

The Experience of Intercultural Dialogue in the Amazonian University UCSS-Nopoki and Its Implications for SETI

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Abstract In 2017 two Universities of Lima (Peru), the Universidad Católica Sedes Sapientiae (UCSS) and the Universidad Femenina del Sagrado Corazón (UNIFÉ), presented a project called *La Vida en el Universo: Su Origen, Su Naturaleza, Su Sentido (Life in the Universe: Its Origin, Its Nature, Its Meaning)*, which was awarded one of the six Oxford Templeton Visiting Fellowships to Latin America offered by Oxford University and the John Templeton Foundation. The core of the project was a one-week field research about the experience of intercultural dialogue, which is being developed in the last twelve years in the UCSS Amazonian branch of Atalaya (called UCSS-Nopoki), one of the few cases in the world (maybe uniquely fully successful) of a positive interaction between cultures with very different technological levels, as, on one side, our Western civilizations and, on the other side, the Amazonian original peoples having their sons studying in Nopoki. In the present paper some significant results of this research will be presented, which question the widespread skepticism about the possibility of intercultural communication, generally based on the currently dominant philosophical relativism. Furthermore, with respect to a future contact with a hypothetical extraterrestrial civilization, this experience of interaction with the "otherness"—seen from both contexts, both from the Western and the Amazonian side—can serve as a model for possible communication. In the same way, this experience of intercultural relationship should demonstrate that the interaction between different civilizations, if managed properly, can have a positive impact on each of them, also helping everyone to understand better our place in the context of both our particular history and the "Big History" of the Universe.

The Beginnings: Oxford in Latin America and *La Vida en el Universo*

In this paper we are going to present the first results of field research that is currently being developed in the Amazonian University UCSS-Nopoki of Atalaya, which started with the project *La vida en el universo: su origen, su naturaleza, su sentido* (“Life in the universe: its origin, its nature its meaning”). This Peruvian project about SETI and astrobiology was awarded one of the six Oxford Templeton Visiting Fellowships to Latin America offered for the year 2017 by the Ian Ramsey Centre for Science and Religion (IRC) of the University of Oxford and the John Templeton Foundation (JTF) in the framework of Science, Philosophy and Theology in Latin America, a three-year project (2015-2017) which was the second part of a wider project of the University of Oxford in Latin America, whose first phase was represented by the project CYRAL (*Ciencia Y Religión en América Latina*, 2011-2013), also funded by the Templeton.

In 2016 the IRC and the JTF offered to all the Universities of Latin America six grants for the following year “to encourage Latin American universities to invite senior academics from other regions of the world to visit their institution for short-term courses, workshops and lecture series on topics broadly related to the interplay between science, philosophy and theology” (IRC 2016). One of the winning projects was precisely *La vida en el universo*, proposed by two Peruvian Universities: the Universidad Católica Sedes Sapientiae (UCSS) and the Universidad Femenina del Sagrado Corazón (UNIFÉ) of Lima.

The project, which was awarded a \$22,500 grant, was about research, teaching and dissemination and was developed by the designated Oxford Templeton Visiting Fellow to Latin

America, Dr. Paolo Musso, from 20 February to 28 April 2017 in the Peruvian cities of Lima and Atalaya. It focuses on three main topics: a) the relationships between the conditions required for the origin of life and the conditions required for the origin of the universe; b) the philosophical and religious implications of the possible existence of life in other parts of the universe; and c) the problem of the universality of reason, with a special focus on intercultural communication.

Furthermore, there were also some unscheduled talks, given by Claudio Maccone, Technical Director of the International Academy of Astronautics (IAA) and Chairman of the IAA SETI Committee, and by some other distinguished scientists who were involved in the project during its development: the astronomer and theologian José Gabriel Funes, professor at the Universidad Católica de Córdoba (Argentina) and former Director of the Specola Vaticana from 2006 to 2015; the astrobiologist Julio Valdivia, President of the Sociedad Científica de Astrobiología del Perú (SCAP); the independent astronomer Carlota Pereyra, Director of the *Ecovida y Universo*, a program of the Asociación Qespichyq; along with the cosmologist Teófilo Vargas and the astronomer Víctor Vera, both professors at the Uni-

versidad Nacional Mayor de San Marcos (UNMSM), the most ancient University of America. The project ended on 28 April 2017 with an international congress held in Lima in the main auditorium of the UNIFÉ, with the participation of seven Peruvian and five foreign invited speakers, whose *Proceedings* (Musso, ed. 2020) are in press just at this moment and will be published very soon, at the beginning of the new year.

