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RESEARCH PAPER

Stimuli for initiation: a comparison of dance and (sign) language

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Abstract This work considers a claim by a theater-dance troupe regarding a distinction in initiation points for dance and language, where the claim contrasted physicality to abstraction. The starting point here is that the troupe is expressing an awareness of a distinction they experience and, thus, that deserves ferreting out. Three interpretations of this claim within an embodied cognitive science are examined and discounted in turn. In fact, choreographers/dancers and language users alike exhibit concern with the issue of initiation of activity in that they consciously play with varying stimuli for initiation of activity to artistic effect. This is demonstrated here through a discussion of the dance film *Exquisite Corps* and the renga form of poetry looking at sign language instantiations. Thus, the initial theater-dance troupe's claim cannot find purchase in an examination grounded in embodied cognitive science. If there is, in fact, a fundamental difference between the experience of initiating dancing and initiating language use it lies elsewhere, perhaps in areas of cognition yet to be explored.

Keywords Dance · Language · Sign language · Embodied cognition

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How this study initiated

The Brazilian theater-dance troupe Dois Pontos is comprised of deaf and hearing dancer-actors. At various moments in their performances, a narrator will be on stage, as well, with appropriate interpreting (into Portuguese or into Libras, the sign language of Brazil). I attended a performance of theirs in Florianopolis, Brazil, in spring 2019. Afterwards, during a Q&A, an audience member asked a deaf dancer-actor if he found dance and language (in his case, signing) to be essentially the same activity. The deaf dancer-actor said no; dance and language are different, because dance initiates in the body, with a movement, while language initiates in the brain, with a concept. The discussion that ensued (in Portuguese and Libras) was not grounded in examples, and strained my ability to follow. But the rest of the troupe members agreed with the claim.

Certainly, the brain is the stimulus for all self-generated articulation. Thus, the claim that dance originates in the body with movement and language originates in the brain with a concept is false. Nevertheless, the dancer-actor was expressing awareness of a distinction that the other troupe members shared. I thus take the Dois Pontos' claim as an opportunity to explore initiation in dance and language.

I label articulation as dance based on the choreographer's or dancers' identification (rather than on an

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abstract definition—see Francis, 1996) since I hope a probe of the awareness that artists have of their art may help in trying to understand the claim of Dois Pontos. I cite a handful of dancers and choreographers, and refer the reader to Hassiotis (2014) for dozens more. Likewise, I label articulation as language based on the producers of the articulation (rather than on an elusive definition, and see useful remarks on the use of the term *gesture* in Kendon, 2017, p. 31). In taking this approach, I acknowledge the value of subjective experience and of introspection-based qualitative data, a practice recommended by others when studying a wide range of activities, including dance (Jola et al., 2011; Reason et al., 2016) and signing (Holcomb, 2010). Further, I am a linguist who has been a student of dance nearly all my life and I analyze spoken and sign languages. Thus, as I analyzed the data, I often mimicked articulations, relying on my experiential knowledge in assessing them.

I take as a given that the dancer's skill includes physical abilities, expertise in motor-learning, cognitive abilities pertaining to moving the body in a given environment, mental representation and planning of movement, memorization of movement sequences, as well as aesthetic judgments pertinent to the art, such as alignments of movement and music[1] and considerations of audience perception (Hansen & Bläsing, 2017; Karkou et al., 2017). And I take as a given that the language user's skill includes mastery of the grammar, from the inventory of articulatory units, to how to combine them in lexical items, to how to organize them into phrases and sentences, to how to use them to convey meaning (Lyons, 1981). That is, regardless of what the dancer or language user produces, in this study I assume their full competence with the activity of dance and of language. These assumptions allow a discussion of dances and poems without questioning whether the dancers or language users "made a mistake".

1FL01[1] Even non-dancers align their movement to music. In an 1FL02experiment in which people were asked to walk in time to music 1FL03and to a metronome, people moved more quickly to music than 1FL04to the metronome, showing a sensitivity to resonance (Styns 1FL05et al., 2007). Dancers, however, align movement to dance in 1FL06many more ways than speed. And, traditionally, if dancers work 1FL07with live musicians, there is a visually apparent articulatory 1FL08collaboration between the dance and the music, although this is 1FL09not inherent, as contemporary dance challenges show (Kossen-1FL10Veenhuis 2017).

Setting within cognitive science

The Dois Pontos troupe made a contrast between body/movement and brain/concepts that was common in the early years of cognitive science: the discipline exalted central/conceptual cognitive processing as distinct from sensory processing and motor control—one falling within the purview of the discipline and the other not (e.g., Shapiro, 2007). Thus, mind/body was one among many binaries of the time (like male/female or culture/nature; e.g., de Beauvoir, 1997; Sartre, 2003). In the past two decades or more, however, scholars have shown that cognitive processing involves capacities of the somatosensory system. The somatosensory system is concerned with the conscious perception of movement, pain, position, pressure, temperature, touch, and vibration arising from fascia, joints, muscles, and skin, and this perception is detected in many places in the body and then conveyed through the spinal cord and brainstem to the somatosensory cortex of the parietal lobe of the brain (Gleveckas-Martens, 2013). Thus, the somatosensory system is responsible for proprioception (a sense of self that includes one's movements and postures), interoception (a sense of the internal state of major organ systems), and exteroception (a sense of interaction of the body with the external world). The somatosensory system also plays a role in emotional processing (Kropf et al., 2019).

This more recent scholarship argues for an embodied cognitive science (e.g., Shapiro, 2007) and recognition of the concept of multiple intelligences (Gardner, 1993), which manifest, demonstrate, or apply human conceptual abilities (Henley, 2014). An embodied cognition at this point is more a program of research than a well-defined theory (Shapiro, 2019). This could, at least partly, be due to the fact that the cultures in which this research is progressing have not yet given us ways to talk about experiences other than objective ones (Throop, 2005). Thus, the conceptualization of modal intelligences often goes unrecognized (Henley, 2014). Still, substantial work on the analysis of dance has already been done from an embodied cognition perspective (e.g., Bläsing et al., 2019, and see relevant work as early as Hanna, 1979).

