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Two cooks at work: independent and coordinated lines of action

1 Introduction

In this paper, we analyse data from a multi-view video recording of two cooks preparing meals in the kitchen of an Italian restaurant. The aim of this research is to show the different interactional configurations emerging from the micro analysis of the activity of the cooks, focusing on transitions from individual to cooperative actions. We are particularly interested in analysing the verbal and non verbal modalities that the two cooks use for switching from autonomous lines of action to the co-accomplishment of local tasks.

In our analysis, the activity of cooking in the kitchen is conceived as a *situated activity system* (Goffman 1961), that is a system comprehending all the phenomena occurring during the accomplishment of a specific activity in a specific relevant setting. The *situated activity system* corresponds to "the range of phenomena implicated in the systematic accomplishment of a specific activity within a relevant setting" (Goodwin 1997: 115). Some of the previous studies of such situated activity systems are Suchman's studies of airport control rooms (Suchman 1987, 1993), Hutchins's studies of a pilothouse (Hutchins 1995, Hutchins and Palen 1997), and the study of the London underground control rooms by Heath and Luff (1994). All these works can be referred to as *workplace studies*. They analyse work and collaboration in technologically advanced environments. The study of the activity of cooking in a professional kitchen can be defined as a workplace study, although the work setting differs from that of those previous studies in the sense that it is a technologically simple context. The artefacts in a professional kitchen are mostly manipulable objects which function as resources and constraints (Norman 1998) for the accomplishment of the activity.¹ As for the general study of situated activity systems, the relation between human actors and artefacts is an important aspect of the activity of cooking. The analysis will show that the cooks prepare the meals through a substantial use of physical tools the positioning and accessibility of which in the surrounding have an important influence on the structure and ongoing organization of the activity itself.²

In our data, the prototypical interactional situation — that is the face-to-face interaction as it is associated with conversational activity sustained through a mutual body orientation and a mutual gaze — is very rare. Most of the time, the two cooks and the other members of the personnel that enter the kitchen interact without being mutually oriented: they don't look at each other and their bodies are oriented to the different activities they are accomplishing. Even in these conditions, the two cooks interact and collaborate for guaranteeing a minimum level of coordination. In this situation, the stable positioning and function of objects in the surrounding play as resources for monitoring and interpreting the other's behaviour and in so far contribute to the participants' coordination, be it at the minimum level of sharing the different working emplacements, or at the

1 We adopt here Norman's distinction of artefacts in manipulable objects and cognitive artefacts (Norman 1991).

2 An analysis of the use of objects in a kitchen and their relation to the planification of actions is presented by Conein and Jacopin 1993.

maximum level of co-accomplishing a stage in sequence of actions.

Besides these cases, there are occasions in which one of the participants begins an action which is then interrupted or suspended by the intervention of the other participant or by her³ becoming available for accomplishing a particular task at that moment. The intervention of the other participant changes the configuration of the whole current action. The analyses will focus on those particular cases, which permit us to investigate the transition between individual actions to coordinated activity.

2 The kitchen and the activity of preparing meals

2.1 Overall structure of the activity

The recordings have been made in a small restaurant (for about 25 customers), situated on a beach (see figure 1) which also offers dishes to take away. The tables are on an external terrace. The waitress takes the orders at the tables, she announces them loudly to the cooks either from the bar through the internal window, or after entering the kitchen. After this first announcement, she picks up the order in the kitchen, near the work top and the internal window, where all the orders hang until the service of a table is terminated.

Once the order has been communicated to the cooks, they begin the preparation of the dishes. The two cooks have different roles and responsibilities. The head cook prepares hot plates and the assistant cook prepares cold dishes and salads. Depending on the attendance, the cooks can prepare the dishes ordered by one table at a time, or they can decide to prepare the dishes of the same kind for several tables (for instance, the starters or the first courses for all the tables). In both cases, the cooks use the hang orders as reminders and guides for the organization of their activity. This is why in the data we can see them staying in front of the hanging orders, reading aloud or in a low voice. The cooks share a small space which is organised in two main complementary spaces: the left side of the room, where the cooker, the deep-fryer and the kettle are placed and where the head cook prepares first and second courses, and, on the opposite side, the work top where the assistant cook prepares salads and starters.

