes which have a profound transformative effect on the development of individuals and cultures (the special focus of our concern). For instance, Bogin (1990, 1995, 1997, 2010) claims that two

extended processes of neoteny, around 4-8 and 14-17, contribute to the distinctive qualities of human beings: clear examples of epigenetic processes contributing to evolution by ontogenic selection (Zavala, 2013). We could say that primary and secondary education is enabled by this development, and is part of humanity's epigenetic heritage. Human brains have evolved to be able to profit from education in these two stages, with profound effects for both individuals and cultures. We can propose that an education system which suppresses or conflicts with this development damages the development of children by impoverishing their epigenetic environment. In the case of Mexico, we can ask whether the dominant education system disempowers the Indigenous epigenetic system and, if so, whether that can and does contribute to educational failure.

### **Dominant constructions of the person in Mexico today**

In this section, we use our biocultural framework to look at dominant discourses which use concepts of the person as parts of instruments of governance. Our starting point is texts from the Mexican constitution. We focus particularly on the "Human Rights and their Guarantees" section, which defines individual and collective subjects of rights and obligations, and declare what the Mexican way of life should be, and how its population should be educated. This text has recently been revised – a revision which was motivated by the effect of the Zapatista army, a group of mainly Indigenous people from Chiapas, in the Maya-speaking south-east of Mexico, whose protests against injustice from 1994 reached an influential international audience. We will then look at the Zapatista discourse which provoked this revision.

Two pieces of background knowledge are needed to understand what these discourses are doing and what they are working against. Both come from the long history of Mexico, the continuing effects of the Spanish conquest of 1521, when Cortez conquered the Mexica empire and other Indigenous nations. Its political legacy is the continuing social and political disadvantage of many Mexicans of predominantly Indigenous descent, in a situation of intercultural tensions, and severe poverty and injustice. Complicating this situation is the biocultural picture. After more than 500 years of interaction between European and Indigenous populations, it is impossible to know how many Mexicans have Indigenous inheritance. Official statistics recognise 6.7% of the population as Indigenous (INEGI, 2010), but indigeneity is based on cultural characteristics, predominantly language. Indigenous biological inheritance is not identified. It can be said, however, that the majority of the Mexican population has a mixed genetic and cultural heritage. The Mexican term is *Mestizos* ('mixed'). Although that term could be understood in a biocultural sense, its everyday use tends to ignore both biological and cultural links with contemporary Indigenous peoples.

The use of the term 'Mestizo' as signifying non-Indigenous illustrates what Guillermo Bonfil (1987a,b) criticised as the dominant ideology of what he called 'imaginary Mexico', in contrast with 'deep Mexico', where the continuity of Indigenous life and culture in Mexican society is acknowledged. Bonfil focused on the historical, social and cultural struggles, not the biocultural story that we emphasise. His deep Mexico carried the unacknowledged Indigenous meanings, history of Indigenous struggles, their constant and current presence in Mexican society, and their interactions and clashes with Spanish military and religious powers, from colonial times to the current government power system. He gave a historical context for the survival of what Lopez-Austin (1994) identified as the Mesoamerican cosmovision at the centre of a continuing set of cultural practices. Bonfil takes up the story

from after the conquest, whereas Lopez-Austin's has a longer history, less constituted by the new intercultural context that Bonfil studied.

In both imaginary and deep Mexico, Indigenous roots are strongly present in what Bonfil calls the 'Cultural Matrix', in our terms epigenetic inheritance. Within this epigenetic process, we can refer to Bonfil's concept of cultural control, in which Indigenous people at times managed to exert control over the process of *Mestizaje* to transform Mexican cultures, values and practices (Bonfil, 1987b) through different dynamics, such as negotiations, processes of resistance, appropriation of other cultural meanings, innovation or even suppression of their culture. At other times, they have lost control and have been exposed to impositions and alienation, all involved in the intercultural dynamics where diverse cultural manifestations have emerged. The promoters of imaginary Mexico in practice exclude its Indigenous roots. They have political, judicial and economic power, control the media and other forms of communication, and shape every aspect of the education system. But deep Mexico still fights for expression. The majority of the Mexican population practises customs and has beliefs, values and ideas from deep Mexico, even if not fully acknowledged. This contradiction is at the core of tensions in Mexican society.

