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THE MINDFUL BRAIN
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*Reflection and Attunement in
the Cultivation of Well-Being*



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Chapter Fourteen

THE MINDFUL BRAIN IN PSYCHOTHERAPY: *Promoting Neural Integration*

As we discussed briefly in the Preface, interpersonal neurobiology is an integrative approach that draws on a wide array of ways of knowing to create a picture of human experience. This approach builds on many disciplines of science to propose how we might define the mind and its emergence in the moment, and its development across the lifespan. We've seen that the human mind can be defined as an embodied and relational process that regulates the flow of energy and information. The mind emerges as this flow occurs within and among people, and it develops as the genetically programmed maturation of the nervous system is shaped by ongoing experience.

Through this synthetic analysis emerges the perspective that mental well-being is created within the process of integration, the linkage of differentiated components of a system into a functional whole. In this view, drawn in part from complexity theory, we see that when a system's components become functionally linked—when they are integrated—they can be defined as having a FACES flow: flexible, adaptive, coherent, energized, and stable. Outside of that flow the person, family, community, or society may experience chaos or rigidity. In the flow, the experience is filled with coherence: connected, open, harmonious, engaged, receptive, emergent, noetic, compassionate, and empathic. These working defini-

tions of the mind and of mental well-being have been useful in educating teachers and therapists to consider a possible view of a healthy mind.

Through our emerging understanding of the mindful brain we can build on these ideas to offer a framework for how an interpersonal neurobiology approach to therapy may be created.

AN INTERPERSONAL NEUROBIOLOGY ROLE IN UNDERSTANDING AND PROMOTING WELL-BEING

Personal transformation can be considered to involve the three legs of our triangle of well-being: coherent mind, empathic relationships, and neural integration. There is no need to simplify these three into a single aspect of reality as they're mutually reinforcing. Naturally, being all a part of the energy and information flow of well-being, we could say these are three aspects of one reality. But these "three aspects" have unique, irreducible qualities.

If integration enables a FACES flow, it is a logical next step to examine how integration within and among these domains is promoted. If we begin on the plane of the physical domain of reality, we can say we are seeking separate aspects of a system which can then be linked together. Before exploring this approach in detail, let's discuss some general principles.

It is important to remember that this is one therapist's experience, one approach to finding windows of opportunity to help people move toward well-being by promoting integration in their lives. I offer this view for your consideration, not as a statement of how to do some particular therapy, but as one way of being as a therapist. If you are a clinician yourself, or if you are in psychotherapy, I hope these ideas and the following stories of actual experiences are of help in illuminating possible avenues of change that will be useful in creating your own approach. In a mindful

state we can see others' suggestions as a possible route, rather than as a roadmap delineating the only way to go. We each are different, our lives complex, and having a sense of possible directions may be more helpful than locking on to some idea of an absolute truth.

ATTUNEMENT

Shared attention initiates attunement. As we engage with others, we mutually focus our awareness on the elements of a person's mind that become the shared center of the hub of our minds. As this joining evolves, we begin to resonate with each other's states and become changed by our connection.

Attunement can be seen as the heart of therapeutic change. In the moment, such resonant states feel good as we feel "felt" by another, no longer alone but in connection. This is the heart of empathic relationships, as we sense a clear image of our mind in the mind of another. A simple acronym for remembering this feature is ISO, the internal state of the other, an awareness that you as the therapist have of your patient, and your patient has of you. Each person senses his or her mind clearly in the expressions of the other, experiencing that embodiment of one's own authentic mind inside another person. Here we see the notion of "embodied simulation" of the mirror neuron system (Gallese, 2003, 2006), in which our neural processes integrate what we perceive with our body's priming for action and emotion.

Another way in which we attune to the mind of another is by way of a *narrative of the other*, or NOTO. By taking in the experiences of the patient, we create a story in our own minds of who he or she is. In small and large ways, we can reveal that we have a narrative of the other inside of us. If a patient comes back from a trip to San Francisco and I say upon his return, before he speaks, "How was your trip to the Golden Gate Bridge?", he will

know that he exists inside of my head even when we are not with each other. On a larger scale, a NOTO is revealed in the ways in which the life experiences of a patient fill my mind and I can sense her struggles, see her journey in its route across time, and let her know in our discussions how that evolving story exists in my mind through the ways we connect around making sense of her life.