I adopt an embodied cognition perspective here, and acknowledge that dance is a highly complex cognitive activity (Brown & Parsons, 2008) as is language (arguably the most complex cognitive task;

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Hackney et al., 2016): both occur in cognitively demanding circumstances and require an integration of different types of skills and knowledge. In investigating the Dois Pontos' claim, I look at three potential distinctions between the two activities within an embodied cognition perspective, and conclude that none of them brings us to a defensible recasting of the Dois Pontos' claim.

Somatosensory involvement: Do both activities involve the somatosensory system?

First, one might try to recast the Dois Pontos' claim as saying that movement in dance initiates through activity of the somatosensory system only, while language initiates in concepts that do not involve the somatosensory system. Under this interpretation the claim is false. Regarding dance, movement articulation controlled by the self (i.e., not reflex or the result of an external force manipulating the body) calls for the determination of where to move what part of the body –a decision-making process that requires cognitive/executive control and activity in the ventromedial prefrontal cortex (Blakemore & Robbins, 2012; Gage & Baars, 2018, Chapter 10, Sect. 6.1) as well as in the cerebellum (Centre for Educational Neuroscience, 2019), which occurs at the sensory-motor interface (extrapolating from primate studies: Romo & Salina, 2001). Regarding language, inner speech (talking to ourselves in our heads) generates an efference copy (Whitford et al., 2017; and see Perrone-Bertolotti et al., 2014), where an efference copy is a movement-producing signal generated by the motor system, thus involving the somatosensory system. If one wants to claim that there might be some other form of internal language that is more closely related to thought, one might look at "abstract thinking", which, it has been shown, does not require involvement of the somatosensory system (Berkovich-Ohana et al., 2019). However, thought and language, though they may influence one another, are not identical, as linguists, philosophers, and psychologists have argued for decades (e.g., Gleitman & Papafragou, 2012; Lund, 2003; among many), and as studies of neuroimaging confirm (Fedorenko & Varley, 2016).

Abstract thought: Is it a necessary precursor to both activities?

Another recasting of the claim is that dance does not initiate from preceding abstract thought but, instead, always involves the whole body, whereas language always initiates from preceding abstract thought, which does not involve the somatosensory system.

The first part of this claim might be defensible. Visualizing movement (where *visualize* is to be interpreted as an imaginative activity that need not involve the visual cortex, Huang, 2013) involves signals that go out to the somatosensory cortex (Hanakawa et al., 2008). So, if "thinking about dance" means "visualizing dance" (rather than some other kind of abstract thought), the whole body is involved.[2]

But the part of this claim about language is falsified by interjections. At sudden sharp pain, for example, English speakers might blurt out, "Ouch!" or a pseudo or true profanity such as, "Darn!" or "Damn!". Interjections can pop out of a person involuntarily and instantaneously, thus, without forethought. Are interjections true language? I offer two arguments that they are. First, interjections vary by language, whether spoken or sign language. Italian speakers in the situations described above might say (in order), "Ai!" "Cavolo!" "Cazzo!" American Sign Language (ASL) users articulate interjections comparable to these; Italian Sign Language (LIS) users, likewise, have signs comparable to these and different from the ASL signs (for examples, visit spreadthesign.com). Second, interjections, while generally syntactically independent themselves, play a role in maintaining the flow of mutual understanding in conversations regardless of language (Dingemanse, 2017). That is, interjections are followed by ordinary language and that language is appropriate in content to the stimulus of the interjection (and see Goddard, 2014).

Body-external versus body-internal stimuli: Is there a difference regarding the two activities?

A third possible way of investigating the Dois Pontos' claim within embodied cognition makes use of the

[2] Actually viewing dance has a greater effect on the somatosensory system than simply visualizing it (Di Nota et al., 2016), since viewing movements triggers mirror neurons (Buccino et al., 2004).

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contrast between body-external and body-internal stimuli, where consideration of the dynamic interaction between the environment and the body reveals many ways that elements of different types can influence or even govern intelligence (Wilson, 2002; Glenberg, 2010; Wilson & Foglia, 2011/2015). Rather than try to restate the claim in these terms, I here ask whether dance and language differ categorically with respect to interaction with body-external versus body-internal elements such that this difference affects initiation of articulation.

With respect to language, I argued earlier that it can initiate from a body-external stimulus (see the discussion of interjections). And I do not labor to establish that language can initiate from a body-internal stimulus since language in typical conversation is generally accepted to be an expression of thought (and, often, of identity), though a given thought/proposition can be articulated in multiple ways. In simplified terms, we can "work it out" in our minds, then say or sign it.

With respect to dance, I turn first to choreographers' comments about their own work that express recognition of external and internal stimuli. Emery LeCrone says, "Sometimes it's certain dancers, sometimes a specific place, a feeling, or a mood that inspires me" (Lilienstein and Sugino, 2014). Camille A. Brown says, "The most important thing is: What is the story about and how do we express that in the clearest way?" (Forbes, 2018). Bill T. Jones says, "When I move, my arms and my joints are speaking" (Cunningham et al., 1997: 48:55–49:07[3]). Multiple books and articles have been written about the choreographer's task in terms of: the elements that go into a dance and into the creative process (Blom & Chaplin, 1982; Butterworth & Wildschut, 2009), performance theories and dance practices (Allsopp & Lepecki, 2008), engaging the viewer (Preston-Dunlop, 1998, and see remarks on the kinesthetic experience of the viewer in Batson & Wilson, 2014), harnessing sensory systems in the creative process (Kirsh, 2011), the role of improvisation (Minton, 2017), and the challenge of creating a perception even as the articulation responsible for that perception passes away (Lepecki, 2007).