Once the dishes are ready, the head cook or, more often, the assistant cook whose work space is just near the internal window, announces that the dishes are ready and gives them to the waitress through the internal window, for the table service.

Another independent space structuring the activity is represented by the sink, which is situated in front of the unique external window. During the preparation of the dishes, both cooks often need to wash tools or vegetables at the sink, even if the assistant cook is in charge of cleaning the kitchen and the utensils at the end of the service.

The overall structure of the activity can be schematized as follows:

- 1) Order
 - (the waitress takes the orders at the tables situated on the terrace)
 - the waitress announces the order loudly to the cooks, through the internal window, or after entering the kitchen
 - the waitress walks to the place where written orders hang on the wall (near the internal window) and she pins up the new order
- 2) Preparation of the ordered dishes by the cooks
 - cooking or preparing cold dishes and salads
 - dishing out (only for hot dishes)
- 3) Service
 - One of the two cooks announces that the dishes are ready and gives them through the internal window
 - (the waitress takes the dishes from the bar side of the window and she serves them at the table on the

³ We use the feminine form because the two cooks are women.

terrace)

The analysis proposed in this paper will not take into account the first and the last stage of the overall structure (in parenthesis in the schema above), because it will focus on the stages of the sequence in which the cooks are involved.

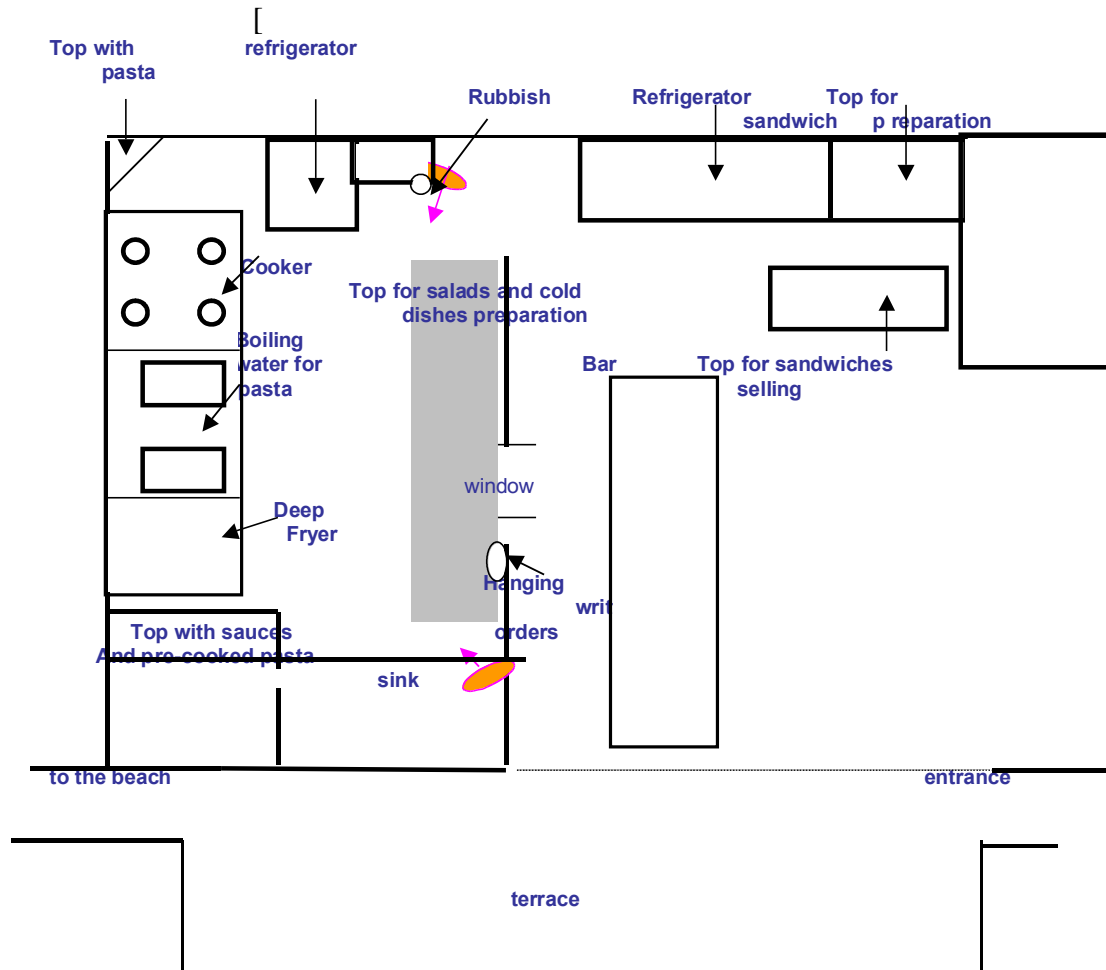


Figure 1 : the setting

2.2 Constraints on the activity

For the description and comprehension of human activity, it is fundamental to understand which are the constraints that, on the one side, limit the actors' choices in the activity execution and, on the other side, affect the actors' evaluation of this same activity.⁴

⁴ Norman (1998) analyses the structure of the action in two main aspects which are the execution and the evaluation. "Execution involves doing something. Evaluation is the comparison of what happened in the world with what we wanted to happen (or goal) (Norman 1998: 47).

Coming back to the two cooks in the kitchen, the constraints which inform their activity are of different types: physical constraints, mainly linked to the space arrangements and to the tools positioning, and semantic and cultural constraints, linked to what the cooks know about their specific task of preparing meals and about the whole activity of the restaurant.⁵