We can see distorted traces of this struggle played out in the revised Constitution. We analyse it as a semiotic construct that defines and reveals what the political power wants, seeks, and does. In this text, Mexico is characterised as a "pluricultural" nation (Secretaría de Gobernación, 2014: Art 2o), which could imply recognition of different cultural practices and beliefs, forms of knowing, sense making and values that define how persons develop into members of society. However, in practice, official recognition of this diversity does not fully acknowledge their value, and ignores emerging tensions between the Mexican dominant culture and Indigenous cultures that carry different ontologies and associated cultural practices and beliefs. These tensions are significant in the context of historically unequal rights for Indigenous peoples, who have struggled against the predominance of European-based forms of knowledge and practice.

The Constitution constructs humans as persons who are subjects of rights and obligations. It characterises Mexico and its peoples, regulates the way in which the country operates as a Federation, and establishes rights and obligations for all persons - primarily Mexicans, but also any individual in its territory. In this spatially, historically and demographically complex and diverse context, although the Constitution attributes human rights to all persons, it overlooks the specific cultural ways of becoming human in this particular society and culture. In these articles within the Constitution, the terms that link with the development of notions of person include human being (*ser humano*), individual (*individuo*), person (*persona*), and Indigenous (*indígena*). From an intercultural perspective, we can also identify the terms Indigenous community (*comunidad indígena*), Indigenous peoples (*pueblos indígenas*) and people (*pueblo*). From our perspective, these sets of terms function in significantly different ways. One set seems interchangeable, words for a standard average human of no biological or cultural specificity: persons as individuals. The other set includes a cultural basis which is separated but still undifferentiated in terms of the acknowledgment of pluricultural Mexico.

The second article of the Constitution specifies two kinds of Mexicans along these lines. On one side, all persons are individuals with generic rights. On the other, there are 'Indigenous communities' with specific cultural rights. This play of definition of cultural rights linked to a particular collective identity differentiated from the rest as individuals points to a core problem that creates a social and cultural fissure. Indigenous communities have cultural



rights but Indigenous individuals cannot claim those same rights. ‘Indigenous rights’ refers to the collective rights of ‘Indigenous communities’, and there are Indigenous persons not living in Indigenous communities. In the gap between the two broad categories, ‘persons’ and ‘Indigenous’, the concept of ‘Indigenous person’ disappears.

The other missing category is *Mestizo*. The Constitution does not mention that most Mexicans are Mestizos, including some identified as Indigenous. The category of *Mestizaje* is implicit in the Constitution but purely in a cultural not biological form: “The Nation has a pluricultural composition originally based on its Indigenous peoples”<sup>4</sup>. In this strategically-mystifying sentence, the term “originally” is open to many interpretations. In one sense, it could affirm that the pluricultural character of Mexico today is based only on the pre-colonial groups. A second sense is that only originally, in the beginning, was Mexico pluricultural. A third sense is that the Indigenous way of life is the only pluricultural core of Mexican society. These multiple ambiguities are useful for the State to declare in paper but deny in fact the pluricultural character of Mexico, whatever that might mean. At the same time, the biocultural problem of *Mestizaje* is solved by this empty celebration of its cultural forms, located in a fictional past. These ambiguities confirm Bonfil’s critique of a divided Mexico. From the point of view of ‘imaginary Mexico’, ‘deep Mexico’ does exist, but only when it is needed, as in the construction of national identity based on the Mesoamerican past. This view ignores the complex *Mestizaje* of biology and culture, present in contemporary daily customs, cultural practices and beliefs carried by individuals and communities identified as Indigenous or not. Persons, in terms of this constitution, are not part of pluricultural Mexico, since they belong to a supposedly universal culture, only distinguished from all other citizens by being defined as objects of the power of this nation.