Dancers (who are often dancer-choreographers) also recognize external and internal stimuli for dance initiation. Dancers articulate working from the choreographer's words or behavior (Gardner, 2007), so that the dancer-choreographer relationship becomes one of collaboration (Farrer, 2014; Forbes, 2018). Emery LeCrone extends that relationship of collaboration to include environmental (i.e., body-external) factors: "Choreography is a collaborative art form. You have to have dancers, time, and space, in order to work" (Lilienstein and Sugino, 2014). The choreographer David Parsons explains that the job of the choreographer involves "how to pull things out of dancers, how to deal with concepts" (Di Orio & Searle, 2015). To take a concrete example, after the dance studio floor at our college had just been cleaned and waxed, a group of students entered before class and one of them slid involuntarily, purely as a reaction to the now slippery surface. She then purposefully slid in a different direction and other students joined her. An initial articulation in response to an external stimulus turned into dance because of the way that dancer behaved. What that dancer did, and what the dancers who joined her did, is typical of dance. Every movement of a body part in space creates a potential pattern of such elements as direction, level, size, shape, position—all of which may be understood by the dancer (or anyone else) proprioceptively and/ or visually (Sarlegna & Sainburg, 2009; and see remarks on deaf/blind children in Hayes et al., 1974), as well as interoceptively (and see Shusterman, 2008 and Quigley et al., 2021), such that the dancer then chooses the next movement. That is, an articulatory inter-action with something physical is immediately subject to somatosensory experiences and cognitive scrutiny.

As we move, we plan our next moves, "working it out" with bodily articulations as part of this reflection (conscious or not). Planning involves decision-making and once decision-making is involved, whether or not influenced by emotion (Schwarz, 2000), cognition is involved. This holds, whether we have one dancer or choreographer whose cognitive capacity is relied upon solely, or whether we have a group of dancers whose collective cognitive capacity is relied upon (and see the discussion of emergency room decisions in Croskerry 2015). Wayne McGregor, who was Resident Choreographer at the Royal Ballet for ten years, stresses the value of being in a state of preparedness; he prefers to respond in real time to stimuli and "very quickly come up with an idea" (Choreographer, 2017).

Importantly, articulation that starts from a concept as stimulus does not always travel a welcoming path:

3FL01[3] This quote is in a video, thus we give the timestamp of the 3FL02quote within that video.

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we can try "working it out" in our heads with a result that might not be able to be articulated by the body. The ballet choreographer-dancer, for example, might understand/visualize a dance mentally through the exact terminology of the field, but the articulatory reality must still be faced. When a concept cannot be realized through articulation because of physical realities, choreographers might turn to technology for solutions. In the dance "Caught", David Parsons wants to "fly", an action impossible to sustain, so he uses a strobe light to allow us to see the dancer only at moments when he is in mid-air. At other moments the stage is dark, so the audience never witnesses the dancer touching the ground.

In sum, language and dance can be initiated through interaction with both body-external and body-internal stimuli.

Aside: Automatic activity and cognitive complexity

The investigation so far insists on the cognitive complexity of dance and language. But what about so-called automatic movements that involve motor/muscle memory—might they be examples of dance or language that is cognitively less complex? A dancer who has practiced a piece repeatedly can find themselves dancing it when the right external stimulus is present (e.g., particular music or studio) without being conscious of their articulations until they've already completed (a good part of) it (Bläsing et al., 2019). However, with regard to dance, the neuroscientist Daniel Glazer's research shows the brain is no less engaged in automatic performance than in other performance (see interviews in Solway, 2007 and Thibodeaux, 2021). Likewise, when the mind wanders during speech, as when reading aloud, for example, Thomson et al. (2013) found that there are no effects of mind wandering on reading performance itself. In other words, the executive/attention resources that go into mind wandering do not impinge on the executive/attention resources that go into reading aloud. So, speech that occurs during mind wandering is also, cognitively complex. (I know of no relevant studies on sign language here.) In sum, automatic dance or language activity is cognitively complex just like other dance or language activity.

Playing with varying stimuli types over time

So far, no categorical difference in stimuli for initiation of dance or language has emerged. But leaving the matter there misses an interesting point about stimuli: dancers and language-users apply their conscious awareness of different types of stimuli in ways that are similar and seem to be playful confirmations of the theory of cognitive embodiment. I here offer a brief look at some of those applications, and then a more detailed look at an instance of a group-dance type and a group-poetry type in which alternation between external and internal stimuli is central to the artistry of the performance event.

Dance

In addressing articulatory reality, the choreographer Simone Forti calls it "thinking with the body"; "…when I'm trying to understand something, of course I have my rational tools, but also I almost feel some kinesthetic and visual models in space—tendencies of energy and of how things are going to unfold" (Goldstein, 2014/2018). This play between Forti's concepts and how things unfold articulatorily can lead to unpredictable stimuli on the dancers' articulations that require articulatory reactions in order to maintain conformity with Forti's concepts. Consider Forti's moving huddles, where the choreographer's directions might include making sure each dancer is touching at least two other dancers at all times (and perhaps other requirements, such as having at least two parts of one's body in contact with the floor at all times). Pressure from an outside source (another dancer) on one part of the body may or may not actually move the dancer's body, but in either case the dancer must then choose following articulations that allow them to continue realizing the huddle concept. The shift from the external to the internal is, by necessity, instantaneous, but no less real.

One of the most extreme examples of external stimuli on articulation changing within a performance and, thus, affecting dancers' articulatory choices, comes from the famous collaboration of the choreographer Merce Cunningham with the composer John Cage. They started working together in the mid-1940s, and over the next decade, in the words of Cage, they sought to see each—dance and music—"less like an

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object and more like the weather"[4] (Walkerart, 1981/2021: 2:06–2:08). They came up with a method known as chance procedures, in which Cage would toss coins to determine for his musicians the pitch, volume, and duration of sounds, while Cunningham would toss coins (and sometimes simply respond to imperfections in the paper he was writing on) to determine the number of dancers on the stage and the sequence of phrases/figures. The space was filled with multidirectional activity, so there was no sense of "front" (Brown, 2009). In this way, Cunningham and Cage built randomness into their performances. Dance and music simply coexisted in a given time and space. Or that's how Cunningham and Cage saw it—though they admit that there were points in certain dances when they adhered to a given match between music and dance figures. But analysis of their work shows that the anarchy they were striving for resulted in highly controlled performances that were not anarchy but instead "simulated" anarchy (Perloff, 2012), comparable to that in a collage (Miller, 2001).

