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Steps to a Science of Inter-being: Unfolding the Dharma Implicit in Modern Cognitive Science

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A few months ago, a French publisher called me up and said he wanted to talk to me about a book. 'You know there are lots of people out there who wonder what it is that the brain and cognitive sciences do. Does it matter to anybody what's going on there? What's the point? Couldn't you write a book that people could read in the metro and then say, "Oh, now I see why it matters."' As the days went by, I began thinking 'Why not?' and 'How could I do that?' To my astonishment I found myself formulating some principles, that seen from the inside, looked awfully like Dharmic principles, and yet there was no 'Buddhism' in them at all. That really struck me. Having been involved for a long time with the interface between science and Buddhism, I figured maybe I've been missing the point. Maybe it's not about having an interface or an encounter, it's more about *redis-covering* some fundamental insights of Buddhism from *within*. Let the science itself speak out fully, and maybe it will find its expression. It's not going to be the 'same', it's going to be a 're-saying'.

So that's my exercise here. Cognitive science today, what is it to *you*? You being anyone except a brain scientist. I have structured this in four main key points. I will present them as slogans of ideas, or to be more precise, fundamental insights which rest upon about fifty years of good research, and which I take to be established results. After spending a long time in

cognitive science laboratories you could say that I'm presenting take-home messages. These are not very personal interpretations, but an attempt to squeeze out the fundamental messages that can be seriously defended. There is no space for the detailed empirical and theoretical arguments here, but the point is that these are statements which are not arbitrary but *can* be supported by evidence from the long process of research. They are not just something off the top of my head or my own private opinions. I'm trying to take a reading and make it congruent with the underpinning of empirical results.

A last preliminary point: science moves very fast, so these key points were thus shaped ten years ago. Most of these things are not to be found in textbooks today.

1. THE KEY POINT OF EMBODIMENT

The first point is what I call the key point of *embodiment*. This is in contrast to the prevailing view that is grounded on the computer metaphor; seeing mind as the software, with brain and body as hardware. Here, by 'mind' I mean anything that has to do with mentality, with cognition and ultimately with experience. One of the major key realisations over the last few years in science has been to understand that you cannot have anything close to a mind or a mental capacity without it being completely embodied, enfolded with the world. It arises through an immediate coping, inextricably bound in a body that is active, moving, and coping with the world.

This might sound obvious but is not so within the world of research where other ideas have been predominant especially the computational idea I discussed above. It is necessary to break away from that dominance. There is a long list of arguments to say that the mind is not a program, a software, a rule-based manipulation of symbols. To summarise them in a nutshell, here comes my first slogan: *The mind is not in the head.* This idea arises as a consequence of the rediscovery of the importance of embodiment.

Now why is this? The logic here is very precise: once you understand that in order to have a mind you have to have an active handling and coping with the world, then you have an embedded and an active phenomenon and whatever you call an object, a thing in the world, chairs and tables, people and faces and so on, is entirely dependent on this constant sensory motor

handling. You cannot just see the object as independently being 'out-there'. The object arises because of your activity, so, in fact, you and the object are co-emerging, co-arising.

Here is a quick example to show that this is not a purely metaphorical thing: some time ago Held and Hein carried out a beautiful classical experiment with two little kittens, which are blind at birth, in two baskets. The baskets were moved around for a little tour some hours each day and both the kittens were exposed to the same environment. One kitten was allowed to have its feet out of the basket and walk, the other one was kept tucked up inside the basket. Two months later, the two kittens were released. The one that had its feet free behaved like a normal cat. The other one did not recognise objects, it fell down the stairs and bumped into chairs. To all intents and purposes, it behaved as if it was blind, although its eyes were intact. The conclusion *not* to draw is that cats see with their feet! The conclusion to draw is that space arises out of movement. It is an absolutely dramatic statement that space, this thing in front that seems the most objective, the pillar of objectivity in physics, is totally inseparable from the fact that we have to sensory-motor handle it. The same kind of argument can be developed from a number of other examples that I cannot describe here. In my book *The Embodied Mind* there is a detailed description of how this can be applied to the perception and quality of colour, again an entirely *co-emergent property.*[1]

Let us now turn this slogan *'The mind is not in the head'* into a more structured logic: *Cognition is enactively embodied.* 'Enactive' is a label used here in its literal sense. Cognition is something that you bring forth by the act of handling, by the fact of doing it actively. It is the very foundational principle of what mind is all about. That entails, as I tried to show above, that it is a deep co-implication, a co-determination of what seems to be outside and what seems to be inside. In other words, the world out there and what I do to find myself in that world, cannot be separated. The process itself makes them completely interdependent, quite literally so, as seen with the example of the kittens.