### **Voices from below on the biocultural Mexican person**

The mention of Indigenous rights in this part of the Constitution is recent. It was the result of a long historical process, with a turning point in 1994 through a Declaration of War by the Zapatista Army for National Liberation (EZLN) against the Mexican State. This movement was mostly made up of Maya-speaking Indigenous people from the Lacandon Jungle in south-east Mexico, which gave its name to their manifesto, *Declaración de la Selva Lacandona* (EZLN, 1994). It started in Spanish with the phrase *Hoy decimos Basta!* “Today we say: enough is enough!”<sup>5</sup>. The text gave the history of Mexico from their perspective:

We are a product of 500 years of struggle: first against slavery, then during the War of Independence against Spain led by insurgents, then to avoid being absorbed by North American imperialism, then to promulgate our constitution and expel the French empire from our soil, and later the dictatorship of Porfirio Diaz denied us the just application of the Reform laws and the people rebelled and leaders like Villa and Zapata emerged, poor men just like us. We have been denied the most elemental preparation so they can use us as cannon fodder and pillage the wealth of our country. They don't care that we have nothing, absolutely nothing, not even a roof over our heads, no land, no work, no health care, no food nor education. Nor are we able to freely and democratically elect our political

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<sup>4</sup> *La Nación tiene una composición pluricultural sustentada originalmente en sus pueblos indígenas* (Constitución Política de los Estados Unidos Mexicanos 2014: 12)

<sup>5</sup> *Hoy decimos ¡Basta!* (EZLN 1994)

representatives, nor is there independence from foreigners, nor is there peace nor justice for ourselves and our children.<sup>6</sup>

This declaration and subsequent documents created during the dialogue for peace describe the Indigenous problematic in Mexico and the denial of their human rights. Ideas from the Lacandon Jungle Declaration can be recognised in this second article of the Constitution but transformed into the interests of the government. The Declaration points out the impossibility of denying the reality that produced the war, but the response reconstructed imaginary Mexico, ignoring that the solution can only come from the recognition of deep Mexico as proposed by the EZLN (Coronado, 2002). The San Andrés Agreements (*Los Acuerdos de San Andrés*) (COCOPA, 2003) were signed by the Government and EZLN representatives, but core principles of the Agreements were not fully addressed in the reform of the Constitution. The EZLN expressed a pluricultural perspective of Mexico as a whole when it proposed in the Agreements the need to “construct a new national society, with another economic, political, social and cultural model that includes each and every Mexican”<sup>7</sup>. By signing these treaties, the government recognised the problematic, but later disregarded these agreements.

We note in the Declaration a number of significant differences from the Constitution in how the Zapatistas construct identities. In the first place they use a deictic, ‘we’, a floating indicator of who is included, and who is doing the inclusion. In this case the implicit boundary is not between Indigenous and Mestizos and non-Mestizo non-Indigenous, but the current battle lines, in which many are aligned with Indigenous people, while many others are aligned with the dominant. This discourse represents the fluid intercultural situation of Mexico far more accurately than the shifts and elisions of the dominant discourse. It also highlights the significance of a collective sense of persons, whether or not they are Indigenous. Secondly, we may note the biological dimension of excluded Mexicans. Many, but not all, are Indigenous, deprived of basic biological needs like food and shelter, not protected from biological threats such as curable illnesses. In the Zapatistas’ implicitly biocultural concept of person, cultural properties such as knowledge and identities are not separated from their biological rights, as they are in the Constitution. This contrast is evident in the third article of the Constitution that deals with education: “Every individual has the right to receive education”<sup>8</sup>. Education is the most important means by which the State tries to construct the kind of person required to fulfil society’s needs as defined by the State. It is in the definition of the aims of education that the meaning of person is more clearly expressed, a notion that is especially important for our analysis. As described by the Constitution, “Education that the State provides will tend to develop all faculties of the