The major point for us is that chance procedures necessitated that the dancers repeatedly respond to different external stimuli, which then affected articulatory choices. Dancers typically heard the music for the first time at the premiere – and lighting, costumes, and scenery all were determined without the dancers' knowing ahead of time (Miller, 2001). But music, lighting, costuming, scenery … all affect movement choices (Banes, 2011; Dean, 2012; Henley, 2014). The dancer who had practiced a given series of figures in one kind of clothing, for example, suddenly had to perform those figures in a new order in costuming that might interact with the different dance figures in different ways; indeed, the clothing of a dancer can inhibit or free their movement and their personal style (Harding, 2020). And, of course, the number of dancers on the stage can drastically affect movement paths and other articulatory decisions. So, the ungluing (to use Cage's term) of the choreography from all these other factors meant constant changes in external stimuli and, subsequently, new choices (internal) by the dancers, where these interrelated changes in stimuli (external-internal) were the essence of the excitement in chance procedures.

Let us take a close look at one experiment in dance-film choreography with changing external stimuli and resultant changing articulation over time—one that is analogous to an experiment in sign poetry discussed below. *Exquisite Corps* (2016), by the engineer turned choreographer-filmmaker, Mitchell Rose, was created as a dance film version of the French drawing game Exquisite Corpse.[5] The dance film includes 42 choreographer-dancers in various locales. Each choreographer-dancer created and performed a 2–10 s scene. Rose then sewed the films of those scenes together into one long sequence (Sidgel, 2017). The choreographer-dancers wore red shirts, aiding visual continuity to the changing sizes and shapes of bodies. Rose calls this kind of work "remote collaboration"[6] (Exquisite Corps by Mitchell Rose, 2016: 0:22–0:23), where the result of *Exquisite Corps* is a "chain love letter to dance" (0:48–0:51).

Before each choreographer began, they were given the complete, edited footage of the preceding choreographer's work/scene. The choreographer then discussed with Rose ideas about possible locales and, sometimes, about what might fit well at that point in the sequence of scenes.

Each choreographer had the preceding choreographer's work in mind. But in order to make the scenes fit together, Rose required each choreographer to begin their scene in the final shape or movement of the previous choreographer. In Fig. 1a, we see the moment before the first dancer's (Bebe Miller) ending movement; in Fig. 1c, we see the moment after the second dancer's (David Dorfman) starting movement; in Fig. 1b we see the exact instant of transition between the two dancers, where the first dancer's image is superimposed on the second dancer's, showing how seamless the transition is.

The initial stimulus for each choreographer's first articulation is external: the shape that the preceding

4FL01[4] This quote comes from a video-recorded interview, where the 4FL02timestamp on that video is indicated.

[5] There was an English parlour game called "Consequences", 5FL01
in which two or more people would tell a story together. One 5FL02
person wrote a sentence on a piece of paper and folded the paper 5FL03
down just enough so no one could see what they had written. 5FL04
The next person would add more, fold the paper down again, 5FL05
and pass it on. At the end, the "story" would be read out loud 5FL06
(Collab Writers 2019). In Paris in 1925, the surrealist painters 5FL07
Yves Tanguy, Jacque Prévert, André Breton, and Marvel 5FL08
Duchamp made an analogous game, called *Cadavre exquis* 5FL09
'Exquisite Corpse,' in which people made a picture together 5FL10
(Haanzalik & Virgintino, 2019). 5FL11

[6] This quote and the following one are from the same video- 6FL01
recorded interview. After each quote, is the timestamp on that 6FL02
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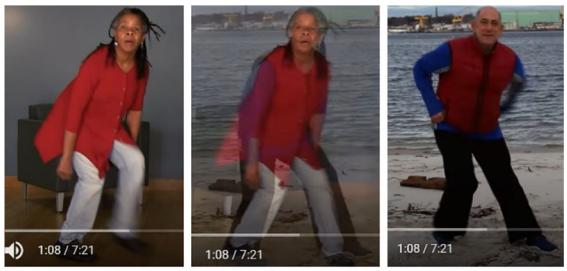

Fig. 1 Transition from first to second dancer

dancer ended with. From that initial point, the choreographer moves into their own creative exploration. A dancer who makes no contact with anything but the ground might be followed by a dancer who immediately uses objects in the environment. In Fig. 2a, we see such a dancer (Kyle Abraham) in the moment before his final movement; in Fig. 2c, we see the next dancer (Andrea Miller) in the moment after her initial movement; in Fig. 2b, we again see one superimposed on the other in a (close to) seamless transition. But I have added also Fig. 2d, in which we see the second dancer making further use of that wall. Indeed, that dancer goes on to make contact with a desk, as well.

Sometimes a choreographer dances entirely on her feet the whole time (as Beth Gill does), and the next dancer (Jonah Bokaer) moves almost immediately to having the torso in contact with the floor, as shown in Fig. 3 (where Fig. 3b is the super-imposed images of both dancers).

Some dancers sing (Joe Goode, Meredith Monk), a dancer chants (Deborah Hay), a dancer swings from parallel bars on a playground (Ann Carlson, Fig. 4a), a dancer eats pizza as she does an arabesque and reads her computer screen (Faye Driscoll, Fig. 4b).

One dancer keels over into a pool (Daniel Ezralow, Fig. 5), where we get to see him underwater, reacting to a very different set of physical stimuli.

The challenge at this point was how to transition from an underwater shape of one dancer to a shape on land of the next dancer. Rose solved this with technology. Figure 6a shows the underwater dancer a moment before transition. Figure 6b captures the superimposed images of the underwater dancer and the next dancer (Brian Brooks). Figure 6c shows that dancer on land a moment after the transition. Rose has chosen to rotate the whole scene 90 degrees clockwise. Then the whole scene gradually rotates counterclockwise until it is upright (Figs. 6d, e).

All of these choreographers are well-established in the field, meaning they have many years of choreographic experience, have been supported and presented around the world, and have a recognizable "style" or aesthetic in their works, even as they shift from one form to the next. Most viewers can simply admire the smooth transitions from one dancer to the next and enjoy how each dancer's part has its own unique quality. But the viewer who is familiar with one or more choreographer can marvel at (and study) their participation in *Exquisite Corps* as wonderful examples of how external and internal stimuli require articulation adjustments which, nevertheless, reflect that choreographer's style.