There are two consequences to this enactive embodiment. If the mind is not in the head, where the hell is it? It's precisely the point here: it is in this non-place of the co-determination of inner and outer, so one cannot say that is outside or inside. The other consequence that follows, which is less commonly noted, is that the mind cannot be separated from the *entire* organism. We tend to think that the mind is in the brain, in the head, but the fact is

that the environment also includes the rest of the organism; includes the fact that the brain is intimately connected to all of the muscle, the skeletal system, the guts, the immune system, the hormonal balances and so on. It makes the whole thing into an extremely tight unity. In other words, the organism as a meshwork of entirely co-determining elements makes it so that our minds are, literally, inseparable, not only from the external environment, but also from what Claude Bernard already called the *mileu intérieur*, the fact that we have not only a brain but an entire body.

If you are coming from that tradition of philosophy of mind which does think that mind is something that happens in the head, this comes as something of a surprise. For example, philosophers in the past have amused themselves by speaking about 'brains in a bath', a brain in a test tube with little wires coming out of it. It's funny, the Anglo-American philosophical community has spent hours at conferences discussing this kind of thing, but when we look at the state of research today, the whole argument seems bizarre because with a brain in a bath there cannot *be* such thing as mind. It would be completely incoherent neural activity, because it could not have the functionality of what it actually does, the constant coping with the body and with the environment which makes sense of it.

So, in brief, that is the first key point of embodiment, the co determination of inner and outer. And we should not forget that this refers as much to the outside environment as it does to the body itself.

1

The Key Point of Embodiment

The mind is not in the head

Cognition is enactively embodied
co-determination of inner/outer

2. THE KEY POINT OF EMERGENCE

The second slogan is: *The mind neither exists nor does it not exist.* I call this the key point of *emergence.* This is a tough one, because this notion of emergence is quite fundamental and usually misunderstood. I use the term 'emergence' in a more or less technical sense. The more one looks into the way the brain works, or I should say, the way the process of cognition works, the more it becomes clear that one is dealing with very individual components, neurons or groups of neurons or populations of neurons. It is the job of the neuroscientist to poke into these cells, and try to understand the details of their workings, the awesome richness of the brain and the extraordinary intricacy of millions and millions of intricate connections. These local elements in interaction can be referred to as the local rules; these *local* rules and local interactions turn out to be not like passing information in computers – beep beep from here to there, the sending of messages in a syntactic or programmatic manner. These interactions are in real time very fast, dynamic and simultaneous.

What one gets as a consequence is something I still find absolutely astounding, which is that from this local element comes the establishment of a *global* process, a global state or global level, which is neither independent of these local interactions nor reducible to them. This is the emergence out from the local rules to a global level that has a different ontological status, because it brings about the creation of an individual, or a cognitive unity. So when you see an animal moving around, or myself speaking to you, I behave as a coherent unity, not a mere juxtaposition of movement, voice, sight, and posture. I'm an integrated, more or less harmonic unity that I call 'myself' or 'my' mind, and you interact with me at that level: 'Hi, Francisco.' That interaction is happening at the level of individuality, which is the global, the emergent. Yet we know that the global is at the same time cause and consequence of the local actions that are going on in my body all the time.

Now, I don't have access to the firing rate of my neuron 223 in the visual cortex, because that would be like breaking the law that the global is of a different ontological kind than the local. This point of emergence, a general principle that has pervaded all of science and not only neuroscience during the last twenty years, reveals the fundamental importance of conceiving of a new mode or kind of existence, of the way to characterise what

something is. It's a mode of existence of which you cannot say it doesn't exist. ('Francisco doesn't exist.') I count for something, you are reading what I am writing. At the same time, what is the nature of my existence? We do not assume that there is something substantial or a special quality that is sitting somewhere in this or that area of my brain that makes Francisco Francisco. In fact this cognitive self is entirely the result of its dynamical links that embrace very single local component, yet at the same time it is not identifiable to any interaction in particular. So it's like saying it is and it isn't there.

