Flavour

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Culinary precisions as a platform for interdisciplinary dialogue

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Abstract

Claims or specifications about cooking (in some literature referred to as 'culinary precisions') as found in recipes or as generally shared knowledge, permeate the world of food and cooking. The collection and study of these culinary precisions carries with it potential as a framework for research, not only in food science, but also in other disciplines such as social sciences and humanities, allowing for multidisciplinary approaches and cross-fertilization between a broad range of sciences. These precisions also allow for novel approaches to education at all levels, as shown through educational efforts in several countries as well as educational research. Finally, they provide a unique arena for the interaction between science and society. In the present report, we describe a recent initiative, 'The Kitchen Stories Network', with an open invitation for interested parties to collaborate across disciplines and across societal boundaries in order to collect and study such culinary precisions for the common benefit of sciences, education, other stakeholders such as businesses and non-governmental organizations, and society in general.

Keywords: Cooking, Culinary precisions, Education, Food, Interdisciplinary, Kitchen stories, Molecular gastronomy, Natural sciences, Network, Science in society, Social sciences and humanities

Claims and specifications about cooking

The world of food and cooking is full of specifications on how to perform tasks and occasionally why one should adhere to this advice. Many of these specifications are rooted in tradition, while others are more recent, and these sometimes appear to us like modern urban myths. Some are rooted in the long experience of kitchen professionals or home cooks, and some originate from science. Such culinary 'claims', 'instructions', 'specifications' or 'precisions' (various terms have been used) are the shared common knowledge of societies about the techniques and practices of food and cooking. Often they are shared orally as knowledge is handed down through generations, or in written form, for example, as part of recipes. As described previously [1], this knowledge may come in the form of hints, advice, 'tricks', or 'old wives' tales'. In this paper, we use the term 'culinary precisions' to describe the technical or procedural information present in a recipe (oral or written), which provides added value in terms of improved quality and greater chance of a successful product, although, to our knowledge, this term has not yet been adopted as a formal term in the international scientific community. A typical example of a culinary precision is 'When preparing *beurre blanc* sauce, butter should be added as ice-cold cubes'. The understanding that temperature affects the structure and taste of the sauce has probably developed through generations of skillful chefs making thousands of *beurre blanc* sauces collecting their experiences and sharing best practice. If the claim is studied scientifically, phenomena such as melting, emulsion, droplet size, and water/fat solubility can be taken under the scope of research, science education, and science dissemination. Culinary precisions are already being collected and studied by scientists as well as food professionals and devotees. The widest collection is in France, where Hervé This has collected around 25,000 culinary precisions, some of which have been published in French on the internet [2] and in a book [3]. Smaller collections are also available in other languages [4,5].

To date, there have been several efforts to study the chemical and physical phenomena of such culinary claims, and since publication of *The Curious Cook* [6],

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several publications have mentioned such claims as part of the field of molecular gastronomy [7-9]. Examples of scientific studies on such culinary claims are research into cooking of beef stock [10-12] and the effect on flavor of separating the peel and seeds from the flesh of tomatoes when preparing a tomato-based dish [13]. Even though culinary precisions have been studied within food science, we are not aware of any studies based on such claims in other disciplines such as ethnology, food history, or sociology (however, we do not claim that such research does not exist, and would be delighted to see any studies).

Culinary precisions: properties, purpose, and potential

In addition to providing material for research, culinary precisions contain questions and deal with phenomena that are by their nature multidisciplinary (Figure 1). These culinary precisions represent valuable parts of a society's cultural heritage and provide rich research material for various scientific fields, including cultural history and sociology. In some cases, the phenomenon in question is well described within one field of science but is less so in another, suggesting potential for multidisciplinary research and cross-fertilization/-pollination between disciplines.

Secondly, culinary precisions provide a unique arena in epistemological terms. These claims about food and cooking occur in the intersection between, on the one hand, the natural sciences, and on the other hand, practice-derived knowledge gained through experiential learning and sharing. This apparent gap might carry a potential tension between 'different ways of knowing', but it also opens up possibilities for interaction and exchange between science and society, in both directions.

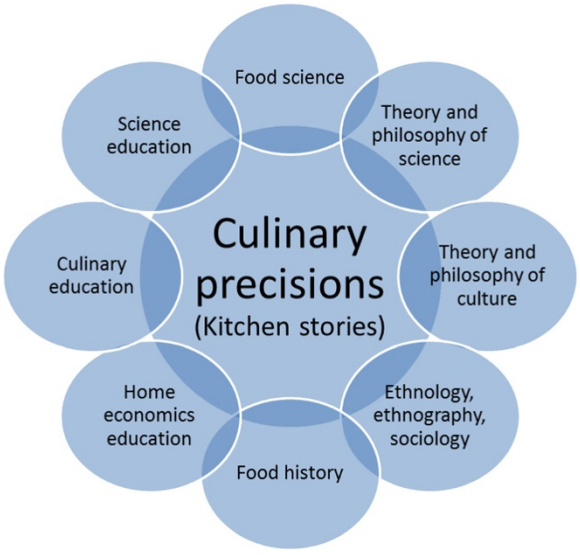

Figure 1 Culinary precisions deal with questions and phenomena that by nature are multidisciplinary.