Language

Language can also play with articulation from external and internal stimuli. Consider the familiar task of creating a poem with a fixed rhyme scheme. In a language like English, which is limited in rhyme options (in comparison to Italian, for example), choosing to write a rhyming poem ups the challenge for the poet (Hollander, 1989). The (external) limitations imposed by the rhyme scheme make the job of delivering the initially decided upon concepts difficult, and might lead to a balancing act between sound and meaning. Many language games, likewise, are based on this balancing act (Horubet, 2009).

Sign languages also play with articulation initiated by external and internal stimuli.[7] A well-known sign

[7] Before examining particular cases, it's important to establish that the examples talked about below are bona fide language. Some traditions in sign literature share with mime a range of ways that humans can use their bodies in conveying action and description. However, as Sutton-Spence and Boyes Braem (2013) show, sign language literature (SLL) differs from mime in multiple ways. SLL often uses conventionalized vocabulary organized according to rules of grammar; mime does not. SLL generally does not use props; instead, the hands represent all objects necessary for telling the narrative; mime, instead, can enjoy rich use of props. SLL can introduce multiple characters onto a scene at once, often using simultaneous articulation to show the various referents and their relationship to each other; mime, instead, presents multiple characters in a successive way. SLL revels in presenting the various ways characters can communicate with each other; mime doesn't generally include linguistic communication such as dialogue. SLL often anthropomorphizes abstract qualities such as confidence and envy;

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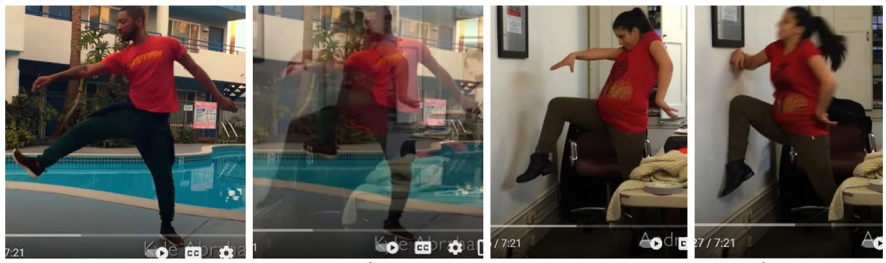

Fig. 2 Transition from dancer who does not make contact with the environment (other than the floor) to one who does

Fig. 3 Transition from dancer who stays on her feet to one who rolls on floor

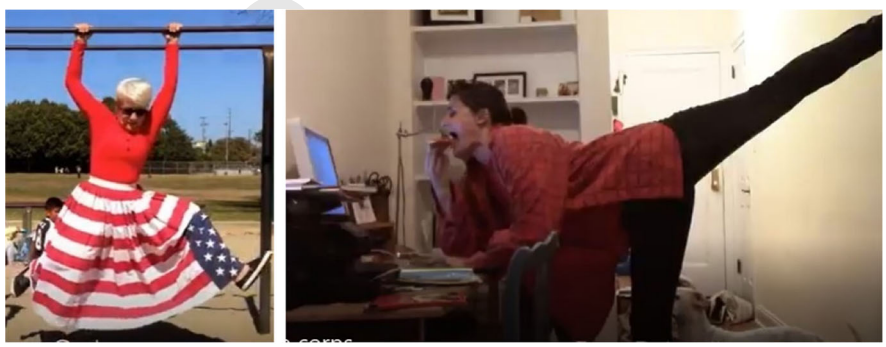

Fig. 4 Examples of variety of articulations

Footnote 7 continued
mime does not. SLL does not call for the signer to get on the floor or dance around; mime often does. The list continues, but the conclusion should be clear: SLL differs from mime in the types of things that are expressed and the ways they are expressed. Please, add to this the fact that sign language literature is recognized by deaf communities as their sign literature. Therefore, below examples are drawn from a well-known tradition and from a much newer type of sign language literature with confidence that we are dealing with sign language phenomena, not with mime.

language literary tradition is that in which the story advances based on externally determined and changing stimuli over time: handshape stories. For example, consider Cody Francisco's (2016) "ABC Story", in which the handshape starts as A, then becomes B, then so on through the manual alphabet. The physical shape of the hand implicitly affects the range of concepts that can be expressed at any given time. For this reason,