It's like when you say 'England'. In some sense England exists, it has commerce, it has peace treaties, and it does all kinds of things qua nation. At the same time, where is it? England is in the pattern of interactions of people living there, and those conversations and actions are what makes it into a unity. So it neither exists nor does it not exist, that is, it exists only as a pattern in flux. Clearly it has a *mode* of existence which is not of the kind that we have inherited from theology or physics, conceived as substantiality or a materiality, a quality which can be found or localised some way or another. Yet emergent entities are the basis of complex entities typical of the realms of life and mind, extremely effective as a mode of action and a mode of presence in the world.

So, cognition is not only enactively embodied but is *enactively emergent*, in that technical sense that I just tried to sketch. Some people might call that by various names: self-organisation, complexity, or non-linear dynamics. The core principle is the same: the passage from the local to the global. It's a co-determination of neural elements and a global cognitive subject. The global cognitive subject belongs to that emergent level and it has that mode of existence.

Now the principle of emergence is normally interpreted with a rather reductionist twist. What I mean is that many will accept that the self is an emergent property arising from a neural/bodily base. However the *reverse* statement is typically missed. This is important. If the neural components and circuits act as local agents that can emergently give rise to a self, then it follows that this global level, the self, has direct *efficacious actions* over the local components. It's a two-way street: the local components give rise to this emergent mind, but, vice versa, the emergent mind constrains, affects directly these local components.

So from this point of view, the puzzle of psychosomatic phenomena is a false problem. Why should we be surprised that a

global state of a cognitive mood or an attitude or a state of mind could have a direct effect on very, very minute local principles? And if you think this is just wishful thinking, let me give you one example. We have been working with epileptic patients who have electrodes implanted in their brain for future surgery. Thus we have access to very detailed electrical signals of the brain of a waking human. This makes it possible to also analyse the moments that precede the crisis and in fact to predict its occurrence some minutes before.[2] This is of course a good example of local properties (the local currents) leading to a global state (the crisis) in a lawful manner. But we were also able to obtain evidence for the converse: if a patient engages in purposeful, cognitive activity (such as recognising a visual form) we could see changes in the epileptic dynamics. This means the effect of a global state has downward effects over local electrical activity in a very precise fashion[3]. So let's talk about mind-body integration. For some funny reason there is this Western tradition, this odd perception that you can have matter being the support of mind, but you cannot have mind directly affecting matter. Well, this is demonstrably wrong, and this again is what this notion of emergence allows us to see, if you understand it properly as a two-way street, not just a one-way street.

So, cognition is enactively emergent and is the co-determination of local elements and the global cognitive subject. There are two corollaries I would like to draw from this key point. First corollary, if you put together key point one and key point two, embodiment and emergence, the mind is fundamentally a matter of *imagination and fantasy*. In other words, it's the internal activity of these rich emergent properties, plus the fact that you have an ongoing coupling that forms the core of what the mind is. The mind is not about representing some kind of state of affairs. The mind is about constantly secreting this coherent reality that constitutes a world, the coherence of the organising through the local-global transitions. Stated in other words, perception is as imaginary, as imagination is perception-based. There are some beautiful experiments showing that you can give an (enactively embodied) organism anything at all as an excuse for sensory-motor interaction, and it will immediately constitute a world which is shaped, which is fully formed. It's an amazing conceptual shift from thinking that there are properties of the world that you need to apprehend in order to make a coherent picture of reality, to the notion that almost anything would supply an excuse to invent a reality. Our world is

imagination and fantasy, and that's why it is a fundamentally important point for children to develop theirs.

