

Semiotics of Food

Dario Mangano

Summary. “Good to think with.” The potential of a semiotics of food, as well as its cultural value, is perfectly expressed by this famous statement from Claude Lévi-Strauss. It affirms the importance of food in defining identity on various levels, from entire peoples to individual families or even individuals, and thus emphasises the immediate ritual value that every aspect of nutrition assumes. It is not merely a matter of stating that food inherently conveys something else, that gastronomy becomes the carrier of meanings that go beyond it and have no connection to its nutritional function, but rather of demonstrating its systematic nature. The relationship between food and language, upon careful consideration, can be understood in two different ways: there are discourses that have food as their object, the discourses on food, as well as those of food that employ food as an expressive medium to signify something specific. However, it is not sufficient to claim that bread signifies something in a certain tradition to make it semiotically relevant; one must argue that bread is capable of articulating a broad range of concepts. This possibility is what the semiotics of food investigates.

Keywords. Semiotics, food, gastronomy, food meaning, identity

Zusammenfassung. „Good to think with“. Diese berühmte Aussage von Claude Lévi-Strauss bringt das Potenzial einer Semiotik des Essens und ihren kulturellen Wert perfekt zum Ausdruck. Sie bekräftigt die Bedeutung des Essens für die Definition der Identität auf verschiedenen Ebenen, von der eines ganzen Volkes bis hin zu einzelnen Familien oder sogar Individuen, und damit den unmittelbaren rituellen Wert, den jeder Aspekt der Ernährung hat. Es geht nicht nur darum, zu behaupten, dass das Essen an sich von etwas anderem spricht, dass die Gastronomie zum Träger von Bedeutungen wird, die über sie hinausgehen und nichts mit ihrer Ernährungsfunktion zu tun haben, sondern darum, ihren systematischen Charakter aufzuzeigen. Die Beziehung zwischen Essen und Sprache kann, wenn man es genau nimmt, auf zwei verschiedene Arten verstanden werden. Es gibt die Diskurse, die das Essen zum Gegenstand haben, die Diskurse über das Essen, aber auch die Diskurse über das Essen, die das Essen als Ausdrucksmittel benutzen, um etwas Bestimmtes zu bezeichnen. Aber es reicht nicht aus zu sagen, dass Brot in einer bestimmten Tradition etwas bedeutet, um es semiotisch relevant zu machen, sondern es muss argumentiert werden, dass Brot in der Lage

ist, eine breite Palette von Konzepten zu artikulieren. Diese Möglichkeit wird in der Lebensmittelsemiotik untersucht.

Schlüsselwörter. Semiotik, Lebensmittel, Gastronomie, Bedeutung von Lebensmitteln, Identität

1. Beginnings

“Good to think with”. The potential of a semiotics of food, as well as its cultural value, is perfectly expressed in this famous phrase by which Claude Lévi-Strauss summarised the enormous anthropological question linked to food (Lévi-Strauss 1962). Gianfranco Marrone would make clear just how much is owed to the great scholar in the footnote to the introduction of a book which, not surprisingly, uses these same words as its title (*Buono da pensare*, Marrone ed. 2014d). Lévi-Strauss’s idea is as simple as it is laden with consequences: the enormous differences found in the food systems of different peoples can be explained only if it is assumed that choices are made not so much on the basis of utilitarian criteria or environmental variables, but above all under the pressure of apparently less-concrete needs. If the availability of certain ingredients, the presence of certain tools or the knowledge of certain transformation techniques provide a set of possibilities from which to process raw food – which is incidentally extremely broad – it is the cultural – and therefore mental, cognitive, and semantic factors – which create the conditions for producing a dish and, in a broader sense, a way of eating. Hence the importance of food in defining identity on various levels, from that of entire peoples to single families or even individuals, and therefore the immediate ritual value that every aspect of nutrition assumes. If, *a priori*, gastronomic choices are arbitrary due to the wide range of variables that influence them, *a posteriori* they become necessary, as part of that gastronomic imaginary that plays a fundamental role in the perception of ourselves and each other. For this reason, the chips Barthes (1957) spoke of, in what is one of the first examples of the semiotic gaze applied to food, can be considered mythological in the same way as the more traditional party dish: both eventually come to signify the culture which produced them.

Barthes talks explicitly about food as a form of communication in an essay shortly after his famous *Mythologies* entitled *Toward a Psychosociology of Contemporary Food Consumption*, in which he addresses the question of the semiotic value it assumes (Barthes 1960). It is not simply a matter of affirming that food intrinsically speaks of something else, that gastronomy becomes the bearer of meanings that go beyond it and that have nothing to do with the nutritional function for which, in principle, it is intended, but of showing the systematic nature of it all. The “ease” – Barthes writes – “with which all the facts concerning food form a structure analogous to

other systems of communication” (Barthes 1960 in Marrone and Giannitrapani eds. 2012: 49–50). In other words, what makes food semiotic is not the meanings it can carry but, as we shall see, the possibility it has of articulating a set of messages and relationships not only through food in the strictest sense, but also thanks to that enormous set of objects and practices that accompany its production and consumption. Contrary to what one might think, therefore, the task of a semiotician is not to reveal partially hidden meanings of food, but to reconstruct the system of signification of which dishes, together with much more besides, are part.

Thus, when Algirdas Greimas chooses the recipe for *Soup au pistou* [pesto soup] as an example to demonstrate the way in which objects of value are created, highlighting how narrative models allow one to effectively articulate the meaning of even a simple cooking recipe, he is in fact confronting a profound dimension of culture that the analysis precisely reveals (Greimas 1983 in Marrone and Giannitrapani eds. 2012). The sequence of operations described, the tools involved and the transformations they produce, do not simply make it possible to prepare that particular dish, but give meaning to a set of raw materials (and also of objects and elements such as fire) which in themselves may mean very little, ensuring that the fundamental leap is made between the state of nature and that of culture. The recipe makes explicit the coexistence of two levels within the food object – one of a material order and one of an abstract order – that follow the distinction between expression and content on which any language is based.

