

# Building Bridges

A transdisciplinary view on gastronomy

transdisciplinarietà  
gastronomia  
discipline  
interazione  
alimentazione  
scienza  
sociologia  
**transdisciplinarity**  
**gastronomy**  
**disciplines**  
**interaction**  
**food**  
**science**  
**sociology**

**Arbolea, Juan Carlos<sup>1</sup>; Martínez de Albéniz, Iñaki<sup>2</sup>**

<sup>1</sup>Basque Culinary Center, Faculty of Gastronomic Sciences, Mondragon Unibertsitatea, Donostia, San Sebastián, Spain.  
jcarbolea@bculinary.com

<sup>2</sup>Department of Sociology and Social Work, Faculty of Social Sciences and Communication, EHU-UPV, Bizkaia, Spain.  
i.albeniz@ehu.eus

Citation: Arbolea, J; Martínez de Albéniz, I. (2022). "Building Bridges: A transdisciplinary view on gastronomy" UOU scientific journal #04, 32-39.

ISSN: 2697-1518. <https://doi.org/10.14198/UOU.2022.4.04>

This document is under a Creative Commons Attribution 4.0 International license (CC BY 4.0)



La gastronomía es un espacio compartido que abarca con naturalidad diferentes disciplinas o áreas de conocimiento. La cocina, la sociología, la antropología, la historia, la arquitectura, la química y la biología son algunas de las áreas que se pueden utilizar para explicar las características específicas de los alimentos y el acto de comer. Sin embargo, las disciplinas normalmente trabajan por separado, provocando la mayoría de las veces una pérdida de información interesante. El concepto de transdisciplinariedad se utiliza entonces para considerar todas las dimensiones de la gastronomía para encontrar soluciones reales que van más allá de las disciplinas.

Este diálogo entre un científico alimentario y un sociólogo no pretende ser más que una conversación entre dos colegas de distintas disciplinas que suelen colaborar en algunos proyectos de investigación alimentaria. A través de esta experiencia colaborativa, ambos expertos destacan algunas ideas que pueden ayudar a construir puentes entre disciplinas. Al final, la gastronomía puede ayudarnos a entender todo el sistema alimentario.

**Gastronomy is a shared space that naturally embraces different disciplines or areas of knowledge. Cooking, sociology, anthropology, history, architecture, chemistry, and biology are some areas that can be used to explain specific characteristics of food and the act of eating. Nevertheless, disciplines usually work separately, causing most of the time a loss of interesting information. The concept of transdisciplinarity is then used to consider all dimensions of gastronomy to find real solutions that go beyond the disciplines.**

**This dialogue between a food scientist and a sociologist does not expect to be more than a conversation between two colleagues from different disciplines that usually collaborate on some food research projects. Through this collaborative experience, both experts highlight some ideas that can be helped to build bridges between disciplines. In the end, gastronomy can help us to understand the whole food system.**

## THE SCIENTIST

I would say that Gastronomy is a common space that naturally embraces different disciplines, and different areas of knowledge. Gastronomy is a cosy house built during centuries. The atmosphere is impregnated by Cooking, all sort of cuisines from all over the world. In that house are rooms for so many disciplines: sociology, anthropology, history, architecture, chemistry, biology... the list is so long. However, the rooms are separate, and each discipline occupying its own room, consequently is not aware that it is in the same house as the others. At least in that house, each discipline exists for the sake of Gastronomy and Food.

Some years ago, I realized, as a food physical chemist, that I could perfectly understand the micro-structure of multiple foodstuffs, but I did not know anything about the social and cultural implications of that foodstuff. And that seemed to be fine. I was just applying science to understand different mechanisms at the molecular level. Science must follow the scientific method. You have a question, make a hypothesis, define a method, and have some results and conclusions. That is completely fine if we forget that that particular food is just one of the different actors that form the act of eating. Traditional cooking is more empirical. It is based on trying and observation (observation is also used in science). Chefs are more open to consider other factors like intuition and creativity.