The second corollary of this principle is that, since mind is based on local to global emergence, there is nothing in the mind that you can separate into discrete separate elements. In other words, phenomenologically our minds do not present a clear division of memory here, affect there, and vision over there. As a consequence, one of the most striking discoveries over the last few years is the understanding that affect or emotion is at the very foundation of what we do every day as coping with the world; that reason or reasoning is almost like the icing on the cake. Reason is what occurs at the very last stage of the moment-to-moment emergence of mind. Mind is fundamentally some thing that arises out of the affective tonality, which is embedded in the body. It takes about a fraction of a second for the whole thing to happen, over and over and over again. In the process of a momentary arising of a mental state, the early stages are rooted in the sensory motor surfaces near the spinal cord in the mid brain, then they sweep upwards on to the so-called limbic system, into the so-called superior cortex, so this emotional tone changes transforming into categories and distinct elements and chains of reasoning, which are the classical unities description of mind. But reason and categories are literally the tips of the mountain which are sitting on affect, particularly affect and e motion. In fact, e-motion is already intrinsically cognitive. Once you change your perspective and stop looking for reason as the most central principle of mind, then you can see the emergence of moment of mind as it happens. It starts out from this soup, the entire organism in situation, and then it gives rise to this surge, which gradually spreads out like peaks of mountains.

That's why experience in a phenomenological footnote is so hard to articulate, since a large chunk of its base is pre-reflective, affective, non-conceptual, pre-noetic. It's hard to put it into words, precisely because it precedes words. To say it precedes words does not mean it's beyond words. It's the opposite, it's because it's so grounded that it has not yet become the elements of reason that we tend to think are the highest expression of mind.

So, to summarise the two corollaries. First, I say: 'Life is like a dream'. Second, to cite Pascal: 'The heart has its reasons that reason does not understand'.

2

The Key Point of Emergence

The mind neither exists nor does it not exist

Cognition is enactively emergent
co-determination of neural elements
(local) and cognitive subject (global)

3. THE KEY POINT OF INTERSUBJECTIVITY

With our next key point we enter into a domain which is not well charted yet. The slogan is: *This mind is* that *mind*. It has been a constant in cognitive and brain science to simply assume as obvious that a mind belongs inside a brain, and hence that the other's mind is impenetrable and opaque. Any violation of this spatial separation is taken as invoking some kind of hocus-pocus psychic energy which is to be avoided. Well, very recent research in cognitive science is beginning to show quite clearly that individuality and intersubjectivity are not in opposition, but necessarily *complementary*. Again, it does not cease to amaze me how some philosophers of mind have spent litres of ink on debates about how to prove that you have a consciousness, and that we are not surrounded by zombies. Quite frankly I find this ludicrous. The issue is squarely upside down: the presence and reality of other is so intimately close that the pertinent question is how can we ever come to have the notion that we are that separate and distinct?

I have already said that modern research in cognitive science gives ample evidence to the effect that all cognitive phenomena are also emotional-affective. That is, it has very naturally ended up considering the very ground of the genesis of mind as an affective-empathic phenomenon. This is particularly clear in studies of both higher primates and young children.

Thus, in a recent survey Provinelli and Preuss conclude that the key result of many decades of research on higher primates is

not the language/non-language controversy.[4] It is that higher primates excel at providing an interpretation of the *other's mind*. This represents a peculiar type of intelligence related to understanding mental states such as desires, intentions and beliefs from the other's bodily presence: face, posture and sound. Behavioural studies in children and chimpanzees reveal striking similarities in their developmental pathways in this regard, although it is likely that humans have developed further refinements. The pioneering work of D. Stern in his studies on babies noticed already that the boundaries of self and others are not delineated even in perceptual events, and that being a 'me' and constituting a 'you' are concomitant events.[5] The baby's amazing capacity for empathic response emerges a few hours after birth. A final example concerns what everybody knows, that kids need love and care when they are little. Recently, there was a beautiful study published on how love and care affects the structure of the local elements in those children.[6] Astonishingly, they were able to show that holding and loving care was a direct determinant not only at the level of brain properties (i.e. synaptic and neurotransmitter changes), but also at the level of genetic expression. In other words, these kids are modified in their very bodily constitution by actions at the emotional level between human beings. We could multiply the further examples dealing for instance with studies on early infancy and their absorbed concern with faces. Or the recent neurophysiology that links the perception of one's body image to that of the other's body as in a mirror. The basic point is always the same, namely that cognition is *generatively enactive*, that is a co-determination of Me-Other.