As patients feel our authentic concern and our capacity to embed them in us in the present within ISOs and across time with NOTOs, they come to feel felt by us and attuned with us. To achieve such direct connection, to integrate minds, it is crucial that the therapist have an open hub in which to mindfully receive whatever arises in the course of therapy. This attunement not only feels good in the moment, it likely alters the self-regulatory integrative fibers of the brain, especially in the middle aspects of the prefrontal cortex. Attunement interpersonally and the nurturing of attunement internally are the central processes of psychotherapy. Attunement of both forms is built upon integration.

SNAGGING THE BRAIN

In mindfulness we direct our attention to our intention. Where attention goes, neurons fire. And where neurons fire, they can

rewire. This process can be summarized by the term SNAG, signifying the way we stimulate neuronal activation and growth. In mindful awareness we are “snagging” our own brain by focusing attention on our own intentions in a way that stimulates our middle prefrontal regions and promotes integration. This prefrontal activation engages axonal fibers that extend out to link together various disparate regions: cortex, limbic areas, brainstem, body-proper, and even the social world of other brains. The growth of prefrontal fibers anatomically means that functionally, we will be promoting neural integration.

Internal attunement is proposed here to snag the brain to promote integration. Interpersonal attunement can be seen to catalyze similar neuronal activation and growth. Attunement then becomes a central focus of our understanding of how therapy can change the brain.

Let's recall the list of nine middle prefrontal functions correlated with activation of the associated areas of medial and ventral prefrontal, orbitofrontal, and anterior cingulate cortex: (1) body regulation, (2) attuned communication, (3) emotional balance, (4) response flexibility, (5) empathy, (6) self-knowing awareness, (7) fear modulation, (8) intuition, and (9) morality. How many of this list would you include on your desired results for your own or others' growth in life? From this perspective, we can examine how interpersonal attunement in attachment, internal attunement in mindfulness, middle prefrontal function, and effective psychotherapy might converge in their common mechanisms of action.

THE DOMAINS OF NEURAL INTEGRATION

We can propose that for any form of therapy to be effective we must "snag" the brain toward neural integration, promote coherence of mind, and inspire empathy in relationships. This is how therapy focuses on the triangle of well-being. The strategy we'll take to describe this dynamic and individualized process will be to delineate nine distinct domains of neural integration and how to promote each of these within our lives (Siegel, in press). These domains include those of (1) consciousness, (2) vertical, (3) horizontal, (4) memory, (5) narrative, (6) state, (7) temporal, (8) interpersonal, and (9) transpirational integration.

If we focus on the domains of integration within our neural systems, we can see the simultaneous creation of empathy with others and coherence within. The following vignettes of patients

(identifying features have been removed from these stories), may help illustrate the use of this approach within psychotherapy, as we apply the principles of the mindful brain to clinical practice.

The Integration of Consciousness

Hi Dr. Siegel . . . just wanted to let you know that I am feeling a whole lot better . . . a bit more clarity on this issue, and a far better view of the rim . . . it is amazing—and a real insight as a therapist—that how even knowing and practicing all that I know and practice (i.e., watching my breathing, COAL, SOCK), my mind gets hijacked still by what happened so long ago . . . I feel much better now—that nice normal calm feeling—I think because I have been able to untwist this twisted stuff and can look at it without twisting myself inside out . . . I have not forgotten it once yet, and I am feeling like I probably won't lose complete sight of it any more . . . it's kind of like even when I forget, I remember that I forget, and that is sort of like not forgetting, really . . . I cannot wait to work more on these aspects of my self next week . . . thanks Dr. Siegel . . . I just am so grateful for your guidance . . . see you Wed . . . best, Mary

This is an email from Mary, a thirty-five-year-old psychotherapist with a painful history of abuse by a step-father during her childhood that led to significant difficulties with posttraumatic stress and dissociation. Because her childhood experiences were terrifying, a disorganized attachment pattern developed. She survived by dividing her sense of consciousness: some aspects of her mind acknowledged the events, another part of her mind was unaware of the abusive relationship.

In the course of therapy, coming to know the truth about her experiences within the frame of a close, connected relationship with her therapist—me—allowed her to experience these memories in a new way. The hub of my own mind needed to be receptive to whatever arose: I could feel aspects of the terror, could sense her fragmentation and helplessness, and would try to be present as best I could to “contain” these overwhelming sensations. When

memories are shared in this way, when there becomes room to feel the sensations fully and then to have the reflective experience that this knowledge can be borne, that it can be tolerated, then the nature of the memories can actually transform. As we'll see more in the upcoming section on memory integration, such an interpersonal sharing can widen the "window of tolerance" for knowing about painful past events. This expansion is an enhancement of self-regulation, the capacity to bear witness to one's own pain and remain present as that implicit recollection is integrated into a broader sense of the person's life. The key is for me as a therapist to remain fully present for whatever arises—not passing judgment, being right there, in the moment, following the shifts and stabilizing of different states, welcoming all into the therapy experience.