But what is an apple? Is it a gastronomic product? Yes, it is. But it would be silly to think it would be just gastronomic. Food Science and Agricultural Engineering can also help to understand the meaning of an apple.

We can clearly see connections between disciplines in a single apple. But most of the times,

disciplines tend to work in a separate room. They belong to the same house but they do not know or they do not want to know.

If we then do not act to build bridges, to have a broader vision of Gastronomy and Food, how could we think about topics like Gastronomic Sciences? If we try to simplify what is Gastronomic Sciences, we could say that Gastronomy becomes a Science. We could say that Gastronomic Sciences could fill that gap between Science and Gastronomy.

But is it that simple Iñaki?

## THE SOCIOLOGIST

Let's continue with the apple. That apparently banal object is an object that has multiple dimensions and scales of observation. Those different forms of knowledge that we call disciplines, from the science dealing with the molecular analysis of the apple, to, say, the science that analyses the symbolic or sacred meaning of an apple in religious texts, between them cover the multiple dimensions of an apple. If we put all these dimensions together, we would have a kind of "archipelago of knowledge"; islands in a sea that separates them.

There is a more interesting definition of archipelago: a set of islands separated by the same thing that unites them. This will have to be the definition, Juan Carlos, not of gastronomic sciences, which continue to be separate islands, but of a Science of Gastronomy (I like naming it "gastrology"). The islands are the disciplinary positions, because each discipline needs a position, that is, its own perspective, concepts and methods, components through which it distinguishes itself from the other "sciences", otherwise the knowledge would be confused and would only generate confusion. But the fact that they are islands does not mean that they cannot

collaborate in the knowledge of that sea that separates as much as unites them.

If we aspire to a Science of Gastronomy, for gastronomy to be a science like any other, with its own point of view, its methods and its analytical tools, an apple has to be a boundary-object. As Susan Leight Star has said, a boundary-object is robust enough so that it remains an object and does not lose its distinctive profile, but at the same time plastic enough so that it can be shared, analysed, interpreted by different disciplines, without any of them monopolizing it.

There is a very illustrative parable about a group of blind men who heard about an animal called "elephant". When they approached this animal for the first time, the elephant was for each one the part they felt (ear, trunk, leg, tail...). None of them had the whole picture of the elephant. The same thing happens with our apple and the blind disciplines, which only observe what they consider "their object" when it is actually "their approach to an object". The Science of Gastronomy is the attempt to convert relative blindness into a comprehensive and transdisciplinary vision (disciplines working together for the sake of all of them) of what we understand by food, eating and cooking as boundary-objects.

The paradox is that an apparently banal object such as gastronomy, which had always been left behind in the shadow of kitchens, traditionally considered as black boxes (we knew what was the input -food- and the output -dishes-, but not the transformation processes, the algorithm ruling inside), or in the short-range lights of a dilettante elite that used gastronomy to build social walls, the paradox, I was saying, is that gastronomy is a very complex analytical object due, firstly, to the fact that it has

never been considered worth analysing, and secondly because of the multiple dimensions it has once we observe it without prejudice. Gastronomy supposes a greater challenge for science and an opportunity to overcome what C. P. Snow called the two cultures; the huge abyss between natural sciences on the one hand, and the humanities on the other.

As a sociologist, I see my discipline as a sort of a matchmaker, a gathering-point where these two cultures can begin to talk and seduce each other, not to appropriate the object to the point of monopolizing it and disavowing each other, but to be able to work together in the narrow but stimulating space of the limits of each discipline. Sociology is a science that has put at risk its own object: society. It is no longer a science of society, a notion that has become controversial. I am not referring to that famous Margaret Thatcher's "ideological" claim: 'there is no such thing as society'. Sociology is the science of associations; it is focused on how things associate; how they form an ensemble. Sociology, therefore, could be useful to promote contact between these separate islands of knowledge; it could build bridges between disciplines.

Is it challenging for a "pure" scientist as you, Juan Carlos, - In this dialogue you called yourself "the" scientist - working with a representative of such a dubious knowledge?