The third author who we consider fundamental is Jean-Marie Floch, who a few years later inspired further reflection on food by studying the famous French chef Michel Bras, and one dish in particular, *the Bass with whey and alpine fennel with Malabar nightshade and quenelle of sage bread* (Floch 1995 in Marrone and Giannitrapani eds. 2012), showing how a gustatory identity can be designed by strategically manipulating food materials. In his work, Bras seems to take into account both the gustatory dimension and the axiological signification of the ingredients, which the semiologist traces back to the mythology of herbs and spices in ancient Greece. But what makes Floch’s work important is the fact that it shows how it is possible to visually translate all this into an image like the one Bras uses in his logo, conveying his brand identity through it. Gastronomy, then, not only signifies itself but, as we shall see, produces further signification.

2. Languages of food

So far, we have mentioned some of the essays now considered classics collected in a book edited by Gianfranco Marrone and Alice Giannitrapani (eds. 2012) which rekindled the semiotic reflection on food in Italy that began in 2000 with *Frammenti di un discorso culinario* [Fragments of a culinary discourse] by Piero Ricci and Simona Ceccarelli (Ricci and Ceccarelli 2000)

and was subsequently revived in *Semiofood* (Manetti et al. 2006). Remaining in Italy, the impact of Jean-Jacques Boutaud's *Le sens gourmand* – published in 2005 and translated into Italian in 2011 with an afterword by Pierluigi Basso Fossali (2011) – should also be acknowledged. Since then, a real line of studies has developed which in the last 10 years has focused on various phenomena related to food production and consumption and which, it must be said, has been more far-reaching in Italy than in other European and non-European countries. Not only is the number of contributions that we can ascribe to a semiotics of taste greater in this country than in others, but they analyse textual types that go beyond dishes or recipes, involving many other artefacts that become part of the discourse around food. It is therefore surprising to note the absence of this field of study in surveys such as the recent *La sémiotique en interface* (Biglari and Roelens eds. 2018), which explores the relationships between semiotics and other research domains, from the social to the natural sciences. A common element of the various works of which we will offer an overview here is the idea that food can be considered a language. But what exactly does it mean to think of food as a language?, asks Marrone (2016). How is it possible to combine the set of products and practices that revolve around food with the language proper? And again, what relationship does it have with other languages such as visuality and spatiality?

The relationship between food and language, carefully thinking, can be understood in two different ways (Marrone 2014b). First of all, there are the discourses that have food as their object. Those of cookbooks, guides, specialised magazines, but also newspapers, books, television broadcasts and of course the infinity of texts derived from the Web ranging from blogs to websites, through to social networks and YouTube. This is what is commonly understood by enogastronomic communication, which has seen a huge boom over the last fifteen years, flooding our daily life, and which Marrone, who has analysed the sociosemiotic phenomenon, has dubbed nothing short of *gastromania* (2014a). It is not about the fact that gastronomy, explains the semiologist, has been a fad for a while, like others in the past, but that this time it has managed to seep into unrelated areas, pervading a large part of our lives. Emblematic in this sense is the role of the chefs, who from reserved creators hidden away in the secrecy of their kitchens have become all-round public figures, real media stars appearing on television and in newspapers to comment on any topic, from politics to the environment, from art to the economy.

It goes without saying that all this talk has changed the way we think about food, and therefore also how we prepare and consume it. Thanks to blogs, for example, in a short time detested housewives have become influencers capable of imposing, in addition to their recipes and their techniques, also an implicit set of culinary values. Often, of course, without having any experience but only riding the wave of easy online success measured in clicks. And if on the one hand this has led to an epic of various interpretations of 'grandmother's kitchen', ending up naturalising traditions that are

often somewhat improvised (Marrone 2014a), on the other hand it has raised issues (and therefore trends) of every kind: from the philology of the typical to an obsession with nutritional aspects, passing through various possible ethical impulses, from that of zero kilometre food to practices that exclude certain foods from the diet. Not only what we eat has changed but also the way we eat it, and of course what we drink. A few years of media bombardment were enough to transform carefree drinks with friends into serious tasting experiences to be quickly translated into a series of blog posts on the web. All anxiously awaiting those likes that, in an instant, can transform an anonymous drinker into a feared and acclaimed critic.

From a semiotic perspective, it is evident that all this discussion did not happen solely through verbal language. First of all, let us consider photographs and the way in which they have flooded social networks, especially dedicated channels like Instagram or Pinterest, ending up overtaking and overwhelming all other commentary. For us it is not just a matter of detecting the tendency to exhibit the appearance of cakes, sandwiches, soufflés and so on, but of reflecting on how this way of relating to what we eat gives meaning to food (Marrone 2012a). We will come back to this.

But the relationship between food and language can also be understood in another way, perhaps less intuitive but therefore often more interesting: not the discourse on food but that of food (Marrone 2014b). In fact, preparing a dish involves acting on an expressive material – the so-called raw materials – which is presented to man as inarticulate. There are many edible plants and animals, but among these only a few are selected as pertaining to a certain culture and to be actually eaten. Furthermore, in most cases this does not happen directly. A tomato is first harvested and then, as appropriate, cut, peeled, chopped, squashed, boiled, fried, etc. First of all, it had been planted, nourished, and therefore also selected from many species, that are far from natural, being the result of hybrids created by man. The proof of this is the red colour which we usually associate with the tomato, which is by no means the only one that it can assume, but simply the one that has ended up imposing itself on our imagination. The raw materials are thus transformed into ingredients and subsequently further transformed in complex and articulated ways of creating that gastronomic unit with a deeply cultural connotation that is the dish. Just as happens in language, one does nothing but give shape to an initially inarticulate material in order to produce a substance. What is interesting is that even starting from a rather small set of raw materials and actions, an enormous variety of results is produced, often very different from each other such as the unleavened bread of the Jewish tradition compared to the French baguette.

However, the possibility of such a combination alone is not enough to make food semiotically relevant. For it to do so, it is necessary that the expression plane enters into a relationship of reciprocal presupposition with an equally complex content plane. It will not suffice to say that bread signifies something in a certain tradition, it must be argued that it is capable of

articulating a broad set of concepts. Thus, for example, the many and varied ways of making bread in the different regions of Italy (even in the different provinces and individual towns) end up signifying – starting right from their characteristics (type and duration of leavening, ratio and consistency of crust and crumb, quantity of salt, any seasoning, etc.) – not only the identity of those who produce it but also, more generally, other peculiarities of the gastronomy that characterises that place. Like the unsalted Tuscan bread, which is ideal for enjoying the cold cuts that are produced in abundance in this region.