There is, of course, a direct link between affect and empathy that is worth exploring here a little more as a closing point. Affect is a pre-reflective dynamic in self-constitution of the self, a self affection in a literal sense. Affect is primordial, in the sense that I am affected or moved before any 'I' that knows. As I write now, I have a dispositional attitude that engages me in an anticipation of writing and shaping my thought into sentences. As I write this word now, the disposition is coloured by a play of emotional charge revealing a moderate resentment for not finding the proper expression. But that emotional tone appears against a background of an exalted mood of a productive day devoted to finishing this text. More explicitly, I want to distinguish three scales for affect. The first scale is *emotions* proper: the awareness of a tonal shift that is constitutive to the living present. The second is *affect*, a dispositional trend proper to a longer time

(hours or days), a coherent sequence of embodied actions. Finally there is *mood*, the scale of narrative description over a long duration (many days or weeks).

The primordial or pre-verbal quality of affect makes it inseparable from the presence of others, and this is where I enter into the last stretch of my argument here. In order to see why this is so, it is best to focus on the *bodily* correlates of affect, which appear not merely as external behaviours, but also as directly felt, as part of our *lived body*. This trait of our lived body plays a decisive role in the manner in which I apprehend the other, not as a thing but as another subjectivity similar to mine as alter ego. It is through his/her body that I am linked to the other, first as an organism similar to mine, but also perceived as an embodied presence, site and means of an experiential field. This double dimension of the body (organic/lived; *Körper/Leib*) is part and parcel of *empathy*, the royal means of access to social conscious life, beyond the simple interaction, as fundamental inter-subjectivity.[7]

3

The Key Point of Intersubjectivity

This mind is that mind

Cognition is generatively enactive
co-determination of Me-Other.

4. The Key Point of Circulation

The next key point moves us straight into a sharper turn but a necessary one, since it is also motivated by the internal dynamics of research itself. The slogan: *Consciousness is a public affair.* The direct background for this key point is the recent boom in

the study of human consciousness as a legitimate domain for science. But the term 'consciousness' is vague enough that we need some clarification to start with.

The main intuition that animates this key point is this: the depth inherent in direct, lived experience permeates the natural roots of mind. I would like to develop this intuition in two steps. First, the very thrust of a proper scientific analysis of mind (i.e. in the context of the cognitive sciences) leads to the need for a detailed examination of *experience* itself. Secondly, examined experience and scientific analysis can have an explicit, non-dual relationship, a *mutual determination*, a circulation that avoids the extremes of both neuro-reductionism and some ineffability of consciousness.

A common trait in many spiritual traditions is that human experience is not taken at face value, but *examined* in one way or another. In contrast, cognitive science has been almost entirely interested in cognitive faculties in ordinary, *un*examined life. But this is beginning to change rapidly, and is not surprising since cognitive science faces the unique challenge of containing our own conscious life within its field and scope, and, *a fortiori*, the very act of examining our individual life. I have given elsewhere the arguments for the importance of developing such an experiential neuroscience, or *neurophenomenology*.[8] At the very core of that research programme is the crucial issue that if we are to avoid simply reducing experience (examined and unexamined) to neural accounts, a proper *methodology* is required for its examination.[9] It is typically here that the interface with spiritual traditions naturally presents itself. Next to the issue of methodology, there is the complementary question concerning the *nature* of the relationship between such external, scientific accounts coming from cognitive science and the first person, that is, phenomenological accounts directly anchored in lived experience. How do these two domains of observation and descriptions *mutually constrain, co-determine* each other? It is only fair to say this direction of work discloses a number of deep, disturbing challenges, which is why this key point is far less consensual than the preceding ones.

Concerning methodology, whether it be phenomenological or based on a contemplative tradition a major challenge is to lay bare each one of these aspects of the way of access of phenomena in the first person, in flesh and bone to establish a phenomenological *pragmatics* beyond vague usage. The failure to make phenomenological reduction into a concrete method is, in my

eyes, the most undeveloped theme of phenomenology, and the greatest strength of the Buddhist tradition. As a result, a substantial amount of phenomenological literature has strayed into textual analysis and repetition of descriptions from Husserl or others, without the disciplined engagement to re-do such descriptions afresh. Beyond phenomenology there are the much-criticised introspectionist schools in the early twentieth-century psychology, which are having a second day in court,[10] and the non-Western wisdom traditions which have patiently cultivated highly detailed know-how (i.e. Buddhism, Taoism, Gnosticism). This discussion opens the question to what extent there is a unity underlying the multiplicity of methodologies for the examination of experience. (In such traditions the method of exploring one's experience is the key to the path if spiritual transformation is to be possible at all.) The challenge that this multiplicity of sources represents is this: is there a homology between these methods? Is there such a thing as a basic structure shared by these various pragmatics of experiencing?