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<sup>6</sup> “Somos producto de 500 años de luchas: primero contra la esclavitud, en la guerra de Independencia contra España encabezada por los insurgentes, después por evitar ser absorbidos por el expansionismo norteamericano, luego por promulgar nuestra Constitución y expulsar al Imperio Francés de nuestro suelo, después la dictadura porfirista nos negó la aplicación justa de leyes de Reforma y el pueblo se rebeló formando sus propios líderes, surgieron Villa y Zapata, hombres pobres como nosotros a los que se nos ha negado la preparación más elemental para así poder utilizarnos como carne de cañón y saquear las riquezas de nuestra patria sin importarles que estemos muriendo de hambre y enfermedades curables, sin importa les que no tengamos nada, absolutamente nada, ni un techo digno, ni tierra, ni trabajo, ni salud, ni alimentación, ni educación, sin tener derecho a elegir libre y democráticamente a nuestras autoridades, sin independencia de los extranjeros, sin paz ni justicia para nosotros y nuestros hijos” (Declaración de la Selva Lacandona 1994). English version from [http://en.wikisource.org/wiki/First\\_Declaration\\_of\\_the\\_Lacandon\\_Jungle](http://en.wikisource.org/wiki/First_Declaration_of_the_Lacandon_Jungle), viewed 12 June 2014.

<sup>7</sup> “exigen la construcción de una nueva sociedad nacional, con otro modelo económico, político, social y cultural que incluya a todas y a todos los mexicanos” (EZLN, 1994: 16).

<sup>8</sup> *Todo individuo tiene derecho a recibir educación* (Secretaría de Gobernación, 2014: 16).

human being harmoniously, and, at the same time, foster in him love of country, respect for human rights and awareness of international solidarity, in independence and in justice”<sup>9</sup>.

In the actual words in Spanish, we note that, although the State is the ‘stated’ agent of something that could sound like the development of all faculties or capacities, biological and social, it is only education which acts as the agent. Moreover this agent will only ‘tend’ (*tenderá*) to do it. The promise is weak, located in a vague future. As in the dominant cultural perspective, it does not include any element of the biological. We may also note that the human being (*el ser humano*) appears here as carrier of duties: to love the fatherland and to ‘respect human rights’. It seems that the duty to respect human rights only applies to each individual, but not to the government which, in spite of the Constitution, has a poor record on human rights. This does not stop it from emphasising human rights as something that should be produced by education.

The Lacandon declaration quoted above used the Constitution as a foundation, producing a text which ultimately fed, in an altered form, into the Constitution itself. The Zapatistas legitimised the uprising by portraying the living conditions of Indigenous people in Mexico and their lack of rights: no work, no land, no shelter, no health, no education, no autonomy, no freedom, no democracy, no justice, and no peace. Their proposal to improve human coexistence can also be seen as an epigenetic process in which the propositions of the Constitution turn into lived experiences: education should “...strengthen appreciation and respect for cultural diversity, for the dignity of person, the integrity of the family, the commitment to the general interests of society, to the ideals of fraternity and to equality of rights for all”<sup>10</sup>. Like the Constitution, the Zapatistas do not use the word ‘Mestizo’, but their use of ‘we’ includes it as structural in their social world. The Zapatistas also take up and re-frame the key term ‘pluricultural’, not by denying it but saying what it ought to mean. The San Andrés Agreements, prepared by the Zapatistas in dialogue with the government commissioners, say: “The recognition and promotion of the pluricultural nature of the country means that, in order to strengthen the culture of diversity and tolerance within a framework of national unity, the action of the State and its institutions must make no distinction between Indigenous and non-Indigenous, or before any collective sociocultural grouping”<sup>11</sup>. In contrast, the pluricultural option does not operate in the constitution, but is denied by the separation between the Indigenous and non-Indigenous.

The hegemonic discourse constructs a monocultural notion of person and defines how human beings have to live in this ‘pluricultural’ society. But due to the already mentioned denial of deep Mexico implicit in the definitional contradictions, the characterisation of what it means to be a person in Mexico ignores existing ontological and epistemological differences between the Western-based dominant culture that mainstream education enforces, and the Indigenous cultural meanings carried by both Indigenous and Mestizo sectors. This situation has implications that we are going to discuss later considering the notion of person as

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<sup>9</sup> *La educación que imparta el Estado tenderá a desarrollar armónicamente, todas las facultades del ser humano y fomentará en él, a la vez, el amor a la Patria, el respeto a los derechos humanos y la conciencia de la solidaridad internacional, en la independencia y en la justicia* (Secretaría de Gobernación, 2014: 16).