But the relationships between linguistic structures and gastronomic structures are manifold. Marrone (2014b) shows, for example, how the dog-eating custom that survives in some areas of China can be traced back to linguistic categories. There are in fact three levels of proximity that the enunciative system distinguishes, indicating them with demonstratives: an intimate zone, indicated in Italian by *questo* [*this* in English or *ici* in French]; a near one, indicated by *codesto* [*this/that* or *là*]; and a distant one, to which *quello* [*that* or *là bas*] refers. These spaces then act as an implicit basis for distinguishing between domestic, courtyard and exotic animals, of which only the former are normally considered edible. The point is then that in some communities the dog is not seen as a pet as it is in the West, but as an animal to be kept at the same distance as chickens and rabbits. A thesis that was demonstrated when, thanks to globalisation and the Internet, in China dogs began to be thought of as pets and therefore welcomed into homes. A short time later a movement was founded to ban dog meat from the table.

3. Gastronomy as a semiosphere

What is particularly interesting about this second type of discourse in which food itself articulates a form of conceptual reflection, are the issues that emerge. One need only to semiotically analyse the evolution of haute cuisine, for example, to realise how chefs – through their own dishes – reflect on perception and the relationship between the senses, presenting a vast repertoire of deceptions and surprises. The greatest chefs, meanwhile, go even further, transforming food into a veritable metalanguage. Massimo Bottura, for example, created his *Compressione d'una pasta e fagioli* [Compression of pasta and beans] as a tribute to one of the most traditional dishes of Italian cuisine, managing to problematise both the relationship with the past (and with different Italian traditions) and with the great European schools of cuisine, namely French and Spanish (Mangano 2013).

Often it is not the dish that is analysed, but as suggested by Greimas, one or more recipes. The recipe is in fact an object of meaning that lends itself well to being de-constructed through semiotic tools; being in fact the textualisation of the competence necessary to make the dish, it ends up conveying its deep meaning (Marrone 2014b; Giannitrapani and Puca eds.

2021). This comparison, as the analysis of the *risotto alla Milanese* by Marrone (2013a) illustrates, makes it possible not only to highlight the differences between the various ways of preparing the same dish, but also the complexity of translating the sensations of those who cook and eat into words and pictures. And if, as in this instance, one of the recipes comes from the pen of a writer like Carlo Emilio Gadda, whose aim is to parody both the textual genre and the dish itself (not surprisingly called *risotto patrio*), the search for expressive forms is perfectly combined with those of content.

Thus, through food, we end up facing fundamental problems for the sciences of signification such as those related to perception and sensation/aesthetics, aesthetics, and the translation between languages and the way in which linguistic and semiotic models allow us to recognise the semantic complexity of food and its profound logics. Such as those that lead Marrone to identify two different languages in the case of nutrition, based on those of visual semiotics regarding images (Marrone 2012a). Looking at a painting or a photograph, in fact, it is possible to focus on two different dimensions: the *figurative*, which depends on being able to recognise figures from the world such as a tree or a house, and the *plastic*, which takes into account the effects of meaning produced by the essential traits which make up the image (position, colour, and shape together with all the other, often difficult to name, sensible qualities they present). The same happens with food. Our first introduction to the tasting experience, which the semiologist describes as *tasty*, is based precisely on the recognition of *gustatory figures*, flavours that we have learned to recognise since being weaned, distinguishing a bite of veal from one of cauliflower. A slow education, which has led to the construction of a vast encyclopaedic competence of which we are rarely aware, linked as it is to a specific culture, to the ingredients that are used in it and to the way in which they are combined. The verbal language lends itself well to translating these bundles of sensations by naming ingredients and flavours such as a *ragù* or a *minestrone*. However, not only is it possible to unpack this sort of cumulative perception by putting aside learned cognitive schemes, but also to focus on aspects of food that, although perfectly tangible, cannot be described other than by constructing an *ad-hoc* metalanguage. To give an example: the *tannic* flavour that sommeliers speak of in their jargon, to indicate that sensation of astringency experienced when drinking a red wine and which is often described as ‘dry’.

Here we cannot strictly speak of flavour and therefore of taste – it is no coincidence that to convey the idea we refer to touch – yet it is a quality that characterises the experience of drinking and which, therefore, identifies a wine. So, this entire series of such important stimuli are of pertinence to another level of meaning that Marrone calls *flavourful*. Think of the crunchiness of a tart, the consistency of a mayonnaise or the creaminess of a pureed soup, impossible to describe except through similes, metaphors, and synaesthesia according to an intersemiotic translation mecha-

nism. Think too, of that study in contrasts which is produced precisely at this level, by combining different states of materials and different sensations, giving rise to semi-symbolisms that haute cuisine in particular makes extensive use of.

It should be clear at this point that in everyday experience the discourse around food and that of food are constantly overlapping. The most obvious example is at the table itself, be it at home or in a restaurant, where while tasting the food, one invariably ends up talking about it, sometimes discussing how it was prepared, or evoking other meals, other recipes, other moments. The great chefs know this well and would never dream of bringing a dish to the table without accompanying it with a story that prepares the diner to experience it. The product of all this is conviviality, which on the one hand is about intersubjective relationships between diners mediated by food, on the other it concerns subject-object relationships with food.

Nutrition can therefore be thought of as a specific semiosphere, according to the apt expression that Lotman coined in response to Vernadsky's biosphere. But if the biosphere is the set of creatures and processes that allows biological life, and the semiosphere instead is the set of texts and languages that allows intellectual life, we can think of gastronomy as a dimension that brings together and coordinates them both. This is confirmed by the variety presented by gastronomic systems and the different ways they presuppose to relate to the environment on the one hand and to other human beings on the other. In short, the idea that you eat to feed yourself is just as reductive as the idea that you dress to cover yourself. If fashion, with its continuous renewal, clearly shows the importance of the meanings we give to what we wear, gastronomies remind us the extent to which identity also passes through what we eat.