With such a mindful approach, Mary seemed to change as we directed attention, together, on the various ways she had come to adapt to her hostile family environment. As she went ahead in her own therapy she found that direct teaching about mindfulness was helpful in her daily life. I taught her the meditation that I offered in the last chapter, and she found the hub to be a useful visual metaphor for being able to know about elements of the past as activities of her mind, not the totality of who she is. In many ways, this mindful discernment feels like the cornerstone of therapy, not just for Mary and other patients, but for us, as therapists, as well. We sense our patients' pain, but we do not have to become that pain. Having that modulating capacity to be open but not to "become" our patients is a fine line between being empathic, and developing secondary, or vicarious, traumatization. Perhaps it is a theoretical set of "supervisory mirror neurons," broadly hypothesized by Iacoboni as a possible component of our prefrontal abilities that enable us to resonate but not "become" another, that we build as therapists and that in general enable us as people to be present but not to get lost in others' experience (Iacoboni & Siegel, 2006). Mindfulness as a therapist, being attuned internally

so that we can know the distinctions between resonance and empathy, versus flooding and overidentification, seems an essential step in our work.

Integration of consciousness can be promoted by both direct and indirect means, as we have discussed. Our open presence as therapists alone is an invitation to have people experience more aspects of the rim of their mind. As we feel the mindful spaciousness to embrace whatever arises in the field of awareness, patients will sense an opening space, an encircling embrace, that can contain what before was unbearable knowledge, emotion, or memory. As we share attention, we initiate attunement. In this way, sharing attention with others is the beginning of a resonant state with two people. As we “share” attention with ourselves, as we develop the spaciousness of the hub of the mind to attend to our intentions, we align our reflecting and experiencing selves.

Direct applications also are helpful and include all of the mindful awareness practices that help focus attention on intention. Beginning with awareness of the breath, it is amazing how taking pause to reflect inward can initiate an opening of the hub that feels natural and yet profoundly moving. Returning awareness gently to the breath when attention has wandered strengthens the hub and initiates the reflexive capacity to become aware of awareness. With practice, sometimes for just 10 minutes a day, patients seem to develop a self-observational ability that then prepares them for the next step of opening their minds to enhanced receptivity.

In a session, receptive awareness can be catalyzed by simply suggesting that the patient become aware of not just the breath, but of whatever enters the field of awareness. As the patient notices whatever arises as it arises, he or she will be reinforcing the self-observational skills that can decouple automaticity—a vital “Yoda” skill in promoting the next layers of integration.

As Mary progressed in her therapy, she came to a resolution of the conflicts across her many states of adaptation to the severe

trauma. She read an entry in her journal to me that expressed the ways in which mindfulness brought a sense of clarity to her healing:

From the hub of my mind, I can view all the chaos, fear, terror, threats, brushes with death, wishes, and plans for death, pain, mind binds, all-mind knowing, all-mind not knowing, all-body knowing, all-body not knowing, states of adaptation that now reside happily and benignly on the rim . . . over there on the rim, I can view and know the states, but in the hub, I am not those states, I am only the knowledge of those states—how they came to be, how they saved me, and how they have now evolved into a story about what happened to me, about how crazy and disturbed my family was, and about how I survived it and am profoundly able to be present as I move forward in full awareness of and liberation from the prison that was my childhood . . . all those many years ago . . . finally making sense of it all.

Integration of consciousness permits us to find peace within the chaos as we develop the hub of our mind. In that spacious place of reflection, healing can begin as we come to deeply sense the fullness of our lives, from the past, in the present moment, which free us in the future. Such healing will be illustrated in many of the stories that follow.

The other domains of integration are listed on the following pages in a sequence, because this is a linear and logical format, but they might be better explored as a circle, with each of the following seven perhaps encircling the integration of consciousness. The ninth and last domain—transpirational integration—may indeed sometimes emerge following the integration of the first eight (Figure 14.1).

