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Unpacking Knowing Integration: A Practice-based Study in Haute Cuisine

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ABSTRACT:

Within a practice-based approach of organizations, we explore the knowing integration phenomena at the roots of competitive advantage. While former knowing integration studies have pointed to the importance of boundary objects across occupational communities, knowing integration inside a community to ground competitive advantage remains to be explored. How do individuals integrate their knowing in practice, in complex and important situations in order to contribute to competitive advantage for the firm? We ground our analysis on the ethnographic study of performed tasks in new dishes creation in two gourmet restaurants. We trace individual knowing in this creation to highlight how a new dish emerges from knowing integration, based on our understanding of knowing as processual, social, and situated. We propose a model of knowing integration as a combination of three phenomena: comprehending, interpreting and explicating. We show that integration leads to the development of new dishes while knowing remains largely individual. We therefore suggest that there exists a clear distinction between knowing integration and knowledge sharing or transfer. We also contribute to a clearer delineation between integration and explication, the latter being only one and secondary means to achieve the former. Our study advances practice-based studies of organizations by highlighting the central role of integration in knowing dynamics and by bridging micro and macro perspectives on practice.

Key-Words:

- Combination
- Competitive Advantage
- Integration
- Knowledge
- Learning
- Restaurants
- Transfer

RESUME :

Nous proposons d'analyser l'intégration des connaissances à la source d'un avantage concurrentiel avec une approche pratique des organisations. Alors que la littérature s'est focalisée sur le transfert de connaissances et les relations entre communautés par le biais des objets frontière, nous considérons les relations intra-communauté et la façon dont les acteurs mobilisent, restructurent et créent des connaissances pour l'action. Dans une perspective pratique, la dynamique des connaissances est un phénomène situé dans un contexte social donné. Nous nous appuyons sur une phase empirique qualitative, par l'analyse de l'intégration des connaissances lors de la création de nouveaux plats au sein des équipes de cuisiniers de restaurants tri-étoilés.

Mots-clés :

- Apprentissage
- Avantage concurrentiel
- Connaissance
- Créativité
- Gastronomie
- Intégration
- Transfert

JEL classification : M0, M10, L2, L83

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Building on an "epistemology of practice" (Cook and Brown 1999), this paper investigates how individual knowing is integrated within the organization. It reports a research that seeks to understand the actual practices associated with integration and builds a framework of integration as a combination of individual heterogeneous knowing.

Knowledge integration became a central issue for organizations (Grant 1996a, b, Nonaka and Takeuchi 1995, Kogut and Zander 1992) ever since knowledge has been considered as the most significant resource for the firm and a critical factor of competitive success. With the view that knowledge and learning reside in individuals (Simon 1991) and that tacit knowledge is the primary source of competitive advantage, Grant (1996, p. 114-115) outlined four mechanisms for integrating individual specialized knowledge: rules and directives, sequencing, routines, and group problem solving. The first three mechanisms are formal means of integrating existing knowledge in usual situations to avoid "costs of communication and learning". The fourth mechanism, "group problem solving", is based on dialogue and direct interindividual communication. It relates to situations of novelty, "unusual, complex and important tasks" and therefore encompasses crucial situations such as innovation or crisis.

Much of past research conceptualized integration as resting on explicitation or socialization (Nonaka and Takeuchi 1995, Nonaka and Von Krogh 2009); integration is often conceived as interactions resting on explicitly articulated knowledge, while more tacit elements are reserved to individual actions (Enberg et al. 2006, Crossan et al. 1999). Interestingly, these models actually share a common understanding of knowledge integration as a transfer: they highlight various means of moving pieces of knowledge between individuals and groups. However, Grant (1996b, p. 114) insisted that transferring is fundamentally different from integrating knowledge and that the former is even inefficient for integration: "if Grant and Spender wish to write a joint paper together, efficiency is maximized not by Grant learning everything that Spender knows (and vice versa), but by establishing a mode of interaction such that Grant's knowledge of economics is integrated with Spender's knowledge of

philosophy, psychology and technology, while minimizing the time spent transferring knowledge between them". In line with this view, Okhuysen and Eisenhardt (2002, p.383) called for better distinguishing between "knowledge sharing [...] and knowledge integration" and suggested that the later should rather be conceived in terms of combination.

Following Bechky (2003) and Eisenhardt and Santos (2002), we argue that confusing integration with transfer is rooted in "fundamental inconsistencies in how knowledge is conceptualized and measured" (Eisenhardt and Santos 2002, p. 159): traditional approaches "treat 'knowledge' as a given" (Bechky 2003, p. 313) and do not account for how knowledge is enacted in the real everyday doing of actors in organizations. From this point it goes as follows: if knowledge is a "given" resource, then it can be neutrally transferred to others so that they can benefit from it. Within a static view of knowledge, the main challenge logically becomes to extract knowledge from individuals and make it travel (through whatever means) in order to ground coordinated collective action on a shared resource.

Yet, a wide array of practice-oriented literature (Cook and Brown 1999, Carlile 2002, Nicolini et al 2003) proposes to take an epistemological turn towards a more dynamic and practical understanding of knowledge and preferably refers to "knowing", understood as an ongoing, social and personal phenomena, which is also situated and dynamic. "It is in practice, in fact, that knowledge comes to life, stays alive and fades away" (Nicolini et al. 2003, p. 26). People mobilize their knowing for practice and doing so they also structure and restructure their knowing. Therefore knowing and doing are fatally interrelated in a dynamic way. Adopting this view drives to fruitfully reconsidering integration within organizations, as exemplified by seminal analyses of knowing integration across occupational communities at a collective level (Carlile 2002, Bechky 2003). The purpose of our study is to unveil what happens inside a community and at an even more individual level. How is individual knowing integrated in practice?

We ground our analysis on an empirical study in the field of haute cuisine and gourmet restaurants. Haute cuisine is a field characterized by a very strong link between the chef, the work of the kitchen team and the specific cuisine of the restaurant. In particular, the chef's

creativity is institutionally acknowledged as a major factor of success for gourmet restaurants (Parkhurst-Ferguson 1998, Durand et al. 2007) and the restaurant's success is apparent through rankings in gastronomic guidebooks. At the same time, cooking is collective and relies on a highly organized team. Such a situation then offers the opportunity to concentrate on internal knowing integration while the relationship between creativity as individual knowing and success is established in the field. We conducted two in-depths case studies to examine the minutiae of the integration of the chef's individual knowing in the kitchen, against the backdrop of the creation of new dishes in restaurants. Our results contribute to building a view of knowing integration as combination, as opposed to transfer. We argue that integrating knowing rests on three phenomena: comprehending, interpreting, explicating. Comprehending is the grasping of the initial idea by individuals. Interpreting is enacting the idea through trials. Explicating is formulating the basics of the final recipe. These mechanisms are cumulative and all contribute to building unique value for the organization. The following pages are organized in five sections. First, we sketch out the practice-based approach of knowing and highlight its contribution in regard of integration. Second, we present the field of haute cuisine and gourmet restaurants and describe our research method. Third, we detail and exemplify individual knowing integration in each of our cases. Then we propose a transversal analysis with the identification of three constituting phenomena: comprehending, interpreting, explicating. Last we discuss our results and highlight the contributions of our framework for research on integration and on practice-based approaches of organizations.

