

KEEP IT SIM- PLE MAKE IT FAST!

AN APPROACH
TO UNDERGROUND
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Keep it Simple, Make it Fast!

An approach to underground music scenes (vol. 4)

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6.2. Distributed cognition in dance: Artistic skills in social interaction

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A b s t r a c t

Are the dancers' skills interactive? Our pragmatic stance looks for the social roots of artistic skills in the communication and attention patterns of dancers in the studio. Dance is a setting to study distributed cognition through modalities other than speech. We look for distributed cognition not only at the communicative level, but also at a more phenomenological level of joint action and perception. Through a cognitive ethnography of a dance rehearsal and Conversation Analysis we are able to delimitate here the modalities in use such as speech, marking, gesture and space. Findings show how multimodal translation, incremental concretion, space management and listening are examples of artistic skills. We explain what really happens when dancers act as experts in the field, with a culturally defined normative frame.

Keywords: *Ethnography, dance, skill, distributed cognition, multimodality.*



1. Introduction

Where is the social legitimacy of artistic practice? In other words, where is the source of artistic skill in a dance rehearsal? Choreography is an example of an organized activity. Organized practices that are retained and considered legitimate are (re) produced in the interaction with the other participants. Artistic practices that are repeated and retained become legitimate. Moreover, through the processes of interaction and communication dancers generate ways of understanding the everyday (Berger and Luckmann, 1966). The key mechanism of preservation is a continuous and coherent conversation (Berger in Vera, 2016). But a dance rehearsal includes other skills that are not communicative. Speech is only one of the vehicles for meaning while in the dance studio. Precommunicative attention is a particular skill that involves listening to the other (Muntanyola-Saura, 2015a). Other embodied modalities, such as gesture or marking appear in rehearsal. A body is a piece of consequential equipment, and the dancer is always putting it on the line (Goffman, 1982).

In this paper the goal is to discover the chain of interactions that explain other dancers' skills. We look for distributed cognition not only at the communicative level, but also at a more phenomenological level of action and perception. Key elements for the coordination and performance in dance come before explicit communication patterns. Moreover, these cognitive elements are not only arbitrary products of situated action (Kirsh, 1995), functional elements of distributed cultural systems (Hutchins, 2005) or social organizations (Nöe, 2015), nor embodied elements for coordination (Gibbs, 2006). We claim that artistic skills have cognitive functions that go beyond communication. We suggest that they are cognitive skills that only come into being when they are socially legitimized as intersubjective typifications (Schütz, 1967). The source of artistic skill is in the distribution patterns of communication and interaction in the dance studio.

Thus, we take a dance studio as a setting for distributed cognition. Through a cognitive ethnography of a dance (Muntanyola-Saura, 2014) and Conversation Analysis (Sacks *et al*, 1978; Mondada, 2014) we are able here to explain the directionality of artistic skill. We take a bold theoretical stance within an interdisciplinary approach, and make a detailed empirical analysis of qualitative data. Specifically, we analyze a phrase where the dancers get stuck and enter an iteration of episodic sequences of action. In this empirical example the dancers together with the choreographer apply their artistic skills to solve a wrong grip. By delimitating the modalities in use such as speech, marking, gesture, touch and space on the one hand, and by locating the precommunicative skills of the agents involved on the other, creative cognition in dance becomes part of a complex cognition system of actors, environmental cues, and social rules of communication. We put forward how the resulting corrections and adjustments are not merely an epiphenomenon of an individual dancer or the choreographer, but part of an interactive activity built around shared authority.

2. Theoretical framework

How do we recognize artistic skill? Taking into account the latest discoveries in neuroscience does not necessarily mean falling prey of mainstream reductionsim. An ethnographic stance such as the one we propose takes

social experience at face value. When listening to music, or watching dance, we are not connecting pitch, wave-length and vibrates. The irreducibility of experience is what puts social experience at the center of our analysis. The artistic experience becomes a holistic and contextual social process, given that *one does not expect absolute values, but new notes in a melody*, or words in a conversation that make sense, for that matter (Dreyfus & Dreyfus, 1986, p. 86). Moreover, in order to understand artistic skills and judgements we cannot isolate the experience of the dancer from its context. The need for contextualizing also appears in experiments such as visual ilusions, which also vary accross cultures, times and contexts (Henrich, Heine & Norenzayan, 2010). Even tangrams and the Ponzo Ilusion are the result of socially located interactions (Muntanyola-Saura, 2014a).