## THE SCIENTIST

... please let me correct myself...

## AN OPEN SCIENTIST

Sure. It seems to me that a dialogue about building bridges among disciplines is extremely challenging, but not because I consider myself "a pure scientist" (what would that be?). It is especially challenging because of the current lack of associations

and interaction among disciplines. The current structure of Sciences makes natural barriers with a low possibility of interaction or unity. This isolation, in a way, was needed for the progress of the different knowledge that represents disciplines.

According to Thomas Kuhn, Science enjoys periods of stable growth punctuated by revisions and revolutions. I enjoy imagining that we are close to a change of paradigm in Science and that of necessity. Science would build bridges to understand the world, the universe as a whole, like the bridge needed to connect psychology with neurophysiology or quantum and classical physics.

Why would a "pure" scientist feel that discussing with other specialists is challenging? A representative of a dubious knowledge? the sociologist or the chef?

This is a good point, Iñaki. We are discussing about how we could build bridges among disciplines. But those bridges are built by humans, by individuals (with their beliefs, fears, culture and so forth) that represent a discipline with lower or higher social status, and the individual response for that status. This fact makes a big initial barrier for the bridging proposal.

We need then, firstly, to break down those social and professional barriers, as well as to take a friendly approach with the language used. That archipelago, that set of islands are now separated not only by the sea, but also for a huge lack of communication between islands (disciplines).

Even if we break those barriers and we open the paths for communication, communication does not necessarily have to exist. We would need to create new rules for the game, how to interact, how to mix different knowledge, how to associate

disciplines into a big house called Gastrology.

## THE SO-CALLED SOCIOLOGIST...

Juan Carlos, let me tell you a little story. In 2013 I began to collaborate with Mugaritz Restaurant and the Basque Culinary Center in the content design of a congress that had (and still has) a very promising name: Kitchen Dialogues [Diálogos de cocina].

As I was a sociologist, and my discipline lacks a clear definition - and this is what makes it interesting and challenging - the promoters of the congress invited me to discuss the ability to talk about those things that are on the margins of gastronomy. They asked me to talk about the social and anthropological implications of eating and cooking. I did not feel very comfortable going as a representative of my discipline, because surely there would be people much more qualified than me to do it, so I took advantage of the occasion to promote as much as possible the encounter between "different": different people, different methods, different ideologies and cultures, different origins, different sciences, different tastes, different backgrounds... of the people gathered there.

Up until then, the congress was dedicated to making chefs aware of disciplines that could be related to cooking. It was a congress designed "against" - a contra-model of the more conventional gastronomic congresses - in which the chefs showed their latest dishes and their technical findings in front of their colleagues. Kitchen Dialogues aimed to show that the cooks, instead of being the protagonists, those who had the singing voice, would sit in the auditorium to listen and be "disciplined" by what scientists and thinkers from multiple disciplines had to tell them about

what they did. Every two years we incorporated another perspective, a new topic, an unknown scientific discipline (chemistry, neuroscience, art, whatever). The congress functioned by “accumulation of knowledge”, as if the cooks were enrolled in a university faculty.

One day, we realized that in the congress as such there was little dialogue. The different disciplines kept turning their backs on each other when they spoke from the stage. Each one was going to “talk about his book” as we say in Spanish. Seeing it on stage made it even more visible that the sciences inhabited a Tower of Babel, in which, each one spoke a language that was untranslatable for the others. The cooks, meanwhile, took notes very carefully and were surprised by the multiple dimensions of what they used to do intuitively.

But curiously, what happened in the backstage of the congress was very different, when we gathered together the guests, representatives of different scientific disciplines, at a table to eat. There, while they ate, their discipline ceased to be the center and they talked about what they were eating. You can imagine that the food that was served was, in addition to delicious, very challenging for the senses and for the intellect also: food for thought. The food that they were eating was a shared object that inspired all of them to use their knowledge as a means and not as an end.