I A practice-based approach of knowing integration

This section presents the "epistemology of practice" (Cook and Brown 1999) in which we ground our analyses and outlines its major implications in regard of knowing. We argue that a knowing perspective advances our understanding of integration.

Within a practice lens, all human activities take place in a social context even those that seem individual (Giddens 1979, Bourdieu 1990, Schatzki et al. 2001): how people choose their partner, what sport they practice and how they practice it, what people eat and how they

eat... All these activities should therefore be examined as practices, that is to say in regard of their particular social, material and physical context, specific stakes and actors. Over the past twenty years practice-based approaches have spread in organization studies under different light: communities of practice (Lave and Wenger 1991), cultural aspects of practice and learning (Cook and Yanow 1992), strategy as practice (Jarzabkowski et al. 2007, Whittington 2007, Antonacopoulou 2009) to name just a few. Whatever their orientation, all these practice-based studies emphasized the importance of knowledge dynamics (Gherardi 2006), offering a revised understanding of knowledge itself and granting a specific place to knowing as the ongoing social process (Tsoukas 1996, Cook and Brown 1999) of "knowledge in action" (Nicolini et al. 2003, p. 3). The knowing-in-practice view constitutes an epistemic shift to escape the dilemma between an overcognitivist view of knowledge residing only in human heads on the one hand, and a reified view of knowledge as an "objectified transferable commodity" on the other (Gherardi 2006, p. xv). Knowing is more than a static resource that we would possess and use in action. Knowing is something we do. We permanently create, use and restructure knowing for practice and through practice, hence the reference to knowing instead of knowledge (Orlikowski 2002). Knowing is therefore a phenomenon that is social and personal, processual, and situated (Nicolini et al. 2003). Knowing is social because individual actions are practical (Antonacopoulou 2006). They are embedded in the social world where they take sense and value (Bourdieu 1990). At the same time these actions are entrenched in the unique experience of the individual and therefore knowing is also personal: knowledgeable people "are not solely ephemeral social entities [...] they are living beings who inhabit a world of life [...] They have bodies, they touch, smell, taste, they have sentiments and senses" (Nicolini et al. 2003, p. 22). Knowing is processual because it permanently evolves through practice. It is dynamic. When doing things we mobilize our knowing but also develop and restructure it. Knowing is an "ongoing social accomplishment, constituted and reconstituted in everyday practice" (Orlikowski 2002, p. 252). Therefore, knowing is linked to the conditions of practice, which are those of its emergence, a particular time and space. It is situated in "moments of lived work, located in

and accountable to particular historical, discursive, and material circumstances” (Suchman 1987, p. 188). Among these, the cultural aspects, such as values, language, perceptual elements (Yanow 2000) play an important role. They rest on non-reflexive, immediate features and aesthetic experience (Strati 1992).

Such an understanding of knowing points to the need to further our examinations beyond formal and explicit knowledge processes (Chiva and Alegre 2005), in order to uncover the practical reality of these phenomena in organizations. In particular, it fosters the development of a more accurate understanding of integration. As Eisenhardt and Santos (2002, p. 160) argued: “less focus should be given to the idea of knowledge transfer (moving a piece of knowledge from one place to another) while more focus should go to knowledge integration processes, in which the development of meaning and the creation of new knowledge occurs through individual interactions and is affected by social contexts”.

Authors advocating a dynamic and practical understanding of knowledge (as knowing) initiated an indeed refined, though still partial picture of integration. Orlikowski (2002) explored the competence of high-technology product development in global firms with a knowing in practice perspective. She highlighted the shortcomings of knowledge transfer and sharing approaches that consider knowledge as a stable asset, easily stocked and transferred, because they do not fit the actual situation of real organizations' everyday work (Orlikowski 2002: 269). Bechky (2003), Carlile (2002), and Dougherty (1992) explored the difficulties of knowing integration across communities of practice. With her study of the problems encountered by large firms in linking technological and market possibilities for successful innovation, Dougherty (1992) highlighted the role of differing "departmental thought worlds" (1992: 196) and suggested that successful innovation required overcoming interpretive barriers in order to integrate knowledge in the product's design. In a similar setting, Carlile (2002) reached converging conclusions based on the ethnographic study of a single case. He especially outlined that knowledge integration across communities of practice implied jointly transforming knowledge and argued that boundary objects were pertinent integration devices to overcome knowledge barriers and benefit from working

across communities of practice as a source of innovation. The power of boundary objects for knowing integration has been further demonstrated by Bechky (2003) with the ethnographic study of the problems arising on a production floor between engineers, technicians and assemblers. She suggested that integration difficulties, which originated in differences in language, locus of practice and conceptualization of the product, could be overcome by co-creating a shared understanding around boundary objects across occupational communities as opposed to simply knowledge traveling between individuals or groups. In this light, knowing could be integrated because it was shared through a transformation and co-creation process, not transfer.

These seminal studies enabled the initiation of a more refined understanding of integration grounded on a dynamic and practice approach of knowing. In particular, they contributed to more clearly delineate between transfer and integration and pointed to the role of interactions. They pursued this idea in a particular setting though as they focused on knowledge integration across communities of practice or occupational communities. Our aim here is to pursue in this vein but inside a community and at an even more concrete individual level, to look at how work gets done, the way individual knowing is integrated in practice. To do this, we developed an empirical in-depth study of the case of two chefs and gourmet restaurants in the field of haute cuisine.

II FIELD STUDY

For the purpose of our empirical study and given our interest in knowing in practice, we conducted qualitative case studies in a single sector. In addition to minimizing potential cross-sectorial variance, this represented an opportunity to develop in-depth studies while generating data for comparison between different organizations. We chose our cases in the field of haute cuisine because of the unique link it exhibits between the chef's knowing and the success of the restaurant. We analyzed the minutiae of the organizational integration of individual knowing, and more precisely focused on the creation of new dishes to detail how the Chef's creativity as individual knowing is integrated in the practice of new dishes creation.

In the following pages, we first provide a detailed description of haute cuisine, its specificities and the stakes of creation in this field. Describing Haute Cuisine is necessary as knowing is contextual. It also responds to validity concerns, to “enable someone interested in making a transfer to reach a conclusion about whether transfer can be contemplated as a possibility” (Lincoln and Guba 1985, p. 316). Then we turn to exposing our method.

