

## Session 8: Cultural Astronomy and Heritage



## Introduction

Session 8 begins with an invited talk, “Cultural Astronomy: A scientific frame to understand academic astronomy as part of the Social World,” by Alejandro López. In this paper Alejandro discusses cultural astronomy and how it not only studies the astronomy of other cultures, but also displays the cultural history of Western astronomy as well. He discusses the relationship of astronomy with other disciplines and how cultural astronomy links astronomy and the social world. He provides supporting arguments and stresses that cultural astronomy must play a key role in astronomical heritage and education.

Anahí Caldú asked Alejandro:

*How do you draw a line with colonialism? Could bringing astronomy to communities be understood as a colonialist attitude?*

Alejandro responded:

*I understand that bringing academic astronomy to communities is not in itself colonialist. I think that if it is to do it without first speaking and knowing the communities and understanding their context, what they think of heaven, what they want and what they need. Avoiding colonialism also implies arriving with a humble attitude and sharing our knowledge and appreciating theirs, not going to enlighten the ignorant. But not in a condescending way but based on a real understanding of the provisional and situated character of all human knowledge, including what we think is excellent.*

*Of course, it also implies being aware of the context in which we would do this task, the institutions involved, what they are looking for, the conflicts that society faces, the role of our initiative in that scenario, etc.*

Next, in another invited talk Antonio César González García writes about “Our Sky, the Sky of Our Ancestors.” He describes how astronomy tends to be viewed from a perspective of modern science, but that other cultures have viewed the sky from different perspectives. Cesar discusses astronomy in culture and gives several related examples. He adds that astronomy in education can be used not only to introduce scientific concepts, but also engage local populations in a greater appreciation of their heritages.

“The astronomical heritage of pre-Hispanic societies in Venezuela: Total Eclipses of Sun reported in Petroglyphs” by Nelson Falcon and Alcides Ortega follows. They describe how relatively is known about the astronomy of pre-Hispanic societies in Venezuela that left no elaborate archaeological remains and had no written language. Petroglyphs, however, abound and the authors discuss examples of solar eclipses at two sites that could potentially correlate as inspirations for related petroglyphs.

Siramas Komonjinda, Orapin Riyaprao, Korakamon Sriboonrueang, and Cherdasak Saelee write of “Relative Orientation of Prasat Hin Phanom Rung Temple to Spica on the New Year’s Day: The Chief Indicator for Intercalary Year of the Luni-Solar Calendar.” In their paper they describe the ancient temple of Phanom Rung and how it may have

been designed with calendrical purposes in mind. Orientations mentioned were those for Spica and the Moon.

“Cultural Astronomy for Inspiration” is described by Steven Gullberg. He describes how archaeoastronomy enthralled many and that this interdisciplinary field can be used to inspire, not only for astronomy but also for other disciplines as well. He uses the astronomy of the Inca Empire as an example and includes a number of field research photos that illustrate fascinating light and shadow effects. Steven also describes the Incas’ use of dark ‘constellations’ in the Milky Way and depicts them in an illustration.

Gor Mikayelyan, Sona Farmanyan, and Areg Mickaelian next discuss “Armenian Astronomical Heritage and Big Data.” They describe a rich astronomical heritage in Armenia and present efforts to preserve it, such as the Byurakan Astrophysical Observatory (BAO) Plate Archive. They continue their report with description of the Armenian Virtual Observatory (ArVO) database. They state that the electronic archive will be incorporated within the International Virtual Observatory Alliance (IVOA).

The section’s last paper is “TIEMPEROS : Meteorological specialists from the pre-Hispanic indigenous cosmogony of Mexico, and the use of technology to promote astronomy and atmospheric sciences” by Cintia Durán. In it Cintia describes a personal investigation of request for rain and good weather rituals carried out in certain parts of central Mexico in consideration of the traditions and teachings of the local *Tiempero*. An education model came as a result and a prototype weather station was designed. Such stations then were built by several communities.