The book *Forme della cucina siciliana* [Forms of Sicilian cuisine] edited by Alice Giannitrapani and Davide Puca (2021), semiotically reconstructs a specific gastronomy such as that of Sicily. Italian cuisine, as is well known, is anything but uniform within the country, being the product of very different regional traditions, which at the end of the nineteenth century were (at least in part) collected in a recipe book, the famous *La scienza in cucina e l'arte di mangiar bene* [Science in the kitchen] and the art of eating well), with which Pellegrino Artusi effectively 'unified' the country gastronomically. For semioticians, it is not a question of historicising a gastronomic tradition, nor of sanctioning what does and does not belong to the 'real' Sicilian cuisine, but of questioning those processes in the *invention of tradition*, in the words of Hobsbawm and Ranger (1983), which allow more or less recurring uses to impose themselves, thus entering the gastronomic system. A process of affirmation that obviously finds its opposite in the decline of certain dishes, the way they are prepared or the use of certain ingredients. As a language, gastronomy is in fact a dynamic entity, which is affected by socio-cultural transformations and reflects them in such a way that every dish, and every variant of it, carries with it an implicit memory of the processes that produced it. Processes that semiotics is able to reconstruct by

analysing the different recipe books in which the regional gastronomic imaginary is affirmed time and again and therefore, in fact, constructed.

It is no coincidence that the index of *Forme della cucina siciliana* is presented as a menu, in which there are first, second and dessert courses, as well as dishes that do not find their place in this distinction, as is the case of the *caponata*, and reflections on cooking methods such as “fried”, from which actual classes of dishes descend. These are exemplary gastronomic objects, which are treated in the same way in which Lévi-Strauss treated myths: trying to identify the deep structure that characterises them beyond the many variations that occur (Lévi-Strauss 1968). The form referred to in the title is thus the semiotic one, henceforth understood as a profound logic starting from which the chain of transformations is put into action that makes a *sarda a beccafico*, *cous cous*, an *arancina* or a *cassata* the expression of a gustative identity that is socially and culturally determined internally but also effective externally. Not only because it renders this tradition recognisable to non-Sicilians, but because it is continually imitated, remade, reinvented, modified, betrayed, praised, and denigrated but hard to ignore. The semiotic boundary of a semiosphere, Lotman (1985) argued, is the sum of the linguistic filters of translation towards other semiospheres: those of other gastronomies but also those of other languages (Stano ed. 2015a); a constant process on closer inspection which Simona Stano also deals with in *Eating the Other: Translation of the Culinary Code* (Stano 2015b).

Similar in character is also *Su porceddu. Storia di un piatto, racconto di un popolo* [Story of a dish, tale of a people] by Franciscu Sedda (2020), in which the author focuses on a single dish, the *suckling pig* cooked in Sardinia. Sedda shows well how it is possible to reconstruct, starting from a single culinary text, an entire culture in all its facets, from political to religious, according to the Lotmanian principle whereby every cultural system produces artefacts (literary, artistic but also, as in our case, gastronomic) to which it entrusts the possibility of signifying its overall articulation.

4. Food and media

The panorama of media products that revolve around food is vast and varied. Not only because food, despite everything, continues to be in fashion, managing to get people to talk about it on television, in newspapers and in digital media, but because it is itself a medium, a means of communication. Rather than conveying messages, as we have said, it is in a literal sense the place of mediation, of an encounter that is about sharing but also a premise for the emergence of individuality. Semiotic analysis then becomes a way to understand which image of food is offered by the media in each case, how much of the complexity of this cultural phenomenon is preserved and how much is lost, but also which strategies are followed to talk about it.

Let us take, for example, television cooking shows (Giannitrapani 2014a). They range from entertainment programmes, in which you are catapulted

into the kitchen of the expert of the moment to follow the preparation of a dish in every detail, to competitions of all kinds, in which food becomes a battlefield between individuals willing to undergo the harsh judgment of severe critics in order to be called chef for a day (Marrone 2013b). And maybe write a recipe book to add to the hundreds that are on display in bookshops. If on the one hand the implicit model is Julia Child, who with her television show taught the techniques of French cuisine to an American audience, thus importing a refined palate into a country that was not used to it; on the other hand, global successes such as *Masterchef* make food into something different: no longer a product to be eaten, perhaps enjoyed in company, but a performance to be evaluated in small bites, only for weighing up its strengths and weaknesses but not for actually eating. And, of course, an object to look at, maniacally taking care of the final telegenic presentation of the dish, as well as aestheticising the stages of its preparation (*ibidem*). For semioticians, everything in these broadcasts signifies an idea of food: the television studio, the choice of presenters and judges, the type of direction, the visual identity of the programme, what is said about food but also everything that happens around it. After all, every show does nothing but manipulate a pre-existing image – yet by doing so, it continually regenerates it, changing and adapting it to the constant change of perspective that a living culture cannot fail to produce. It is not surprising then, that after all the cooking shows that have appeared in recent years, even at a domestic level, more attention is paid to the presentation of dishes than ever before, and that sales of pastry cutters and syringes have increased significantly.

Cinema has also dealt with gastronomy on several occasions, offering interesting examples of how food not only crosses genres but can take on actual roles within narratives (Mangiapane 2014a; Marrone 2014a; Marrone 2015b). Thus, if in *Babette's Feast*, just to give one example, food can be considered a co-star of the story, if not even the starring role alongside the woman who prepares it, the cook Babette Hersant (Mangiapane 2014a; Marrone 2014c, 2015b), in the animated film *Ratatouille*, produced by Disney for a completely different type of audience, cooking (knowing how to do it or not knowing how to do it, but above all being able to do it and wanting to do it) becomes the activity around which the whole story revolves (Marrone 2014a). The meaning of food serves the narration and, conversely, the narration further articulates its cultural value. So, it turns out that a 'simple' animated movie and a refined auteur film basically thematise the same thing, namely the symbolic effectiveness of food in all its complexity. Another interesting example is that of the television adaptation of *Gli arancini di Montalbano*, an investigative story by Andrea Camilleri which is part of the successful series starring the famous police inspector from Vigàta (Marrone 2012b). Here too the food is not a side dish to the story, a simple note of local colour that adds to an already strongly connoted Sicilian atmosphere, but plays a key, active and central role, offering the narrator the opportunity to show, through talking about food, what it never shows, that is the mental process by which the inspector understands who the culprit

is. In short, getting inside Montalbano's head is equivalent to knowing how that "beautiful ball" – the arancino – is made.