From the point of view of the field of neuroscience, we are neuronally programmed to be social. A key finding in neuroscience is that of mirror neurons in bonobos by Gallese et al (2004). Shared motor representations, visualized in a specific region of the brain (insula), move beyond the individual. At a neural level, language and emotions build and filter the information most useful for our behavior: When we experience an emotion, we do not maximize all the possibilities: our body filters those ready to be expressed (Damasio, 1999). In other words, being afraid might well be useful to avoid complicated or dangerous situations. And at the same time, a conversation might helps us avoid a fist or two.

Evolutionary psychologists such as Cosmides & Tooby (2013) put forward plasticity as the key attribute of the brain: our brain as a teenager is not the same as the one we will have at older age, and thus changes with the interaction with the physical and social environment. Moreover, a key cognitive mechanism that keeps evolving is that of intentionality: following Searle's (2010) account of the mind, neurons cause intentional states. We make things happen, and we perceive and experience things happening to us. Thanks to intentionality we attribute and extend causality to what we see and remember. In the case of dance, perception and memory are strongly linked to movement. And more specifically, to joint moves: movement that involves more than one dancer at a certain level of synchronization. Musicians and dancers live a shared present as an experience of *togetherness* (Schütz, 1971). Rehearsing in a studio becomes a social situation. It gets close to the extended mind claim by Clark (2008): minds extend beyond the boundaries of the human organism.

The social organization of perceptual experience is directed to the world, not to the brain (Nöe 2004, 2015). Artistic judgements in a museum are built in spontaenous conversation: people take pictures and talk all the time about what they are seeing. There are shared comments on individual experiences that are filtered on the spot. In doing so the audience follows their own systems of relevance, a product of socialization, past experiences and the like. Moreover, there is a specific secondary socialization of the public in the art field, since their knowledge comes with going to other exhibits and fairs, as well as with their professional background. Following the constructionist proposal of Berger and Luckmann (1966) attitudes and expectations are built in socialization, within the family and at school. Later on, members of the same generation, friends, colleagues and professors, among others, act as secondary socialization agents in social contexts such as the studio, the conservatory or on tour. The discourse of the dancers in relation to their work is part of a taken for granted reality (Schütz, 1962).

At the same time, the actuality of the exchange and the sequentiality of the unfolding conversation shapes artistic judgement. Conversation is everyday legitimation (Berger in Vera, 2016). Individuals incorporate some practices and discard others, responding to the expectations of their partners and peers (Goffman, 1959). When Goffman claims that we find truth in a wedding, he is pointing towards the existence of social rituals that reinforce social expectations and thus define socially legitimated practices. So judgement happens at this moment, in interaction, and doesn't necessarily preexist at a neuronal or individual level. The brain need not, after all, maintain a small scale inner replica of the world (Dennet, 1997).

We all need space for thought, for debating, for reading, for writing. A subjective assertion becomes interesting in terms of judgement if it is publicly shared in argumentation. Perfumistas develop a public language among themselves, and they do so by filtering and sharing their individual experience (Alac, 2017). Fele (2016) claims that dialog is selective. But as Alac shows in most of her research and specifically in her key theoretical contribution, the Multimodal Interactive System, not only speech is selective. Her ethnographic work shows how body gestures and metaphors all take place in a circle of selecting attention, verbal and instrumental coordination, and finally pointing and mapping. In fact, most of the time conversation at work is multimodal.

On the one hand, as defined by Schütz (1971, p. 161), dance practice needs the expectation of reciprocity, that is, intersubjectivity. So when dancers dance together they participate in a matter of mutual tuning in. Tuning in thus becomes a key coordination mechanism previous to any form of communication. DeNora (2014) talks about a mutual determining relationship that builds a common reality.

On the other hand, communicative modalities act as solicitations (Dreyfus, 1998) for those in artistic practices. Solicitations are Gestaltian attractions of objects and people. As Goffman (1982) claims, these conversations are focused interactions that tend towards joint attention. In other words, aesthetic judgment comes with a shared act of attention, as in Hennion (2005). In dance rehearsals there are specific dancers, which we call filter figures, that gather all the attention (Muntanyola-Saura, 2014b). The surrogate figure simplifies some of the moves, performs them somehow in a slower pace and makes the learning process of new moves easier.