In short, at conferences, scientists tried to defend and even promote their discipline, but at the table, aided by food and drink and the good atmosphere, they became “undisciplined” and spoke on equal terms, conversing unapologetically and without secrecy with their colleagues from other disciplines. Sometimes I have come to see in these tables how multidisciplinary collaboration and research

projects arose. The real “kitchen dialogues” took place backstage: they were after-meals (in Spanish we call them “sobremesas”) in which the table served as an improvised laboratory in which transdisciplinarity ceased to be a chimera.

I draw two lessons from this, Juan Carlos. In the first place, food itself is a factor for building bridges between disciplines, but not only because it is a boundary-object with its multidimensionality that increasingly interests more scientific disciplines due to or, why not say it, its complexity. It is a bridge-building factor because, secondly, it generates an environment of collaboration: because it is a social cement from which to build social as well as scientific bridges. Where scientists really get to know each other is not in the congress hall; in the congress, everyone makes their speech and leaves the room when their colleagues begin their speech. Where scientists really get to know each other is around a table, where they have to talk about an object such as food, cooking or gastronomy, and none of them “represents” exclusively or monopolizes the conversation. They have no choice but to listen what the others say.

The good news is that *Diálogos de cocina* has gone a step further: it has shown that that, over time, gastronomy has already reached such a level of complexity as an object of analysis that it is worth turning it into the subject to be addressed. Consequently, more and more chefs are taking the stage in a colloquium format. In addition, the willingness of experts in the audience to listen and learn from what chefs say about their work is becoming more and more evident. Gastronomy has acquired the status of an interesting topic. Probably not a scientific status yet. But everything may come to pass.

I dream that *Diálogos de cocina* will one day be a gastrology

congress; a meeting in which there is no distinction between science and gastronomy; between brainy knowledge and gastronomic pleasure; a huge table where you eat and talk at the same time; in which the experience is known and enjoyed simultaneously; in which those gathered there have to do with their knowledge the same as they do with food, sharing it equitably so that no one leaves hungry. Food and knowledge served on the same plate. The knowledge of pleasure and the pleasure of knowledge working together.

## AN OPEN SCIENTIST:

A good dream indeed, Iñaki. The problem here is when the scientist sits down around a table, she/he forgets that she/he is a scientist, and the full person arises. The knowledge may be shared but I think we are not yet prepared to do a serious work in those circumstances. Scientists want to control the objectivity and they become uncomfortable in the space of subjectivity. But Gastronomy is both objective or subjective at the same time. That is part of its complexity. It is true that Gastronomy has acquired the status of an interesting topic in the last few years. A scientific status would be one of a big list because Gastronomy naturally mixes disciplines like chemistry, physics, biology but also anthropology, history and much more.

Everything is in the melting pot already, but we don't know how to deal with it. We don't know how to integrate all disciplines to get a better understanding of the food system as a whole. After all, chefs inhabit the space of Gastronomy as the main representatives and they can play a key role to build bridges between disciplines, helping individuals (disciplines) to transgress the barriers of other disciplines.

In extreme conditions, barriers

between disciplines can vanish. I have been involved for a while in a project about space food. Humanity is facing the situation of having human beings living on the moon or travelling for three years to Mars. In that situation, the astronauts can't only be fed by gels and lyophilized food as happens at the moment. They would be fine from a nutritional point of view. But we know that it is not enough. We can design much more interesting products from a culinary point of view. That would be a good step forward. Still not enough. In that extreme condition, the act of eating, the act of sharing and socializing become precious. Every detail is important. The food microstructure of the served bread, the yeast properties from a microbiological point of view, the room where they eat, the ritual around the table, the cultural background of that people. Everything would work only if it were studied as a whole. Otherwise, we will lose important information and therefore we could have an unpleasant situation.

At this point, Iñaki, we can agree, just between you and me at least, that building bridges among disciplines could cause a paradigm shift. What for? And how?