# Cultural Astronomy: A scientific frame to understand academic astronomy as part of the Social World

Alejandro M. López 

SIAC president, CONICET-UBA, Buenos Aires, Argentina  
email: [astroamlopez@hotmail.com](mailto:astroamlopez@hotmail.com)

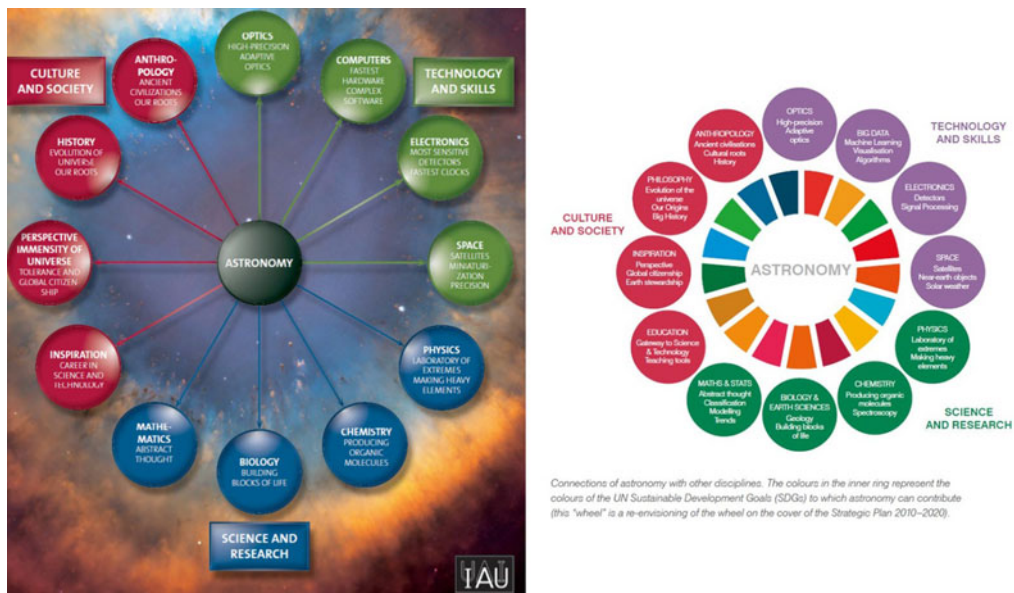
**Abstract.** In the past, Western academic astronomy has conceived in a very specific way its interests. However, in recent decades there has been a promising openness to the rest of the society, in the context of areas such as education, heritage and outreach. Despite this, there has not been an adequate scientific approach to do it, which would imply taking into account the social sciences and a truly interdisciplinary perspective. Here we want to develop the idea that this interdisciplinary approach already exists and it is called: Cultural Astronomy. Unfortunately, in the context of academic astronomy it has been only seen as a study of the “astronomies of others”, intended as previous stages or failed attempts of Western academic astronomy. We will seek to show that Cultural Astronomy, as a critical reflection on the social character of the astronomical knowledge, is key to the success of these opening efforts.

**Keywords.** Cultural Astronomy, Interdiscipline, Education, Heritage, Development, Outreach

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## 1. Astronomy and Development

“Astronomy for development” has been a priority for the IAU in recent years. The last two strategic plans, 210–2020 and 2020–2030 (IAU 2018; Miley 2009), are clear manifestations of this importance. We believe that this impulse is a huge step forward, since it puts academic astronomy in a position to assume a more active and leading role in the various challenges facing the contemporary world. In this sense, the IAU is generating an important expansion of its goals. Both strategic plans insist on the interdisciplinary nature of the effort necessary to carry out these ideas. One of the first things that we believe should be taken into account when considering an interdisciplinary work with the social sciences is the asymmetric relationships that exist between academic disciplines. These relationships have their roots in the complex history of the constitution of the “western” academic field and the knowledge policies that have articulated it. These asymmetries are today part of our academic common sense, and imply strong preconceptions about the importance and hierarchy of the different disciplines. An example of these can be found in the relationship diagram of astronomy with other disciplines that appear in the mentioned strategic plans (Fig. 1) (IAU 2018: 22, Miley 2009: cover page). There, it can be observed that while mathematics, chemistry, physics and biology are located under the title “Science and Research”; anthropology and history –in the first plan– are under the heading “Culture and Society”. In fact, in the first plan (Miley 2009: cover page), they are placed next to “Perspective immensity of universe” and “Inspiration”. But history and anthropology are sciences that carry out research. In any case society and culture could be proposed as their object of study, but in that case the other sciences should have been put under a label such as “living beings, matter, energy, patterns, etc.” In fact,