Following Alac (2005), modalities in context are vehicles for specific information, and this is why it is scientifically relevant to look at the multimodality of communication patterns in critical judgements. In dance, sonifications, which are a type of verbal sound, convey the dynamic of the moves, while touch has a more structural function of transmitting the grips, and marking, a very interesting "hidden" modality, projects the moves into the body (Kirsh *et al*, 2017). We can thus apply here the concept of incremental information developed by Khodyakov (2014) in his analysis of conductor-musicians relationships in an orchestra. In order to give legitimacy to conductors that come and go, orchestra musicians demand concreteness in the conductor's instructions. We will see how the choreographer, like the conductor, is responsible for translating this communicative modalities in the dance studio. One way of making the information flow specific enough is for the choreographer to translate from the visual to sound and other modalities, such as distributed marking. In Muntanyola & Kirsh (2010) you can find a detailed account of marking as a relevant modality in dance. In Muntanyola-

Saura (2015) and Muntanyola-Saura & Sanchez-Garcia (2018) we make the case for distributed marking in synchronized swimming and aikido.

Moreover, the sharing of perceptual information conveys a shared sense of agency. Nöe (2015, p. 10) goes beyond intersubjective consensus and claims that seeing (and all kinds of perception) is the *organized activity* of achieving access to the world around us. The joint interpretation of a dance instruction means living through a vivid present together, by experiencing this togetherness as a “We” (Schutz, 1967). The social organization of artistic practice emerges in observation of particular interactions. Nöe takes choreography as an example of an organized activity.

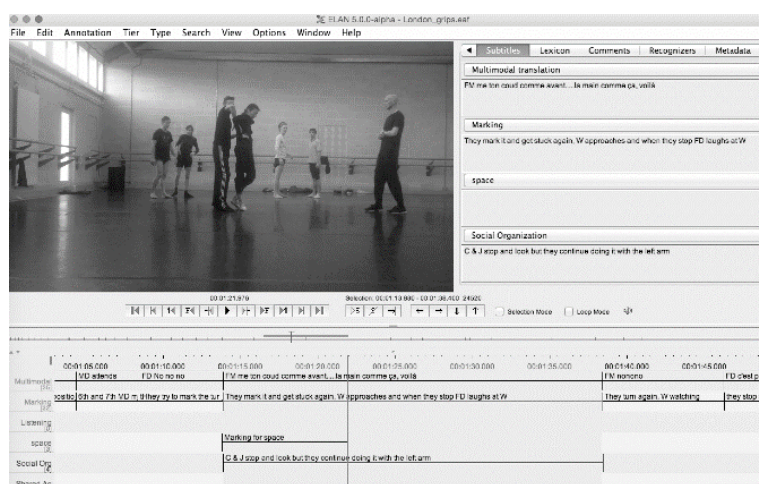
Our theoretical stance claims that artistic skill is a pragmatic outcome of observed patterns of interaction that are social but not yet communicative. Cognition becomes a by-product of the individual's cognitive needs together with its immediate physical environment. Our holistic claim is thus not new in sociology of the arts (Durkheim, Goffman, Garfinkel, Bourdieu, Becker). Still, as recent publications such as *Artistic Practices* (Zembylas, 2014) puts forward, there are few studies that put together the all well-known claims of microsociology with those of contemporary cognitive science, in what is has been call an integrated social sciences model Cosmides & Tooby (2013). In terms of projection, finding the right grip in dance is a complex result of a situated action. Situated cognition (Kirsh, 1995), distributed cognition (Hutchins, 2005) embodied cognition (Gibbs, 2006) and cognitive ethnography (Muntanyola-Saura, 2014b), acknowledges this. Communication, as a product of the coordination mechanisms of joint attention, is clearly multimodal (Muntanyola-Saura, 2012). In artistic settings, we find studies on dance and music (Muntanyola & Kirsh, 2010; Keevalik, 2010). Listening as a skill is an outcome of multimodal communication in the studio. As one of the dancers in Muntanyola-Saura (2015b) puts forward, what helps memorizing is keep moving and trusting your partner is there with you. Listening means being a good partner, that is respondent and present in the moment, so that there is a shared awareness of time and space.

3. Methods

We developed a cognitive ethnography of a dance rehearsal. Cognitive ethnography is a type of ethnography that studies of the situational nature of cognition. In the specific artistic context, our minimal unit of analysis is the social interaction among dancers and the choreographer. Individual actions cannot be fully understood without taking account the social context of the dance studio. Following De Jaegher, Di Paolo & Gallagher (2010), we define training sessions as a bundle of social interactions. We collected data through observation in December 2014 of four weeks of rehearsal in London of the piece ATOMOS by the word-class neoclassic company Wayne McGregor- Random Dance, residents at Sadlers Wells Theater. As part of the project directed by David Kirsh, from the department of cognitive science at the University of California, San Diego (UCSD) we filmed the rehearsals, took pictures and conducted structured interviews with the dancers. Interviews contributed to understanding the frame of the interaction from the subjective point of view of the rehearsal participants, through the complementary use of visual perception, digital video observation and interviews, allow us to describe and analyze the communicative and interactive patterns of work at a micro level.

