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## Care - Making the Affective Leap: More Than a Concerned Interest in a Learner's Cognitive Abilities

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**Abstract.** This commentary addresses the issues of 'care' in intelligent learning systems more precisely, elaborating and extending the definition to include recent research from neuroscience and education on the affective aspects of learning. It reflects on the association of profound empathy with care and in what ways the systems described in this issue illustrate features of profound empathy. It concludes that though they all include some features of profound empathy they all lack an elaborate definition of 'care' which means their ability to reproduce it is limited and they tend to focus more heavily on the cognitive rather than the affective nature of care. However it concludes that there are exciting opportunities ahead in the field if we consider the affective nature of learning and care more seriously.

### INTRODUCTION

Although John Self regards care as a serious factor in the design of intelligent tutoring systems in the paper to which this issue is dedicated, he chose not to explore the concept of 'care' in any depth apart from arguing that such systems adapt to learners needs and 'care about what the students knows, misunderstands, wants to do etc' p352 (Self,1999). This brief commentary will argue that John Self's emphasis on care is even more fundamental to learning than perhaps even he acknowledges, though through working with John I suspect 'care' is intuitive to his way of thinking. It will also argue that the nature of care is more complex than having a concerned interest in some aspect of a student's cognitive understanding, though that indeed is a vital part of care. John urges precision in his original article and if we are to bask in the glow of the term 'care' as he suggests and harness its emotional and moral power in our research then we need to begin to define it more precisely and elaborately. This might help us to understand to what extent our systems do really 'care' and give pointers to ways in which we might improve them. Though the articles in this special issue show many 'caring' features, none of them define the term except with reference to John Self's article. In order then to develop increasingly understanding systems, which take into account learning contexts perhaps we can begin to elaborate our definition of care.

### CARE, INTERACTION AND LEARNING

Noddings (1986) describes caring thus:

*Caring is largely reactive and responsive. Perhaps it is even better characterised by receptive. The one-caring is sufficiently engrossed in the other to listen to him and to take pleasure or pain in what he recounts. Whatever she does for the cared-for is embedded in a relationship that reveals itself as engrossment and an attitude that warms and comforts the cared for ( p19).*

*Caring involves stepping out of one's own personal frame of reference and into the other's. When we care we consider the other's point of view, his objective needs and what he expects of us. Our attention, our mental engrossment is on the cared -for, not on ourselves. Our reasons for acting, then, have to do with the other's wants and desires and with the objective elements of his problematic situation (p.24).*

Genuine care therefore is an engrossing developmental process, which encompasses affect as well as cognition. From Noddings (1986) we gain this idea of care as empathy, as 'receptivity', to be open to someone's feelings and feel 'with' someone, to share a feeling and an understanding. From Murdoch (1970) we gain the concept of 'loving attention'. Vygotsky reminds us of the importance of the united nature of affect and cognition and of the inadequacy of a merely cognitive approach:

*When we approach the problem of the interrelation between thought and language and other aspects of mind, the first question that arises is that of intellect and affect. Their separation as subjects of study is a major weakness of traditional psychology, since it makes the thought process appear as an autonomous flow of 'thoughts thinking themselves' segregated from the fullness of life, from personal needs and interests, the inclinations and impulses of the thinker. (E)very idea contains a transmuted affective attitude toward the bit of reality to which it refers. (Vygotsky, 1986 p 10).*

My thesis argues that an attitude of care in teaching and learning emerges through profound empathy in one to one empathic relationships (Cooper, 2002). Showing that you care profoundly provides precisely the right climate in which students learn most effectively. The learner's achievements consist of both personal and academic development and are continually inter-linked. The degree of empathy shown by the tutor or system can also affect the degree of empathy shown by the student and the student's ability to share with and learn from others. The constraints of the context also appear to be powerful factors in the ability of the tutor to employ their empathy to best effects and meet the needs of their students (Cooper, 2002).

Best argues that emotions have been largely neglected in British mainstream education (Best, 1998) and the increasingly mechanistic approach to teaching and the prescribed and extensive nature of the curriculum in recent years have not helped. However it is surprising that rich holistic findings of previous international psychological research into learning (Rogers 1975; Purkey 1972; Aspy, 1972) and also recent developments in neuroscience about the significance of affect (Damasio,1994; 1999; Goleman, 1996) are often ignored when we consider some aspects of computer based learning at an international level. Vygotsky's warning about the separation of affect and cognition are seen clearly in the field. Our user models nearly always address cognition and though our agents increasingly address affective issues we seem to mainly separate the two, almost as if affect is quite separate and too ephemeral for some research to contemplate. The findings from neuroscience reaffirm the emphasis placed on affect by the older psychological literature and suggest strongly that all learning is affective in nature (Damasio, 1994).

In combination these two fields of research help us to understand how empathy works and how the emotional engagement of intense multi-sensory interaction allows us to envisage and process our environment more intensively and gain alternative perspectives. Emotions seem to be central to decision making and also to learning and memory. Though the complex systems described in this issue succeed in creating more understanding models and touch here and there on the role of affect and the significance of care in teaching and learning they do not take either seriously in a theoretical sense.

