

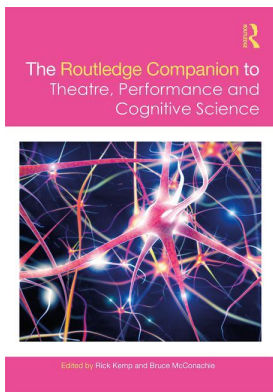
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6

MINDING IMPLICIT CONSTRAINTS IN DANCE IMPROVISATION

Pil Hansen

Introduction

Improvisation in dance ranges from the widespread practice of contact improvisation, which involves interpersonal exploration of physical weight sharing and balance, through forms of structured and task-based improvisation, to the more controlled dance-generating systems in which source materials, tasks and rules of interaction are predefined. In dance for the stage, improvisation is often used as a method to create new movement material, which then is refined and set in repeatable choreography. However, an improvisation score or system can also be presented as performance, either by itself or in combination with set movement sections. Dance improvisation is, furthermore, commonly used as a form of somatic therapy and as a teaching tool.

Approaches to dance improvisation have historically pursued a form of intensified, bodily performance presence in which the dancer is responding spontaneously to stimuli in the present moment instead of relying on past learning or anticipation of the future. However, contemporary practitioners and researchers of dance improvisation are challenging this concept of bodily presence in the improvisation discourse with the aim of further understanding the layers of kinaesthetic and cultural memory that the practice involves. At the same time, cognitive scientists (mostly from neurobiology, experimental psychology and biomechanics) have collaborated with artists to empirically examine implicit (i.e., not conscious) cognitive dynamics through dance improvisation. These cognitive dynamics include procedural memory and entrainment. ‘Procedural memory’ refers to a series of both cognitive and motor tasks that are automated and thus can be performed without awareness, and ‘entrainment’ is a generic term for the human tendency to coordinate movement and language rhythmically to one another. Although dance improvisation at first glance may seem spontaneous, discernible patterns of interaction do tend to emerge and have been analysed as a form of self-organization. The implicit cognitive dynamics studied by cognitive scientists contribute to constraining dancers’ improvisation options in ways that attract patterns of interaction and self-organisation. In dance-generating systems, explicitly designed constraints (i.e., tasks, rules, cues) are added to affect the self-organisation of dance improvisation. Such tasks typically direct the dancer’s conscious attention towards the otherwise implicit constraints mentioned earlier, and thus enable the dancer to draw on, inhibit or manipulate both implicit and explicit constraints. This agency reaches beyond the spontaneous

present of established improvisation discourse and involves attentive engagement with memory and planning, albeit of a radically different kind than the performance of set choreography or the planning of movement sequences.

I aim to qualify these introductory observations through a review of relevant studies in the cognitive sciences, and then position the concept of presence within the established discourse of dance improvisation. I then give examples of contemporary improvisers who directly challenge this concept. Shifting perspective, I draw upon interdisciplinary studies of cognitive science and dance improvisation to elaborate on the role of implicit and explicit constraints. Putting these different viewpoints in conversation with one another provides the context within which I discuss how the addition of explicit constraints may give dancers the ability to actively work levels of memory and planning that otherwise affect the improviser implicitly.

Dance improvisation

Genealogy

The studies discussed in this contribution address improvisation from contemporary dance practices in Europe, the United States, Canada and Australia that build directly or indirectly on ideas from the American avant-garde of the 1970s¹. At that time, Anna Halprin drew on the child's playfulness to develop improvisation approaches meant for psychological therapy, educational purposes and community building on the west coast (Carter 2000, 184–5; Ross 2003, 45). Although Halprin's work introduced dance improvisation to these contexts, it is contact improvisation, developed by Steve Paxton at Judson Dance Theatre in New York, that has been most widely implemented (Novack 1986; Paxton 2003; Biasutti 2013). Another member of Judson Dance, Trisha Brown, explored norms of movement and perspective through improvised, pedestrian engagement with physical materials and urban structures (Berger 2002, 17–28). Brown has inspired environmental improvisation approaches used in site-specific dance and the usage of impossible tasks like 'inhabit two places at once' as improvisation instigators (Meg Stuart qtd. in Reiter 2010, sixth paragraph). To date, Brown's and Paxton's collaborator, Deborah Hay, continues to develop and teach complex improvisation systems comprising specific perceptual orientations and rules, dual tasks and poetic movement scores (Hansen and House 2015, 67–8), which, in turn, have influenced the development of dance-generating systems by choreographers such as William Forsythe in Germany and Ame Henderson in Canada (Hansen 2015, 126–8).