As presented, the pragmatics of exploring experience is a very specific gesture. Its unicity lies not only in what is done, but also in the inescapable ontological region *where* it happens: the *lived body* (*Leib*), as we have discussed before. In both ordinary and even more so in spiritual experiences, the feeling-tone of intimacy and directness is essential. Experience is Janus-faced. On the one hand it is a 'pure' domain, which may be (or not) described by the invariant categories, and proper to inter-subjective life world. However, it is also an event linked to the temporality of the world and more precisely to the world as it is manifest in the biological rhythms of *my* body.

In this sense the practices of this examining experience unfold, I submit, a *distinct region of ontological reciprocity*. This region can be characterised by the manner in which specific entities show up as within it (i.e. what is *given*), and by its distinct immanent constitution (i.e. what is given is given in a sphere which is *mine*). This specific region is inhabited or discloses entities and events inseparable from the presence of the lived body in all of its complexity. Needless to say, the direction of work just sketched cannot be carried on an abstract, general basis, but needs to be based on case studies, conducted step by step. As an example we may consider a study of the central question of the neurophenomenology of the experience of time, the ever-present embodied now,[11] or the origin of the image of self.[12]

So the study of consciousness in the sense examined here opens regional ontologies of material or ideal objects which are inter-penetrated, trans-parent both towards their material basis (they would remain otherwise unbridgeably detached) and to the experiential domain (they would remain otherwise as floating, disembodied idealities). Clearly, the reciprocity *Leib/Körper* is not available in all its enormous import as long as we remain in an attitude of unexamined experience, that is, within the natural attitude. Going beyond requires sustained cultivation of the reductive attitude to be fully applied.

A main lesson is that the enterprise of neurophenomenology has taken us into the thicket of philosophical and methodological renewal. If this direction of research is to provide an answer to the otherwise unbridgeable explanatory gap between the cognitive and the phenomenological mind, it cannot ignore the very constitutive basis for the mutual reciprocity that makes the mental and experiential, and the bodily and neural, hang together. It is thus evident that only from this renewed basis can a neurophenomenology be other than a repetition of the past, in the form of searches for correspondence across the 'mystery' line.

This mutual reciprocity without residue is the very nature of the region unique to the *Körperleib*. In this ontological region where reciprocity manifests in all its vividness, three main threads need to be woven together on an equal footing to provide a seamless braid of continuity between the material and the experiential, the natural and the transcendental.[13] In other words, we have identified three poles in the mutual circulation we have been examining:

1. The *formal* level, since describing mental contents partakes of a mode of ideality and hence is effectively on common ground.
2. The *natural* (neural, bodily) process considered at the right level, spanning across global emergence and local mechanisms, that assures a direct relevance both to the psychological content and to a detailed neuroscientific examination.
3. The *pragmatic* level of examination that opens up to the *Leib/Körper* transition since it, and it alone, can give us access to a non-dual position, that excludes neither experience nor body, and provides the relevant basis or data for 1 and 2.

These three poles do not simply stand in a static or structural relation. They stand in a *mutually generative* relation in the sense that each one requires the other to make any sense. None of them in isolation can suffice. This triple braid provides, I propose, the foundation for an important renewal in philosophy and science to move towards a non-dual thinking which is not declarative or predefined by decree, but found at our very doorstep.

4

The Key Point of Circulation

Consciousness is a public affair

Consciousness is ontologically complex co-determination of first- and third-person descriptions.