**Figure 1.** Diagram -“wheel”- of relationships of astronomy with other disciplines. On the left the version of the Strategic Plan 210–2020 (Miley 2009: cover page), on the right the version of the Strategic Plan 2020-2030 (IAU 2018: 22).

under anthropology, you can read: “Ancient civilizations. Our roots”. But anthropology deals with human cultures and societies as a whole, not just those of the past. Moreover, its most characteristic methods, such as ethnographic fieldwork, are designed to study societies contemporary to the researcher. It is not about exploring only “our roots”, it is about understanding ourselves and the others with whom we live.

This type of considerations is very common and can be seen in much of the terminology we use to classify the disciplines in dichotomous terms. In the table below, the left column contains terms that we use explicitly. The ones in the column on the right are their opposites and although, in general, they are not explicitly used; they are implicitly suggested when using the ones on the left.

| Astronomy | Social sciences      |
|-----------|----------------------|
| Science   | Non-science?         |
| Pure      | Impure?              |
| Nature    | Culture (Arbitrary?) |
| Hard      | Soft?                |
| Precise   | Imprecise?           |
| Objective | Subjective?          |
| Truth     | Opinion?             |
| Developed | Non developed?       |
| “We”      | “They”?              |
| Future    | Past?                |

## 2. Cultural Astronomy

This contribution seeks to bring the perspective of cultural astronomy to the discussion of the links between astronomy and the social world. Cultural astronomy (Belmonte Avilés 2006; Iwaniszewski 1991; Ruggles and Saunders 1993) is an interdisciplinary area that studies the ways in which the different past and present cultures perceive the sky, the questions that are asked about it, the meaning they give to it, the practices that they develop related to it, the relationships that they build with that environment and what happens there; all as an integral part of its social processes of production, reproduction and transformation. Cultural astronomy is an interdiscipline dedicated to the study of social facts. This broad area of studies includes: Ethnoastronomy, Archaeoastronomy, History of Astronomy (some kind), Astronomical education (some kind), etc. We can say that Cultural astronomy is a perspective which is not searching for fragments of “our” astronomy in distant cultures. It is interested in the cultural context of astronomy (Aveni 1989; Zeilik 1983; Iwaniszewski 1989) but also studies astronomies as socio-cultural products (McCluskey 2005; Iwaniszewski 2009, 2011, López 2011a; Ruggles 2010, 2011). It is an area with ancient roots, whose first professional antecedent can be sought in the works of the British astronomer Norman Lockyer. Between 1980 and 1990 Cultural Astronomy achieved to establish solid methodological bases (Belmonte Avilés 2006; Iwaniszewski 1991; Ruggles and Saunders 1993). Archaeoastronomy, Ethnoastronomy and a socio-anthropological History of Astronomy are some of its branches. Cultural Astronomy have almost three big interacting “methodological traditions”: the Green tradition (based on an statistical and general approaches), the Brown tradition (focus on specific cases and in the local and regional contexts); and the Blue tradition (interested in locally situated interpretations). Numerous professional astronomers have devoted themselves to this area of knowledge, including many members of the IAU. In fact, cultural astronomy has been present in the old Commission 41 of the IAU, as well as in the current C4 and C3 commissions of division C. The academics who dedicate themselves to cultural astronomy have gathered important experiences and developed an enormous conceptual baggage in reference to interdisciplinary work, especially with the social sciences. One of the issues that has become clear to astronomers working in cultural astronomy (Belmonte Avilés 2006: 46), is that interdisciplinary studies requires not only working in teams with specialists from all the disciplines involved. It is also necessary that each of the researchers learn their colleagues’ language. For this reason, we believe that the perspective of cultural astronomy is essential when thinking about the links between professional academic astronomy and global society. Next, we will discuss some key ideas that cultural astronomy perspective can give to the academic astronomical community in order to rethink their role in the global society.