Performance presence

Regardless of whether the aforementioned approaches aim to develop an embodied sense of self and community, connect with another through a shared point of physical balance, explore our environment and everyday norms or manipulate the body as a perceptual instrument, they all seek spontaneity in the present moment. This spontaneous presence is often purchased by inhibiting planning of the future and conscious repetition of movement material from the past while responding to present stimuli that derive from the environment and its inhabitants or from the improviser's proprioception and associative imagination (Hansen and Oxoby 2017, 77–80). An ideal of being in the present, detached from past learning and anticipation of the future, is often referred to as a form of freedom from formal or trained choreographic structures (Burrows 2010, 24; Goldman 2010, 94–111). This freedom

is furthermore believed to liberate the dancer from structures of social identity and hierarchy embedded in set choreography (Novack 1986, 11; Little 2014).

This ideal concept of presence was and is troubled by the improviser's phenomenological experience of time during performance, which is not limited to the present. This experience has been described by influential scholars and founders of improvisation approaches from the Judson Dance Theatre generation, who otherwise prioritise the need to detach from past knowledge when improvising.

Choreographer and scholar Susan Leigh Foster described dance improvisation as a talking 'back and forth between the *known* and the *unknown*' (2003, 4). According to Foster, the known has been established in the past and comprises the dancer's trained tendency to move in patterns and predetermined structures that limit the improviser's choices. She argued that dancers need to 'extricate ourselves from that which is known' to arrive at the unpredictable (4). Foster furthermore emphasised that 'improvisation's bodily mindfulness summons up a kind of hyperawareness of the relation between immediate action and overall shape, between that which is about to take place and is taking place and that which has and will take place' (7). To Foster, the improviser thus pushes through and beyond learnt movement tendencies and structures of the past, focusing his or her conscious attention on the movement responses and choreographic opportunities from the near past and near future that give shape to the present.

Steve Paxton, the founder of contact improvisation, eventually sought to develop techniques of perceptual orientation, which could produce awareness of a form of procedural memory he referred to as 'reflex action.' Interestingly, this pursuit addresses an aspect of the dancer's implicit body knowledge that is not normally explicitly 'known' to the dancer, including learnt movement tendencies. Here, it is useful to consider that contact improvisers undergo an implicit learning process that gradually allows them to take greater risks of falling and trust their ability to connect with their partner in finding a shared point of balance. Instead of 'extricating' improvisers from this memory, Paxton stated that reflex action 'successfully preserves the integrity of the body' during improvisation, arguing that conscious awareness of such implicit memory is necessary to both draw on past learning and 'learn from the moment' (Paxton 2003, 177).

In cognitive psychology, it is recognised that human beings have two individual, but connected, learning systems (Stevens 2017, 56–7):

- 1 A slow and implicit system which, for example, is involved in procedural, motor knowledge and immersive language acquisition. This implicit system tends to extend rather than depart from prior learning.
- 2 A fast and explicit system through which episodic knowledge (situated interactions) and semantic knowledge (information) are learnt more systematically and synthesised by directing attention. This explicit system involves the possibility of choice and departure from prior knowledge.

With these systems in mind, Paxton's pursuit of awareness can also be understood as an attempt to support the implicit learning system with the explicit learning system as a way of extending past learning into future choices. Thinking beyond Paxton's writing, it is furthermore possible that this awareness speeds up the learning process and enhances the possibility of choice-making.

There are contemporary dance improvisers who see the discursive matrix of spontaneity, presence, internal self-expression and freedom from the 1970s as a limitation (Hansen, Kaeja, and Henderson 2014, 30; Midgelow 2015, 107–8, 112–13). They work from the hypothesis that explicit awareness of otherwise implicit factors that affect the improvisation, including movement tendencies, affords the improviser the ability to make reflective choices.

One such example is Malaika Sarco-Thomas' *touch + talk* practice. Dance improvisers are asked to verbally respond to questions about their motivation to improvise, strategies of perceptual recalibration and anticipated audience reception at regular intervals during public performances of contact improvisation (2014, 198). With this practice, Sarco-Thomas pushes beyond the proprioceptive and internal focus typically involved in the performance of presence in contact improvisation. Through explicit articulation of factors and reflection on choices, she directs attention towards pre-established motivation, anticipation of the future and the experience of a group that is external to the dancer's proprioceptive focus (194).

Vida Midgelow's improvisation practice and research involves a form of dramaturgical consciousness that reconciles the improviser with the many layers of memory that improvised responses draw on and express. While she, like Paxton, recognises the importance of implicit, procedural memory involved in movement skill, she has developed a series of improvisation and reflection tasks that help the improviser reveal trained and socially conditioned knowledge. When rendered explicit, this knowledge is used as source material and to make choices about emergent structural possibilities while improvising—choices that embrace or challenge the revealed knowledge (Midgelow 2012, 2015). Supported by this dramaturgical consciousness, the improviser's choices in any given moment can reach farther into the past and the future than the near past and future that Foster wrote about. An ideology of liberation through presence is replaced with agency.