As far as physical constraints are concerned, it is important to highlight that the kitchen is a very small room so that the two cooks have to move in a narrow space. The first consequence of this sharing a narrow space is that, although the kitchen is organized in two main distinct workplaces, the two cooks have to share some equipments, and consequently spaces. These are the washing space, where the sink and the dish-washer are placed, the refrigerator, the rubbish and partly, as the analysis will show, the work top for cold dishes. Other physical constraints are represented by the tools arrangement. The objects and tools' arrangement in the kitchen is stable. It is designed according to the spatial organization of activities, in order to guarantee utensils accessibility during their accomplishment and to minimize the time spent in searching and taking objects.⁶ Semantic constraints regard the cook's specific competence in using tools and cooking. For example what they know about using the kettle or about the activity of cooking pasta. Cultural constraints regard a more generic competence comprehending what the members know about the whole activity of the restaurant. In this sense, the cooks must conform their rhythm of preparation of the dishes to the more general requirements of the service. These are the necessity of keeping the clients' waiting time in acceptable limits, to contemporarily serve all the people sitting at the same table, to prepare dishes following the sequence of starters, first and second courses. For respecting all these constraints the two cooks must co-plan the preparation of hot and cold dishes and must coordinate their work with that of the waitress. The use of the hanging written orders, as they signal the order of clients' arrival and what has been ordered at each table, is very important for the organization and control of this level of the activity.

3 A basic principle: there never exists a total lack of attention between the cooks

The most frequent situation in our data is that in which the two cooks are involved in parallel and rather independent activities, so that they don't look at each other and their bodies are oriented to their own ongoing activity. Most of the time, the head-cook is at the cooker, cooking pasta and sauces, and the assistant cook is at the work-top, on the opposite side of the kitchen, preparing cold dishes. Even in this case, the two cooks' behaviour demonstrates that they continuously monitor each other and they mostly know what the other is doing. This form of basic attention to the other can emerge through both gestural and verbal behaviour, as in excerpt 1:

Excerpt 1: Cucina-Do13/07/03 (00:18:37-00:19:16)

A Alessandra, assistant cook

L Lina, head cook

P1 00:18:37 {>>A is preparing a cold *antipasto*'>>
 {>>L is cooking something (sauce) on the stove, back to A>>
00:18:40 ((G goes out))
00:18:41 A turns to the written order on the wall, up in front of the work-top
 A reads>>
00:18:50 A wipes her hands and
00:18:52 A goes out of the kitchen in a quick manner))
P2 00:18:59 L turns to look at A's work-top))
P3 00:19:14 L turns again to the stove
00:19:15 L steps back, looks in the direction of the door, then in
 direction of the top>>

5 The distinction between physical, semantic and cultural constraints is also in Norman 1998: 84-86.

6 Conein and Jacopin (1993) suggest that the objects' stable arrangement in the kitchen can be analysed as an external representation of the actors' plans of actions.