## 3. Knowledge as a social construction

We live in a socio-cultural-environmental reality. Our knowledge is a socio-cultural product (Bloor 1998), including astronomy. Social construction of knowledge does not mean neither simply “collective work”, nor arbitrariness. Our world is a universe full of meanings, schemes of perception and metaphors organized into cosmovisions/worldviews and cosmologies, in which we are introduced by the other members of our society. Cosmovisions and cosmologies are poles of a continuum: Cosmovisions more linked to logics of practice, incorporated by daily activities (*habitus*), primary socialization, imitation, and day-to-day experience (Bourdieu 1997). This includes our ideas about the sky. Cosmology refers to more explicit and systematic elaborations. The experience of the senses limits the possibilities of any human cosmovision, but not to the point of generating a single compatible option, partly because the perception itself implies the

prior imposition of socio-cultural patterns and presuppositions. The social character of the knowledge in question and the need to legitimize that knowledge and comply with accepted truth regimes imposes limits on the possible cosmovisions in a given society at a given time, but they are not absolute either and they do not unequivocally determine an only one possible cosmovision. A cosmovision not only implies a specific set of answers about how the world is, it also involves a set of questions, guiding objectives, truth criteria, etc. They were built historically and socially; any evaluation of their metaphysical and ontological assumptions would be from some equally historically and socially constructed system; they tend to be naturalized and seen as obvious and complete. Also, they are linked to social structures and essentially to power, this implies that in the context of the contemporary global order (or in any other order) the comparison between them is never a mere “epistemological” act, it is about a struggle to achieve legitimacy in a specific scenario. Knowledge systems are always imbricated in the general social field, with varying degrees of autonomy with respect to it and this implies that they are strongly crossed by power. The more important the sky is for a society, more their power mechanisms will be involved in managing the links with it. Every system of ideas and practices about the sky have a constitutively unfinished and changing character. A real dialogue between cultures, needs to assume that they have hierarchical relationships with each other, linked to political, economic, ethnic, gender, age, religion, etc. inequalities. Because the construction of knowledge is crossed by power relations. As a brief sample of the possible cultural astronomy contributions, we can begin by analyzing the very idea of “development”. In the social sciences the category of “development” is a complex and debated concept (Escobar 2005). In this sense there are two basic questions that we must ask ourselves about “development” in order to think about “astronomy for development”. The first question is: development of what? The second question is: development for whom? In reference to the first of these questions we can point out three major areas recurrently mentioned in the debates on astronomy for development: education, heritage and economics.

#### 4. Astronomy and Education

Regarding development in education, cultural astronomy has very important contributions to do. A true plural education in the contemporary world must be intercultural. That means, in the first place, that it must take into account the culture and ideas of those people who receive the education in question. Secondly, it supposes that it must understand that our world is formed by the permanent interaction of a great diversity of cultures, articulated by relationships crossed by power and inequality. Therefore, an astronomical education for development must dialogue and know the local systems of knowledge. It must prepare students to dialogue and build agreements in a diverse world. A true education should always be an intercultural education. For this, it is essential the contribution of researchers in cultural astronomy and in particular the methodological contribution of ethnoastronomy. Western Academic Astronomy assumes certain base metaphors, proposes a possible repertoire of emotions and attitudes towards the sky. These ideas are obvious for those who grew up socialized in them. For other human groups are profoundly opposed to their own way of experiencing and thinking about the sky. In this context an intercultural astronomy education implies a true reflexivity on behalf of the teacher. This implies denaturalizing the “western” sky. One of the ideas that we tend to take for granted is “natural laws.” This idea is a legal metaphor for the conceptualization of the regularities of the sky, which is also considered the paradigm of “natural law”. Those regularities are seen as the very foundation of reality. Therefore, alterations in these patterns generate concern. It is interesting to note how, on the one hand, the origin of this way of thinking about regularities comes from the realm of the