However, the core of the project was the field research developed from 16 to 22 March 2017 about the extraordinary experience of a very successful intercultural interaction between our Western civilization and some Amazonian original peoples who were (and still are) living in Nopoki, a branch of the UCSS of Lima founded in 2006 in the city of Atalaya, in the department of Ucayali, in the South-East of the Peruvian Amazonia.

Nopoki and Its Uniqueness

“Nopoki” is a word of the language of the Asháninka (one of the original peoples who participated in the foundation of Nopoki), which literally means “I’ve come.” This statement, however, does not express merely the fact that the student has come to the university; it is intended to affirm the sense of an encounter between the student who “has come” to learn and the professors who



Figure 1. The opening ceremony of the final congress of *La vida en el universo* (a project funded by the University of Oxford), which was held in the main Auditorium of the UNIFÉ (Lima, 28 April 2017).

“have come” to teach, as well as the commitment of the new student to become an active member of the Nopoki community.

The birth of Nopoki was due to the initiative of Monsignor Gerardo Žerdin, a Franciscan missionary with a deep knowledge of many indigenous Amazonian peoples, who little by little realized that their greatest problem was education, and that the key for the preservation of their identity was the preservation of their original languages. To lose a language, indeed, means to lose the opportunity of understanding the world in a unique way: therefore, with the loss of language, knowledge, tradition, ways of understanding and relating to the world and the others are also lost. In addition, in a school where only Spanish is spoken, professors and children are unable to understand each other completely.

Monsignor Zerdin conceived of the idea of creating a university where it would be possible to provide the students coming from the original Amazonian peoples with an education that took into account their language, their culture and their lifestyle, so that they could become able to teach their children in the same way in the future. To

make it possible, each original people should have sent to Nopoki not only its children to become students, but also one of its wise men to become a professor, which was a very difficult decision, because, due to the great distances, both students and professors should would have to live in Nopoki without going back home for a long time.

Despite the hardships, some Amazonian peoples decided that the sacrifice was worth it. So, in 2005, Monsignor Žerdin went to Lima and proposed his project to many universities. The only one interested was the UCSS, whose educational method, based on the ideas of Monsignor Luigi Giussani (1997, 2019), had a natural affinity with Žerdin’s approach. After a first “experiment” held in 2006, with the creation of a pre-university center with fifty-seven students, in 2007 Nopoki was officially founded as a branch of the UCSS Lima, with forty-seven students and a unique faculty, that of the Educación Básica Bilingüe Intercultural (EBBI), i.e., Basic Intercultural Bilingual Education. Now in Nopoki are also the Faculties of Administration, Accounting, and Agricultural Engineering. At the moment, only in the EBBI is there real bilingual education although the

final goal is to extend it gradually to all the faculties (see Azcona 2018, UCSS 2018).

Nopoki and the Future of SETI

Intercultural Communication on Earth and off Earth

Linking Nopoki to Oxford makes it possible to gain some useful insights about how to construct a suitable language for an interstellar message to be used in a possible communication with some extraterrestrial intelligence (if, sooner or later, we discover any).

The problem of the possible existence and nature of extraterrestrial intelligent beings is probably as ancient as the human capacity to gaze at the stars. It was not only a common topic in literature and oral storytelling, but it also has been seriously discussed by philosophers, scientists and theologians (Dick 1982; Crowe 1986) with an increasing interest in the most recent years (Asla 2016a, 2016b; Dick 2001; Dunér et al. 2013; Musso 2009; Vakoch 2014; Losch and Krebs 2015).

However, the problem of how to carry out an effective communication with another civilization arose only with the birth of SETI.³ The first SETI program was started on 8 April 1960 by the U. S. astronomer Frank Drake at the Green Bank Radio Telescope in West Virginia, according to suggestions made by Giuseppe Cocconi and Philip Morrison (1959). From then on, many other similar programs have been carried out by scientists in various countries all over the world.

