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Alive communication

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Abstract

The purpose of this paper is to propose a theoretical model, based on a dynamic systems perspective and the metaphor of aliveness in communication. Traditional concepts and methods for the study of communication are relatively static and based on the metaphor of signal and response. These traditional methods lend themselves to relatively simplified measures of frequencies and durations, sequences and co-occurrences: a model of objectified communication. The concept of **alive communication** focuses on the dynamically changing aspects of communication using three related components: coregulation, ordinary variability, and innovation. Like living organisms, alive communication develops over time as it forms dynamically stable patterns. Aliveness can be applied to communication at any age, in any species, between species, in any form including time-delayed practices using written symbols, and with non-living objects. The model provides a tool for evaluating the "life-likeness" of communication with animate and inanimate objects and robotic devices, and for assessing and treating communicative difficulties – in which aliveness is missing – within and between dyads/families.

Keywords: Communication; Co-regulation; Innovation; Creativity; Aliveness; Developmental change

Traditional concepts and methods for the study of communication are relatively static and based on the metaphor of signal and response. These concepts lend themselves to relatively easy coding and data analysis because all instances of a particular action, say a smile or an offering gesture, are treated as "the same" across instances. The concept of **alive communication** focuses on the dynamically changing aspects of communication. From the perspective of aliveness, no two instances of a facial expression or gesture are completely alike. Each time a person smiles spontaneously or with sincerity, it is in some sense "new" and "alive." Expressions and gestures that do not change in this way across repeated instances are typically signs of intra- or inter-individual dysfunction or pathology. In these cases, the self or the other is viewed as an object, not a fully alive person.

Based on a dynamic systems perspective, this paper offers concepts and methods for researchers to utilize a metaphor of aliveness in communication as an adjunct to the existing concepts and methods based in the signal and response metaphor. The theoretical model of aliveness in communication proposed in this paper is composed of three linked processes: co-regulation, ordinary variability, and innovation. **Co-regulation** refers to a form of coordinated action between participants that involves a continuous mutual adjustment of actions and intentions. During co-regulation, the communication system acts as a single entity such that action cannot be parsed into "individual" and discrete

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contributions. **Ordinary variability** in communication refers to a steady pulse of subtle but noticeable changes in expression, movement, posture, and intonation that are always shifting but within the bounds of mutually consensual activities called "frames." **Innovation** refers to the emergence of variability that exceeds what is "ordinary," creating the possibility for the communication system to undergo developmental change. **Alive communication** is thus a dynamically changing form of coordinated co-action in an ongoing relationship, or the presumption of the possibility of an ongoing relationship, that has a history and a future and that may change developmentally.

In the next section of this paper, the three linked processes of aliveness and their theoretical bases will be discussed in more detail. A final section discusses the implications of this model for evaluating different types of communication.

1. Co-regulation, ordinary variability, and innovation

1.1. Co-regulation

Traditional models of communication make the assumption that information – say ideas, intentions, or emotion – is "contained in" each individual and transmitted between senders and receivers in a signal-response fashion (Shannon, 1963; Smith, 1977; von Neumann, 1958). A mother, from this point of view, "wants" her baby to smile at her so she initiates communicative actions that are likely to "elicit" smiling, to which the baby may or may not smile "in response," thus communicating some emotional information back to the mother. In this case, the total amount of information is the sum of the discrete states, the mother's intention, the mother's actions guided by her intention, and the infant's pleasure in response.

The **continuous process** model of communication (Fogel, 1993), in contrast, suggests that *communication produces a net gain of information* in the system; that information is created and **emergent** from the communication process. According to Hinde (1985) with regard to animal postures of aggression,

> "Such signals are thus to be seen as involving negotiation with the rival as well as an expression of internal state. The term negotiation does not necessarily imply manipulation but emphasizes the continuous interaction between the two individuals involved" (Hinde, 1985, p. 111).