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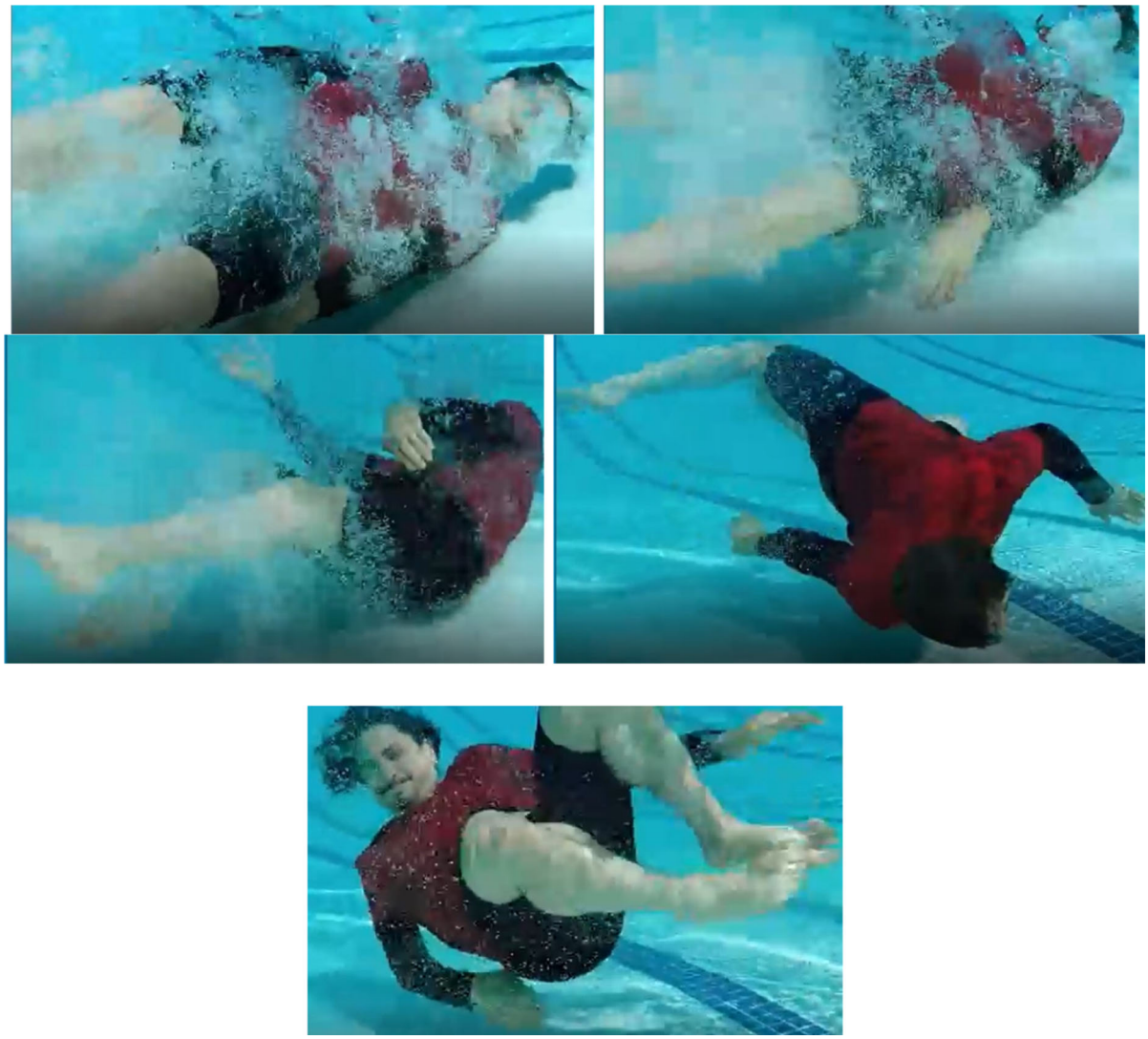

Fig. 5 Dance underwater

sometimes when deaf people socialize, handshape stories are performed as linguistic games or challenges. Other handshape stories are built on a sequence of numbers, such as Clayton Valli's (1995) "The Bridge", in which the handshapes go from the manual numbers 1 to 5. Still others use a single handshape throughout the story, such as Terrylene Sacchetti's (2013) "1-Handshape". And some use handshapes that spell out a word in the ambient spoken language, such as Debbie Rennie's (1990) famous "Veal Boycott", which spells out C-A-L-F repeatedly. Many memorable narratives for children use handshape stories, such as the recent ones in Brazil known as *Literatura didática em Libras* (UFSC, 2021).

The group-produced poetry known as renga, originating in Japan (Horton, 1993) offers another, more recent, example of playing with varying stimuli. Renga has been appropriated (and re-tooled) by some sign language communities (Mesch & Kaneko, 2017; Morgan et al., 2020) in a variety of ways.[8] Generally, one person signs, then the next person, then the next, making a complete poem. Sometimes each signer

[8] It has also been appropriated by other spoken languages, including English. For directions and examples, see Brewer (2020).

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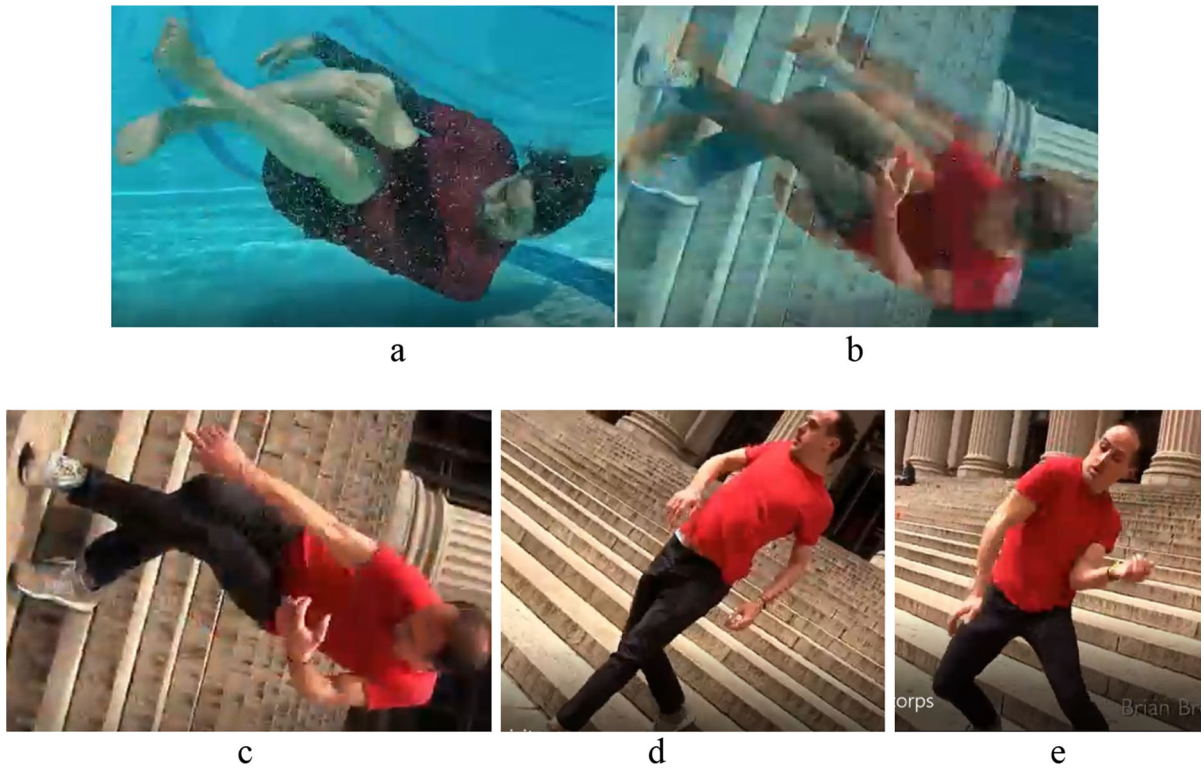