7 *Antipasto* is the italian term corresponding to the english *starter*.

P4 00:19:16 L VALE\ (.) +dove sei/ (2.0) sei di savoiarda
 Vale\ (.) where are you (2.0) are you doing the savoiarda⁸
 +turns back to the stove and cooks>>
 (0.5)
 A sî::: (.) non trovo la mortadella xxx
 yes (.) I don't find the mortadella xxx
 (..)



P1

P2

P3

P4

In (P1), the two cooks are attending to independent activities: L is cooking a sauce on the stove, while A is preparing a cold antipasto on the work top. In P2, just after A's going out of the kitchen, L turns to look toward A's work top and then turns back to her preparation. Sixteen seconds after this first signal of L's awareness of A's displacement, in P4, L turns again in the direction of the door and of A's work-top and she explicitly asks to A where she is ("Vale dove sei", "Vale where are you"). This initial open question is followed by an assertive question ("sei di savoiarda", "you are preparing a Savoiarda") through which L verifies if A is preparing a *Savoiarda* salad. The aim of this second question is to verify what A is effectively doing, and it reveals that L is aware of what A should do at that moment. The manifestation of L's monitoring A's activity is gradual: first, the repetition of the gestural signal of looking in A's direction (in P2 and P3), and second the explicit inquiry about where A is and what she is doing at that moment (in P4).

4. Levels of co-participation in the activity: from minimally coordinated independent activities to shared activities

The two cooks have to coordinate their activity at three main levels: the basic level of sharing a narrow space in which different areas are devoted to the accomplishment of different activities, the level of the preparation of meals, and the more general level of the organization of the whole activity, comprehending the rhythm of the preparation of dishes according to the service's requirements.

In this section, we propose a detailed analysis of some cases of the two cooks' coordination at the second level, that is the level of the preparation of dishes. The aim of the analysis is to show different levels of co-participation in the accomplishment of the activity. Through the analysis of three examples, we will show the graduality with which one of the two cooks enters and participate in the activity of the other one.

4.1 Local cooperation in the accomplishment of a side sequence

This section is concerned with cases in which the cooks are involved in two parallel activities, and one interrupts her own activity for locally intervening in the other's one. In the following excerpt,

⁸ The term *savoiarda* is the name of a type of salad.

excerpt, she tries to catch A's attention by the use of several verbal devices (P2): a summon "spetta Ale tieni", in which we can notice the imperative mood "spetta", "wait", the address term "Ale" and a second verb in the imperative mood "tieni", Litt. "take", "here". Even if the participants are not looking at each other at that moment, the use of "tieni" indicates that L is holding something out to A. This turn constitutes the first part of the pair "summon / answer", through which L tries to get the other one stop. But it does not obtain the expected second pair part, and A goes on filling the small dish. L then repeats her offer with quite similar devices (P3): "finisci tutti lì/ (.) ♦tieni", "finish all there (.) here" where she uses the imperative mood "finisci tutti lì/", and after a pause repeats "tieni" ("here"). This repetition of the turn works along with the body movement: L turns to A, and moves a step front, she speaks loudly, and her body is directly oriented towards A. In P4, A interrupts her task, turns and walks toward L with the dish in her hand, thus indicating her agreement to L's proposal of using the big dish. L simultaneously moves towards A holding the big dish, and, in P5, A pours the salad in the big dish. Then each one returns to her own activity. The structure of the sequence can be schematized in the following figure in which the horizontal line represent the time axis.