The cognitive science of dance improvisation

Midgelow's and Sarco-Thomas' tools direct conscious attention towards factors that inform improvisational acts and responses as they are experienced subjectively by the improviser. In order to access knowledge about factors that are harder for the dancer to register consciously, observation from a third-person perspective can be useful. In such an effort, I now turn to arts-science studies of dynamical systems and cognition in dance improvisation.

The role of constraints in the self-organization of dynamical systems

The factors that I have discussed thus far, can be and have been considered as constraints of behaviour within the framework of Dynamical Systems Theory (DST). This cognitive framework is applied in order to understand how such factors contribute to the generation of self-organising patterns of interaction between improvisers (see Stevens and McKechnie 2005; Buckwalter 2010, 134; Hansen and House 2015).

DST looks at how complex systems, ranging from chemical processes to birds' flight patterns, tend to self-organise over time. In my DST studies of dance-generating systems, I typically begin by identifying the implicit variables (individual movement tendencies) and explicit parameters (tasks, rules) that constrain interaction possibilities. I also name preselected sources of energy (memories of movement, recycled movement scores, images, songs, etc.) that dancers use as sources for movement generation. By systematically processing video recordings of improvised performances, I then proceed to analyse patterns of self-organised interaction. Note that the emergent composition of improvisation comprises such patterns. Central to this task is identification of the particular variables or parameters that attract these patterns in shifting phases (Hansen 2015; Hansen and House 2015).

As explained by cognitive psychologists Thelen and Smith (1996, 45–70), a dynamical system depends on a continuous influx of external sources of energy in order to self-organise. On the one hand, if the system becomes too closed off from such sources, then interaction

will become repetitive and cease to generate new forms of organisation. If the system, on the other hand, is pried fully open to new sources and its boundaries thus become less defined, self-organisation is less likely to occur and certainly harder to observe. There are two ways in which an improvisation system could become too closed: (1) if the dancer primarily relies on the implicit constraints of movement tendencies and thus repeats movement without the ability to generate original responses; and (2) if the improvisation context stops providing fresh energy because its sources have all been encountered and learned by the dancer.

The DST method makes such issues detectable by outside observers. An improvisation approach designed with awareness of these issues will include parameters such as tasks, principles and rules that explicitly constrain interaction possibilities and thus solve the problems caused by too much openness. Gradual addition of new source material, new improvisers or new environments can address the risk of repetitiveness caused by exhaustion of energy sources. However, the equally closing effect of implicit (i.e., non-conscious) repetition of movement tendencies warrants further examination.

Implicit constraints: procedural memory and kinaesthetic perception

The implicit memory that is referred to as body knowledge, movement tendencies, habit or reflex by the dance improvisers cited in this chapter is in cognitive terms known as procedural, motor memory. It retains the movement patterns that have proved functional in response to specific forms of interaction in the past and that have been learnt implicitly over multiple rounds of repetition. One rarely achieves awareness of such patterns, and the enactment of them is experienced phenomenologically as an original, present and perhaps even intuitive response and not as the habitual repetition of memory that we know it is.

The same can be true for how dancers direct their attention and thus their kinaesthetic perception. Contemporary dancers are trained to use peripheral vision and proprioceptive information, and to perceive spatial relationships and relationships to other bodies. Thus, experienced dancers are able to perceive their own body and movement in relation to their surroundings in ways that non-dancers rarely master, but this expertise is typically implicit and automated.

Kinaesthetic perception and procedural memory deliver the foundation for other areas of expertise, including memorisation of choreography (Bläsing 2010; Stevens 2017), imaging of movement (May et al. 2011) and joint action (also called unison). While imaging is usually drawn on consciously and memorisation is supported by sounding and marking techniques that render specific landmarks explicit (Vass-Rhee 2010; Kirsh 2011; Warburton et al. 2013), joint action depends on the cognitive processes of entrainment, which are implicit.

Combining implicit and explicit constraints: entrainment and attention

Entrainment is typically defined as the simultaneous rhythmical coordination of two individuals in time and space (Phillips-Silver and Keller 2012). It has been established experimentally that dancers entrain more effectively to music than non-dancers (Washburn et al. 2014), likely because of their enhanced kinaesthetic perception. Although entrainment to music is the most common area of study, entrainment to internal and external bodily rhythms in dance has also received significant attention. George Sofianidis et al. (2014) did, for example, find that swaying non-dancers entrain to expert dancers' sway rhythm when sharing touch, while expert dancers are able to inhibit such influences from their partners, and thus lead the entrainment.