Previously, some rather naïve proposals had been made in the nineteenth century based upon the idea that intelligent beings might live on Mars (what then seemed to be possible, but not today) and so could be able to see some giant symbols drawn on the Earth’s surface, and successively, around the middle of



Figure 2. Dialogue with some students from different Amazonian original peoples in Nopoki. The traditional clothes they wear are not mere folklore because here they learn their symbolic meaning.

the twentieth century, the merely demonstrative messages of the Pioneer and the Voyager probes (Drake et al. 1972; Sagan et al. 1978), which we are not going to consider here since they were not real attempts of communication. Then, with the rise of SETI, some more serious proposals about how to construct an interstellar message were made, based upon the more realistic idea that any communication with extraterrestrial intelligence (CETI) could take place only via radio waves⁴ (Devito and Oeherle 1990; Dutil and Dumas 1999; Freudenthal 1960; Hogben 1961; Musso 2004a, 2011; Nieman and Nieman 1920; Vakoch 2013, 2014).

However, since we cannot base our attempts of imagining how CETI could be on the features of a real extraterrestrial civilization (because up to date we have not yet found any), the only points of reference we *can* actually consider are those drawn from human history, i.e., the encounters between *terrestrial* civilizations, above all those characterized not only by deep cultural differences but also by a deep technological gap. The most suitable and best known of all is surely the encounter between our Western civilization and the indigenous peoples of Latin America, so the idea of using it as a paradigmatic example is not new at all; it is as old as SETI itself. The problem is that usually only negative aspects are taken into consideration; also because—we must recognize it honestly—they are the vast majority. Nonetheless, insisting upon only the negative is incorrect since it is unjustifiably unilateral and can in no way be helpful for our purpose.

Things become even worse if we take into account a wider context than that of the SETI community. Indeed, according to a bad habit of modern philosophy, as reprehensible as widespread, very often philosophers base their criti-

cisms of the possibility of a true intercultural communication on merely imaginary examples, as the world-famous Quine's "Gavagai" (1951), and not on reality, which, on the contrary, clearly shows that communication, although difficult, *is* possible, at least between terrestrial civilizations. This happens due to the strong influence of the relativistic stance, that nowadays is dominant among philosophers, psychologists, sociologists, and humanists in general, who therefore are usually very skeptical about the possibility of a real communication even between different terrestrial civilizations and, therefore, *a fortiori*, between terrestrial and extraterrestrial ones.⁵

Also traductologists tend to be rather skeptical about the feasibility of CETI based upon the number of possible nuances of the meaning of a text and how difficult translation is even between rather similar languages. Most of them (but not all) think that it would be impossible to translate any text into a radically different language. However, CETI methodology should be very different from that of a standard "terrestrial" translation. Indeed, properly speaking, CETI would not even be a form of translation (since we would not know into *what* language we should translate), but rather an attempt of encoding our language in such a way that could make it understandable to other intelligent beings, who should make the translation on their own, based upon what they have understood. Even so, assessing its feasibility by only imagining the possible scenarios is very difficult without ever testing our strategies in a real situation.

Anthropologists, instead, study (of course!) the cultures and languages of real original peoples, but, unfortunately, very seldom from a point of view useful for CETI, since usually they are

interested in translating their languages into ours, but not vice versa. Moreover, very often original peoples end up being the object, but not the subject of the investigation, which prevents us from discovering what understanding *they* have of *us*.

On the other hand, scientists, who are obliged by the experimental method to base their theories on empirical evidence, are usually much more optimistic: the problem with them is that they are often *too* optimistic because the language of science and mathematics is much more precise, hence much simpler to communicate than the languages of humanities. Therefore, they are sometimes unaware not only of the false problems existing in the minds of philosophers but also of the real problems existing in things themselves. Unfortunately, in this case two errors moving in opposite directions do not cancel each other; on the contrary, they combine to create an even more serious problem. The only way out seems to be an interdisciplinary work, which is precisely the mission of both the SETI Institute and the IAA SETI Committee, but this is easier said than done.