Parallel activities	Local cooperation		Parallel activities
B (Ale) fills the dish			B pursues filling the dish
	<i>A intervenes with a proposal concerning B's ongoing activity (changing the dish)</i>	<i>B accepts A's proposal (pours the contents of the small dish in A's big dish)</i>	
A (Lina) washes at the sink			A pursues the washing

4.2 From independent activities to the accomplishment of subsequent stages of the same activity

In this section, we will analyse a case in which the two cooks co-accomplish subsequent stages of the same activity. The analysis refers to the activity of preparing hot dishes, and particularly to the transition between the stage of cooking and that of dishing out. The focus will be A's convergence in L's activity at this particular moment, dishing out the pasta that L has just finished preparing and put on the work-top.

Excerpt 3: Cucina-Do13/07/03 (00:33:44-00:33:56)

P1 00.33.44 >>L is cooking pasta at the cooker>>
>>A is preparing a starter at the top>>
>>the waitress stands behind L, waiting>>

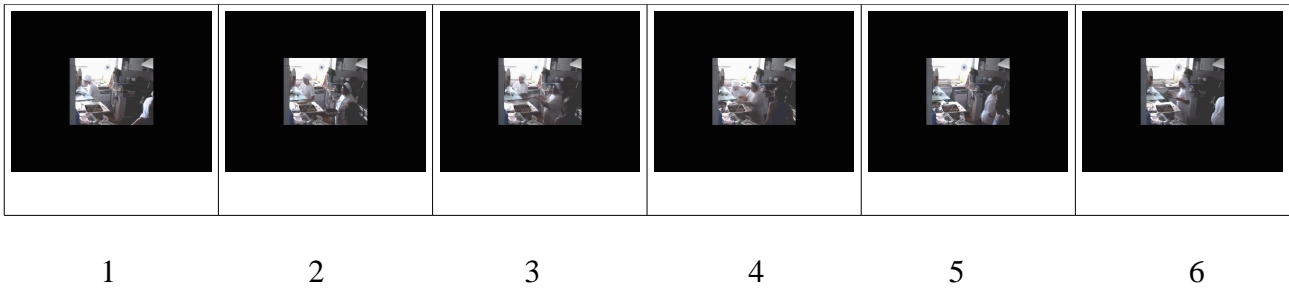
P2 00.33.46 L +((high voice)) °allora° questa è la penna
°so° this is the penna
+L turns from the cooker holding the pan, crosses the kitchen to A'S top in the middle of the kitchen>>

P3 00.33.47 A moves on the right moving the dishes she is preparing
{L puts the pan on the top})

P4 00.33.48 {A leans down to take a plate>>
A ((low voice)) si
yes
(3.0)

P5 00.33.49 L returns to the cooker))

P6 00.33.56 A stands up with the plate in her hand, takes the pan, crosses the kitchen to fetch a spoon and begins to fill the plate>>



In excerpt 3, at the beginning of the sequence, the cooks are accomplishing independent activities: L is cooking pasta at the cooker and A is preparing a cold dish at the work-top (P1). Once having finished cooking pasta, L turns toward A's work-top, holding the pan in her hand (P2). L's standing in the middle of the kitchen with the pan in her hand (P2) is a signal of her having finished to prepare pasta and of her being ready to dish out.⁹ The transition between the activity of cooking pasta and the subsequent one is also signalled by a verbal announcement "allora questa è la penna", "so this is the penna".¹⁰ L's changing her body orientation, from the cooker to the cold dishes' work-top, her standing with the pan in her hand, and her verbal announcement have the double function of signalling to A that an activity transition is in course and of projecting the subsequent activity of dishing out.¹¹ Considering the evolution of the sequence, A interprets L's verbal announcement and her gesture of letting the pan on the top and coming back to the cooker for preparing the next first course as a request of dishing out the pasta. She leans down to take a plate (P 4) and she dishes out the pasta (P6) while Lina has come back to the cooker for preparing the subsequent dish (P 5).