We applied ELAN analytical software for small-scale micro interactions (Max Plank Institute for Sociolinguistics) as an analytical tool for multimodality. ELAN® was originally developed by the Max Planck Institute for Psycholinguistics for the analysis of micro-gestures and interactions. Unlike Atlas.ti or InVivo, Elan favors the simultaneous encoding of various aspects of the process, by including the whole video, without fragmentation. Therefore, it is more suitable for classification of movement, while admitting the transcription of narratives and interactions. Excel field notes taken during the process helped in the transcription of communicative events. In a second step, we selectively exported to Excel the interactions' content in order to statistically account for modality types.

Successive rounds of inductive coding were applied to pinpoint the most relevant set of cues and criteria used for event classification. We followed Jeffersonian conventions as applied in Conversation Analysis (Sacks et al, 1979) included in figure 6.2.1 together with a screen-shot of ELAN.



talk Speech is in bold (*Italica* for translation from French)
 [] Overlapping talk
 = Latching
 WHAT Sonification
 (()) String of talk for which no audio could be achieved
 () Described phenomena
Marking Description of marking
 FD Participant is identified when she is not the current speaker
 Multimodal details have been transcribed to the following conventions.

Figure 6.2.1 – Jeffersonian Transcript Conventions and screenshot of ELAN software for Conversation Analysis

Source: Dafne Muntanyola-Saura.

4. Results and discussion

We reduced the complexity of the analysis by choosing a set of specific steps from a rehearsal and maintaining the naturalistic setting of observation. The selected dance phrase from 16 December 2014 is a typical configuration of a triadic relationship between a duet of dancers and the choreographer. The central dancers are the reference for the choreographer, and form a

triangle with him, in a specific spatial configurance that remains stable across the dance instructional process (see Kirsh *et al*, 2016 for a detailed account of how the choreographer and the dancers position their bodies in space). The female dancer (FM) and male dancer (MD) are the center of attention, and the rest of the dancers (we include duet C & J in the analysis) follow them. This is an example of making, a type of instruction analyzed in Kirsh *et al* (2016). In the phrase we transcribe here, the dancers forget a specific grip. Not only the duet, but the whole company is momentarily bound together in a sequence of movements until the situation is resolved, efficiently or non-efficiently.

	Seconds	Total %	Choreographer %
Speech	193,3	52,3	38,8
Full Out	148,1	40,1	0
Marking	171,7	46,5	31,8
Distributed Cognition	37,7	10,2	0
Space	26,3	7,1	44,9
Phrase Duration	369,3	100,0	31,3

Figure 6.2.2 – Multimodal Distribution of instructions

Source: Dafne Muntanyola-Saura.

Figure 6.2.2 shows the presence of different modalities in the sequence of interactions during the rehearsed phrase. Speech dominates, followed by marking and joint attention, which involves doing the moves full out, that is, dancing together. The percentages go over a 100% since the communicative actions overlap, as we will show in the excerpt of Conversation Analysis. The data collected shows us how the choreographer is present in modalities, specially in space management, one of the observed skills in choreography (Figure 6.2.3). When spacing is critical, Wayne McGregor embodies the moves of the other dancer and aligns with them, as we see in figure 3. This is a form of multimodal translation that contributes to the incremental concretion (Khodyakov, 2014) of instruction. In Figure 6.2.3, the choreographer gestures, touching his right leg first, and pointing with her right hand later, to clarify visually verbal instructions that refer to the female dancer's legs. The music is loud, the dancers are French and gestures are frequent. The choreographer give dancers resources that he has at hand. He uses terms such as energy, movement, velocity, the gaze, actions and texture, as collected in our fieldnotes. The dancers and the choreographer also work with distributed marking (Figure 6.2.3), which appears in Figure 6.2.2 as distributed cognition. Marking is a cognitive strategy common to dancers and athletes, and also musicians and other embodied artists, which allows them to communicate moves without doing the full thing, selecting aspects such as weight, speed, direction or dynamics.