The only real attempt at a systematic interdisciplinary study of the whole matter was made at the beginning of the millennium with a series of international workshops on Interstellar Message Composition (IMC) promoted by the SETI Institute under the direction of Douglas Vakoch, the first of which was held in Toulouse during the 52nd International Astronautical Congress (IAC) from 30 September to 2 October 2001. Unfortunately these efforts were soon interrupted due to serious economic problems at the SETI Institute. At present, the debate is still going on within the IAA SETI Committee, but with increasing difficulties, due partly to the fact that in the last years the new

members of the Committee have been almost all scientists, and partly to the increasing hostility toward active SETI, despite that *studying* how to construct a good interstellar message is quite different from actually *sending* it to the stars (whose risk, in any case, would be practically zero: see Musso 2012).

This is why we had the idea of undertaking a pioneer study doing *real* field research about a *positive* case of interaction between terrestrial civilizations who are almost “alien” to each other. Unfortunately, the available funds were limited such that we were not able to carry out an in-depth investigation as we desired, but the results were so interesting that we decided to find a way to further the research as soon as possible, as now we are just about to do (see 5).

However, we were able to exploit in the best possible way the week we spent in Nopoki: conversations were held with both students and professors from the original peoples about their experience of positive intercultural coexistence in the university and what made it possible. Dr. Musso gave a talk about the search for life in the universe according to the method of modern science; the wise men of the Yine and Matsigenka peoples agreed to give another talk in which they presented their traditional cosmovisions; and the astronomer Carlota Pereyra, assisted by her son Rodolfo, taught Nopoki students how to look at the sky through a telescope that she had brought with her. In addition, they had discussions with the students and professors about the conception of astronomy in their respective cultures, which culminated in the creation (absolutely not planned in advance) of the Nopoki Map, i.e., a celestial map with new constellations drawn by the same students based upon on their own traditions, which also contributed some

interesting elements to our research (see Pereyra 2000).

Finally, we have to mention that in the last phase of the writing of this paper, from 8 to 11 June 2019, some of its authors, i.e., Paolo Musso, Wilmer Atachahua and Guisella Azcona, went once again to Atalaya, where they met with Didier López (also one of the authors) and several other professors of Nopoki, to deepen some issues with them. Especially significant has been the dialogue with Monsignor Žerdin (who had not been able to participate in the Oxford project because he was travelling during that period). He clarified many fundamental aspects about the method that is being used in Nopoki to translate the concepts of our culture into languages that do not have them, especially in the case of mathematical concepts, to which we must now dedicate some separate remarks due to their peculiar importance.

A Very Special Issue: Ethnomathematics and Its Relevance for SETI

If there is something about which almost all SETI scholars agree, it is that any attempt of IMC will necessarily involve, at least to some extent, mathematics, and that it is likely that the first part of any interstellar message will be based upon mathematics, since it should be the most universal language of all (see Musso 2011). However, even those authors who are absolutely sure of this cannot be equally sure that *our way of representing* mathematics is universal (or at least universally understandable). Unfortunately, this is almost impossible to demonstrate experimentally since nowadays almost all human beings know at least basic mathematics and represent it in the same way.

The only exceptions are represented by some very isolated indigenous peoples, mainly living in the Australian outback

(see, e.g., Butterworth et al. 2008) or, precisely, in the Amazon forest (see, e.g., Pica et al 2004). Some anthropologists have studied those peoples and their “ethnomathematics”, i.e., their way of representing mathematics and managing mathematical problems despite the fact that their mathematical systems are very simple (typically, they can count only until five), with some very interesting if limited results. In most cases they studied one group of people at a time, with different methods and goals, making it difficult to reach a global vision. Furthermore, they were not very interested in the problem of translating *our* mathematics into *their* conceptual systems, which, on the contrary, is crucial for IMC.