If there is a media product that is forced to articulate gastronomic imagery, it is undoubtedly advertising (Mangano 2014b, 2020). It is a textual typology often discussed in semiotics, describing the way in which within consumer society, through the micro-narratives of commercials and billboards, the meaning of the products has been constructed, strategically comparing their merits. In the case of food, looking at advertising does not simply involve observing the different communication strategies implemented – systematising the different ways in which it is suggested to think about it and then oscillating between the two opposites that sometimes see it as nourishment, and therefore a means to live, and other times as an existential goal – but to reconstruct the imagery that precedes all of this. When a commercial or advertisement states how the consumer should understand pasta, a mozzarella, or a snack, they do so within a broader and more systematic perspective, albeit completely implicit. This can be seen clearly when switching from a synchronic comparative perspective to a diachronic approach. Within a few years, not only does advertising speak differently about the same product, relying on other values, displaying it differently and accompanying it with different descriptions, but even those to whom it is addressed change a great deal, those *enunciatees* that the world of marketing calls "target". In fact, when we talk about gastronomic imagery, we must not focus only on food, on what it signifies at a given moment, but also on people, the ideal consumers, or those who are presupposed to consume it, as well as on the reasons that are meant to push them to do so and on the way in which a meal fits into that other project of meaning which is everyday life. Hence the semiotic value of food products such as snacks (Marrone 2013b), a real invention of the contemporary world thanks to which a system of breaks from daily activities is institutionalised. Does the break come first or the food you fill it with? Here advertising plays an essential role: not only must it promote the product, present, and make it attractive, but also place it in the space and time of the many possible daily activities of an audience that, needless to say, should ideally be as wide as possible. If meaning is not given to the moments that are not dedicated to eating, one cannot give meaning to those that are. The communication strategy is therefore not a way of getting a product noticed, making it 'attractive' and therefore appealing, but a way of giving meaning to the whole of life as a function of food. Thus, when advertising talks about milk, it ends up confronting its symbolic importance that reminds one of nourishment *par excellence*, but which also evokes an important erotic dimension which it regularly uses (Marrone 2015a). A selection of figures derives from it in which this substance takes the most diverse forms and does the most varied things, being continuously re-semantised in order to render it a sort of food joker, good for everything and everyone.

Even a simple logo is then able to tell us something about food if it is put in the condition of signification through analysis. That of the quintes-

sential fast food McDonalds (Agnello 2003), yet also that of Slow Food (Marone 2011b), a cultural movement launched to defend “good, clean and fair” food, according to the successful slogan invented by Carlo Petrini, which has become a hallmark to be affixed, suitably revised, on various types of food products but also on books and various events where there is something to eat and drink. Slow food is a pure brand since there isn’t a company that produce food behind it but only an organization that over-label products to certify their quality. A way to implicitly denouncing the inconsistency of other forms of labelling such as those of the many denominations of origin (DOC, DOP etc.) but also to affirm the need to give an identity to products through communication (Puca 2021). Brand logics that are inscribed in those essential forms that logos present and which, under the lens of semiotics, express their complexity and the set of significations they carry.

Finally, there is the Web, an ocean into which everything we have talked about so far flows and is channelled but also rewritten, rethought, transformed, adulterated, and translated into other languages (Mangiapane 2014b). And if the many culinary blogs, some of which are so popular as to become full-blown authorities, re-propose the recipe book model, hybridising it with the lifestyle magazine and visually enriching it as much as possible with photographs of all kinds, the thematic channels on YouTube not only re-propose television models, but continually invent new ones, while trying to carve out some visibility. A heterogeneous mass of texts which not only talk about food, but where the food itself talks, articulated as a dimension of existence in relation to others. And so successful blogs end up being inundated by brands that go to great lengths to use them as showcases for their products. All that remains for semioticians is to work comparatively on what they considers texts, and therefore, in accordance with the etymology of the word (the Latin *textum*), complex and composite structures such as fabric. From their threads emerge once again the communication strategies of the various blogs which, through semiotic tools, are not only identified but also inter-defined, recognising a deep level of signification in which the culinary values that are proposed time after time are articulated (Mangiapane 2014b). But above all, what emerges is perhaps the most relevant feature of Web-mediated communication, namely that the goal of any discourse, however formulated, is to construct the image of the speaker, that enunciator whose subjectivity for linguistics is altogether impossible to conceive outside of language. The blogger does not talk to someone about food, he talks about food to be someone.

5. Gastronomy without food

Gastronomy, we have said, is not only in what you eat but also in the many discourses that take it as an object. More often than what is commonly observed, however, such discourses are not held by means of words or images but by that entire set of objects without which, if you think about it,

the transformations necessary to produce a dish or its experience of consumption could not be achieved. We are talking about cooking tools; knives as well as pots and pans or cutlery, but also about restaurants.

Let us start at the end. For a discipline that focuses on the processes of signification, a restaurant is not a simple support, a space in which to ingest a good or bad meal, it is something that plays an active role in the complex process on which, ultimately, this judgment depends (Giannitrapani 2014b; Giannitrapani ed. 2021). It is not just a matter of putting the diners at ease, of not disturbing them while they concentrate on the dish and of making sure that they can communicate with their table companions, but of contributing to the meaning that the food will assume for them. A dish is judged as typical not only on the basis of how it is made, but also by the place where it is eaten, on the way in which the space evokes figures and values or, on the contrary, decides to negate them. On the other hand, the McDonald's logo we were talking about earlier does not refer to food (as Burger King's does) but to the consumption space, those golden arches that were intended to welcome the customer into the magical world of fast food: easy, playful, carefree, even childish and, as we later learned, extremely dangerous to health.

But a restaurant is itself a complex object, a macro text whose meaning is determined by the interactions between many parts. If the first contact with it occurs at the entrance, there are many ways to manage this rite of passage, as fast as it is effective, which separates the tasting space from that of the city. Unless it does not separate it at all, as in those restaurants that showcase their guests (Giannitrapani 2014b; Giannitrapani ed. 2021) or in the case of street food (Ventura Bordenca 2021). And then there is the dining room, its possible environments, the table – also a variously configurable space (Boutaud ed. 2004) – right down to the plate. Not to mention the invisible spaces such as that of the kitchen, which remains hidden from the eyes of the customer until, as happens more and more often, it is decided to show it. Or even to host a table in there, as happens in some of the most prestigious starred restaurants, with only one condition: the table in the kitchen cannot be reserved. Only the chef can invite a customer to occupy it. It goes without saying that eating in the kitchen, next to those who elaborate what will be tasted a moment later and interacting with them is not the same as being in front of the finished work of art. We use the term deliberately to evoke the sphere of art with which gastronomy has always been confronted (Marrone 2014c; Mangano 2013); after all, eating in the kitchen can be likened to an artistic performance by both the chef and the diner. In short, as the context changes, as is obvious, the perception of food changes. The problem then is to what extent the idea of context as something that is 'outside' the text continues to be effective in explaining the effects of meaning that food produces. The semiotic approach based on the notion of text solves the problem: the gastronomic text is that unit of variable size and composition, with its own internal structural organisation, by which the meaning of a food experience is determined. The kitchen takes