1 The field of haute cuisine.

Haute cuisine is the field composed by gourmet restaurants. It is highly institutionalized and responds to very specific rules (Fauchart and Von Hippel 2008). One of the most striking field's characteristics is that major gastronomic guidebooks play a dominant role (Karpik 2000, Parkhurst-Ferguson 1998: 20) and in particular render competitive success apparent through the restaurant's ratings (Durand et al. 2007). The Michelin Guide is the most important culinary guidebook and is internationally acknowledged as the most serious (Karpik 2000). Michelin ranks restaurants along two dimensions: from none to three stars and from none to five forks. Stars reflect the gastronomic level of the restaurant, especially in regard of two major criteria which are the inventiveness of the cuisine (menu, new dishes, culinary universe) and the daily operational perfection. Stars historically are of greater importance in the field than forks, which are secondary and only reflect the decorum (Karpik 2000). Restaurants awarded with stars compose the field of haute cuisine and a gourmet restaurant is defined only after the quality of the output. Performance in haute cuisine is non-financial and socially constructed (Rao et al. 2003), although losing or gaining a star bears definite economic consequences (Fauchart and Von Hippel 2008, p. 192). We specifically focused on three-star restaurants. Less than 60 organizations in Europe are awarded Michelin's three stars (the maximum grade) over a total population of about 1600 starred restaurants in haute cuisine.

Although they all provide the finest gastronomic experience, three-star restaurants are very different from each other. Each chef has a strong and unique identity, based on cooking style, ability to innovate, touch and/or the products (Parkhurst-Ferguson 1998, p. 637, Rao et al. 2003). In haute cuisine and although the chef is not alone in the kitchen, there is in fact a

direct relationship between the chef and the restaurant's cuisine (Fauchart and Von Hippel 2008, Rao et al. 2003), therefore with the gastronomic level and Michelin stars. Such relationship is especially salient in new dishes, the creation of which is therefore endowed with major stakes. Alike in haute couture, creativity is nowadays a prerequisite to maintain a position in haute cuisine, especially in three-star restaurants (Beaugé 2008). In other words, as Michelin stars reward creativity, new dishes are an occasion for demonstrating the chef's excellence (Ferguson 2005). At the same time, cooking is collective and relies on a highly organized team. Three-star chefs and their kitchen teams are expected to create dishes up to their level of sophistication and perfection (Beaugé 2008). Yet creativity is not required for the sake of newness and the introduction of misjudged novelties in a menu is detrimental to a restaurant's rating. Menus are in fact a balance between newly created dishes and classics of the restaurant revisited. Only a few new dishes are introduced each year. They are the result of long lasting efforts and though vital, their creation is a very demanding practice. In all, three-star restaurants fit the particular requirements of our research question. They represent a unique opportunity to concentrate on the internal phenomena of integration in crucial situations. In addition, grand restaurants also represent a genuine opportunity to observe all the aspects of the organization and workers' practices, because they are small organizations (less than 100 employees) with short activity cycles (two sittings a day and a seasonally renewed menu). In all, haute cuisine is a particularly appropriate context for the purpose of our research.

2 Method.

This research is part of a larger project conducted in the field of haute cuisine for several years. For the purpose of studying knowing integration, we focused on two restaurants in which we were able to carry ethnographic studies. In practice-based approaches, "it is crucial to be able to observe what people do, what their work is like and what efforts it takes" (Carlile 2002, p. 447). We chose these extreme cases (Eisenhardt 1989, p. 537) because of their highly innovative cuisine: these two restaurants are reputed to be among the most creative in the world (Wells 1996, Le Monde 2005). For convenience we present the restaurants under

the pseudonyms Atlas and Boreas; chefs are respectively referred to as chef A and B. Table I summarizes the main characteristics of the cases.

Table 1 Overview of case restaurants

Atlas Restaurant	Boreas Restaurant
Third star awarded in 1998	Third star awarded in 1996
37 employees' Parisian restaurant in a hotel.	39 employees' Parisian restaurant.
Innovative, "avant garde", exploratory cuisine, often compared to modern art.	Minimalist and innovative cuisine based on sensitiveness.
Precursor of fusion cuisine and exotic combinations, permanent genre transgression	Renewed textures, mixing of tastes. Large use of vegetables and flowers. Reputed for long-lasting roasting techniques applied to poultry and vegetables.
Chef A born in 1950	Chef B born in 1956
Has been working with the same second chef for 20 years.	Second chefs change every 3 years on average

In the two cases we mobilize in this research, the internal organization of the kitchen is similar. It is in fact the most common organization in French haute cuisine restaurants' kitchens. Kitchens are organized by stations: meat, fish, garde-manger (vegetables and herbs), pastry etc. Each station (and the cooks in that station) is the responsibility and under the authority of a station chef. All kitchen staff (cooks and station chefs) is under the authority of the chef and second-chef. Each dish is the result of the combined efforts of multiple actors: on average, five elements compose each dish.

To identify knowing and observe integration, we based our approach on performed tasks as "real work" (Cook and Brown 1999, p. 387). Yet, in order to avoid the risk of relying on a single data source (Denzin 1989, Eisenhardt 1989) we collected information from multiple sources (Miles and Huberman 1994, Lincoln and Guba 1985, Yin 2003): secondary data,

interviews and observation. These also provided us with the multifaceted data that we needed to address the sensitive aspects of gastronomy and cooking.

First, haute cuisine is a topic regularly covered by media, with a particular focus both on internal processes and creativity. In France the subject is of paramount interest in society at large (Parkhurst-Ferguson 1998, p. 631). Media were therefore especially rich with information on our cases and their chefs. We collected these data mainly from the press, the internet and television. They provided us with journalists' interviews with Chefs, descriptions of the restaurants and food, and visual accounts of dishes, cooking and creative sessions, documentary films (Bensadoun 2006, de Maistre 2005). We initiated this secondary data collection as a field background, prior to our observations and interviews. Then we maintained it as an ongoing process throughout the case studies; we kept collecting secondary data continually, in order to enrich our data set on the focal restaurants.

Second, as we needed a "direct [...] method of getting at knowing" (Carlile 2002, p. 446), we conducted direct observation of practices and organization in each of the focal kitchens, before, during and after lunch (i.e. from morning until late afternoon). During these periods, we had the opportunity to observe many facets of the kitchen life: preparation work in the kitchen (new dishes cooking or tasting sessions, discussions and exchanges with cooks), before-sitting briefings (when menus are rehearsed and the clients' list scanned), cooking during sitting (under pressure) and last, debriefings after sittings. Given kitchens' size (often small) and pressure (often high), we could only take partial observation notes during our observations. We were very careful not to interfere with what was going on in the kitchens in order to create as little perturbation as possible: we made ourselves discrete. For this reason, we systematically transcribed our observation notes in full details immediately after our observations. Although this was sometimes exhausting, it guaranteed both a greater freshness and accuracy of our data.