The Greatest SETI Experiment in the World

The original peoples of Nopoki are in an intermediate situation since they are not completely isolated and usually know at least basic mathematics. Many of their languages do not have a conceptual system able to represent it although they are working to create one. Far from being a limitation, this is, on the contrary, an ideal situation that makes Nopoki a potentially perfect laboratory for testing *experimentally* our ideas about IMC because

- 1) Nopoki is very likely the only place in the world where we can find such a great number of original peoples, different from not only us but also from each other in culture, language, technology, and level of development of mathematics.
- 2) Nopoki is also probably the only place where a textbook of basic mathematics is being translated into the languages of many original peoples, some of whom have no mathematical concepts and differ from not only our languages but also from each other, sometimes

not only in their concepts but even in their structure.

3) Nopoki is also the only place in the world where this process of translating our mathematics into many different languages is done using a method similar to that considered the best basis for any attempt at IMC. We could even say that, in a sense, the Nopoki textbook of basic mathematics is an interstellar message, or, at least, its first part.

4) Nopoki is very likely the only place in the world where the translation of our mathematics into the languages of many different peoples is done by the members of those peoples themselves, exactly as it would happen in the case of a real CETI.

5) Nopoki is likely the only place where we can find *languages* without mathematical concepts spoken by *people* who know mathematics at least to some extent, which would be bad for anthropologists but is *perfect* for SETI scholars, since it makes the situation much more similar to that of a real CETI.

6) Nopoki is the only place in the world where it will be possible, in the near future, to make a comparative statistical analysis to establish whether the understanding of the same textbook of basic mathematics is conditioned (and, if so, to what extent) by the language into which it has been translated and by the culture to whom such language belongs.

It is evident that the problem of the universality of our way of representing mathematics does not end with the representation of basic mathematics. On the contrary, the most difficult problem (which we intend to study in the near

future) is that of the representation of advanced mathematics. Nonetheless, it is equally evident that the latter problem cannot be studied without having previously solved the former, which we hope we are about to do, at last, thanks to Nopoki. This is the right moment. If the translations of the book are approved by the general assemblies of the respective peoples, which we hope will happen in 2020, it will present a unique opportunity for future study along these lines.

Nopoki and the Future of Humankind

What we have discovered in Nopoki is much richer and deeper than we thought, and that is why it has much to do also with Big History due to its philosophical, anthropological, social, and political implications. So, let us now briefly discuss also these topics, at least in a preliminary way, while waiting for further and more systematic studies.

Nopoki and the Future of Reason

Independent of the possibility of CETI becoming real sooner or later, it has also been used as a philosophical thought experiment. It is a powerful method for better understanding *our* nature and *our* intelligence, especially to establish whether some sorts of “universals of reason exists,” i.e., some factors belonging to reason as such, which therefore must necessarily be common to any conceivable intelligent being in the universe (see Asla 2020).

Studying the experience of Nopoki from this point of view could be useful for philosophy, whether SETI succeeds or not, especially if we consider that, as we have already noticed before, at present relativism dominates the field of philosophy worldwide (and, more generally, our whole culture), despite the fact that it is based mainly on superficial or even fictional arguments.

Finally, the unifying perspective provided by studying the experience of Nopoki from the point of view of CETI and IMC could facilitate a fruitful interdisciplinary dialogue among science, philosophy and many other disciplines, like anthropology, sociology, psychology, neuroscience, and so on, also reviving, at the same time (at least, we hope), the interdisciplinary work of the IAA SETI Committee.

Nopoki and the Future of Society

Intercultural dialogue in Nopoki is, first of all, *a fact*: it happened, and it is still happening. By that we are not saying that we should not try to understand it—just the contrary. We should do it trying to *learn from the experience* they are living and not trying to force it into a previous scheme based on our favorite theories and/or our personal biases (Azcona and Atachahua 2020). Indeed, if in Nopoki they can do something that many others cannot, it means that their experience has something to teach our society as a whole, as has been recently recognized not only by many anthropologists and sociologists, who have started to study Nopoki with increasing interest, but also by the highest institutions, both political and religious.

The Peruvian Ministry of Education (MINEDU) and Ministry of Culture (MINCUL) have recognized the importance of a real intercultural formation in the education of young native people (MINEDU 2013). Furthermore, the then President of the Peruvian Congress, Mrs. Luz Salgado, after visiting Nopoki with some colleagues, during the final press conference held on 6 May 2017, declared: “How many Nopokis do we need, how many universities of this style, which welcome all the Peruvian cultures, so that they can have an alternative, are needed in Loreto, Cusco, Junín and other regions?” (Salgado 2017).