One individual may have a "possible intention" or a "tentative feeling" that becomes elaborated during co-activity, i.e., it emerges during the very act of being engaged in communication. A physical assault may or may not result from potentially hostile communicative encounters as it depends upon a process of escalation or de-escalation of aggression involving subtle and simultaneously shifting expressions of each partner "sizing up" the other continuously. Likewise, infant smiling is not merely a response to the mother's prior act of smiling, but the intersubjective experience of co-regulated participation in an episode of positive emotional communication (Trevarthen & Aitken, 2001; Tronick, 1998).

A continuous process model follows from a dynamic systems perspective. It rejects ideas of information storage and representation within the individual since these notions imply a series of retrieval steps that deprive the action system of spontaneity (Fogel, 1993; Kelso, 2000; Thelen & Smith, 1994). Rather than such top-down models of action control, dynamic systems perspectives propose that there are self-organizing patterns of co-activity in the communication system, called attractors, distributed across individuals. These attractors, though patterned, are nevertheless fluid, dynamic and leave room for emergence of novelty through co-regulation processes. Through self-organization, all the components of a system are mutually affecting each other in such a way that they temporarily lose their "individual" identities, thereby forming cooperative units, or coordinative structures, that have unique properties that transcend the individual components.

Social play, clearly a co-creative form of communication, shows both self-organization and spontaneous co-regulation that goes beyond the information contained in pre-existing representations within the individual. The "rules" of a formal game such as peek-a-boo or pat-a-cake do not fully specify the dynamics of the actual play, which emerges slightly differently each time it is played, and even in each different turn of the same instances of the game (see Fig. 1; Fogel, Nwokah, & Karns, 1992; Fogel, Hsu, Shapiro, Nelson-Goens, & Secrist, 2006). This alive theme and variation format of social games is captured by Stern's (1985) concept of "vitality affects."

Co-regulated communication occurs when co-action is coordinated (both sequential and co-occurring), when partners are open to mutual influence, and when the resulting process creates new information, information that was not entirely available to the participants prior to this instance of their joint engagement (Fogel, 1993). Co-regulation appears to be related to the personal experience of "resonance," or "dyadic states of consciousness," or "moments of

Fig. 1. *Co-regulation*. This sequence of images, taken from a tickle episode between a mother and her infant, shows how both partners are moving at the same time in close relationship to each other. Their movements are neither identical nor imitative. They are each continuously adjusting to the other on a second-by-second basis so that neither is leading or following. The enjoyment of tickling is a dyadic achievement, emergent from this rich, dynamic process.

meeting," a sense of connecting or "being with the other" that have both behavioral and neurophysiological signatures (Beebe & Lachmann, 2002; Schore, 2001; Siegel, 2001; Stern, 1998; Tronick, 1998).

Fig. 1 shows an example of co-regulation during a typical tickling sequence of one mother and her year-old infant. In this example, the mother initiates the tickle but almost immediately both the mother and the infant's movements flow continuously in relation to one another so that neither one appears to be the initiator or follower. The actions of their whole bodies – arms, face, posture, voice – are in continuous motion, in continuous mutual adjustment to create a coordinated joint activity (the tickle) that emerges from this dynamic co-regulated interplay.

2. Ordinary variability

Research on communication over the past 60 years has shown that communicative actions tend to coalesce, via co-regulation, into regularly recurring patterns. Following some of the pioneers who first examined communication via film records, the term **frame** was coined to refer to these recurring "context-specifying" patterns of co-action (Bateson, 1955; Goffman, 1974; Kendon, 1985). Bateson, for example, described the pattern of rough-and-tumble play between juveniles as a consensual agreement that "this is play," rather than a fight. Kendon (1985) discussed frames as segments of co-action that have a coherent theme (shared or non-shared, e.g., "this is play"), that take place within a particular location (in space or in time), and that involve particular forms of mutual co-orientation between participants.