<sup>10</sup> *...fortalecer el aprecio y respeto por la diversidad cultural, la dignidad de la persona, la integridad de la familia, la convicción del interés general de la sociedad, los ideales de fraternidad e igualdad de derechos de todos* (Secretaría de Gobernación, 2014: 17).

<sup>11</sup> *“El reconocimiento y promoción de la naturaleza pluricultural de la nación significa que, con el propósito de fortalecer la cultura de la diversidad y la tolerancia en un marco de unidad nacional, la acción del Estado y sus instituciones debe realizarse sin hacer distinciones entre indígenas y no indígenas o ante cualquier opción sociocultural colectiva”* (COCOPA, 2003: 32).

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developed by Mayan and Mestizo children. We argue a complex double case about the problems of the dominant concept of 'person' in Mexico. On the one hand, it has many strategies for mystifying and denying the endemic facts of Indigenous disadvantage through shifting concepts of the person that deny social and biological facts. At the same time as it promotes these ideologically motivated concepts of Indigenous (and Mestizo) persons, it also ignores and suppresses Indigenous notions of person. We have suggested that Indigenous ontologies include a greater biocultural awareness as they appear in the Zapatista discourse, which is based on Indigenous core cultural principles. We will show, as Bonfil (1987a,b) argued, that these constructions of 'person' are still a vital, if contested, presence in pupils in Mexican schools today - in more Indigenous contexts as amongst Maya-speaking children in Yucatan, but also in Mestizo children in Mexico City. To understand this vital persistence we reflect on the social, cultural and biological grounds that sustain them and inquire into the processes that might make it possible. Our investigation explored the hypothesis that one factor will be the effect of different biocultural processes of becoming persons.

### **Deep and Imaginary Mexico in intercultural education contexts**

In this section, we draw on two cases to illustrate the complex, ambiguous presence of what Bonfil called deep and imaginary Mexico. We frame the 500-year process described by Bonfil as a process of Evo-Devo, in which what he called 'cultural control' functioned like an epigenetic landscape in the hands of Indigenous/Mestizo people, who modified, rearranged, functionalised and sometimes deleted significant elements of their culture to allow their deep culture to survive in different, often hostile conditions. Our data on developing notions of person come from a study by one of the authors on Mexican children (Zavala, 2011). In this paper, we refer to the ways in which children represented their concept of a 'person' to explore how far they construct themselves as biocultural persons, and how those constructions reflect on their social contexts and cultures. We refer to the ethnographic basis of this research and analyse semiotically representations of the person by children in two contexts more or less Indigenous in character. One group were Mayan children from three communities of Valladolid, Yucatan, in South-east Mexico. The other group included Mestizos from Mexico City in a neighbourhood formed by migrants from the countryside.

Traditional languages and cultures are strong in the Mayan communities, and they would be regarded officially as Indigenous, though all of them attend government schools and, in this and many other ways, they are constrained and affected by the dominant system. The children from Mexico City speak Spanish as their first language and would be officially classified as non-Indigenous. Yet, in their family background, they have some elements of Indigenous culture. The Mayan children were between four and 12 years old and the Mestizos from five to 18 years old. Both groups crossed developmental boundaries recognised in comparable ways between child and adult as bio-cultural categories. We also examined the different categories of person that they developed to understand their selves at different stages. All of them were asked about their concept of 'person' (*persona* in Spanish). The questions were applied using drawings of one human, one animal and one thing, and also involved free drawings. The children were asked to apply six concepts related to their understanding of a person: will (*deseo*), thinking (*pensamiento*), feeling (*sentimiento*), consciousness (*conciencia*), soul (*alma*) and life (*vida*). The children answered by doing drawings, talking and writing as they wished.