Our third data source is interviews. We first had informal conversations with chefs and their cooking teams to set the conditions of our observations and install mutual trust. They took us through their kitchens, introduced us to their work place and universe. We had lunch in their

company to experience the restaurant's food, which we must admit has been a particular pleasant step in our project. Then, we conducted individual formal interviews with chefs and their second-chefs separately. We interviewed both chefs and each second-chef for two hours. These interviews followed semi-structured format and the same interview guide oriented towards the identification of knowing and integration in the creation practice. While conversations, informal discussions, observations and impressions were transcribed in the form of open notes in our dairy, these formal semi-structured interviews were audiotaped, precisely transcribed and debriefed with interviewees.

In all, our data set covers the complete process of new dish creation, from inspiration sources to the regular cooking of a dish inscribed in the menu and served to the clients. We have both visual and interview accounts for the whole process. All the qualitative data collected resulted in a rich set that we analyzed with the view that knowing integration is something that people do.

We used our data to trace individual knowing in the creation of new dishes and understand how a new dish emerges from knowing integration based on our understanding of knowing as processual, social, and situated. We thus concentrated our attention on how things happened in these situations: who different actors are, what they do, when and how they do it. We granted specific attention to the materiality of practice: the tools cooks use, the artifacts they create (evocations, cooking trials, notes, recipes) and how they use them (Orlikowski 2000, Gherardi 2001, p. 136-137). We built on these elements as a first step in selectively coding our data. This corresponded to intra restaurant analyses where we captured the internal pattern of each case. Then we compared and contrasted our data across cases. Through this process we progressively turn to a theoretical coding which led to the emergence of the framework of knowing integration presented in this article.

Hereafter we first relate knowing integration in each case based on the selective coding: their specific context, the practice and actors around the creation of a new dish. Then we turn to the cross-case analysis leading to the knowing integration framework.

III Knowing integration in new dishes

1 Atlas restaurant

The genesis of new dishes at Atlas starts with a personal idea of chef A, who saves his mornings to “think about [his] personal work” (interview).

Found of modern contemporary arts, chef A finds inspiration in paintings (interview, observation of dishes). He is also inspired by the spices and ingredients he discovers while travelling, particularly in Asia and Africa (interviews). Besides, chef A works on a regular base with an academic partner, a physicochemist, with whom he investigates culinary constructivism, with references to such artists as Kandinsky and the search of sensorial emotions through the construction of new dishes. They exchange monthly on new findings on textures, combinations, colors... Chef A uses this work as stimulating challenges or ideas for new dishes. “My encounters with the raw materials always start my imagination working. [...] My work with [the physicochemist] doesn’t change my cooking but gives me more opportunities for exploring ingredients and techniques, and for emphasizing flavours” (Bangkok Post 17/03/06). For instance, chef A developed a foie gras Chantilly on this ground, which mobilizes the foundations of French gastronomy but radically modifies its rules. This chantilly is served with orange reduction and grilled Paris mushrooms.

Chef A regularly discusses possible new combinations with his chemist partner and with his second-chef, but he is the one who proposes, initiates dishes (interviews and observations). When chef A comes up with an idea, he evokes it with a small team of cooks, generally four people (second and some station chefs). Chef A explained us that such idea work enables him to distance from his initial ideas: “if you don’t have in your team people able to constrain your work, you cannot go along. Alone, you remain too close” (interview). We also observed that this distance is a way to assess technical feasibility matters.

During these idea work sessions, chef A does not describe the dish itself and rather talks about the emotions he wants to provoke, such as surprising effects, or perceptual eating sensations. The cooks sometimes meet in the restaurant's dining room or more often they meet in the kitchen early in the morning. For example:

“Chef A lays a plate of popcorn on the kitchen board and starts talking about his wanting to cook popcorns. He evokes his thought of dessert from the idea of a simple popcorn, possibly associated with chocolate, nuts, caramel and marshmallow with different consistencies: crunchy popcorn, puffed marshmallow and chocolate that melts in the mouth.

- "We have to find the fit", chef A says.

Then he grasps a popcorn, chews it, and leaves the kitchen“

(Account from popcorn observation).

Then, in his office, chef A recapitulates what he said in a note. He indicates the principles of the dish (associations and emotions), the main ingredients and he describes or draws some of the techniques he would privilege at this stage. For instance, for the popcorn dessert, he favoured milk chocolate and schematised the dessert as vertical chocolate cannelloni filled with popcorn.

In the meanwhile, the reduced team (second chef and 3 station chefs) engages in cooking tryouts of the new dish. During these trials Chef A is not in the kitchen. The cooks work together on the same dish. During this phase, they barely talk, focusing on what they are doing, with only short comments such as "this is OK", "it is ready", "more", "butter first"... Their comments regard specific and tangible elements, such as the quantity of ingredients, the cooking technique, temperatures, order of products in the plate.... As the second-chef insists "the main difficulty in a new dish here is to make the taste and aesthetics coincide. It may be disturbing sometimes, but it also why it's interesting" (interview). Later on, the chef comes back in the kitchen to taste the trials and discuss them. This discussion can address such details as cooking techniques, quantities or ingredients. However we observed that it more often reengages new trials and even additional evocations of the dish and its emotions.

Following the popcorn example:

“When chef A comes back, he is not satisfied with the taste of the dessert. He says:

- "No, I don't really like it this way. We are missing something. There is something we haven't exploited properly. It is not visual; it is about the taste..."

He takes a clean plate and begins to prepare the dish. He draws a thin circle of caramel in the plate and says to A1 (cook standing next to him):

- "Here it is. Now nuts and liquorice marshmallows... and puffed rice?"

Chef A takes a chocolate cannelloni, places it in vertical position in the plate and meticulously fills it up with popcorn that he carefully chooses from the bowl. Meanwhile, A2 (another cook) was still working at the finishing touch on another tryout, next to chef A. Chef A takes a look at what A2 is doing: nuts and marshmallows are arranged as a crown and the cannelloni lays flat at the top. He says:

- "This is the idea of the desert... This is what is interesting for the taste".

He takes A1's plate, removes some of the marshmallows and says:

- "Go on", asking A1 to add ice cream:

- "Flat flat flat! Here it is. We changed the taste."

(Account from popcorn observation).

Before displaying a dish on the menu, chef A tastes it again, sometimes amends it. Then, chef A writes what he calls a recipe but looks like a literary description. He indicates the ingredients, the approach, and the techniques. However, he does not give the metrics of the ingredients. We observed that during the sittings, he could still adjust cooking degrees or seasoning or even the arrangement in the plate: "yes, we can change until the last minute to find the fit" he says (interview). The so-called recipe is hand written and chef A draws schema to describe the arrangement in the plate. We noted that he barely indicates cooking times. The recipe also stresses the coherence with the style of the restaurant. Last, chef A grants a lot of importance to naming the dish, frequently evoking perceptions and emotions.