Although recognizable as familiar by the participants, and even reliably coded by independent observers, each time a frame recurs it is not lived exactly the same as in previous occurrences. This is because there is an inherent variability in recurring instances of a particular frame (Fogel, Garvey, Hsu, & West-Stroming, 2006). Each time a frame is re-lived in a relationship, small variations in attention, location, and co-orientation create a sense of ongoing novelty within sameness, a pattern of theme-and-variation (Baxter, 1994; Fogel, 1993; Stern, 1985). Variability within a broader pattern of stability is the hallmark of dynamic systems, indeed of all living (alive) systems (Capra, 1996; Darwin, 1859; Thelen & Smith, 1994).

This continual change within ongoing stability has been found to characterize many forms of interindividual communication, contributing to the feeling of aliveness. We call this **ordinary variability** or **level 1 change** (Fogel et al., 2006a,b). Consider a pair of friends who have a frame for meeting regularly for lunch. Level 1 change is observed as they do not always eat in the same restaurant, nor do they always meet on the same day of the week. They may also talk about similar themes – sub-frames – such as work or relationships although the conversations are never exactly the same. For this couple, this variability is ordinary, yet sufficiently interesting to keep the sense of aliveness in the frame on each recurring lunch session. It is this sense of aliveness that continues to draw them together on a regular basis.

Fig. 2 shows level 1 change from a study of mother–infant communication using toy objects. The infant is 3 months-old. The objects themselves become animated and alive as the mother continually moves the toys – rattling, shaking, spinning, noise-making, etc. – and changes from one toy to another while the infant maintains her interest to these

Fig. 2. *Ordinary variability*. In these images, the mother demonstrates different toys as the infant watches. Note that although the toys change and the actions on the toys are somewhat different, the postural orientation and basic pattern of demonstrate-look remains the same. These and other similar actions constitute the ordinary variability that maintains the dynamic stability of this communication frame.

live motions. Through these co-regulated activities, mother and infant maintain the aliveness of their relationship with objects (Fogel et al., 2006a,b).

2.1. Innovation

Research on alive interindividual communication suggests that it is also characterized by at least two other types of change besides level 1 ordinary variability: innovation and developmental changes. **Innovations** are novel actions appearing for the first time within the history of a particular type of frame. These novel actions are lived in the relationship as a "difference that makes a difference" (Fogel et al., 2006a). This is yet another source of aliveness in the communication system.

The concept of innovation only makes sense from the perspective of an awareness of the history of any particular ongoing relationship. This perception of novelty from within the communication system rests on the participants' and/or researcher's sense of the meaning or significance of communicative actions for the relationship (Bruner, 1990; Fivush, 1994; Holt, Fogel, & Wood, 1998; Lyra, 1998; Sarbin, 1986). Difficult to define, but easily perceived within an ongoing relationship, we found that coders could reliably identify innovations and distinguish them from ordinary variability so long as they could observe a series of videotaped sessions from the same mother–infant relationship (i.e., distinguish innovations from ordinary variability in the patterns communication) (Fogel et al., 2006a,b). Where desired or feasible, researchers can use participant's own perception of change and innovation.

Research on innovations requires a microgenetic research design (Siegler & Crowley, 1991). The time interval between sessions needs to be such that most or all of the opportunities of the dyad to re-create the frame are available to observers. In our data, we had 12 weekly observations in the lab, with the same toys, beginning when the infants were around 3 months of age. Innovations become most visible when observed against the background of ordinary variability (Fogel et al., 2006a,b).

Like ordinary variability, innovations are also changes, but they appear to observers and/or participants as meaningfully different types of change, as types of change that introduce "perturbations" within the communication system, and are thus named **level 2** change. For the pair of friends with a regular lunch frame, innovations could take many forms. They may decide to meet for dinner, instead of lunch, or to take a walk after lunch: all new components in their familiar, ordinary communicative routine. These changes must be perceived as substantially different from what they shared before in order to count as an innovation.