value from the room and the dish from the kitchen. If instead of granting exclusive access to the kitchen you make it visible, perhaps through a glass wall or a monitor, you are intervening on those variables that allow you to activate a dish. As is well known, it was Nelson Goodman who used the expression “activation” with respect to works of art, thus alluding to all those elements which, although not part of the work, contribute to giving it meaning, ranging from the museum building to the caption under the painting that it houses (Marrone 2014c). Even an object as small as a wine glass, therefore, can be thought of semiotically as a *synaesthetic machine* that helps to make sense of the fragrant liquid it contains (Galofaro 2005).

The transition from consumption to production, as mentioned, is short. A knife is an indispensable object in the kitchen; it serves to transform what we take from the environment, to separate what we consider useful from what is not, to give it a different physical form to prepare it for further transformations, or to even transform it into that unit of gastronomic meaning that is the bite-sized portion. For many it is therefore a mere tool in which, as the design mantra states, form follows function. One need only look at the knives produced by different cultures, however, to realise how the form can change enormously. And not because some peoples do not know how to make knives well, but because the transformative function they must perform is mediated by the gastronomic cultural factor. A Japanese *yanagi*, for example, is totally unsuitable for cutting steak but is excellent for accurately filleting raw fish. Semiotically analysing the design of objects allows us to reconstruct the implicit transformative logics it presupposes. In short, even a knife can be considered a text and therefore put in a position to signify the gastronomy that created it. The same happens with pots and pans and even with those ultra-technological tools that have recently begun to pass from professional kitchens into those of ordinary homes (Mangano 2019a).

But if design is a semiotic act, then cooking and design may have something in common. After all, for some years now, food design has become part of the galaxy of specialisations that the theory of design encompasses. But what does this practice consist of? Is it a somewhat explicit form of decorativism? And what relationship does it have to cooking, and therefore to gastronomy as a cultural practice? These questions are some of the starting points for the reflections found in the book *Che cos'è il food design* [What is food design?] (Mangano 2014a). After semiotically analysing various examples, it shows how food design requires a profound rethinking of food in terms of experience and not in terms of individual dishes. Here then lies the difference between a chef and a food designer: if food is the focus of activity for the former, the latter must take into account all those artefacts that make the food experience effective both for the individual and commercially. An activity for which knowledge of the processes of signification related to food is crucial (Mangano 2019b).

6. Ethics and politics of meaning

As we have seen, thinking about the processes of signification linked to food leads to progressively widening the gaze beyond what is actually ingested. One would think we were eating signs. In reality it is something more complex, because deciding what – or what not – to eat, indulging in the pleasures of gluttony or deciding not to, evaluating the nutritional characteristics of a food or systematically ignoring them, is an activity that, albeit limited in our individual lives, ends up touching upon several aspects. The dietary regime, commonly known as diet, is not a circumscribed practice but, as Foucault writes, an art of living (1984). For the French philosopher, dietetics began in ancient Greece as a way of conducting one's existence, problematising one's behaviour not only in terms of nutrition, but in the way one lives with others in society. Until the early eighteenth century, in fact, medical books not only offered food advice but also instructed on how to behave at the table like etiquette manuals. Eating correctly not only helped one to feel good but also to be regarded as better people (Marrone and Mangano eds. 2013). In short, food proves to be indispensable to existence, not because of the need to introduce calories into that machine that is the body, but because it subsumes and articulates multiple dimensions of individual and collective existence, qualifying itself as the place *par excellence* in which that fundamental opposition for the human being is resolved: the relationship between nature and culture. A relationship in which the first of these concepts is anything but primal, lacking spontaneity or purity; on the contrary, it exists as the opposite of that state of culture into which the human being, unlike any other animal, is inevitably born. A philosophical question of great complexity that we find ourselves addressing entirely implicitly even in a wholly everyday object such as the packaging of organic biscuits (Marrone 2011a). Images, materials, transparencies, graphic solutions, and colours only signify nature, unless proven, under the lens of semiotics, that these very different ideas are constructed to deny the industrial origin of these products.

It is not a question of using semiotics to analyse gastronomy, but of recognising that food and everything related to its production and consumption are themselves semiotic activities that serve to give meaning to something else, to everything else; even to ecology. The method serves to systematise a reflection, to identify the different levels of pertinence, to understand the links that exist between ethics and aesthetics, between body and mind, between doing and being. Diet, explains Ilaria Ventura Bordenca (2020), is a regime of meaning. The many possible dietary regimes, with their privations and their concessions, with their rituals, with the perspectives they impose on nutrition and, through it, on the entire existence, are social discourses which, by thematising the relationship with food, end up articulating the whole of life. In this regard, theory speaks of *form of life*, meaning by this the possibility that a dimension of existence expands beyond its own borders, eventually extending its logic to areas very different from

it. A vegetarian is not just someone who does not eat meat, he is also someone who speaks a certain way, who dresses in certain clothes, who carries out certain activities, who reads certain books, who buys certain products, and we could go on and on. But above all, he does not look kindly on those who eat meat, and speak, dress, read, act, or buy differently from him. Of all the dimensions of living, that of food is the one that demonstrates the greatest capacity for expansion, as if its logic could translate any other within itself. Thus, if on the one hand it is inevitable that we talk about diets everywhere, on television and in advertising, in the design of tableware and food for children, in newspapers and on the Web, as shown by Ventura Bordenca's analyses, on the other it is necessary to question the function of food. Food is politics. It does not politicise; it is politics itself. It is so precisely because it translates social relations internally, giving them body and signifying them externally (Montanari ed. 2020). In short, food is politics because it is a language.