On Atlas menu, there is a two level naming. The first level naming of the dish refers to the main ingredient (for example Lozère Lamb); the following text (4 to 6 lines) indicates the various components, their preparation ("tartare"; "deboned") and alludes to the idea, the sensations, the evocations ("abstract"; "modest"; "unwonted "). Chef A grants particular attention and time to this consuming literary work.

2 Case Boreas

At Boreas, chef B tries not to be in the kitchen before mid morning and to save the quiet early morning hours to distance himself from his kitchen work. He finds most of his inspiration outside the restaurant in sculpture, paintings and music. He defines himself as an artist and a craftsman: "some chefs are restaurateurs. I am a cook, I feel myself as a craftsman" (Interview). He attaches much importance to his sensibility, to the gesture.

Chef B regularly invites non-cooks to share ideas and suggestions and participate to the genesis of the dish. He happened to work with a perfume designer. Chef B also regularly works with the gardeners taking care of the vegetable garden he created for the restaurant. Gardeners propose new products they grew. Chef B discusses with them in the garden the initial ideas these new vegetables inspire him with.

"Chef B and his gardener in chief stand in the vegetable garden next to a small plant with grey-green leaf.

- Let's taste this plant here. I told you about it.... The *martentia maritima*.

- The plant that tastes like oyster... the chef says.

- Yes that's the one. It comes from Asia. I finally managed to get it... Its' kind of a funny color, lightly grey. It's a bit downy...says the gardener while chef B smells it and whispers:

- It's almost salty

Chef B tears the leaf between his teeth, we can hear it cracking. Then he tastes it.

- "hum... it's tender."

[...]

- It's wonderful, very elegant. It looks like the sea. You know the green... The chef concludes.

- Can you make something with it?

- I can try it on another vegetable... some fruit. We could try a cucumber or something like that. It has to be something simple.

And they switch to another plant"

(Oyster plant observation)

Back in the restaurant, we observed that chef B involves his second and some station chefs in the creation of new dishes from early stages. Cooks are invited to suggest ideas. "He listens to us, he always considers our ideas and he treats us as peers" (interview with second). Chef B frequently refers to "we" when he talks about new dishes in Boreas. Together with the second and station chefs, they usually meet out of sitting hours, sometimes at the chef's place, in order not to be disturbed by the operational work going on in the restaurant. There, chef B explains his ideas, using verbal elements but also paintings and drawings or music pieces. In the meanwhile, chef B also uses gestures, mimicking with his hands. He voluntarily remains vague in order to let the cooks interpret and develop the initial idea.

"I give them my ideas [...], some elements. Let's take for example something I had in mind, a combination of taste I was thinking of. [...] It was a harmony of spinach, oranges, carrot, sesame oil, lemon with a light caramelized deglazing of langoustines. I tell them:

- 'Well: carrots, oranges, I want them as a fine mousseline. [...] Simmer orange zests, just very slowly simmered and tender zests. [...] The carrot mousseline takes the orange flavor. Just to have a hint, just like a guess. Spinach just lightly cooked in salted butter. Sesame oil, a zest of candied lemon. Just like that. [...] Here is what I tell them' (interview).

The chef B also shows us the card he drew with his color pencils. He represented raw vegetables (carrots, spinach and orange) and a sort of fluffy mousseline. The final dish was not represented. The contrast of the pastel colors

and the type of drawings were most sticking. They rendered the freshness, the harmony and happiness of his idea: a springtime feeling dish, but based on wintertime ingredients“

(Account from spinach-carrot observation).

On the base of these elements the second and station chefs prepare a dish. They frequently cook at the same time, each of them in his domain, bended over their pans, concentrating on smells and noises. Chef B is in the kitchen and participates, being installed at a working station with the cooks. In this phase, cooks are particularly focused on the technical and sensitive aspects of their domain, especially cooking degrees and the intensity of heat. Chef B frequently comments and gives advice on what he considers central:

“During the tryout of the spinach and carrot dish he says: What is important is to recover the maximum of flavour from the product [...] then, extract the nice lemon pulp”

(Spinach-carrot observation).

We observed that the second chef also has a look at every piece and sometimes asks one of the cooks to try again, to modify a detail or go for a different quantity. He takes care of the coherence of their particular doing. Then, the second or chef B assembles the various elements in order to get the final esthetical touch. Then, they taste it all together, with wine. “Sometimes it is completely out, but sometimes it is really nice” (interview with chef B).

On this base, chef B and his chefs discuss and exchange. They talk, they smell, touch the dish and engage in further collective cooking trials to progressively adjust the texture, the proportions, and then the design in the plate.

For instance in spinach-carrot observation, chef B and his second discussed the orange VS lemon matter in the dish and the equilibrium of taste it would produce. Chef B also reflected on the arrangements in the plate and the possibility it gave (or not) to clients to create their very own experience by tasting products separately or in different combinations.