social, but simultaneously the idea of a cosmic order is used to justify the social order. Another key point is the nature / culture divide. Division that is not shared by the views on the world of many human groups. It is a classification structure with fundamental consequences in the way of conceiving the world. Another important point is the way in which Western academia tells itself its own history and the history of the “development of universal thought.” The way we usually tell ourselves about that past, especially in the institutions that train future scientists, is a linear story of progress. A story in which everything is a preparation for Western academic science. This linear history supposes the omission and deformation of a much more complex pattern of interconnections, diverse cultural projects, loans and flows of ideas, technology and people. All this shows us the importance of recognizing the culturally situated character of Western science. One of the obstacles to do this comes from the process of relative autonomization that grounded the modern scientific field in western Europe and USA. This process was linked to an imaginary of political and cultural autonomy of the scientific academy. This imaginary is part of the common sense of academics and block any attempt of thinking about the situated character of the Western academy. Natural sciences and specially astronomy have a leader role in this image of the academy. For this reason, Cultural Astronomy, making possible a new vision of academic astronomy, has an enormous potential to collaborate in a radical improvement of astronomical education, and scientific education in general. A more anthropological view of the history of Western Academic Astronomy, reveals its character as a socio-historical product. A deeper understanding of the astronomies of other cultures, which does not relegate diversity to a distant past, would be crucial to improve the teaching of astronomy in the world. Addressing the different ways of knowing the sky in greater depth, understanding its structure, allows us to appreciate the way in which the ideas and models with which humans seek to know the world are generated. Understanding the logics, metaphors, interests and observations in which the Western Academic Astronomy rest, can make it easier for educators to design strategies to approach the teaching of this astronomy in diverse cultural contexts. To do this we have some problems to solve. The first one is that a huge amount of material about the astronomy of different cultures used in the teaching and popularization of astronomy, do not have methodological rigor. Also, astronomies of other cultures are used in an “anecdotal” manner, as a kind of curious introduction to the strange things that were “thought” before the arrival of Western science. We have very few didactical materials about a socio-cultural perspective on Western astronomy for astronomy education. But we also have some key potential strengths: professionals in cultural astronomy and professional associations, as the Sociedad Interamericana de Astronomía en la Cultura (SIAC) – <http://siac.fcaglp.unlp.edu.ar/>-, Société Européenne pour l’Astronomie Dans la Culture (SEAC) – <http://www.archeoastronomy.org/>-, and the International Society for Archaeoastronomy and Astronomy in Culture (ISAAC) – <https://www.archeoastronomy.org/>-. These institutions can give expert advice to astronomers involved in education projects.

## 5. Astronomical Heritage

As we have pointed out in a previous work (López 2016) regarding heritage, cultural astronomy plays a crucial role in the joint initiatives of the IAU and UNESCO on astronomical heritage. One of the things we have learned in this interaction is that today heritage has become a language for the expression of a great variety of conflicts, in a process similar to that which has occurred with environmental concerns (Leite Lopes 2019; López 2016). This occurs because local populations perceive that heritage and environment are issues that interest international organizations and national states. Therefore, it is important to have a broader view of what is at stake in each case where patrimonial