The structure of the sequence can be schematized as follows:

Parallel activities	-----> cooperation by shifting	----->	Parallel activities
A cooks the pasta 1			A cooks the pasta 2
	A puts the pan on the top and announces "so this is the penna"		
B prepares a starter			B dishes the pasta out

The schema visualizes the level at which Ale (B) converges to Lina's (A) activity. She intervenes at the moment of transition between two stages of the process of preparing pasta — cooking pasta and dishing it out — and she completely accomplishes this last stage of the sequence. Ale's convergence in Lina's activity for accomplishing its last stage is functional to the optimization of time as far as it allows Lina to devote herself to a new sequence of preparation.

4.3 From independent activities to the co-accomplishment of the same stage of the same activity

In this section we will illustrate a case in which the two cooks converge toward the co-accomplishment of the same stage of the same activity.

Excerpt 4: Cucina-Do13/07/03 (21:22:00-21:30:18)

⁹ The activity of dishing out is regularly accomplished on the cold dishes' work-top, that is the reason why L stays for a while in the middle of the kitchen with the pan in her hand waiting to have access to the work-top.

¹⁰ On the activity transitions and the use of multi modal resources for structuring the activity, see Bruxelles, Greco, Mondada, forthcoming.

¹¹ This projection is possible because the two cooks know the sequential organization of the preparation of dishes, which last stage, before calling the waitress, corresponds to the activity of dishing out.

21:22:00 L crosses the kitchen with the pan
in her hand comes to A's top>>
L begins to displace the objects on the top>>
A goes on preparing the cold dish>>

P1 21:22:03 L puts her hand on the trencher
L **Ale posso/**
Ale can I

21:22:15 A **vieni vieni**
come come
(L pushes the trencher))

P2 21:24:09 {L begins to lean down and stretches her arm>>
21:24:14 {A pushes the dish towards the internal window))
(noise of the plate))

21:25:00 L **+eh:- c'è da andare via**
eh this is to take away
+L comes up, looks up to the upper shelf in front of the top
L **+mi servono I piattoni**
I need the big dishes

P3 21:27:24 +L stretches out her arm up, comes nearer to the
work-top
A steps back
A looks up at L's movement
A steps front

P4 21:29:03 A stretches her arm to help L to catch the plates
A has her hand up on the plates

P5 21:30:18 L turns down and takes the pan on the work-top



P1

P2

P3

P4

P5

The assistant cook is finishing to prepare a cold dish on the work-top when the head cook arrives near the work-top and begins to displace objects on it in order to have place enough for putting the pan she has in her hand. When she needs to push the trencher inside in order to take porcelain dishes under the trencher (P1), she asks Ale the permission to take more space: "Ale posso", "Ale can I", to which Ale gives a positive answer, "vieni vieni", "come come". Lina begins to lean down and to stretch her arm for taking dishes (P2) while Ale pushes the dish she was preparing toward the internal window. Ale's action, which is signalled by a noise of rubbing, is the signal, for Lina, of her having finished to prepare the cold dish. It is immediately after this noise (at 21:24:14) that Lina begins to produce an auto-repair, which is verbally signalled by "eh:- c'è da andare via", "eh these are to take away", and gesturally signalled by her changing the direction of her activity of taking dishes. She stops the action of taking them under the trencher, she comes up and tries to take plastic dishes on the shelf (P4). At this moment she says "mi servono I piattoni", "I need the big dishes", which functions as a verbal formulation of her gestural activity. It is from this moment that Ale begins to give explicit signals of attention to what Lina is doing for arriving to cooperate with her for taking dishes (P5).

The action of taking dishes on the shelf is accomplished by Ale while Lina has already come back to the action of dishing out (P6). She has taken the pan's handle and the ladle and she is completely oriented to the subsequent stage of the activity, letting Ale finish the previous one.

What is interesting in this excerpt is the fact that coming beside Ale, Lina determines a side-by-side

arrangement¹² which is a preliminary condition to Ale's involvement in her line of action. The side-by-side arrangement allows the two cooks to have access to the same local environment, including the spaces and the objects, and makes each participant available to the other one. It's because of their proximity that each of them becomes a resource for the action of the other one. They both have a visual and auditory access to the other and Lina uses this possibility for making Ale become a resource for the action she is accomplishing.