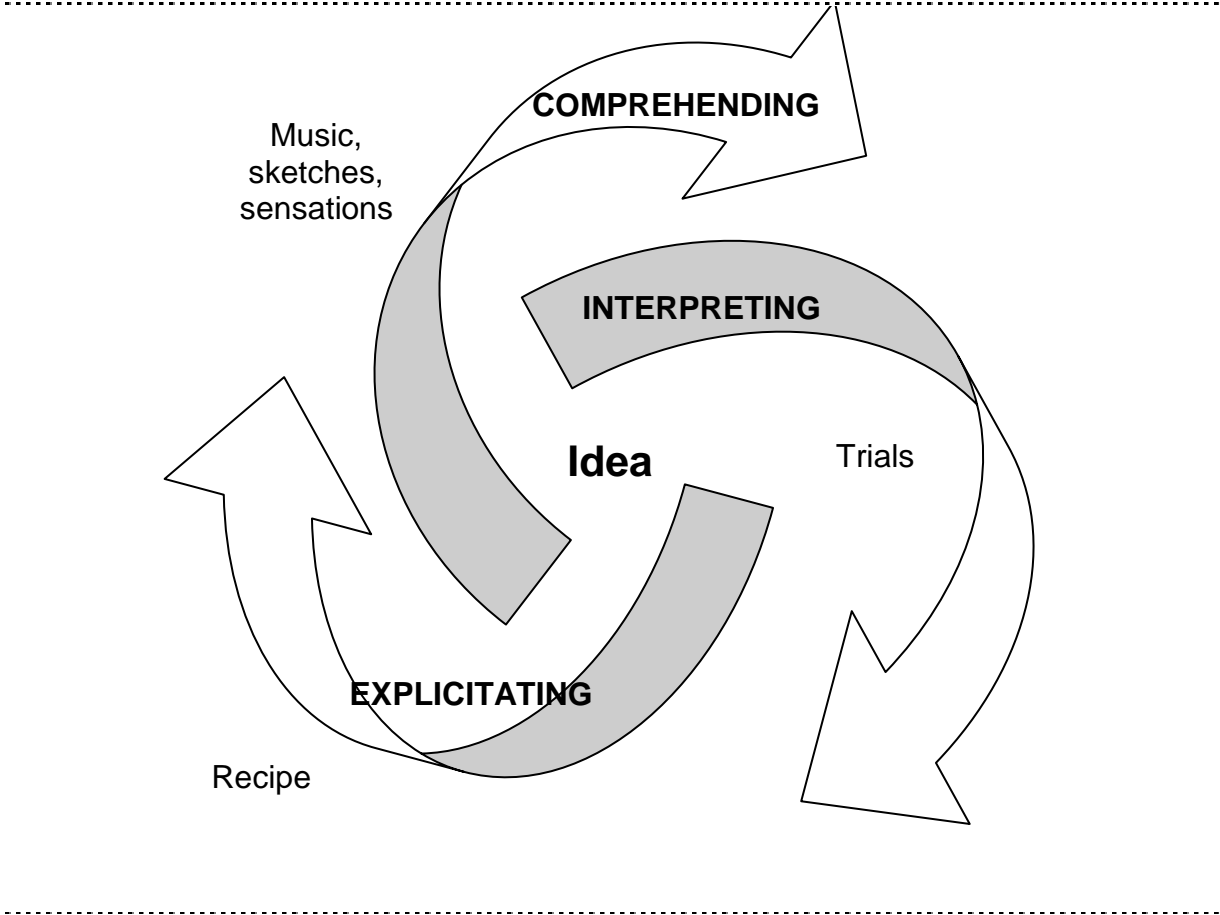
The final recipe chef B briefly writes indicates the main ingredients with quantities, cooking degrees and techniques. However it lets major elements open, for instance indicating "seasoning" without detailing the specific spices to be privileged (sesame oil and salt flower

for that matter in the spinach-carrot dish) as they will depend on the particular variety of carrot and spinach used to cook the dish. The recipe is written in a literary manner, describing the principles of the dish and central ideas rather than detailing the techniques and steps (that cooks already know). Chef B specifies plate arrangement and sometimes wine suggestion, although this is not systematic. Chef B grants particular attention to naming the dish. He chooses sober names, simply indicating the main characteristics (cooking or ingredients) and specifying the dominant seasoning. For instance, "Vegetable Risotto with parmigiano reggiano; minced herbs".

IV Towards a knowing integration framework.

In this section, we turn to comparing our cases in order to determine how individuals integrate their knowing in the new dish creation practice. Our cases exhibit very similar patterns. Knowing integration is a combination achieved through three phenomena as pictured in Figure 1: comprehending, interpreting and explicating.

Figure 1 Knowing integration as a triple-facet combination



1 Comprehending

The first facet of integration corresponds to the trial team comprehending the chef's idea. We refer to comprehending in its fundamental meaning built from the prefix "com" (to grasp) and "prehendere" (to seize). This includes cognitive, and, most importantly, non-cognitive elements, based on perceptions, intuition, and sensitive experience.

Before being presented on the menu, any future dish is initially an idea of the Chef, and no one else in the restaurant. This idea emerges after a long and complex maturation, which includes reinterpretation of gastronomic traditions and new associations, in the light of the chef's experience, his sensibility and exposure to the world (Authors 2003). Chefs' ideas regard partial elements of the dish: specific products (for example particular flowers, forgotten vegetables, or traditional products that the chef wants to work on), links between products and tastes, sensible perceptions to be experienced (for instance a surprising consistence or an unexpected taste considering the colour of the dish) or conceptual principles such as multiculturalism. These ideas manifest through texts, sketches with color pencils, music pieces, metaphors, analogies, gestures or mimes. In our cases, we observed that whatever its means, the description is in fact vague. In case Atlas, the description provided by the chef is more comprehensive than in Boreas. Yet, the technical sophistication and novelty of Chef A's approach, especially regarding culinary constructivism can explain this state of fact; he needs to describe his technical advances in more detail. Nonetheless chef A does at best give a general description to his team.

The reduced cooking team forms its own idea on this ground. Cooks grasp the idea more than they understand it. In particular the sensitive dimension and non-cognitive elements of comprehending are salient; cooks size emotions and feelings.

Of course, comprehending is partly made possible because all cooks have a common background: culinary references, gastronomic history, technical knowing or common experience in the focal restaurant. There is no need to fully explicit the idea; they have enough common references to grasp it. In that sense, comprehending is social. Yet it is also individual, as each member of the trial team will grasp the idea his/her own way, depending

on his/her own experiences and sensitivity. In fact this individual dimension is even expected by chefs because it opens space for personal interpretations and thus mutual enrichment, which a uniform common understanding of the idea would close. Comprehending therefore contributes to knowing integration as it drives to combining individual knowing as opposed to achieving shared knowledge. Each member of the trial team forms his/her own perception of the dish, according to his/her own gastronomic, technical, aesthetical and individual experience and sensibility in the field.

2 Interpreting

The second facet of integration corresponds to interpreting through cooking trials, a term in which the prefix "inter" signifies between or among. With this labelling, we want to highlight the dialogical nature of cooking relations, as opposed to transferring, sharing and communalizing.

As cooking trials possibly happen in the absence of the chef, it is the idea as comprehended that will be cooked and materialized by the team. During these trial sessions it is the cooks' knowing in practice which is purposely at stake. In our cases we note that the trial team plays a fundamental role because trials rest on interactions between cooks. Cooks interact around smells, tastes, textures, noises, gestures in the kitchen; they cook, exchange and re-cook. Trials are moments of lived work during which cooks compare, confront, mix their knowing. There is a progression towards designing the dish and equilibrating the taste, the techniques and aesthetics. Each member of the trial team contributes to designing the dish according to his/her knowing. Depending on the particular members of the team at work and their interactions, on their sensibility, on their own cooking and gastronomic experience, and on the restaurant's and the specific dish's spirit, knowing is created, used and restructured to interpret the chef's idea as understood.

Even if Chefs can be purposely out of the kitchen during the tryouts they nevertheless test the results. They eat the dishes with the team. Further exchanges are then developed on this ground to adjust the dish, its fit with the chef's idea but also its internal harmony and its being in coherence with the restaurant and menu. These adjustments especially regard technical

and aesthetical aspects: cooking degrees, texture, additional or unnecessary ingredients, seasoning, or arrangement in the plate... They can be developed on the ground of simple conversations. More interestingly, they can also require additional drawings or exchanges around even less formalized topics, such as the smell or color of a product. They cook, eat, touch, again and again.