Figure 6.2.3 – Modalities at work: multimodal translation through gesture, visual perception, speech and embodiment (top 3a-3b), and marking, with the dancers' full out left and the choreographer's large marking right) (bottom 3c-3d)

Source: Dafne Muntanyola-Saura.

We will present our findings in three excerpts of Conversation Analysis (Figure 6.2.4, 6.2.5 & 6.2.6). In figure 6.2.4, the dancers forget a specific grip. FD & MD learn a specific grip and repeat it 3 times (0-40s). The participants of rehearsal agree upon the ongoing activity through the same frame (Goffman, 1974). Then FD fails to stand in position and en pointe, and MD uses the wrong arm to hold her hip. The dancers FD and MD repeat up to eight times the grip with the right hand, they get stuck and the error consolidates (0'40-1'54s). The dynamics of partnering indicates a level of distributed cognition at the level of perception. FD & MD are figuring out the grip by joint attention and translating one modality to another (marking, touch, gesture, speech, gaze).

W in that action
FM& MD F

15



C looks at the conflicting grip and marks it
Interruption because the dancers don't know how to do the grip

25

FD No no don't put the elbow like this promenade promenade cmon
W promenade WHOOM (sonification) thats it



W marks left finger turns
C marks her right arm



35

C & J full out but with the wrong grip (left arm instead of right)
FM stops at the conflicting grip

40

MD & FD marking
MD marks right arm while FD grabs his hand

45

MD *it is there that I went to grab it*
MJ *ah no*
MD & FD marking a second time
Marking 3rd time MD marking elbow instead

55

FD *no...no* laughs
Marking 4th time, MD joke gesture
Marking 5th time, FD positions MD arm, and she positions hers and tries to grab his hand

60

MD *wait*
Marking 6th and 7th MD marking right arm, FD grabs his hand

FM *Put your elbow like before, the hand like this, voilà*

70



W approaches smiling
FD positions MD hand, mark it and get stuck again, and when they stop
FD laughs at W

Figure 6.2.4 - Excerpt 1 of Conversation Analysis

FD is an expert compared to MD because of longer years of training and artistic recognition: she is a danseuse étoile from the Paris Opera, and he is member of the *corps de ballet*. She has the upper hand in the verbal exchange and proposes multiple times functional solutions that she performs directly on the MD body. The way for FD to know if it is the right grip is by touching and grabbing the hand, by feeling the pressure. Her negative indicates that it doesn't feel right. Having a shared optimal grip of the world, in joint attention, comes with shared agency, feeling at ease with their bodies and that of

others. This is a desirable outcome in the context of dance making, since *feeling good* is one of the products of stable conditions of interaction. We can thus describe the process of finding the right grip in terms of incremental information: multimodality requires concretion in order to maintain these feeling of shared agency.

120 MD keeps holding the right arm in position
 FM *No like this it is classic*
 FM *I don't have a grip...MD(The arm) It is behind... FD not it is not behind*



(They skip the conflicting step, and they also to the next grip wrong, right arm instead of right) FD shakes her head
 C & J mark the step with the left arm



130 The're stuck (comment of the researcher)
 W so you've got one you've got from this you gotta turn



140 W embodies marking left finger turn, in line with FD

150 MD (...). FD and you put the hand how? The hand how? I think I did it like this
 W and then turn, and then turn
 MD marks right arm, FM turns his hand, W moves their bodies, they repeat the grip, FD looks at W

Figure 6.2.5 - Excerpt 2 of Conversation Analysis
 Source: Dafne Muntanyola-Saura.

In further iterations in Figure 6.2.5, the reference dancers marks the conflicting grip (1'55-3'00s). We see how the interactive and interactive sequence that we just described deteriorates. The turn, the shape of the arm and the mechanics of the grip are all wrong. FD & MD end up skipping the conflicting

step and using the wrong arm to perform the following step, expanding the mistake along the phrase. At this point the choreographer's steps in and recalls the turn they skipped by marking it with the whole body. He manages spaces and lines up his body with that of the dancers, to increase clarity. It appears that the modality of embodied instruction appears when the choreographer wants to make sure the dancers understand what he is conveying in detail.

Both the expert dancer (FD) and the choreographer use specific balletic turns to judge the fitness of the steps. The former judges the grip MD is proposing as wrong because it belongs to a classic vocabulary, while the company works with neoballetic thus contemporary forms. The latter focuses on the structure of the phrases and keeps them going, so that they mark again the wrong step they had previously skipped. Participants of the interaction are applying typifications in speech shared by all members of the company. These are instances of shared typifications that culturally structure and organize the observed interaction in the studio. The dynamics of partnering in Figure 6.2.4 and 6.2.5 already indicates a level of distributed cognition at the level of perception. FD & MD are figuring out the grip by point attention and translating one modality to another (marking, touch, gesture, speech, gaze).