The responses from these two groups allow us to identify differences along a continuum between different proportions of Indigenous and non-Indigenous heritages and cultures in Mexico. Looking for similarities and differences, our analysis was focused on the ontologies associated with Western and Indigenous Mesoamerican perspectives, which we will discuss later. The tensions between deep and imaginary Mexico are everywhere in Mexico but highly significant for Mestizos with greater or lesser links with Indigenous experiences. Hence, we choose to analyse notions of the person during the conceptual development of Mestizo children. The Indigenous research was with a Mayan community. In our analysis, we will bring out the role of the Mesoamerican cosmovision as carrier and representation of the key categories of this deep culture, which is more or less common to Indigenous groups in Mexico.

The research instrument developed in the original research by Zavala (2011, 2012a,b and forthcoming) included templates commonly used in psychology using drawings to elicit similarities and differences. These templates were adapted to basic cultural categories of the Mesoamerican worldview. Zavala drew on a study by Bourdin (2007) on the contemporary Maya concept of the person that can be understood as a unity consisting of body *wiinkilil/cucutil*, soul, *pixan*, will, *ool*, life, *cux/cuxan*, spirit *ik*, energy, *kinam*, thought, *tucul*, and animal family, *uaay*<sup>12</sup>. The English terms do not always correspond to the Spanish, and the original Maya terms are sometimes untranslatable. However, they accommodate the complexities of the Maya/Indigenous world view better than an undifferentiated Western concept of ‘person/persona’. Based on these Maya elements, children were asked about the relation between each of these categories and their understanding of the ‘person’. Initially, children were questioned through a template that included schematic humans and animals in order to see how children understood the category of person and its components between those two primary biocultural categories. Most of our data use this scheme. But during the initial research, it became evident that the Indigenous cosmovision also involved a different relation to what the Western cosmovision regards as inanimate things. In a later iteration, Zavala added a third element, a schematic rock, to the template to represent the inanimate world. Additionally, children produced free drawings and spoken and/or written explanations of their representations.

The instructions gave them the opportunity to recognise key relationships between humans, animals and things, allowing us to see how far the cosmovision remained a resource for them, and for how long in their individual development trajectories. It allowed children’s discourse, visual and verbal, to connect with their Indigenous world views without forcing connections with them. We will illustrate briefly the elements that constitute Mayan notions of person to help us to identify the presence or absence of Indigenous meanings among Mestizo children as well. Data from Mayan children are more homogeneous, so we can more easily identify common elements that show the increasing introduction of cultural elements into biological development. At the age of three, Mayan children draw themselves only as lines and circles. After four, they draw recognisable human forms. At five, when asked to draw ‘persons’ they draw humans and animals together, in keeping with the unity of person and animal in Mayan culture. In some cases self-representations included the environment: clouds, rain, sun and trees. Sometimes the human is dressed, and cultural signs like *huipil*<sup>13</sup>, *papalote* (kite) and

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<sup>12</sup> La persona puede considerarse ‘una unidad de *wiinkilil/cucutil* “cuerpo”, *pixan* “alma” y *ool* “voluntad” ... *cux/cuxan* “vida”, *ik* “espíritu”, *kinam* “energía”, *tucul* “pensamiento”, *uaay* “familiar animal” (Bourdin, 2007: 1, 9). Words in Maya are in italics in their current/colonial forms, followed by a translation into English from Spanish.

<sup>13</sup> Traditional dress.



houses are represented as constituting the person. Seven year olds draw themselves with family, sometimes with clothes. Eight year olds draw humans with typical Mayan costumes. From nine to 11 years children use the same kind of drawing, and more explicit motifs from nature appear (Zavala, forthcoming). The change in the representation is related to the change in Mayan development of person, which includes cultural mastery of signs and a mature perspective on themselves as biocultural persons.

The development of these drawings followed a common pattern often presented as universal in Western psychology (see Kellogg, 1979). The person, almost always present in drawings of three to four year olds (Figure 1), is represented by the head, in this case already with eyes, nose, mouth and hair.

Figure 1. Self-representation, infant three years old (Zavala 2011)



In Figure 2, at a more representational stage, we can see some more definite traces of the specifically Maya context. This Mayan preschool child already understands herself not in isolation, but in relation to the whole family, the home, and the biotic and abiotic environment. She draws all these elements in her self-representation as a person, indicating that, for her, this concept includes living things, plants, and the sun, clouds and rain as living entities. This larger unit surrounding personhood is common in the drawings of these Mayan children (Zavala, 2011; forthcoming).