These doing, cooking, smelling, touching products and arranging the dishes, constitute a basis for exchanges and discussions. Yet cooks do not discuss the principles of the dish itself but rather the elements and arrangements that they adjust in the next trial. They integrate knowing at the same time as they develop it in practice through interactions around the various trials. They share a common aesthetic experience. They build on perceptions to mobilize, combine and recombine knowing while progressing towards co-creating the dish.

3 Explicitating

Explicitating corresponds to the third facet of integration, when a "recipe" is elaborated to portray the dish with a view to transmitting it to the complete kitchen team. The recipe sets some rules and makes explicit a culinary universe. Yet it is noteworthy that explicitating is not a full description of all the steps, quantities and procedures. It still leaves space for knowing in practice as cooks retain judgement for certain matters. In that the recipe is a means of partial transfer and knowing integration is still at stake everyday in the kitchen for the specific cooking of dishes.

Explicitating consists in detailing certain elements. Each chef focuses on different sorts of elements. Chef A insists on ingredients and technical steps, in accordance with the sophistication and complexity of Atlas cooking. Chef B insists on the general and conceptual principles of the dish. Naming the dish is also essential in explicitating because it resumes what the chefs intend to convey both to the clients and team.

Then the Chef presents the "recipe" to the kitchen team at large so that each cook can assimilate both the spirit of the dish and the details he is in charge of. This presentation goes further than just detailing the ingredients and general procedures; the cooks eat the dish, and the Chef explains its spirit, its place in the menu and how it fits the restaurant. The recipe

however always leaves space and margin of freedom for cooks in their daily cooking practice. As one of them told us: "Actually, as long as we serve it, a dish is never closed" (interview). As pictured in Figure 1 explicating is a facet of integration; it does not close a process.

Our analysis highlights that the practice of creating new dishes involves combining heterogeneous though interrelated knowing. Each actor contributes in a unique manner, which both is linked to his/her personal experience and role and takes into account the dish as a common construction. In particular, the initial idea of the chef is still perceptible as central. Turning this idea into a served dish involves various forms of integration of individual knowing that we identified as comprehending, interpreting and explicating. These facets do not necessarily occur in the same order, nor do they form a linear process. On the contrary, integration is an open ended combination, which can imply back loops or simultaneous phenomena. Even the recipe leaves space to new adjustments and chefs do introduce changes (ingredients, arrangements, seasonings...). When chefs introduce a change, cooks and chefs can reinterpret the dish without modifying the written recipe. Comprehending, interpreting and explicating are also very different from knowledge transfer. They do not consist in moving pieces of knowledge from the chef to cooks. They consist in combining different knowing in a shared practice. In this perspective our research challenges some previous results, which we discuss in the next section.

V DISCUSSION

The three facets, comprehending / interpreting / explicating, suggest that knowing integration is a complex and subtle phenomena. While examining integration in the light of knowledge transfer has been a fruitful avenue of inquiry over the past, it allowed researchers to persist with a static view of knowledge in these situations and, more important, produced a partial understanding of integration. Embracing a more dynamic practice approach of knowing extends our understanding of integration as a combination. It invites us both to

better delineate between integration, knowledge sharing and transfer and to advance our understanding of knowing in a practice-based approach.

1 Challenging static approaches of knowledge and integration

Past literature highlights integration as accomplished on the ground of common knowledge (Newell et al. 2006). That is to say, in order to be able to integrate their specialized individual knowledge, actors have to develop a common knowledge ground; once they share such common knowledge, they can mobilize it in collective action. This view rests in fact on a major assumption that shared knowledge implies coordinated action and thus drives to pursue knowledge transfer as the means to achieve integration. Accordingly, the main stake of integration has become to explore ways of knowledge transfer for knowledge sharing. Yet these views do merge integration with transfer and sharing, whereas they are very different concepts and as Grant (1996a, b) outlined, integration should better be understood as a combination. Pursuing such a view of integration as combination, our study suggests that shared knowledge is certainly useful though does not imply integration. Second and on this ground, it highlights that integration and transfer are definitely different phenomena.

From shared knowledge to knowing integration as a combination

Past literature examining integration grants a central role to shared knowledge. In fact if actors share knowledge they definitively can engage into coordinated action. Knowledge overlaps among members of a group indeed promotes the convergence of judgement and individual contribution to the collective achievement (Bigley and Roberts 2001, Zack 2000). Integration studies further outline the importance of co-created knowledge as a foundation of integration across occupational communities (Bechky 2003, Dougherty 1992, Carlile 2002). Accordingly we do indeed record that because they are engaged in a collective cooking practice, cooks do share a common knowing which grounds integration. Our analysis goes further yet, as it better delineates such common knowing and also differentiates it from integration (as combination) itself.

Examining common knowing in our cases highlighted that it is in fact very specific. Cooks in our cases do share a common cookery background of course. More importantly, they also

share a common knowing of cooking in their particular restaurant and in the field of haute cuisine. This social dimension is critical in our cases as all the cooks in a kitchen (and the integration between their specialized knowing) rely on the basic haute cuisine assumption that creating new dishes is crucial to achieve competitive success. However our analysis also points to the fact that such common knowing does not need to be exhaustive to ground integration. In our cases it is restrained to a general job and contextual level. Interestingly, it does not relate to the specific idea at stake in the new dish creation practice: cooks do not rely on a shared understanding of the initial dish idea and even never discuss it. Further, common knowing at this level is not even desired. The dish creation benefits from invoking individual knowing of the trial team from the very start. In all, common knowing as a foundation of integration, although context specific, is both very general and unfocused. Our analysis thus challenges former views, which suggested that shared knowledge would not only be necessary but also sufficient to ensure knowledge integration. First, our study points to shared knowing as in fact minimal in regard of the task to be accomplished. Second, our study highlights that knowing integration is a dynamic, open-ended phenomenon built on this ground. Shared knowledge is a static ground whereas our study highlights integration as practice itself dynamically engaging individuals' knowing, thus rejoining Orlikowski's (2002, p. 269) perspective that it is "never given, only achieved".

Overcoming transfer to address integration

Past literature on integration heavily focused on knowledge transfer and even merged the two phenomena, with the view that knowledge had to be extracted from individuals to be moved; therefore past research emphasized learning through socialization or explicitation as supposed main means of integration (Eisenhardt and Santos 2002, Nonaka and Von Krogh 2009). Our analysis challenges this view with a better delineation between integration and transfer.

In our cases, we do in fact record some transfer, both through socialization and explicitation. An example of socialization is when new cooking techniques are taught to younger cooks. Such transfer is necessary and allows cooks' technical improvement. It plays an important

role in the kitchens. Nevertheless this specific transfer is peripheral to knowing integration for the creation of a new dish, because in haute cuisine competitive success in these situations rests on creativity and not on technical ability. Explicitating is a facet of integration, to transfer the recipe to the whole kitchen team. Yet this is only one step. Interestingly, we also observe that even the explicit recipes are themselves partial and systematically leave freedom to cooks on major aspects (cooking times, seasoning for example).