The following schema represents the interactional configuration of excerpt 4:

Parallel activities		-----> cooperation by co-action ----->		Parallel activities	
A cooks the pasta				A dishes out*	
		<i>A puts the pan on the top</i>	<i>A (Lina) and B (Ale) take the dishes</i>		
B prepares a starter				B pursues her own activity	

*The hierarchical organization of activities can always be further defined and each activity could be further analysed in sub-activities. We decided to adopt, for each case, the level of description requested by the current analysis.

5 Conclusion

In this paper we have proposed an analysis of the interaction between two cooks in a professional kitchen focusing on the occasions in which they co-participate in the accomplishment of the same activity. The analysis has proceeded by showing examples from a lower to a higher degree of co-participation. We have shown a first degree of co-participation occurring when a participant (A) intervenes in the other participant's (B) activity, suggesting her a correction which is then accepted (example 2). A's intervention involves a local change in B's line of action which corresponds to A's contribution to the accomplishment of B's activity. In this case, A doesn't directly take part in B's activity and limits herself to suggest a change which is then accepted by B. We have then proposed the analysis of two examples (3 and 4) in which A directly takes part in B's activity. In these two cases, A's participation reaches the level of the co-accomplishment. In example 3, we have shown the co-accomplishment of a same activity through the execution of two subsequent stages of it by two different actors. The analysis refers to the activity of preparing pasta, the last stage of which corresponds to the action of dishing out. In the example we have analysed, A involves B in order to make her accomplish the last stage of dishing out pasta. In example 4, we have shown the collaboration of the two cooks through the co-accomplishment of the same stage of the same activity. The analysis has focused on the two cooks' co-accomplishment of the action of taking plastic dishes from the shelf. In that case, both the previous and the subsequent actions are accomplished by the same actor.

In all these cases, despite the different degrees of A's implication in B's activity, the participants use both verbal and gestural devices for attending their collaboration. In the first example, the use of those devices has the main function of attracting the other's attention in order to switch from a situation of partial inattention to a situation of mutual orientation. In examples 3 and 4, the use of verbal and gestural devices has the main function of calling attention on what one is doing in order to make the coordination possible. The analysis of example 4 has also shown the importance that a change in the spatial and orientational pattern can have for obtaining the other's involvement in one's action. The change in the spatial and orientational organization permits the participants actors to share a "new" visual and gestural surrounding which is a precondition for the collaboration.

The last point we would like to emphasize concerns studying cooks at work as a case of workplace study. One the amazing outcomes of the detailed analysis we are carrying out on these data is the similarity between the quite simple situation of our two cooks in the kitchen of a small restaurant and the very complex one of people at work in technologically advanced contexts.

12 We refer here to Kendon's concept of F-Formation, that is a "system of behavioural organization by which a spatial - orientational pattern is established and sustained" (Kendon 1990: 209).

Transcript conventions (ICOR)

The ICOR conventions can be consulted in a more detailed version on the web site <http://corinte.univ-lyon2.fr/icor>.

[overlapping	(.)	micro-pause
(2.1)	pauses (seconds)	xxx	inaudible segment
/ \	rising/ falling\ intonation	exTRA	marked segment
((laughter))	described phenomena	:	lengthening
eh-	truncation	°allora°	murmured segment
=	latching		

Translation is done in an additional line situated under the original. The original verbal line is in bold characters, the translation is in italics

Gestures notation

- gestures are described in an additional line under the verbal line.

- the beginning and end of a gesture is indicated in the verbal line, when they can be located in relation with the verbal production. In this case, a different symbol is used for each participant: Alessandra (assistant cook) *; Lina (head cook) +

- in other cases gestures are located in relation with the temporal unfolding of the activity (second colon in the transcript)

)) indicates the end of a gesture

>> at the beginning of a line indicates that the described gesture pursues a gesture that has already begun

>> at the end of a line indicates that the described gesture goes on

} on two gesture description lines indicates that the two actions are simultaneous

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