Fig. 6 Transition from underwater dance to dance on land

might be limited to a single movement and sometimes signers can make as many movements (and take as much time) as they like. Sometimes the signing will begin at one end of a line of poets, travel to the other end, then go back across the line in reverse, perhaps multiple times (as in British Sign Language "Countries", Civin et al., 2011). Sometimes the order of who signs is flexible, so that one signer might go out of turn in order to respond to what someone else has just signed (as in Swedish Sign Language "Love"; Urbos et al., 2010). Sometimes each signer will end their turn by simply turning to the next signer and directing their signing toward that person (as in Irish Sign Language "Spot my Addiction"; McCaffrey et al., 2010). Sometimes as the turn passes from one signer to the next, both poets will articulate the same sign simultaneously and repeatedly (as in BSL "World 2", Rentelis et al, 2011). Sometimes each signer will end their turn by "throwing" a sign to the next signer, who "catches" it (as in Irish Sign Language "Fruit", Dunne et al., 2010). Usually, the poets waiting their turn pay attention to the active poet, behaving somewhat like a chorus to a soloist, but sometimes those waiting their turn can articulate their own information, and sometimes all the poets can (at least briefly) be signing at once (as in South African Sign Language "TROUSERS 2, DRESS 1", Meletse et al., 2020). In other words, the rules of the form vary, allowing signers significant creative control.

The renga form of most interest to us here is one in which each poet is restricted to beginning their turn by building off the phonological parameters of the last sign of the preceding poet. That is, the final location, handshape, and orientation of one person's sign becomes the location, handshape, and orientation of the beginning of the next person's sign. So, each signer's first articulation is a response to an external stimulus (the handshape, location, and orientation of the preceding sign—which was articulated by the preceding signer). Here, the very joy in creating the poem comes from rising to the challenge of making a coherent whole under changing input, both articulatory and conceptual. Only the first signer has the potential to begin their turn with a sign that has a stimulus internal to their own body; the others must begin their turn with the articulation that is given to

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them and then try to work with that to express whatever they think fits smoothly at that point in the poem. This restriction on renga is similar to the restriction we saw on the dance *Exquisite Corps*. However, with renga, the poets are in the same locale typically standing in a line. They do not know ahead of time what the poet before them will do. And, generally, they are not professional poets; often this is their first time creating a poem.

Let's take a close look at the British Sign Language renga "World 1" (Loubser et al., 2011). The first signer, Signer 1, tells how the day is full of passing people and of driving from one place to another. Then he signs FALL-ASLEEP (Fig. 7a), leaning toward his right. He steps back into place and Signer 2, who is to the first signer's right, signs FALL-ASLEEP (Fig. 7b).

Then Signer 2 tells how he dreams and then wakes up and realizes it's late. He throws the covers aside to get out of bed (Fig. 8a, b), using his left hand in a fist shape (the S-handshape). Then we go back to Signer 1. Returning to Signer 1 is already a deviation from the (loose) rules, but that's simply how these signers did it. Signer 1 now repeats the final articulation of Signer 2—a hand in a fist shape going from the right side of the body to the left (Fig. 8c, d), although he is using his right hand. That motion has now been reinterpreted to mean that the signer is grabbing his laptop. He then proceeds to open his laptop and start typing.

Signer 1 checks his phone and finds out something stressful—perhaps how late it is. He closes his laptop, lies back down, pulls up the covers (Fig. 9a), and falls asleep, with his hands falling into a crossed position as his head falls toward the next signer, to his left (Fig. 9b). Signer 3 begins not with her head and hands fallen, but instead with her hands pulling up the covers (Fig. 9c) and then with her head falling to the side

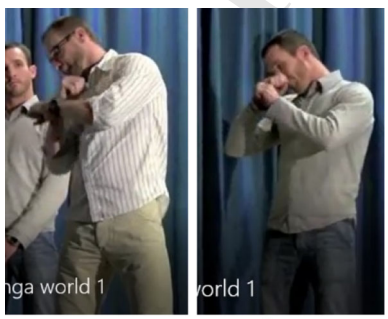

Fig. 7 Transition from Signer 1 to Signer 2

toward the next signer, again to her left (Fig. 9d). Notice that Signer 3 does not let her hands fall into a crossed position. So, she has repeated the final two (rather than one) movement of the previous signer, and with a slight adjustment to the second one. Strictly speaking, she has not followed the rules. This sort of loose interpretation of the rules in renga is rampant, as one expects in a totally spontaneous performance by amateurs.

Signer 3 sleeps, and the alarm clock shakes beside her. She turns it off. Twice. Then she throws the covers aside, to get up, moving her right hand in a fist from left to right, and looking toward Signer 4 (to her left)—so she has picked up the transition that we saw in Fig. 8, rather than creating her own new final articulation. This articulation is repeated again as Signer 4 passes the poem on to Signer 5. But then Signer 5 ends his part with falling asleep, with his hands clutching a pulled-up cover, like in Fig. 9 a and c. Signer 6 starts with the pose of being asleep – the state that Signer 5 ended in, but her hands are not clutching a pulled-up cover, instead they are folded by her cheek (in Fig. 10).

But at the end of Signer 6's turn, she returns to the movement of a fist going from one side to the other of the signer, which Signer 7 then picks up to start his turn. Signer 7 is the last in the line, and he passes his turn off to the original Signer 2 (way at the other end of the line), and we go through the line again. Each signer is talking about what happens in their day that makes them go to bed or get out of bed. All the transitions are now either what we saw in Fig. 8 or what we saw in Fig. 9, until we arrive at the transition between Signer 5 and Signer 6 the second time around. Here, Signer 5 ends his turn with one finger held up in front of him, but Signer 6 instead starts with the motion shown in Fig. 8 immediately followed by the motion shown in Fig. 9, as though to re-establish those two motions as central to the poem. But she then ends her turn with one finger going off in front of her, recalling the way Signer 5 had ended his turn. Signer 7 hesitates a moment and then does a new starting articulation; he has someone tapping his shoulder to wake him up, recalling a motion we saw in Signer 3's first turn, that of an alarm clock shaking by her shoulder. He ends his turn with pulling on his trousers to start his day. Thus, the signers have a clear tendency to impose regularity at the transitions. Nevertheless, they don't always succeed and even when an articulation is repeated, the

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Fig. 8 Transition from Signer 2 back to Signer 1

Fig. 9 Transition from Signer 1 to Signer 3

Fig. 10 Starting point for Signer 6

sense of it is new. Regardless of whether signers use a novel ending point or not to their turn, the next signer doesn't know what they will do until they do it; there is constant interaction between physical form and ideas about story development as stimulus for articulation. And this constant interaction is the basis for the joy in gathering together to perform renga.