Damasio (1999) explains the importance of high levels of engagement in learning, emphasising the role of the human's own sense of body and self in relation to the world he or she perceives and learns about.

He explains how the intensity of focus and engagement created by multi-sensory interaction engages the mind deeply and each interaction reinforces the person's sense of self, because the image of self in the brain has to be recreated at each interaction. Such intense engagement stimulates the whole brain and body because the memory of the interaction is mapped both in the brain at an emotional level but also throughout the body and is remembered as a feeling. Hence all interaction and the learning associated with it is affective in nature.

Provided interaction is mainly of a positive nature the brain will remain curious and open to the environment. A continuing, positive sense of self will produce a constant positive feeling throughout the body, which leads to greater openness and willingness to engage in interaction. Babies brains grow when they feel cared for (Winkley, 1996). Conversely, negative affect tends to produce a shutting down of self, a withdrawal, stimulating protection and defence. In our intelligent systems therefore we need to create this frequent positive interaction and subsequent good feeling. This may come from both the learning itself and the learning context, crucially incorporating the affective relationships with the tutor and with peers.

Damasio (1999) explains how intense engagement with the world around us helps us to process and understand that world. Dewey also rejected Cartesian dualism (Biesta and Vandestraeten, 1997) and saw interaction as a transaction in which both the organisms and the environment were implicitly involved. Intense interaction with other humans also produces emotional engagement. Leal explains how the shared interactions between parents and infants produce intense emotion for the young child (Leal, 2002) and this is how our sense of self grows and our learning occurs.

*All along it has been clear to educators that the experience of 'selfhood' is not a purely 'instinctual' or 'cognitive' affair' but is an early construction, contextualised in a primitive matrix of desires motives and intentions involving 'selves' and 'others' in a continuum of successful instances of social-emotional integration (Leal, 2002 pg. 3)*

Our awareness is heightened the more we interact and through this we 'know' and process other objects and people much more intimately. This 'knowing' of a person both emotionally and cognitively begins to sound very much like empathy, *'the power of mentally identifying oneself with (and so fully comprehending) a person or object of contemplation'* (The New Oxford English Dictionary, 1993 edition). This empathic approach towards others deployed over time results in a moral concern of care for the others (Noddings, 1986; Cooper, 2002).

Vygotsky's zone of proximal development (1978) must therefore involve affective assessment and scaffolding. This makes the tutors or the intelligent system's task very complex. If a tutor is unable to scaffold learning encompassing emotional as well as cognitive responses, the student may flounder around in internal confusion. Some direction, support and intervention is vital to move students on at sufficient pace, to help motivate and encourage them in their tasks and thinking. Formative assessment which is at the very heart of learning needs to be both emotional and cognitive, both personal and academic.

Noddings (1986) argues that time is needed for real caring relationships to develop, not only through the taught curriculum but through the normal conversations and interactions which take place between people. Sometimes these may be lengthy conversations but other times they may be simple interactions that affirm and recognise students as valued people and their importance should not be underestimated (Watson and Ashton, 1995). Such 'off-task' interaction is more likely to enhance liking and feeling of

community than purely task-related engagement (Klein cited in Clark, 1996). Face-to-face interaction is more likely to produce positive sentiments between people. Relationships and a sense of community are destroyed by the 'I-it relationship', which reduces other people to the status of objects (Clark, 1996). Human relationships are central to a positive learning atmosphere (DFES, 1989) and are the source of the higher levels of intellect (Vygotsky, 1978). They motivate and reassure students (Rudduck, 1996).

A key feature of profound empathy in teaching and learning is the development of positive emotions and interactions which create the ambience for learning which enables and fosters open communication, (Cooper, 2002). Profound empathy incorporates a deep understanding of self and others which appreciates all existing and historical relationships and their impact on learning. It includes the ability to empathise with all students and to take responsibility for their needs. Empathic tutors have a richly adaptive and integrated concept of themselves and others, which creates a strong moral concern. These factors in combination have particular effects. They build a positive learning climate by increasing positive interaction and communication. They build a student's esteem and self-worth, create emotional links between tutor and student and build trust and security which leads to an emulation of empathy thus increasing the positive ambience. This emotional closeness enables the tutor to discover hidden factors, which might enhance or inhibit learning.

## **CARE, COMPUTERS AND INTELLIGENT TUTORING SYSTEMS**

The taxonomy of empathy in Cooper's thesis (Cooper, 2002) also reveals the advantages of the computer over the classroom teacher when it comes to care in that it offers more opportunity for intensive one-to-one interaction. A more equal, multi-media, interactive and mutually responsive relationship has the potential to provide greater focus, engagement and greater care. Typically the classroom teacher's ability to empathise and care for students is reduced in the educational system. Large classes, lack of time, and the more animalistic environment created by competition, testing and league tables and the rigidity of the curriculum impact on the quality of empathy available in the classroom. Equally, the nature of individuals and groups with which teachers work, limit the ability of teachers to empathise sufficiently with students.