issues are discussed. This is especially relevant in the case of intangible heritage and cultural landscapes, since the concept of heritage of international organizations tends to privilege a static conservation, without changes. Today, heritage is an increasingly spread concept. It has a great impact on many crucial areas: public politics, NGOs politics, public opinion, and aboriginal communities' strategies. The focus of the heritage concept is the idea of "culture" as a value to protect. In particular, at the present we can see an increasingly valorization of non-western achievements. But the concept of heritage has strong links with a specific western juridical language and property conceptions. For this reason, some of their key characteristics are: the demand of "authenticity"; the necessity of a clear "definition" of the boundaries of every specific heritage; and the "preservation" of the integrity of the heritage. The use of the heritage concept has a tendency to privilege the tangible aspects, the spectacularity, and the singularity of the proposed heritage. This "western" bias has the consequence of and implicit hierarchization of the different conceptions of humankind involved. The Western concepts have a very strong tendency to prevail in the international definition of what is heritage and what is not. Also we can see a strong tendency to use the concept of "culture" to refer to the diversity of the human forms of life but hiding the power relations between the different societies, making claims of political "neutrality". At present time, claims about world heritage are, in many cases, claims about the ownership and rights, but in the case of aboriginal communities the conflicts involved are also conflicts about different ways of think about: the definitions of things, people and humankind; the idea of territory; the ownership; the history, change, and identity. Heritage -as ecology- is now a new language or arena for the display of the complex conflicts between societies, specially nation-states and the minorities within them. The ideas of "traditional" and "authentic" are conceptions frequently applied to aboriginal populations. Usually they are grounded in the idea that that kind of societies does not change (and if they change they lose their authenticity). They are thought as societies that only enter history and change after the impact of the colonization processes (Sahlins 1988). This implies the conception of ethnic identity as linked to some well-defined group of features like dances, clothes, specific ceremonies, or to well define cosmological systems (Comaroff and Comaroff 2009). This does not fit very well with the forms in which oral or predominantly oral societies function. An example of this is the negative to understand the crucial role in present aboriginal communities in South America of their own forms of Christianity, developed form the complex relationships with western missionaries. Many western experts involved in world heritage initiatives are looking for the "real aboriginal life" and do not pay attention to crucial cultural manifestations, with deep roots in the aboriginal cultures, because these manifestations are in the contexts of aboriginal Christianities. In many cases this practices are not part of an "acculturation" process, they are not a "mix". They are real cultural creations of these groups, in the peculiar historical situation that they face. They are truly reinventions of Christianity in terms of aboriginal logics, and are fundamental ways to legitimate – in the context of the national society- important cultural forms, leadership mechanisms, social organization, and conceptions about the relationships between human and not-human beings (Altman 2015). Other very common idea is that aboriginal people lose their identity if they adopt western technology. But this is not necessary the case. For example, in the Chaco region in South America, cell phones and computers make possible new versions of the oral culture of past centuries, reinforces old mechanisms of marriages making, and expands the making of texts in aboriginal languages without the control of western teachers or missionaries. In each case it is necessary to study these elements in context. One of the great effects of patrimonialization is the practices of separation from the everyday that usually accompany it (Acuto and Flores 2019: 3). The "consecrational effect" of this estrangement is part of the mechanisms of "monumentalization" and "enhancement"

that build the legitimacy of heritage as an approved form of memory. As mentioned by these authors, this is accompanied by the introduction of a regulated contact mediated by “experts” of what is thus separated. These are management practices of the “powerful” characteristic of the separation between “sacred” and “profane” and therefore we could consider heritage as a kind of materiality of a “secular form of the sacred” in the context of hegemonic modernity. The incorporation of some aboriginal cultural traditions into national states or international agendas implies in most cases the bureaucratization of these practices. This situation tends to reinforce the forced unification of practices that have a very wide spectrum of variation, according to the non-centralized nature of the societies involved. This often leads to the attempt to define clothing, movements, instruments, meanings, etc. An example of this from Argentinean Chaco region is the recently adopted ceremony for the “Moqoit new year” at the 15 of September, promoted by local government (Giménez Benítez *et al.* 2002; López 2011b). This new form of the spring ritual performances and calendrical conceptions of the Moqoit people have many effects. On the one side, promotes and gives public visibility in the non-aboriginal society to the Moqoit conceptions; and reinforce a dynamic of creation of networks at regional level between different communities. In the other side, implies the creation of a “domesticated” and simplified version of the Moqoit calendar. The actual form of this calendrical important period involves a complex group of signs (birds, flowers, stars, rains) which are not associated to one single day or to a fixed point in the western civil calendar. Also it’s not exactly a Moqoit equivalent to “new year.” In fact it is the visible manifestation of a new fertility cycle that began with another series of signs: The June solstice, the heliacal rise from the Pleiades and the first frosts. The Right to Free Prior and Informed Consent (FPIC) is a key principle for the relationships between aboriginal groups and national governments or international organizations. Many international regulations, as the Convention 169 of the International Labour Organization (1989), the UN Declaration on the Rights of Indigenous Peoples (2006), the American Declaration on the Rights of Indigenous Peoples, emphasize the rights of indigenous peoples to participate -prior to the decisions to be made- through their own decision-making structures in all actions that affect them, including patrimonialization processes. This must be free of pressures and manipulations -for example pressures using the promises of potential economical and touristic benefits-. In societies of low stratification, the processes of decisions usually involve the making of a consensus, and strong discrepancies between different communities and leaders. In many occasions the western agendas are not minded to tolerate these processes and their time scales.