W this is just a turn
MD PAPAPAPA
W you're not clear FD no but its ok...yeah strange that arm

240



They mark the turn, MD MMM sonification, W looks at C&J

W how do you hold it?
W points at C & J

250



C & J show the step with left arm



W noo he would not do that, its the same arm, the same shape
FM marking the MD arm to communicate shape

W it was really lovely from here, it was kind of W marks the grip with right arm

270



FM It was filmed right? (to O) W you filmed it O?
W embodies FD and marks the grip with MD
MD holds the marked right arm walking to the camera

280



Figure 6.2.6 - Excerpt 3 of Conversation Analysis

Source: Dafne Muntanyola-Saura.

In figure 6.2.7, the central dancers cannot seem to get the right grip, so the choreographer changes his attention to another perceptual reference (3'01-6'00). He turns towards the peripheral dancers in the background, and by pointing to the C & J duet, asks them how they did it to perform the step. As anticipated in Figure 6.2.4, Line 35, and Figure 6.2.5, line 130, C&J have been doing full out and marking the conflicting step with the dancer J left arm, which is wrong, as stated by the choreographer verbally at the end of Figure 6.2.6. The choreographer uses a culturally shaped qualifier again, an esthetical verbal judgement (*lovely*), to give value to the particular grip that they are all trying to figure out. He proceeds to mark the grip with his right arm, the shape of it (again another loaded term within ballet culture), and then embodies the grip taking the place of the female dancer and with the male dancer as the partner. The fact that he chooses this modality and manages the space getting so close to the dancer as to touch him breaks the dominant triangle that defines the instructional triad, as stated at the beginning of this section, and shows the salience of this particular grip. As a closure for the selected phrase, an episode of distributed memory takes place. The FD asks the assistant for the filmed rehearsal, and they all go watch it. The choreographer also formulates the question to O, and all three move towards the camera. Here it is interesting how the male dancer keeps holding his right arm in position, as a reminder or maybe as a claim that he indeed remembers the right grip and that he will be able to compare it with the video screen. This excerpt shows instances of distributed memory together with the skills of multimodal translation, embodied incremental information and space management.

5. Conclusion

The analysis of artistic practice starts with social interaction. The Conversation Analysis of excerpts from this cognitive ethnography of a dance rehearsal shows how distributed cognition is an efficient account of the social organization of dance rehearsal. Rehearsals are made of indexical conversations. Video aided observation visiblizes communication. It has proved to be useful in finding structural accounts of expert creativity that depend not only on the agents' intentional behavior, but also on the social field that structure the observed environment. This paper makes visible what really happens when dancers act as experts in the field, within joint attention and a culturally defined normative frame.

First, we show evidence for the multimodal composition of the rehearsal's communicative patterns. Second, we locate incremental concretion, marking and space management as examples of artistic skills. Third, we show how these skills, part of distributed cognition, go through the interactive process of multimodal translation and shared agency. Thus, multimodal translation is a type of artistic skill. Fourth, artists judge their practice in terms of joint agency. They filter and share their experiences in the moment. The dancers solve the problem (getting the grip) by distributed awareness of a cognitive goal and the sharing of information in joint attention. Fifth, tactile modalities (embodiment/ marking) provide feeling & flow. Joint agency is based on shared frames of legitimate conversation between the choreographer and the dancers. Artistic judgement (what to do and what not to do) is a socially defined principle of conversation.

In all, artistic interactions are sequentially ordered in time, finely tuned for coordination, and are the basis for distributed cognition. The naturalistic studio setting provides evidence for distributed cognition in dance making. Social interaction happening in the studio is pre-communicative and multimodal. These pragmatic products of interaction become goals for intersubjective interaction if, and only if, they rely on shared and public meanings. The participants of rehearsal agree upon the ongoing activity through the same frame. In words of cognitive sociologist Cicourel (2002, p. 15) the inferences and/ or judgments that we form progressively on interactions are transformed in structural accounts. Such structural accounts include the established and functional use of language, as well as assumptions about the organizational constrictions and expectances. In that sense, artistic skills are distributed across dancers and choreographers that listen to each other. They are part of a higher level of organized activity. Beyond the atomization of the dancers bodies and the choreographer's brain, interaction is taken as the key unit of artistic skill.

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