Discussion in lieu of conclusion

Within an embodied cognitive science framework, no categorical differences have been revealed between dance and language with respect to types of possible stimuli for initiation of articulation in this study. In fact, dance and language games and challenges (including *Exquisite Corps* and renga) suggest that dancers and language users are aware of and revel in exploring the same sorts of initiation possibilities in both activities.

Nevertheless, we should not lightly set aside the Dois Pontos claim. They are a highly trained, professional troupe; I take their claim as not (simple) opinion, but justified belief founded on experience. Perhaps an embodied cognitive science framework is not the most perspicacious for investigating their claim. We might therefore explore whether other possible differences between the activities of dance and language are relevant to initiation and pertinent to the Dois Pontos claim. The major one that occurs to me is purpose: why does one initiate/engage in these activities?

The most commonly recognized purposes of language, at least among mature language users (not infants), is to facilitate communication of many kinds of information (for an old but abiding overview, see Lyons, 1981), including identity (Baker-Bell, 2020; Edwards, 2009; Langston & Peti-Stantić, 2014). That is, language always has purposes beyond the act of engaging in it; we do not talk simply to talk (even when we talk to ourselves).

Commonly recognized purposes for choreographed and improvisational dance include expression of emotions, beliefs, and attitudes (personal, social,

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political) and instantiations of ritual or cultural preservation (Kassing, 2007), as well as expressing solidarity and experiencing a sense of belonging (Bloomberg, 2020; Fox5, 2020). These purposes are similar to those of language: they are communicative or expressive in nature. Dance can also occur for more individually-oriented reasons, such as physical release or as part of a healthy lifestyle (Mattsson & Lundvall, 2015), as experiential pleasure and sensory exploration (Olsen, 2014), and as a way of finding integration and wholeness in the self (as stated by Anna Halprin, in Wittmann et al., 2015, p. 7). So, dance often has purposes beyond the act of engaging in it.

But can dance occur without such purposes? That is, can we dance simply to dance? If we could, such dance might "feel like" it initiated "in the body" "with a movement", in contrast to language.

Please note, this question is distinct from those of the art for art's sake movement (and see Bell-Villada, 1986) and from the movement for movement's sake concept introduced by Merce Cunningham (Vaughan, 1979, among many), the former of which deals with questioning the nature of art and the latter of which is based on exploring what is possible and stretching the limitations of dance. Instead, I am asking if dance can occur without cerebral or political or exploratory involvement. Can dance be unencumbered in this way?

Many activities (even daily work activities; Ceja & Navarro, 2012) allow a state in which everything clicks, often called flow. Might that notion be pertinent here? I think not. Flow includes various attitudes toward the activity: enjoyment, awareness, unselfconsciousness. But it also includes "a careful monitoring of feedback in relation to one's goals" (Rathunde & Csikszentmihalyi, 2006, p. 479). Flow is about people doing their "personal bests" (Ceja & Navarro, 2012, p. 1103). During highly skilled performance, elite athletes report a state of presence in the situation with heightened awareness (Breivik, 2013)—they are "in the zone". Dancers, among others, may experience flow as a "psychological state in which the mind and body 'just click', creating optimal performance" (Hefferon & Ollis, 2006, p. 141). The literature on flow is filled with debate (e.g., Dreyfus, 2002; Moe, 2004; Breivik, 2007; for a brief overview see Purser, 2018, p. 38), yet it seems to agree that a sense of rising to a challenge is critical. This sense of flow, then, involves setting goals, meeting challenges, judging one's performance. This is not what I intend by unencumbered dance.

Many activities can be seen as a type of meditation (including dance; see Fraleigh, 2015). Might meditation be the relevant notion here? I think not. There are various interpretations of what meditation entails and a variety of meditation practices. Two techniques common to many practices are focusing attention (FA) and open monitoring (OM – aka 'mindfulness' or 'being in the moment'), which share the features of calming the mind and reducing distractions (Lutz et al., 2008). FA within Buddhist practice involves sustaining attention on a chosen object (often one's breathing). When the mind wanders from that object, one is to consciously bring it back, dispelling distractions. OM aims for awareness of where one's attention goes moment by moment, without directing one's focus to any particular object and with the goal of richly experiencing each moment. That is, FA is voluntary focusing and sustainment of attention on an object while OM is moment by moment non-reactively monitoring, via acute awareness, the whole of one's experience. Some people develop their meditation practice by moving from FA, which requires effort in selection and deselection, to OM, which is effortless awareness without selection. Again, none of this is what I intend by unencumbered dance.

Some activities are ways to simply pass the time or things we can do while we are thinking of something else, as though our articulation is 'on auto-pilot', such as gardening or doodling (but note that engaging in such auto-pilot activities can actually help us process the other information—see Andrade, 2017). Might those notions help us here? It seems not. Purser (2018) conducted in-depth qualitative interviews with professional contemporary dancers to explore how they think about their own embodied practice. She concludes that dancers experience both a transcendence (future-oriented) and immanence (in the present) as they perform—what she calls 'inhabited transcendence,' and she suggests that this state may be common to elite athletes, as well. Critical to her position is the recurring expression of awareness among the dancers she interviewed of a state of "being in your body". As her dancer Louisa says, "You have to get to a point where you, you're in your own body and you're, you're not doing shapes, you're finding out where it comes from" (Purser, 2018, p. 46).

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My dance and linguistics backgrounds have carried me as far as I can go. A proper interpretation of the Dois Pontos claim eludes me. Thus, in a somewhat renga way, I pass the baton to my dear readers.

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