In this light, our analysis drives to further differentiating integration from transfer on two more fundamental grounds. First, integration is not socialization and second, it does not result in fully shared knowing.

Interpreting and comprehending are clearly different from types of integration depicted in former studies, in particular from what was termed socialization (Nonaka and Takeuchi 1995). Socialization is learning without explicitation but still consists in knowledge reproduction. In the home bakery appliance story for example (Nonaka and Takeuchi 1995, p. 101), Tanaka's aim was to import the refined technique of kneading dough. She recommended adjustments to better reproduce an external practice considered as the reference and which, as such, was to become equally shared and understood before all: develop a common knowledge base through transfer and then work the project out. In contrast, comprehending and interpreting imply the creation and development of knowing, new forms of knowledge in practice, directly generated by combination in the doing. Alike socialization, they rest on gesture and the five senses. However, they encompass mixing and articulating instead of transferring.

Moreover, at the same time as individual knowing is invested in the creation practice, it is also transformed of course. On the one hand, cooks develop a common knowing around the dish, its specific associations for instance. In that, we rejoin Bechky's views (2003) that certain knowing is co-created in interactions. On the other hand each cook's individual knowing is also transformed, structured and restructured through practice and as a result of practice. Such transformation is strictly personal as it varies according to cook's respective former experiences, background, sensitivity and knowing. These changes do not result from

transfer. The example of the chef is particularly illustrative in this regard: the creative knowing of the chef does remain personal although it is integrated in each new dish. Knowing integration in the creation practice does not entail transferring the chef's knowing. When a new dish is finally served, cooks have not learned the creative knowing of the chef; they cannot take on his role and create the next new dish. Moreover, the chef himself probably develops his/her creative knowing through each new creation experience. In that we rejoin Chia and Mc Kay (2007, p. 233) with the view that "becoming skilled in a practice [...] is not simply a question of deliberately acquiring a set of generalized capabilities that can be transmitted from one individual to another". In all, a new dish is eventually a mix of both common knowing collectively created with the dish, and portions of persistently individual knowing structured and restructured along the dish creation.

2 Contribution to practice-based studies

Within a practice-based approach of knowing and organization, our analysis contributes to advancing our understanding of micro internal phenomena and their relationship to more macro elements in/of the organization.

In the first place, our study complements seminal practice-oriented researches on knowing integration. Whereas Dougherty (1992), Bechky (2003) and Carlile (2002) focused on knowing integration across communities in organizations, our study tackled intra-community integration. Adopting a somehow collective level of analysis, these past studies evidenced inter-community heterogeneity and difficulties, but also built on an implicit view of intra-community homogeneity. In this regard, we were able to complement former researches. Adopting a more micro level of analysis, we evidenced differences and heterogeneity in cooks knowing inside the kitchen, partly due to individuals' past experience, specific sensitivity and role in the kitchen. Therefore we suggest that knowing combination happens across but also inside communities. Moreover, knowing integration across communities appeared problematic and difficult. This justified the need for specific devices such as boundary objects, to facilitate knowing transformation. In contrast, our analysis points to knowing integration being smoother at a lower level: although it is definitely a complex

phenomenon, knowing integration remains natural for the cooks. In particular, we suggest that knowledge does not need to be captured: knowing is an ongoing flow embedded in practice. Here, we diverge from Dougherty's (2004) study of service innovation where she argues that organizing devices are needed in order to facilitate the exploitation of knowledge for innovation. She tends to favour the view that everyone has to be kept "in the know" and "enact similar knowledge as they go about their work" (Dougherty 2004, p. 53) whereas we outline the richness of diversity and heterogeneity in knowing.

Second, our analysis of knowing integration provides better insights for the practice-based approach of organizations. We confirm the central role of knowing for practice (Orlikowski 2000, Nicolini et al 2003) and particularly the importance of tacit and perceptual elements. Our analysis further points to the inseparability between knowing integration and the doing of actors during practice in organizations. Practice is not only an occasion for knowing integration; it is integration itself. In this regard, we advance literature on practice that suggests that knowing is something that people do together (Gergen 1991, Gherardi 2006, p. 41). More specifically, past research (Nicolini et al. 2003, Antonacopoulou 2006 for example) focused on describing both the doing of actors and their knowing but did not specify the relationships between them. Analysing knowing integration, we shed light on such relationship: comprehending, interpreting, explicating bridge knowing and doing and practicing in organization is always a matter of integrating knowing.

We further suggest that knowing can remain individual while being integrated in a collective practice. Knowing is rooted in the personal experience and dispositions of individuals. However, it is social because it is enacted in a shared practice for organization purpose. In that, we rejoin Chia and McKay's view of the individual contribution to the collective practice, in "a perspective which situates the practitioner, right from the start, in the context of an active engagement with the constituents of his or her surroundings" (Chia and McKay 2007, p. 233). Yet we suggest in addition that the relation between the individual and collective levels is bidirectional. The combination of individual specific knowing contributes to forming

organizational achievements. At the same time, the organization shapes individual knowing and the combination dynamics.

Last, our study opens avenues for bridging the micro aspects of practice creation (rooted in individual knowing integration) and the macro elements leading to competitive success of the organization. This has been a founding concern for the development of the practice-based approach on strategizing which ambitions to outline, explore and reframe the link between more micro and macro levels of analysis (Johnson et al 2003). Yet and as discussed by Carter et al. (2008, p. 86) very few convincing efforts have been dedicated to achieving this goal so far. Our study represents an attempt in this regard as it relates individual knowing, the creation practice of new dishes and competitive advantage of the restaurant. Further research could fruitfully expand our results to other contexts and organizational dimensions.

VI Conclusion

Within a practice-based approach of organizations and knowing, we explored the integration phenomena at the roots of competitive advantage (Grant 1996 a and b). While former knowing integration studies have pointed to the importance of boundary objects across occupational communities (Carlile 2002, Bechky 2003), knowing integration inside a community to ground competitive advantage remained to be explored. How do individuals integrate their knowing in practice, in complex and important situations in order to contribute to competitive advantage for the firm? Building on an epistemology of practice, we studied the case of new dishes creation in gourmet restaurants to develop a view of knowing integration as a combination. We highlighted integration as a three-facet phenomenon: comprehending, interpreting and explicitating. We showed that integration leads to the development of new dishes while knowing remains largely individual. We therefore suggested that there exists a clear distinction between knowing integration and knowledge sharing or transfer. We also contributed to a clearer delineation between integration and explicitation, the latter being only one and secondary means to achieve the former. Our study advances practice-based studies of organizations by highlighting the central role of integration in knowing dynamics. We also contribute to bridging micro and macro

perspectives on practice, therefore demonstrating the analytical power of the epistemology of practice in organizations, especially to connect lived work and organizational strategic issues.

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