Finally, on 19 February 2018, Pope Francis, in his famous speech during the meeting with the Amazonian peoples in Puerto Maldonado, said: “I ask my brother bishops to continue, as they are doing even in the remotest places in the forest, to encourage intercultural and bilingual education in the schools, in institutions of teacher training, and in the universities. I express my appreciation of the initiatives that the Amazonian Church in Peru helps carry out in favor of the native peoples [. . .] like NOPOKI, aimed expressly at training young people from the different ethnic groups of our Amazonia” (Francis 2018).

Their “endorsements” were so effective that the number of the new students has doubled from 2017 to 2018 (from 200 to 400), while the number of original peoples present in Nopoki has increased from seven up to nineteen from 2017 to 2019. This does not mean that Nopoki is important for only Amazonian peoples; indeed, in this historic moment, which is more likely to be a change of age rather than an age of changes, as Pope Francis himself always repeats, and because the encounters between different cultures generate much more frequent conflict than dialogue, the capability of Nopoki to generate dialogue where before prevailed conflict is surely very important for all of us.

Nopoki and the Future of Technology

Technology is surely a good thing: it has solved a lot of problems, many of which have been truly dramatic (hunger, cold, lack of hygiene, epidemics, etc.), and it will do the same in the future. Nonetheless, at present we very often exploit technology in an irrational way by using technological products when they are unnecessary, which is causing both serious ecologic and economic problems. Thus, should the peo-

ples of Nopoki find a way of using technology in better harmony with nature, this could be a model for the rest of the world.

Nopoki, in these thirteen years of existence, has not only succeed in showing the possible communicative interaction between Amazonian original peoples; it has also become a peculiar form of co-existence, which demonstrates that the new generations of these peoples could be the great change that our world needs: new scientific knowledge connected with ancestral knowledge in order to preserve the environment. The secrets that each corner of our planet still hides in its sea, its fauna, its flora, its colors, its smells, even the smallest, have not only an aesthetic value but also often contain unexpected and surprising resources to solve our problems of food, health, wellness, and so on.

Nopoki is no longer just an innovative proposal; it has become a necessity for Amazonian original peoples, who see Nopoki as the university that their children and the children of their children need. Their languages and beliefs are vital for the training of complete professionals, who speak their language correctly, as well as Spanish and even a third language, who can communicate

with people from other countries without feeling any shame about their origins, but, rather, show pride in them, and, at the same time, prove to be excellent professionals in their fields: teachers, accountants, administrators or agronomists, who work for their community, for their people, for their region, for their country.

For these reasons, the experience of the UCSS-Nopoki represents not only a solution to an important problem, such as that of the relationships between western and Amazonian cultures, but could also become a powerful medium to imagine better a new road toward a truly sustainable development, together with a deeper consciousness of our place in the framework of the general evolution of the cosmos.

Conclusions

Nopoki is not big, but it is great. In it is much more than any of us could imagine before seeing it in person. It is like a little seed of some giant tree. Will it be able to generate the whole plant? Nobody knows. Of course, it might fail, just like anything else in this world, but what we *do* know is that should Nopoki be successful in expressing its whole potential, then it could generate



Figure 3. Our group at the entrance of the UCSS-Nopoki campus (Atalaya, 22 March 2017).

something that could be a model for all humankind.

It is for this reason that we have decided to create a permanent research center about it, promoted by the Italian University of Insubria in collaboration with the UCSS and called *InCosmiCon* (*Intelligence in the Cosmic Context*: see Musso et al 2019), where our former research about Nopoki will be put in a wider context, not limited to only SETI (although SETI surely will play an important role in it), but including also other issues, first of all Big History. At the same time, we hope that such a fascinating experience could become the core of a wider and deeper investigation, able to discover and study other interesting experiences of intercultural dialogue and to attract scholars from many other disciplinary fields.

We possibly will not have to wait for a long time to see whether it works, since, after two years of preparation, finally *InCosmiCon* is just about to start. So, stay tuned, and, if you want to participate, please contact us without any hesitation.

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