Fig. 3 shows one example of a level 2 change in our mother–infant–object communication study. During a period of demonstrating different objects to the infants (ordinary variability), the infant reaches toward one object and the mother offers it (innovation). The infant, however, did not hold onto the toy and the mother immediately resumed the ordinary variability (level 1 change) of demonstrating objects. We found that when an innovation first appeared, it did not immediately alter the ordinary variability of the frame. Over time, however, some innovations (level 2 changes) were mutually ratified by the dyadic partners and became the new form of ordinary variability, changing and maintaining aliveness in their communication.

The third type of change, **level 3 developmental change** (Fogel et al., 2006a,b), that contributes to the experience of aliveness involves the changes in all the frames in a communication system, including some or all of the following: appearance of new frames, disappearance of old frames, or a blending together of frames that were previously separate

Fig. 3. *Innovations*. A novel series of actions appear against the background of ordinary variability for the same mother–infant dyad as shown in Fig. 2. The infant reaches for the toy and the mother offers. This is very brief, however, and the dyad returns to the "same" ordinary variability of demonstrate-look. Innovations rarely change the frame when they first appear, but only later, after they are ratified by the dyad.

(Fogel et al., 2006a,b). The friend's innovative invitation of dinner together may lead to sharing more dinners and evenings together and perhaps an increase in intimacy and romantic involvement. This relationship, which at first was a separate frame from others in each person's life, may now become blended to include other people and activities that were previously separate. The perception that these former friends are now a "couple" can be understood as an emergent developmental change in the system of newly re-organized frames. This blending of frames can create what has been called "dyadic states of consciousness" which emerge over time in relationships (Tronick, 1998). In our research, we found systematic re-organization of frames, level 3 developmental change, as the mother–infant relationship shifted from frames involving maternal demonstration of objects to frames involving the infant's more self-directed encounters with objects supported by the mother (Fogel et al., 2006a,b).

2.2. *What does the concept of alive communication offer for theory and research?*

To summarize the argument thus far, alive communication emerges through and is distinguished by the experiences of co-regulation, ordinary variability and innovation (leading to developmental change). The continuous process model, based on a dynamic systems perspective, provides a way to understand and analyze these features of communication. In this section, we offer suggestions about how the model of alive communication may contribute to particular domains of research and applied/clinical work.

2.2.1. *What is the basis of the infant's ability to perceive the distinction between people and objects?*

The person-object distinction has a long history, reviewed in detail by Legerstee (2005). It is clear that infants use some type of assessment of the dynamics of their encounters with the world and that by the end of the first year they attribute intention and emotion to other people and not typically to objects. The model of communication presented in this paper suggests that participants in alive communication perceive the partner as alive and "like me" (an alternative way to say that the infant attributes intention and emotion to the partner). Alive communication, however, may occur with non-living objects. The key to understanding this proposition is that aliveness is a property of the communication system and not of the individual. Aliveness refers to patterns of co-activity and their variability: it is enactive and embodied, and not only a conceptual representation of the categorical difference between person and object.

The natural world, for example, is highly variable yet maintains patterns such as seasonal cycles. Individuals can co-regulate with these natural cycles of change and stability in nature, discovering by innovation different ways of relating to that world. Adults frequently act in animistic ways (Why does it have to rain on the day I am planning a picnic?), as if they share a personal and alive relationship with the natural world. In addition, discoveries in dynamic systems approaches to ecosystems (Capra, 1996) suggest that the earth as a whole is an alive planet – a biosphere – with particular patterns of behavior and with a clearly observable developmental change process.

Ancient belief systems (so-called animistic world views) are increasingly being seen as consistent with the science of ecology showing an inherent interdependency between all things (Bütz, Duran, & Tong, 1995; Campbell, 1991). One can make the argument that if we continue to view nature as a "thing," not alive but an object that we can use, abuse and discard, undesirable innovations in nature's cycles such global warming will emerge. These innovations may eventually contribute to other undesirable level 3 developmental changes in the biosphere (e.g., climate change or mass extinctions).