Many of the features of profound empathy can be seen in these systems though significantly none display many features. Perhaps Bull's article reveals the greatest potential to reproduce high quality care. The computer in this instance can offer fast response times, 'just in time' or 'contingent' support (Wood, 1998, 2001) and can search for a 'ready, willing and able helper' thus supporting human collaboration. The system does seriously consider affective issues, though does not really address them theoretically. The proposal that the agent know the person as deeply and broadly as possible is a feature of profound empathy but the interaction has to be reciprocal and encompass off task interaction as well as on-task interaction (Klein in Clark, 1996; Cooper 2002). The importance of off-task conversation and trust and the generation of positive emotions is currently being explored in agent technology (Bickmore and Cassell; 2000; 2001; Kapoor, Mota & Picard, 2001). Trust is built through mutuality and sharing (Cooper, 2002), and the student needs to share emotional understanding with its tutor for the highest levels of learning.

Both computer based learning systems and traditional educational systems lack many features of profound empathy, which might be addressed in the future. The values on which the potential 'learning community' are based may not coincide with those which support a learning community. The introduction of market values into the relationships into Bull's community for example is likely to reduce the level of empathy to a functional rather than profound level (Cooper, 2002) and encourage the I-it relationship

rather than the human one (Clarke, 1996; Marx, 1888). The labelling of banned individuals in Bull's community may also restrict the capacity of the community to learn.

The idea of sharing and trust and mutual open communication is powerfully addressed by Dimitrova. This is also strong aspect of profound empathy but the issue of more overt emotional exchange and its effect is not addressed. The system values the learners existing understanding and the tutor/student relationship is more equal, more collaborative, an important feature of profound empathy, which leads to deeper understanding on both sides. The system supports reflective learning but does not consider students' feelings about learning like an empathic human tutor.

The significance of differential treatment for learners, which Katz identifies and the need for different reflection is also an aspect of profound empathy. Their feeling about their learning and the development of positive emotions is also touched on when she considers assessment and motivational issues in the general dialogues. However it is the cognitive or 'instructional' dialogues which are the focus for the study even though the high significance of a positive ambience in motivating learners to learn has always been acknowledged in educational circles (Aspy, 1972). In Cooper's thesis (2002) experienced teachers stress the human, caring side of teacher/student interaction. Moreover the effects of care reproduce themselves and support collaborative work and the caring ambience generally.

Tedesco's project MarCo considers decision making and the intervention of an artificial mediator to support group planning interactions around conflicts. This is also an aspect of empathy. Young children felt that a caring teacher intervened in situations of conflict allowing a 'fair' classroom in which everyone was valued (Cooper, 2002). Damasio would argue that complex decision making for individuals is also at base an emotional issue (1999). This emotional aspect is not really addressed yet it is a vibrant area of theory in agent research and references to Damasio's work abound in last years proceedings of the AISB for example (AISB, 2001). The concept of multi-modal communication in literacy research (Kress & Van Leeuwen, 2001) and situated learning (Lave & Wenger, 1991) invite the study of a holistic appreciation of learning. This takes into account the complexity of multi-media interaction within a given context to which we have significant emotional responses.

Tedesco also refer to the importance of the quality of the communication in group interaction, but how is this quality assured? The degree of controversy and the power relations in the group can have a powerful effect for different members and the quality of communication is enhanced by profound empathy, which includes emotional exchange between tutor and student and between students. Can we assume all participants are acting in a rational, coherent fashion in their exchanges or are there anxieties at work in discussions? Are people coming to the discussion empty-minded or do they bring their historical selves, their perceptions of others and previously acquired emotional baggage with them? What is the mediator doing to assuage anxiety as a human mediator might? Does the structure of the dialogue games ensure people listen to each other or merely hear each other? Listening involves emotional engagement and motivation coupled with connectivity to one's own understanding not just a technical auditory or textual absorption process.

Similarly in the area of cognitive dissonance, in order to accept the inadequacy of our previous understanding we have to make an emotional leap and have the confidence to reassess our previous thinking. If we feel reasonably secure and that we are functioning in a climate of trust, which permits failure and openness, we can make such leaps with relative impunity. However if we feel threatened or anxious we find it harder to listen to new ideas or adapt our old ones (Hoban, 2002). In this respect the emotional climate has to be addressed in order to ensure such systems work effectively.

## CONCLUSIONS

Empathy it seems is the ability to create a rich mental model of others which relates directly to our own experiences and feelings. This model is simultaneously affective and cognitive in nature. Teachers without empathy neglect emotion and focus too heavily on whole group, subject and curriculum and in the process can lose the motivation of their students (Cooper, 2002). Profoundly empathic tutors or artificial systems that try to imitate them are increasingly recognising and valuing the role of the affective in interaction and learning and utilising this knowledge to enhance the learning process for all students. The increasingly complex systems described here address several aspects of profound empathy in interactions but perhaps do not address as yet the truly affective and holistic nature of learning. We are beginning to acknowledge and value the role of affect which is at the heart of a caring approach in intelligent systems but perhaps we can be enthused by the prospect that we all have still an exciting and extensive journey to make along this particular research roller-coaster.

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