5. CONCLUSION

Let me draw my conclusions by referring to the notion of a psychology of awakening, which gives the title to this book. In some basic sense it is an oxymoron, something like 'military intelligence'. For if psychology qua cognitive science has come to mean anything in its long history it is an understanding of mind that requires an underlying notion of *ego*, a self, an individual mind. In its current incarnation as part of cognitive science this can also be expressed as the functioning of a *cognitive agent*, body-bound and brain-encased. In contrast, awakening, if anything, is the expression of the human capacity to cultivate the expression of that which is not self-centred and ego-based, and certainly not incarnating a cognitive process simpliciter. Specific-

ally, I am using 'awakened' in the Dharmic sense of *boddhicitta*, awakened heart or compassionate emptiness, an eminently other-centred, *selfless agency*. As such, this contrast is unresolvable, not only an oxymoron but for long stretches of history simply a contradiction, or at the very least a tension: a tension that a few have tried to resolve by negotiating the passages between the level of individual cognitive agent to living in the midst of *inter-being*, to use the apt phrase introduced by Thich Nhat Hahn.

My purpose in this paper has been to consider the links between the neuropsychology of an individual ego and awakened mind within the modern context of *cognitive science*. In a nutshell, my argument has been that, even if the tensions cannot be worked out within modern cognitive science even when considering what goes for its most 'advanced' trends, one is seeing the seeds, soft and budding, of what might be a further stage, a future cognitive science where inter-being may be thematised without contradiction. This stage is the description of changes that emerge from within science itself as we have traced with our four key points, and not the announcement of a programme to be imposed from the exterior.

I am ready now to close by drawing together the conclusion concerning the possibility of a future cognitive science of inter-being, a further stage in a history of the development of the field since its inception in the 1960s. This is easily done by considering the historical waves of development within cognitive science:

- Stage 1 is expressed in the early *computationalist* cognitive science, which views the mind as an information-processing system, a set of discrete symbols handled by rules for action.
- Stage 2 is *connectionist* cognitive science, the replacement of the discrete symbol by a set of network states, incorporating a dynamical view.
- Stage 3, *embodied* or enactive cognitive science, summed up in the first two key points, takes this dynamical view one step further by suspending any notion of appropriate action as based on an adequate representation of a pre-given external world, and starts from situated sensori-motor actions, the source of meaning.
- Stage 4 is *generative* cognitive science, where the neuro-phenomenological perspective is extended to include as foundational its intersubjective, empathic-affective dimension. At this stage, cognitive science begins to touch on the

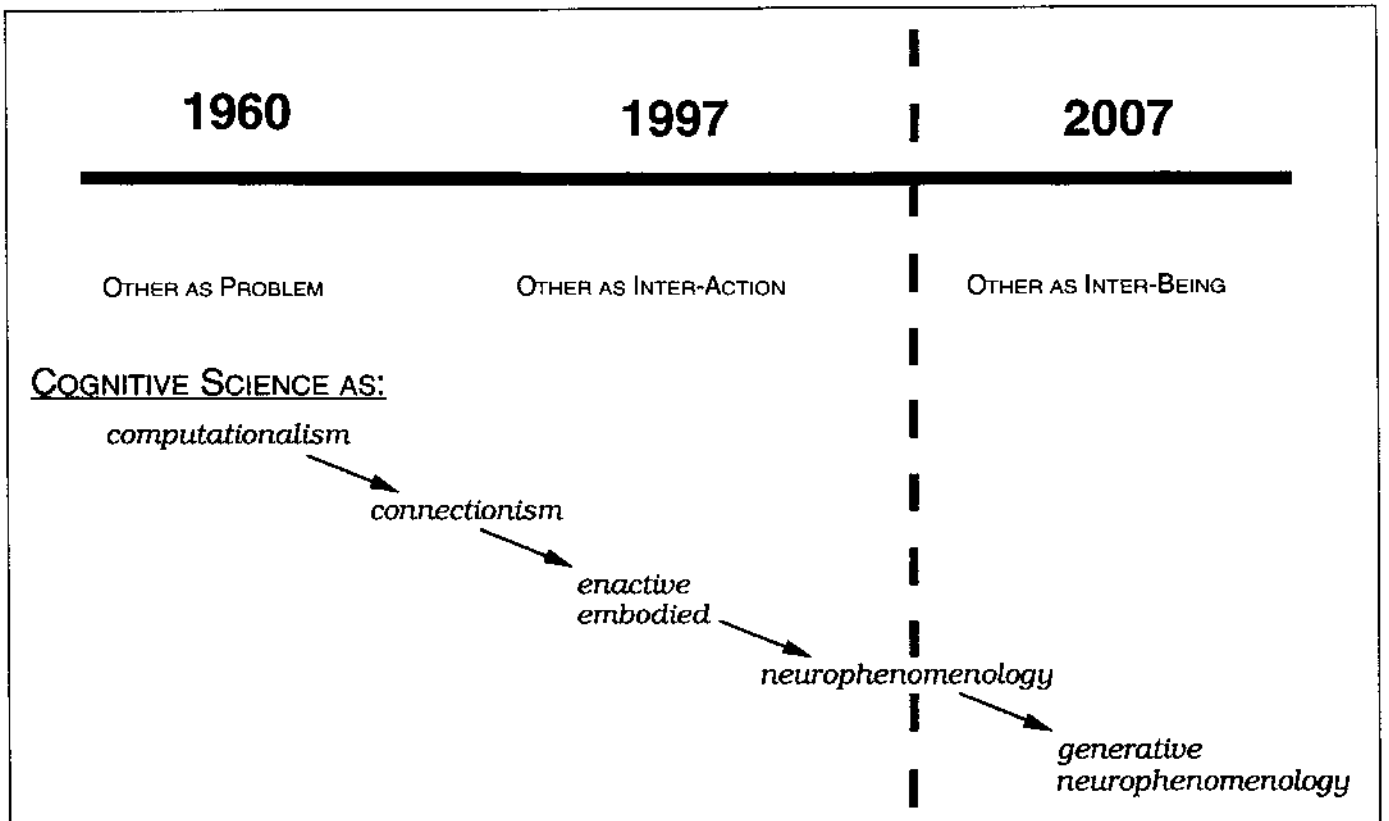
sphere of interbeing whose experience is the basis of awakened mind.