2.2.2. A new criterion: alive versus objectified

People, therefore, have the ability to treat both living and non-living objects as if they were engaged in an alive communication with them. The philosopher Buber (1958) compared "I-thou" relationships (those that have the three features described in this paper) with "I-it" relationships (those in which the "other" is treated as an object). Using this distinction, we can understand the potential for aliveness and developmental change in children's relationships with "inanimate objects" such as dolls and imaginary playmates, or a physical scientist's life-long relationship with some specific attribute of the natural world. Conversely, we can begin to understand how some interpersonal relationships stagnate or result in abuse and neglect, when the "other" is seen as an object or less than alive. The distinction between alive and objectified does not necessarily parse into the categories of person and object or animate and inanimate.

According to Levinas (1969), I-it relationships are "totalizing." There is the assumption that the "other" can be reduced to a set of known features and therefore fully (totally) known, in short, objectified. Levinas called I-thou relationships "infinitizing," meaning that one can never know the other completely, that there is always something more to say, in other words, that the possibility for variability and innovation is implicit in every single communicative act. Robots that emulate the three linked features of aliveness discussed here, for example, are the most likely to be perceived by children and adults as having intentions and emotions, as "alive" and worthy of a commitment to form long-term relationships.

In the case of interindividual communication that has become pathologically objectified or less-than-alive, interventions can focus on bringing the communication system back to life. The earliest forms of family therapy implicitly support the model of alive communication with their use of techniques such as re-framing and paradox (Watzlawick, Weakland, & Fisch, 1974) in order to jump start, or bring back-to-life, stagnant patterns. The idea is to introduce innovations (level 2 change) in a supportive therapeutic context such that the system may begin to re-create its own intrinsic momentum of ordinary variability, innovation, and, eventually developmental change toward aliveness.

Recent research in infant mental health, for example, shows that when parents-at-risk begin to appreciate their infant's intentions and emotions, the communication system will spontaneously come alive and little more needs to be done in treatment (Tronick, 1998). Similarly, when parents-at-risk are shown videotapes of themselves interacting with their infants and allowed to observe how their infants turn away and avoid them in the context of non-judgmental suggestions for change (level 2 change-innovation), parents can be back on track to establishing alive communication with their infants relatively quickly (level 3 developmental change) (Beebe, 2003; Downing, 2004).

2.2.3. Is the concept of aliveness amenable to scientific study?

A term like "aliveness" may not seem the most likely to spur scientific investigation into the different patterns of communication mentioned in this paper: between alive and objectified communication, and between alive and stagnant or rigid communication. Behavioral scientists seem committed, by world-view and by training, to think in terms of discrete units and modules. The very core of aliveness is something that is never completely at rest, never fully defined, never satisfactorily contained within categories. Even though our studies of communication using a dynamic systems orientation (Fogel et al., 2006a,b) have revealed features of aliveness that can be defined, observed and coded, the term "aliveness" runs the risk of being perceived as too untamed, too soft, and too fuzzy to survive within the current paradigmatic frame of developmental science.

We have explored ways to avoid using the term "aliveness" in our work. Yet the terms co-regulation, variability, and innovation – while specific and operational – still do not sum to aliveness. We need this concept, if only as a guiding metaphor, to frame the deeper human meaning of the infinite possibilities hidden within our everyday communicative encounters. Discrete, bounded, objectified, totalizing entities may feel scientifically safe and predictable. Such entities, unfortunately, also diminish, control, reduce, and contain. They leave no room for spontaneity, growth, and transformation. It is possible to "tack on" a concept of change to objectified entities by showing increases and decreases in their quantities. But a scientific understanding of development requires the recognition of the inherent alive dynamics of everyday life, the ordinary variability from whence all other change emerges.

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