This long overview of studies carried out in Italy concerning the semiotics of gastronomy allows us at this point to reflect once more on the food-language relationship and on the simplification that transposing a system of signification to language often hides. We like to think that fashion, design, mathematics, computer coding and even music are languages, only to realise that they do not have the same characteristics as the language *par excellence*, that is natural language. Often because compared to the latter they are not as flexible, being specialised in conveying certain meanings and not others. This is why linguistics distinguishes between primary modelling systems and secondary modelling systems, assigning natural language to the first type due to the possibility it offers of translating the other sign systems within it. A good writer can easily illustrate a landscape with words, but also describe a space or evoke a melody. Without the structuring power of language considered as the supreme "stereotyping device" (Lotman and Uspensky 1975: 42) it would not be possible to make sense of other sign systems. The secondary modelling systems then rely on the primary modelling system, which is natural language, drawing from it the necessary articulatory capacity of the phenomena they concern. The hypothesis, that studies on the semiotics of food seem to support, is that even in the case of gastronomy we can speak of a primary modelling system as with natural language. "Food" – writes Marrone – "does not signify only what is said by the verbal language, but what it says regardless of it" (Marrone 2016: 187), imposing its structuring logics also on what food is not. Tell me what you eat, and I will tell you who you are? Much more: the thought of who we are is not only articulated in the brain but also in the stomach and in all that set of activities that are functional in the creation of something worth swallowing. That is why, once the intoxication of gastromania, foodies, Instagram pages full of photographs of food, gourmet supermarkets, starred chefs and recipe books is over, it finally becomes possible to "rediscover the truth of food" (Marrone 2019: 7). A truth that resides in it being a total semiotic phenomenon.

It will be clear at this point what are the many possible repercussions of a semiotics of food. If the importance of proper nutrition education to prevent health problems has been understood for some years – think of the communication campaign promoted by the Obama administration in the United States against obesity – it is now clear that education relating to food and wine is not just about physical well-being. Food is a fundamental part of the cultural heritage, and therefore of the identity of a people, but also an extraordinary tool for integration and exchange. A centrality that immediately translates into the economy, as evidenced by the constant growth of this sector or phenomena such as food and wine tourism. Not surprisingly, in Italy, in addition to degree courses in Gastronomic Sciences, high schools (which in the Italian system precede university studies) specifically dedicated to this area, such as the high school in Communication and Culture of Enogastronomy, have recently been founded. In particular, the establishment of the first of these high schools, that of the Florio Institute in Trapani, is based on a project conducted by this institute together with several European universities, including that of Palermo, entitled Culture and Communication of Taste (www.cucota.eu), with a homonymous manual among its products. Semiotics plays a central role in this educational environment as the tools at its disposal make it possible to restore the complexity of food, reconstructing the mechanisms and conditions that make it a system of signification. Before being able to think strategically about communicating the cultural heritage of enogastronomy, in fact, it is necessary to understand how it produces meaning.

Bibliography

- Agnello, Maria Laura (2003). Don Giovanni felice. Intorno al logo McDonalds. *Comunicando* 4. In: Gianfranco Marrone and Alice Giannitrapani (eds.) (2012). *La cucina del senso*. Milan: Mimesis, 323–346.
- Barthes, Roland (1957). *Mythologies*. Paris: Seuil.
- Barthes, Roland (1960). Pour une psycho-sociologie de l'alimentation contemporaine, *Annales* 16. Italian translation by Gianfranco Marrone: L'alimentazione contemporanea. In: Roland Barthes. *Scritti*. Gianfranco Marrone (ed.). Turin: Einaudi, 2001. Now in: Gianfranco Marrone and Alice Giannitrapani (eds.) (2012). *La cucina del senso*. Milan: Mimesis, 31–46.
- Basso Fossali, Pierluigi (2011). Postfazione. Paradossi della gastronomia: il gusto da approfondire, a distanza e tutti insieme. In: Jean-Jacques Boutaud (2005). *Le sens gourmand*. Paris: Rocher. Italian translation by Pierluigi Basso Fossali: *Il senso goloso*. Pisa: ETS 2011, 199–210.
- Biglari, Amir and Nathalie Roelens (eds.) (2018). *La sémiotique en interface*. Paris: Kimé.
- Boutaud, Jean-Jacques (ed.) (2004). *L'imaginaire de la table. Convivialité, commensalité et communication*. Paris: L'Harmattan.
- Boutaud, Jean-Jacques (2005). *Le sens gourmand*. Paris: Rocher. Italian translation by Pierluigi Basso Fossali: *Il senso goloso*. Pisa: ETS 2011.