Figure 2. Self-representation, infant five years old (Zavala, 2011)



While Mayan children understand a person as “we”, the Mestizo children had a different concept. Mestizo children at four and five years tended to draw persons alone. The Western ideology of individualism is likely to have influenced this pattern. However, traces of deep Mexico can still be detected in some of these drawings. In Figure 3, the child uses two colours, yellow on the left, orange on the right. Other drawings alternate colours from bottom to top: one alternating blue and yellow, another coffee and green, another red and purple (opposites in the spectrum of visible light for humans). This representation fits with the Indigenous cosmovision in which the body is divided into two vital forces, cold and hot (López Austin, 2010).

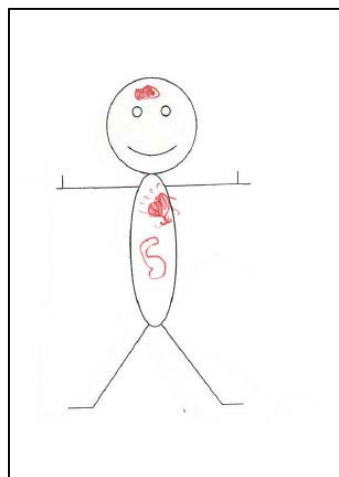
Figure 3. Representation of person, Mestizo girl five years old



We found other signs that can be linked to deep Mexico, although they are a minority in Mestizo preschool. Of 189 drawings, only 12 represent signs of deep Mexico (16%). Most children considered the attributes of persons - will, thought, feeling, consciousness, soul and life - as exclusively human. This perspective contrasted with Mayan children, who assign some of these attributes to animals. Mestizo children are more distant from Indigenous meanings in First and Second Grade of Primary School (six to eight years old), when the education system begins to impose meanings from Western ontologies. At this age, 10% of

children show signs of the Mesoamerican cosmivision. Older children show these signs more evidently by representing internal organs - mostly hearts but sometimes brains and stomachs/livers, the primary physiological system in Indigenous traditions: see Figure 4 (Lopez-Austin, 1994; Coronado; 2003). During the next years of Primary School, from six to 12 years old, our data show that children vary in the extent to which they represent meanings from deep Mexico, with no continuous increase or decrease according to age.

Figure 4. Representation of life, nine years old Mestizo boy



The most evident impact of signs of the dominant ideology was found in Mestizos already in Secondary School (around 12-16 years old). These young people had a range of views, but mostly considered persons as physical entities. They described their drawing using phrases such as: "Eyes, nose, mouth, arms, all that, heart"<sup>14</sup> (boy, 12); "In his anatomy,"<sup>15</sup> (boy, 14); "Physically, the eyes, the face;"<sup>16</sup> (boy, 15); "They all have two hands, almost physically"<sup>17</sup> (boy, 16). But some combine physical and cultural traits: "We can talk, we are of the same species"<sup>18</sup> (boy 13); "Sometimes there are physical traits and we think and have ideas"<sup>19</sup> (girl, 14); "Physically, emotionally, and in many ways they [persons] are alike in not being equal"<sup>20</sup> (girl, 13). This judgement shows a level of consciousness about the social tensions that we described earlier.

<sup>14</sup> "Ojos, nariz, boca, brazos, todo eso, corazón"

<sup>15</sup> "En su anatomía"

<sup>16</sup> "Físicamente, los ojos, la cara"

<sup>17</sup> "Todas tienen dos manos, casi en lo físico"

<sup>18</sup> "Podemos hablar, somos de la misma especie"

<sup>19</sup> "En ocasiones rasgos físicos y que pensamos y tenemos ideas"

<sup>20</sup> "En el físico, emocionalmente y en muchas cosas se parecen en que no son iguales"