It is clear to me that Research and Development would be much more effective and assertive. We live in a complex world with so many difficult challenges. In thirty years, world population will be around 9 billion people. Climate change is already here (floods, droughts, less harvests), increasing food prices, fuel shortage, having less water, creating political and social instability. Food will become (is becoming) a commodity. We really need to change our minds for a more sustainable consumption. Go to a market, anywhere in Europe. You can find quite a lot of food from the other side of the world. Why? Because we demand it. Policy makers have a big role

here, but the battle starts from our own standpoint. We need to think about how we grow food. How we eat it? What we eat? How much I am prepared to pay for it. It will be a big issue of availability, quality and price of the food.

It seems not such a great scenario, doesn't it?

At the same time, human knowledge is exponentially increasing day by day. AI, eating sensors, robotics, VR systems are a reality already and it will affect our way of eating. We already have an overload of information. Algorithms are doing the job of correlating information but is this enough? or is this right? Do algorithms solve all our problems? I don't think so.

We need to be more focused on correlating different sources of knowledge rather than learning a singular body of knowledge. We will have more time to understand the whole picture. We humans are incredible creatures, full of knowledge, ambition, power, pains and joys, love and hate. We are more than knowledge, more than science or technology. Science and technology do not give us all the answers we need. We need to see the big picture. That is why we need to humanize Science.

How? You know Iñaki. I am always looking for the way to organize this. The way of interaction among disciplines.

From our first interactions between food science and gastronomy, we managed to design mega-resistant foams capable of withstanding a syringe passing through them to include aromas that the diner would fortuitously encounter in his sensory experience. A complex scientific challenge that allowed us to reflect on concepts as intangible as vanity. At the beginning of this journey, we were happy to observe how two very different disciplines complemented each other and

created a much richer mosaic, providing more useful information for a better understanding of the food world. This juxtaposition of perspectives and models from Science and Gastronomy began to approach the definition of multidisciplinary.

We have been evolved in our way of working and now, at least, we have a same space where different academic profiles cohabit: chemists, biologists, food engineers, nutritionists, chefs,... In this space, people work in multidisciplinary teams on a common theme. In practice, this is achieved through the transfer of models, methodologies and tools that work for the common good of the project and never from the discipline itself. This way of working, called interdisciplinarity, has the capacity to generate new disciplines, such as quantum cosmology (generated from the confluence of cosmology and quantum physics), archaeological chemistry (generated from the interaction of chemistry and archaeology). Gastronomic sciences too?

From this point, and with enough sensitivity, it would be relatively easy to place ourselves into a transversal vision. However, it would be crucial to design a new way of working in a transdisciplinary frame. In this transdisciplinary adventure, no discipline should take control of the space. We should pursue dialogue. Consensus and mediation will thus be an important goal. Rather than reproducing fragmented models from a particular discipline, the different realities that exist at the same time should be considered.

I wonder, what would be the architecture of our dream space?

## THE SO-CALLED SOCIOLOGIST

Juan Carlos, it is very interesting that your last question points to

the tangible. How to conceive an architectural design for that dream space, to be able to share an object of analysis (gastronomy or the food system) just as we share, on a table, food or a gastronomic experience?

Normally, to analyse something, science isolates it and puts it in a laboratory. As absurd as it may seem, analysing something happens by stopping its practice. We stop eating to analyze how and what we eat; we stop cooking to reflect on how we cook. To close the door of a laboratory is to lay the first stone of the building of a scientific discipline.

Why don't we make tables in those dream spaces to experience first-hand the complexity of the object we are facing? Why not make the table the laboratory of the Science of Gastronomy?

A table where scientific data is processed, discussed, food is eaten, people socialize...

There was a system sociologist who claimed that the only way to deal with complexity is to create even more complexity. Putting an object such as food, the food system or gastronomy in a laboratory and isolating it is an attempt to reduce complexity. It is like looking for the key in the lighted area knowing that it is not there.

The table is, apparently, something not very complex, a space designed for commensality, for understanding each other. I like to think that setting a table properly, which is very often left in the hands of children, is something extraordinarily difficult. Why not think about how to set a table for science?