To date, the most comprehensive and interdisciplinary case study of entrainment to non-musical rhythm in dance examines the rehearsal process of William Forsythe's dance

work *Duo* (Waterhouse, Watts, and Bläsing 2014). This study reveals important relationships between implicit entrainment and strategies that afford dancers additional explicit control. These findings indicate that the condition, which enabled dancers to inhibit bodily entrainment in Sofianidis and colleagues' study, was the dancers' ability to become explicitly aware of competing rhythmical stimuli and direct their attention to the sway task. In other words, dancers are entrainment experts and, furthermore, have a superior ability to consciously manipulate this otherwise implicit dynamic.

Waterhouse, Watts and Bläsing advance the study of entrainment from simplified limb coordination, sway or improvisation tasks to far more complex forms of unison in dance (2014). *Duo* is partly set as memorised and repeatable choreography and partly open for improvised choices. The dancers synchronise and de-synchronise their movement in different proxemic relationship to one another, without touch or music. Instead of these stimuli, they employ visual cues and 'sounding' (i.e., audible cues like breath) to 'counterpoint' movement: oscillating between points of synchronisation and individual variation. With reference to Phillips-Silver and Keller's concept of 'coordination smoothers' in entrainment (2012), the authors suggest that simultaneous auditory and visual cues are used deliberately to modify behaviour in order to produce predictability (Waterhouse, Watts, and Bläsing 2014, 13). In terms more familiar to DST, the cues can be said to constrain the improvisation possibilities and thus increase the likelihood that unison will be arrived at. These explicit markers and points of multisensory attention are coupled with what the dancer, Watts, describes as an 'elastic temporal integrity' (as quoted in *ibid.*). This term refers to each performer's ability to make expressive choices regarding the compression or stretching of time and tempo, but it also encompasses their responsibility to arrive together at counterpoints in time. Although the authors do not discuss the possible relationship between this inter-subjectively perceived and acted on temporality and the forms of movement or speech rhythm that are typically associated with entrainment, it is plausible that variation in movement tempo is also experienced as variation in rhythm, and thus responded to through entrainment to rhythm. This interpretation of their data matches the authors' conclusion:

We suggest that this example of expert entrainment is a skilful perceptual activity of rhythmic collaboration based on sensorimotor knowledge. The case study demonstrated that skill-based entrainment in dance requires the integration of implicit and explicit processes ...

(*Ibid.*, 14)

Attention to multisensory, rhythmical cues that deliberately constrain improvised movement variation is thus combined with implicit entrainment to movement rhythm that is based on trained and automated motor memory. Together, these two levels of skilful entrainment make joint action (unison) possible.

Although the case of *Duo* belongs on the more closed end of the improvisation scale, the complementary role of explicit attention to and conscious awareness of rhythmic cues as a skilful aspect of entrainment in dance can be applied strategically to the broader range of improvisation practices. Indeed, this role may contribute to what Midgelow refers to as 'dramaturgical consciousness' (2015) or to what the dance improviser Kent De Spain calls 'improvisational awareness':

the intensity and density of improvisation causes practitioners to develop survival strategies and skills that help streamline choice-making and open doors to creative resources. One such skill is a heightened sensitivity to what is happening during the improvisation, a layered, synchronic process of embodied cognition that I refer to as "improvisational awareness."

(*De Spain 2012*, 26)

Conclusion

The knowledge of the past, which Foster recognises as part of the dance improviser's path, involves implicit procedural memory that is expressed in movement tendencies, in enhanced entrainment to rhythmical stimuli and in skilful kinaesthetic perception. If the improvised present is to reach into the unknown and bring something new into the world, these implicit competencies must be accompanied by strategic points of kinaesthetic attention and conscious engagement with past influences that enable the dancer to inhibit, manipulate or make choices regarding parts of these processes. Adding explicit constraints, such as audio-visual cues and rules of engagement are effective examples of such strategies, as they demand continuous awareness and repeatedly pull the dancer back to a point of adjustment and choice-making. The reflection challenges proposed by contemporary improvisers are other examples of effective strategies. Together, these strategies both manipulate the self-organisation of improvisational interaction and ensure that dynamical improvisation systems in dance do not become too closed in repetition of procedural memory to generate new forms of self-organisation.

Note

- 1 Improvisation is also a central aspect of historical and cultural dance practices that precede this source, such as the Japanese Noh Drama, the Flamingo from Moorish Spain (Carter 2000, 183) and social jazz dance with its Caribbean, African and urban influences (ibid., 184).

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