Many Mestizo children in school no longer see things with any vital sense, emphasising only utility. To questions about connections between things and the biota the common answer is short: things are nothing like people or animals. For instance, "We use them"<sup>21</sup> (boy, 13); "With things we are not the same, because they have no life, nor the ability to behave as people do"<sup>22</sup> (girl, 13); "Things are to be used"<sup>23</sup> (girl, 13); "You have to use things, but you move by yourself"<sup>24</sup> (boy, 15) "We have life, they do not"<sup>25</sup> (boy, 15). From these examples, we might think that imaginary Mexico has displaced deep Mexico in these Mestizo children. However, when we analyse the data from 15 to 18 year-olds more closely the results are sometimes surprising. For instance, one 18 year old male compared persons and animals: "Both have a different type of communication, the person has customs and has a little more reasoning [than animals] and skills like cats or other animal species (speed, need of eating, etc.)"<sup>26</sup>. He recognised the advantages of each in a perspective more judicious than European anthropocentrism, closer to the Indigenous cosmovision in which animal and humans are part of a unity. This answer was typical of this age-group, with 80% of children expressing similar views.

The differences between the two cosmovisions were most evident in the themes of 'heart' and 'soul'. Children were not asked to draw hearts, but it was common in all levels at Primary School. In answers that include the heart it represents feeling, soul, sometimes thinking, consciousness, and will, aspects of the heart in Indigenous cosmovision. As indicated above, it is a more biocultural concept, forming a biological and cultural system with the brain and the liver, as in the Indigenous cosmovision. This Indigenous concept of the heart as defining the person largely disappeared in Secondary School, but appeared again in older children. It seems that the erasure of the Indigenous inheritance by the education system can fail and be recovered later with development into adulthood. The soul is part of both traditions, figuring in the syncretic process of Catholicism in Mexico. It applies distinctively to the Mesoamerican cosmovision when animals are accepted as having 'soul'. Figure 5 is a drawing by a 17 year-old boy representing his idea of soul. Both human and animal have soul, and soul is everywhere. It covers the whole space, coming from both right and left, up and down, constructing a unity. All these elements are common to Indigenous conceptions of what we translate as soul (López Austin, 2010).

Figure 5. Representation of soul, Mestizo boy 17 years old

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<sup>21</sup> "Los usamos"

<sup>22</sup> "Con las cosas no nos parecemos porque no tienen vida y esa capacidad de comportarse que tienen las personas"

<sup>23</sup> "Las cosas son para utilizarse"

<sup>24</sup> "Las cosas las tienen que usar, tú te mueves por ti mismo"

<sup>25</sup> "Tenemos vida, ellos no"

<sup>26</sup> "los dos tienen un diferente tipo de comunicación, la persona tiene costumbres y tiene un poco más de razonamiento [los animales] hábil como el felino u otra especie animal (velocidad, alimentación, etc.)"





We see this drawing as a moment in an Evo-Devo progression, in which this boy accesses patterns from his Mestizo upbringing, which at the same time reproduce influences from 500 years of Mexican biocultural history.

## Conclusion

Our core argument in this article has been the proposition that biological and socio-cultural processes are inextricably mixed in human existence, requiring a new alignment of biological and cultural disciplines. We develop this biocultural framework to throw light on problems and debates in Mexico around the place of its Indigenous peoples and heritage in the contemporary nation. From a starting point in political cultural analysis we show that dominant groups in Mexico present a concept of 'person' which mystifies its biocultural basis as part of an ideological strategy of governance. Against this dominant discourse we bring out a counter-narrative associated with Indigenous resistance groups. We show that this counter-narrative incorporates a more biocultural understanding of 'person' from Indigenous traditions. We then use ideas from biology as guides for understanding a remarkable biocultural fact. Indigenous genes and meanings have not been erased by 500 years of racism and discrimination against Indigenous Mexicans. In this history, long for many historians but short in evolutionary time-scales, a cultural matrix sustained by a robust epigenetic framework has been transformed, transmitted, and inherited by the majority of Mexicans. Our study shows that this matrix is still visible in Mexican children today, whether classified as Mestizo or Indigenous. Compared to the dominant model of the person enshrined in the constitution and mediated by the education system, this cosmivision in its modern forms is still productive and functional for all Mexicans.

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