Commensality is to the table what transdisciplinarity is to science. Being transdisciplinary is wanting to eat with others who are different at the same table, something that is not known what it is, but that will satisfy all parties. Not for the same reasons though.

How we eat depends, therefore, largely, on how the table that we are preparing to eat is designed. Whether it is a table designed to gather or to separate. If it is designed to gather, it will generate harmony and the result of the conversation will be cacophonous. If it is a table to separate, like that huge white table where Vladimir Putin receives the leaders of other countries, it will generate conflict and therefore a feeling to be lost in translation.

I have known tables in prestigious congresses that

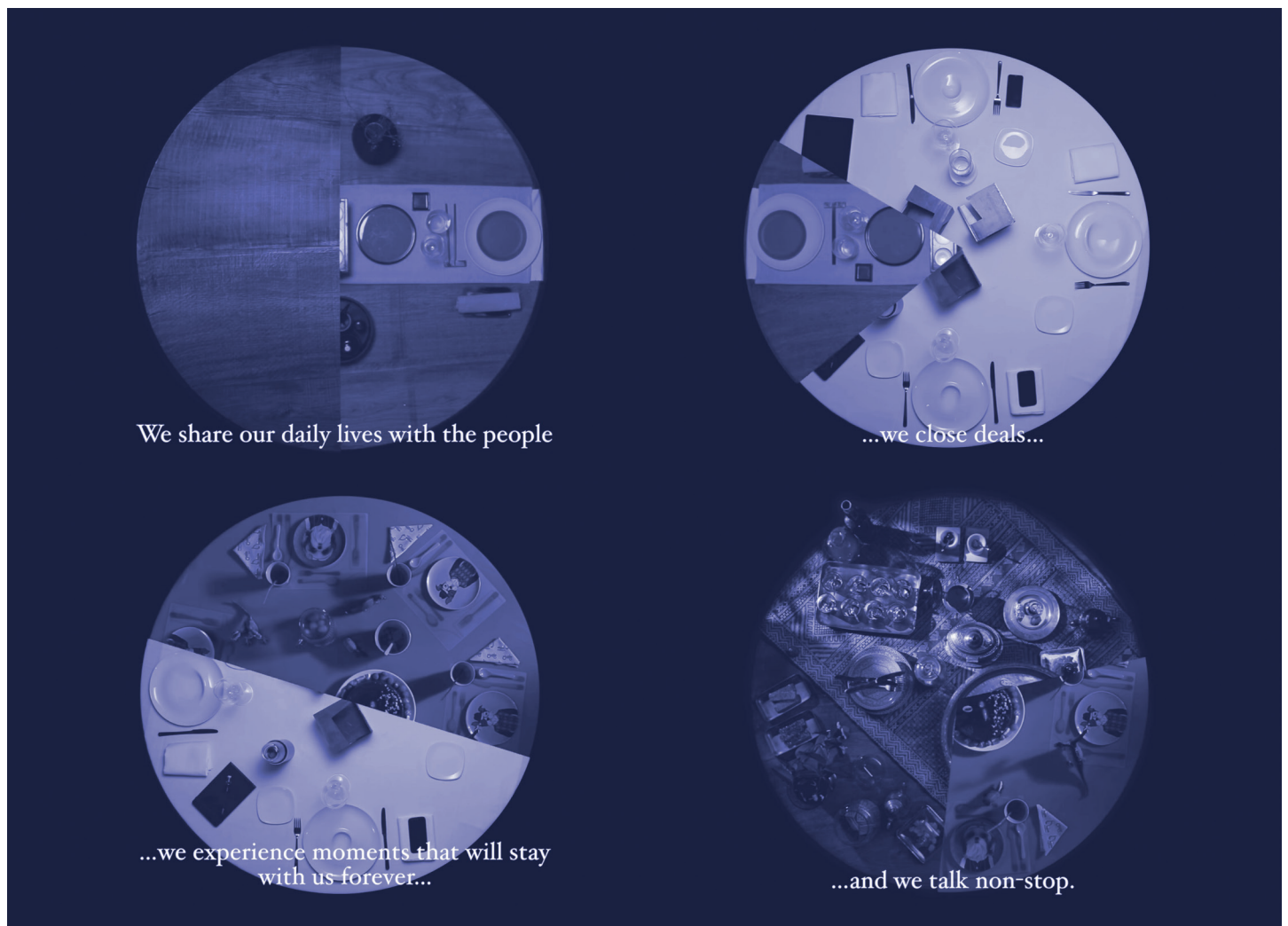


Fig. 1 - Gastroarchitecture of a table. Diálogos de Cocina 2017. Basque Culinary Center. <https://www.youtube.com/watch?v=yWF7TNf51lc>

followed that same separating pattern. Whereas, on the other hand, there will have been unstable picnic tables where visionary theories have been formulated. A picnic table can cross borders, as artist and photographer JR did on the US-Mexico border. Tables that serve for eating the borders that try to split them. There are apparently friendly, inclusive tables, in which those gathered to eat are precisely the borders, which are indigestible with everything that is served because they are not going to eat, but to remain what they are, borders.

A stimulating table from the point of view of its design is the one that generates the possibility of understanding out of conflict and controversy; the one that unites and separates at the same time; that unites what separates and separates what unites. A table is an archipelago in which water is shared.

But at the tables there is a double conversation, the public one, the one that takes place on the table; and the one below, which is less audible. Above are the public agreements, below the small print, the backstage that makes those agreements possible. You talk about building bridges, Juan Carlos, but under the bridges, there are links that also serve to unite, although they do it in a silent way. Many translators and go-betweens are needed in transdisciplinary strategies. Not only bridge-builders.

So, following this interesting logic you propose that what brings us closer to design and architecture, to the so call useful arts, are what we need is to design experiences that produce a certain discomfort in scientists. A discomfort that takes them out of their comfort zone, that activate their subjectivity, but instead of paralysing them, help them break the glass ceiling of their discipline.