Thirdly, culinary precisions provide valuable opportunities for education and dissemination at various levels, not only in dealing with scientific facts, but also in matters pertaining to scientific methods, processes, and ways of thinking. In France, such educational efforts have been carried out in schools at both primary and secondary level [14,15]. In two linked research projects in Finland [16] and Norway [5,17], we have set out to unveil the potential this might have in science and home economics education, and preliminary results from these projects were presented at an interdisciplinary symposium in Helsinki in 2012 [18,19]. Efforts representing informal life-long learning perspectives also exist, including those directed towards chefs and the general public, such as seminars (e.g. in Argentina, Finland and France), blogs [4], TV [20] and radio shows, and podcasts [21].

Finally, because of their universal nature culinary precisions might be collected and studied by the public, craftsmen (chefs, artisans) or even schoolchildren, and these precisions could in turn prompt relevant research topics to be studied within the various sciences. Research projects involving contributions from the public exist in other disciplines such as weather and climate studies [22], ecology and biodiversity [23], and school meals/diet [24]. Thus, the concept of culinary precisions provides a possible framework to include contributions from various groups, such as students from primary through tertiary education, food professionals, and the general public.

Culinary precisions versus science in society

Even though science probably is closer to people's lives than it has ever been throughout human history, there is a perception among the general public that much science is difficult to understand, and even not relevant to their everyday life. To safeguard the development of a democratic knowledge-based society, wider public involvement with science should be encouraged [25]. In order for the public to be able to make qualified decisions on science-based topics that often use specialized and unfamiliar language and methods (e.g. healthcare, biotechnology, nutrition), it is necessary to stimulate the public to develop their understanding of science and particularly of the processes underlying scientific endeavor. Using culinary precisions, ordinary, everyday food can be an arena that makes the complexities of science accessible to the public, and the public can contribute back to science by generating research questions, collecting data, and contributing their practical and heritage-derived knowledge and experience. Thus, when knowledge is seen as shared (applying a transmission analogy with a more symmetric notion of communication between science and society), traditional knowledge based on cultural heritage may be preserved

and also make a contribution to elucidate scientific questions.

Two examples of culinary precisions applied to science in society and education

In order to obtain material for molecular gastronomic research and activities to integrate science into society, the Finnish–Norwegian collaboration project has been collecting culinary narratives since 2009. The aim of the project is to expand and develop the current collection (a selection of a few hundred 'kitchen stories' in Finnish and Norwegian) into an international database to stimulate and activate researchers, professionals, and food devotees in different fields. The current collection is being used in Finland and Norway both for educational purposes and for science in society-related efforts. Inspired by initiatives in France [3,7], food devotees in Finland assemble in monthly informal meetings as a 'molecular gastronomy club', with the meetings run by a scientist and a chef, and debate mutually agreed topics. In this club, culinary precisions such as 'the best fish stock is achieved when it is prepared without fish heads and tails' are explored. Short theoretical presentations and a carefully planned experimental setup with blind tastings stimulate participants to share their knowledge and experience [4]. In addition to learning about the science and craftsmanship involved, participants thus learn about the culture and history of the food. In both Finland [16] and Norway [5,17], educational efforts include collection and analysis of culinary precisions by classes in lower secondary schools (Finland) and by students in pre-service teacher education (university college level). Here the focus lies on using culinary precisions as a framework for teaching scientific inquiry and argumentation in cross-curricular settings. Through the inquiry process, other topics occur naturally and are taught accordingly, with examples being scientific documentation, peer review, food science, chemistry, physics, biology, food culture, history, and epistemology.

The Kitchen Stories Network initiative: a multidisciplinary network around culinary precisions

An open 'Kitchen Stories Network' was initiated in December 2011 by an open invitation, using networks of professionals, blogs [26,27], and word of mouth. The network is open to all, and has set no limits (for example, age, profession, nationality, educational level) for affiliate members. The members share an overall interest in culinary stories, narratives, and claims as a source of shared knowledge and cultural identity. To date, the network consists of more than 80 participants from 17 different countries from Europe, Americas (North and South) and Africa. The members represent scientists (natural sciences, social sciences, humanities), teachers and educators, food writers and communicators, chefs, students, industry and businesses, and food devotees. We believe that this network, and the projects initiated within it, can involve and perhaps even integrate a multitude of disciplines as well as various research methods and paradigms. With culinary precisions as the centerpiece, the various disciplines are allowed to maintain their distinctive features while at the same time meeting at a common point of interest (Figure 1). The ultimate goal is to build an international internet-based collection of 'kitchen stories'/culinary precisions to be developed by and to benefit researchers in different fields as well as society at large.

Anyone interested in joining the network, currently in the shape of a mailing list, are cordially invited to contact us. Efforts have been initiated within the network to apply for funding to expand the project.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

The idea for the contribution was conceived collectively by both authors, and both are responsible for the Kitchen Stories Network, which is mainly organized by EF. Both authors were involved in developing the first draft of the manuscript into the final version suitable for publication. Both authors have read and approved the final manuscript.

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