- Floch, Jean-Marie (1995). L'Eve et la cistre. L'emblème aromatique de la cuisine de Michel Bras. In: Jean-Marie Floch. *Identités visuelles*. Paris: PUF. Italian translation by Lisa Ranelletti: Il piatto, il gusto, il mito: l'emblema aromatico nella cucina di Michel Bras. In: Gianfranco Marrone (ed.). *Sensi e discorso*. Bologna: Esculapio. Now in: Gianfranco Marrone and Alice Giannitrapani (eds.) (2012). *La cucina del senso*. Milan: Mimesis, 227–250.
- Foucault, Michel (1984). *Histoire de la sexualité vol. 2. L'usage des plaisirs*. Paris: Gallimard.
- Galofaro, Francesco (2005). Degustare il vino: il bicchiere come macchina sinestetica. *E/C*. URL: www.ec-aiss.it [retrieved June 19, 2013].
- Giannitrapani, Alice (2014a). Sfide ai fornelli e piaceri televisivi. In: Gianfranco Marrone (ed.). *Buono da pensare*. Rome: Carocci, 101–132.
- Giannitrapani, Alice (2014b). Ristoranti & co. In: Gianfranco Marrone (ed.). *Buono da pensare*. Rome: Carocci, 161–292.
- Giannitrapani, Alice (ed.) (2021). *Foodscape. Cibo in città*. Milan: Mimesis.
- Giannitrapani, Alice and Davide Puca (eds.) (2021). *Forme della cucina siciliana*. Milan: Meltemi.
- Greimas, Algirdas Julien (1983). La soupe au pistou. In: Algirdas Julien Greimas. *Du Sens II*. Paris: Seuil. Italian translation by Maria Pia Pozzato: *Del senso 2*. Milan: Bompiani. Now in: Gianfranco Marrone and Alice Giannitrapani (eds.) (2012). *La cucina del senso*. Milan: Mimesis, 197–210.
- Hobsbawm, Eric and Terence Ranger (1983). *The Invention of Tradition*. Cambridge: Cambridge University Press.
- Lévi-Strauss, Claude (1962). *Le totemisme aujourd'hui*. Paris: Plon.
- Lévi-Strauss, Claude (1968). *Mythologiques***. L'origine des manières de table*. Paris: PUF.
- Lotman, Jurij M. (1985). *La semiosfera. L'asimmetria e il dialogo nelle strutture pensanti*. Venice: Marsilio.
- Lotman, Jurij M. and Boris A. Uspenij (1975). *Tipologia della cultura*. Milan: Bompiani.
- Manetti, Giovanni, Paolo Bertetti and Alessandro Prato (2006). *Semiofood*. Turin: Centro Scientifico Editore.
- Mangano, Dario (2013). Come cucinare il commensale. *Neve al sole* di Massimo Botura. In: Gianfranco Marrone and Alice Giannitrapani (eds.) (2013). *Mangiare: istruzioni per l'uso*, monographic issue of *E/C* 14, 213–232.
- Mangano, Dario (2014a). *Che cos'è il food design*. Rome: Carocci.
- Mangano, Dario (2014b). L'anima del commercio alimentare. Pubblicità, brand, comunicazione. In: Gianfranco Marrone (ed.). *Buono da pensare*. Rome: Carocci, 66–100.
- Mangano, Dario (2019a). *Ikea e altre semiosfere*. Milan: Mimesis.
- Mangano, Dario (2019b). Dieci tesi sul food design. In: Dario Mangano. *Ikea e altre semiosfere*, 61–76.
- Mangano, Dario (2020). Propaganda alimentare. In: Massimo Montanari (ed.). *Cucina politica*. Rome: Laterza, 223–241.
- Mangiapane, Francesco (2014a). Scontri etnici e corpi gloriosi. Mangiare al cinema. In: Gianfranco Marrone (ed.). *Buono da pensare*. Rome: Carocci, 133–166.
- Mangiapane, Francesco (2014b). Politiche culinarie nelle maglie della rete. In: Gianfranco Marrone (ed.). *Buono da pensare*. Rome: Carocci, 167–198.

- Marrone, Gianfranco (2011a). *Addio alla natura*. Turin: Einaudi.
- Marrone, Gianfranco (2011b). Brand on the run. Sguardo semiotico su slow food. *Lid'O*, VII. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 273–298.
- Marrone, Gianfranco (2012a). Livelli di senso: gustoso e saporito. In: Paolo Leonardi and Claudio Paolucci (eds.). *Senso e sensibile. Prospettive fra estetica e filosofia del linguaggio*, monographic issue of *E/C* 17. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 163–184.
- Marrone, Gianfranco (2012b). La forma dell'arancino. Arte culinaria e investigazione poliziesca. In: Francesca Polacci. *Ai margini del figurativo*. Siena: Protagon. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 299–318.
- Marrone, Gianfranco (2013a). Destini della patria. Arti e tecniche del risotto dorato. In: Gianfranco Marrone and Alice Giannitrapani (eds.). *Mangiare: istruzioni per l'uso*, monographic issue of *E/C* 14. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 83–110.
- Marrone, Gianfranco (2013b). Fermare il tempo: merendine e significazione. In: Gianfranco Marrone and Alice Giannitrapani (eds.). *Mangiare: istruzioni per l'uso*, monographic issue of *E/C* 14, 89–110.
- Marrone, Gianfranco (2014a). *Gastromania*. Milan: Bompiani.
- Marrone, Gianfranco (2014b). Introduzione. In: Gianfranco Marrone (ed.). *Buono da pensare*. Rome: Carocci, 11–24.
- Marrone, Gianfranco (2014c). Goodman in cucina: le attivazioni di Babette. In: Nicola Perullo (ed.). *Cibo, estetica e arte*. Pisa: ETS. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 185–198.
- Marrone, Gianfranco (ed.) (2014d). *Buono da pensare*. Rome: Carocci.
- Marrone, Gianfranco and Alice Giannitrapani (eds.) (2012). *La cucina del senso*. Milan: Mimesis.
- Marrone, Gianfranco (2015a). La forma del latte. Allusioni erotiche ed emergenze del reale. In: Simona Stano (ed.). *Cibo e identità culturale*, monographic issue of *Lexia* 19–20. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 257–272.
- Marrone, Gianfranco (2015b). Cibo, cinema: una visione politica. In: Lorenzo Bianciardi and Giovanni Pellicci. *A cena con Babette*. Milan: Morellini. Now in: Gianfranco Marrone (2016). *Semiotica del gusto*. Milan: Mimesis, 365–368.
- Marrone, Gianfranco (2016). *Semiotica del gusto*. Milan: Mimesis.
- Marrone, Gianfranco (2019). *Dopo la cena allo stesso modo*. Palermo: Torri del Vento.
- Marrone, Gianfranco and Dario Mangano (eds.) (2013) *Dietetica e semiotica*. Milan: Mimesis.
- Montanari, Massimo (ed.) (2020). *Cucina politica*. Rome: Laterza.
- Puca, Davide (2021). *Il valore delle differenze. Tipicità e terroir nella cultura alimentare*. Palermo: Museo Pasqualino.
- Ricci, Piero and Simona Ceccarelli (2000). *Frammenti di un discorso culinario*. Milan: Guerini.
- Sedda, Franciscu (2020). *Su purceddu. Storia di un piatto, racconto di un popolo*. Cagliari: L'Unione Sarda.

- Stano, Simona (ed.) (2015a). *Cibo e identità culturale*, monographic issue of *Lexia* 19–20.
- Stano, Simona (2015b). *Eating the Other. Translations of the Culinary Code*. Newcastle-upon-Tyne: Cambridge Scholars Publishing.
- Ventura Bordenca, Ilaria (2020). *Essere a dieta. Regimi alimentari e stili di vita*. Milan: Meltemi.
- Ventura Bordenca, Ilaria (2021). Rosticceria: ibridazioni gustative e logiche identitarie. In: Alice Giannitrapani and Davide Puca (eds.). *Forme della cucina siciliana*. Milan: Meltemi, 287–320.

Dario Mangano
Full Professor of Semiotics
University of Palermo
Department of Culture and Society
Viale delle Scienze ed. 15
I-90128 Palermo
Italy
E-Mail: dario.mangano@unipa.it