Finally, I would like to speculate

on the possibility that these experiences could be gastronomic experiences. The Science of Gastronomy is a science that articulates associations or assemblages of social, scientific, technical and material elements, that activates in scientists a subjectivity, which makes possible collaboration with other disciplines beyond the cognitive limits of their discipline, that is, beyond the world of certainties in which their scientific socialization has taken place.

I would like to raise two questions in this regard: is it possible to design a space, a kitchenatory, in which scientists and chefs can work under equal conditions, without inferiority complexes or arrogant and contemptuous attitudes towards those who are different? Can this collaboration conclude, as it normally does in a scientific article, in certain dishes, designed by scientists and chefs, that make us think about how to face the great challenges that you mentioned in your last intervention, those technical, social scientific challenges, such as climate emergency, leading us inevitably to collapse? Can a dish be an epistemological device? Can it make us think, beyond producing sensory sensorial pleasure or protection (comfort-food)? Can they teach us something about how we are transforming our environment? To recall a core idea: commensality is to society what transdisciplinarity is to knowledge. Can a dish work the miracle of challenging and intriguing scientists from different disciplines and chefs in the same way, so that they have to collaborate to eat it and thus embrace its multiple dimensions?

These epistemological dishes would bring us closer to the most complete, multidimensional and multi-scale vision of the food system that you speak of, Juan Carlos. This possibility has an enormous poetic power. The truth

is right under our noses, on the plate. A dish that shows us, first, that when we cook, we cook the world; and, secondly, that we should build the world as if we were cooking a dish, a delicious, sustainable, affordable and healthy dish.

What I am trying to say, Juan Carlos, is that beyond the intentions of the subjects, the will of individuals, laudable as they may be, gastronomy can help us to understand the food system by creating small experimental devices that make us be reflective on how what we eat and what we cook contributes to shaping the world. That we are what we eat; that we are how and with whom we eat; that we eat what eats what we eat; and that we eat what our senses perceive and what the micro-organisms that inhabit our second brain, the intestine, eats. This knowledge has to travel from scientific articles to kitchens; from laboratories to dishes. From science, to society.