## **6. Astronomy, economy development and coloniality**

Finally, in reference to the economy, one crucial issue is that the academic astronomy community in general has supposed that the installation of large astronomical facilities drives local development. We must be especially attentive to the local impact of these great international astronomical facilities. These huge structures and the set of associated activities are driven by large international consortiums and involve huge amounts of money. We must be especially careful in its design and in the way in which its installation is agreed with the local populations. It must be a true dialogue, where the possibility of local inhabitants to refuse these facilities’ install are real. The scientific community, when installing large facilities, should mark with its example the way in which other large undertakings should be build. But many recent cases (Casumbal-Salazar 2014; Herhold 2015; López 2018; Miller 2016; Mizutani 2016; Swanner 2013) show that we are following the ways of proceeding from the large extractive industries instead of setting agenda to them. As “knowledge industries” we should be a beacon for all other types of industries in terms of impact on the non-human ecosystem, but fundamentally in terms of impact

on the local human society. And a crucial point in the evaluation of this impact is that local social actors, especially the most vulnerable and unprotected, must have an important voice and decision-making power. Science is proposed itself as dialogue and joint construction of knowledge. Therefore, we must be a school of dialogue and listening. In a world in which imposition and authoritarianism are often the easiest way out, the astronomical community has the opportunity to show that reason, dialogue, understanding and listening to the other are valid and efficient tools. Fighting the coloniality of knowledge implies recognizing that its character is inextricably linked to the human societies that produce this knowledge and to power relations. And with this in mind trying to make our own knowledge system less colonial. Also implies coexisting in the diversity of human worlds, seeing diversity as a wealth and not as a problem, but with a critical view of how diversity is articulated with inequality.

## 7. Final Remarks

The other big question is, as we said, for whom is development? The IAU documents show that there is quite a consensus that development should primarily favor local populations. And within that group to the especially vulnerable. This again implies that as a scientific community we must learn to listen to the demands and problems of these populations. As teachers know, all knowledge construction must start from previous knowledge, demands and interests. We need reflexivity to ask ourselves about our own systems of knowledge and practice about the sky in all its complexity, variation, historical and contingent character and as social productions. We need this to understand that “Western” academic astronomy is not a “trans cultural meta-system” of knowledge about the sky. As scientists we need a scientific approach to the Academic Astronomy relations with the world. That is why a profound dialogue with the social sciences is essential. As we see, a deeper interdisciplinary dialogue should be the next step to understand academic astronomy as part of the social world, and in the frame of the present IAU strategic Plan, in the construction of an astronomy for development. Cultural astronomy is the interdisciplinary academic space that has been working for years on the development of this type of methodological perspectives. For all of these we believe that it is of the first importance that the field of astronomy for development deepens its links with cultural astronomy. Cultural astronomy must play a key role in the articulation of the astronomical heritage initiatives. We need to be involved with people if we work with people. Cultural astronomy must play a key role in education initiatives, in thinking about academic astronomical education as a social-cultural situated enterprise. Also, to contribute to the world we must reflect on our practices and conflicts with the world. The symbolic struggle for the definition of the meaning of objects, places, times and practices, is not politically neutral. This struggle is marked by the force of colonial relations. If we want to have a more active role in the world and contribute to it, we cannot maintain a naïve and uncritical attitude about the world’s problems and our responsibility as scientists. The colonial logics are inscribed in our bodies and practices, we need to make a very strong epistemological vigilance to avoid the risk of reproducing colonial plunders in the name of science and culture. We can contribute to World development but the World can contribute to Academic Astronomy development too.

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