- Stage 5 is *neurophenomenology* – a further extension of the embodied-emergent perspective accompanied by an explicit demand to include phenomenological data, where consciousness figures as a central theme. At this point cognitive science enters into a new phase, which is just beginning to emerge today. All the rest is the future.

These successive stages in science can be seen to correspond to an evolution in the understanding of the other. For computationalism and connectionism the other's mind is mostly a problem, an open question that needs proof. The self is seen as an isolated agent who has no direct evidence that others are not mere zombies. For embodied cognitive science and a purely static neurophenomenology, the other appears as inter-action, a given fact but still to be generated as a separate entity, for which links must be built between two independent, constituted minds. In a generative view, the other and I are a common ground, a joint tissue which is tangibly present in empathy and affect, which offer a possible level of analysis if we avail ourselves of the means to do so.

The psychology of awakening then *can* be a real possibility; not merely an oxymoron, but an optimistic future-oriented science of mind. There is a long way to go before such a level of analysis can fully enter into science. For this to happen, we require at least two massive changes. First, breaking with the taboo of using phenomenal data as valid, and training in the competencies demanded by phenomenological analysis as well as those demanded by classical scientific research. Second, breaking with the taboo of intersubjectivity as a ground from which a variety of experiences issues forth. These are heavily inertial assumptions that will move as slowly as continents. The natural attitude of the scientist and the public today is to see the mind as a distinct, brain-encased self. Breaking that illusion from within science seems, today, not a complete impossibility – some cracks are opening for a science of interbeing.

You will have noticed that the four key points presented here all have in common an elegant *reciprocal causality*; a reciprocal co-determination is always at centre-stage, holding the hands of two extremes to join them in mutual determination. This reciprocity is so pervasive in this vision that it is the very ground on which we stand, that is, a ground of groundlessness. Thus


1960
1997
2007
Other as Problem
Other as Inter-Action
Other as Inter-Being
Cognitive Science as:
computationalism
connectionism
enactive
embodied
neurophenomenology
generative
neurophenomenology

emptiness is rediscovered here as a force of scientific movement itself. Those familiar with Dharma may be tempted to continue the exercise of translating what we have said in this text into traditional Dharmic terms: the foundation of mindfulness, egolessness, interdependent origination, compassion, gross and subtle mind, and so on. It is a Dharma *implicit* in science that cries to be stated explicitly, to be restated yet again.