Vertical Integration

Sandra, a 67-year-old grandmother of five, feared going to the cardiologist, saying “Something is wrong with my heart and I

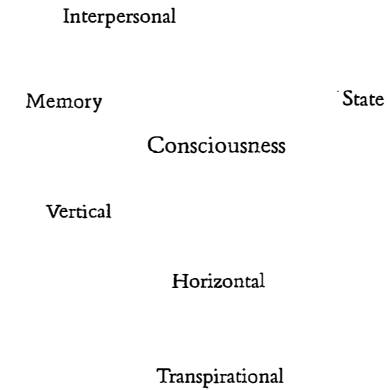


Figure 14.1 Domains of integration.

don't want to find out." During her fourth visit with me, Sandra had a panic attack when it came time for her to focus on her chest during a body scan, which we were doing as an introduction to a direct application of mindful practice in therapy. As she focused her mind on her chest, it was natural to think that she might fear losing her cherished relationships with her family. But what was ultimately revealed in therapy was the unresolved loss of her father when she was a young child, something she had never thought about, no narrative, "making-sense" process had occurred, no sharing of the loss with her brothers or sister, or her mother. Instead she had "cut herself off from the neck down" in order not to feel. In reality, we came to understand, she was terrified of becoming aware of her broken heart.

Staying with sensations enables the wisdom of the body to gain access to the mind. *Vertical integration* is one domain in which we can begin the important process of disentangling our unresolved losses and cohesive adaptive states that have cut us off, literally,

from the vitality of being fully immersed in our senses. Creating coherence in our lives and making sense of our life story involve gaining access to the full spectrum of senses from our body.

Vertical integration is the way in which distributed circuits are brought into connection functionally with each other, from head to toe. Here we are focusing on how input from the body is brought up through the spinal cord and bloodstream into the brainstem, limbic areas, and cortex to form a vertically integrated circuit. You may wonder what this means or why this is necessary, given that the body is already “connected” to the brain. But it is possible to have neural activations outside of our conscious awareness. Bringing somatic input into the focus of our attention changes what we can do with this information: Consciousness permits choice and change.

A range of studies suggest that our bodily state directly shapes our affects which all interact to influence our reasoning and decision-making. Having aversive reactions to our own bodily inputs—or trying to avoid awareness of them—leads to a restricted access of the hub to any points on the rim. In this situation, we cannot be mindful because our receptivity is hampered and we become inflexible. In such a nonintegrated state, the individual is susceptible to patterns of rigidity or outbursts of chaos, far from the FACES flow of well-being. In Sandra’s case, she had developed a cohesive adaptation that shut off her bodily sensations and kept her rigidly confined to a life without much deep sense of meaning. Her panic attacks illustrated how this overly controlled cohesive state was prone to a rupture into chaos in the form of panic.

In psychotherapy, vertical integration can be the focus during a session by beginning with awareness of the body in which you suggest to your patient that he or she just notice the sensations that emerge. A total body scan would involve moving progressively from toe to head, enabling the feelings to fill the patient’s awareness, and keeping the hub’s spoke on the sixth sense area of the rim. Just

sensing, “staying with” the sensations in awareness, “going with that” when a feeling arises, are all reflective pauses that help the mind focus on vertical integration. Notice that “just sensing” is distinct from “just noticing,” as they likely involve the two differing streams of awareness: sensing and observing. In full integration, we encourage all of the streams of awareness to be brought into balance. In restrictive adaptations, sensing may be warded off and a disconnected form of observation may become, at best, a way a person is aware of the body: noticing it, but not directly sensing it.

As we’ve seen in Figures 4.3 and 6.1, the spoke that connects to an element of the rim, such as a point on the sixth sense of the body, can be viewed as involving any or all of the four streams that enable the “data” from the rim to enter the hub’s awareness. Each of the streams is important, each having its role to play in mindful awareness. For Sandra, feeling the direct *sensations* was not possible at first without a terrifying reaction. We therefore focused first on the *concept* of the importance of the body in our discussions. Next, we gently moved into helping her with the ability to *observe* the body from a more distant perspective, such as noting the state of the whole body rather than directly feeling the sensations of her chest. *Knowing* is a stream that sometimes cannot be directly addressed with words, emerging more as an insight, coming perhaps as a shift in perspective or a deep, almost ineffable sense of clarity. In Sandra’s case, it wasn’t until we began with the stream of *sensation*, first on her feet and ankles, and then on her breathing, that she was ready to focus on her heart.

We have the ability to shift our awareness, to prevent the large-scale assemblies of incoming primary data from creating awareness of sensation. Vertical integration is the intentional focus of attention on bodily sensations. Does that sound too strategic to be included within the framework of mindfulness? My sense within therapy is that to dissolve top-down enslavements, like Sandra’s avoidance of awareness of her body, we need to be mindful of the

brain's automatic push to not attend to some aspect of the rim. Here we see that "stay with that" helps our patients, and ourselves, move against those secondary forces that keep us from attuning to ourselves. If we don't feel comfortable using the term *mindfulness* with strategic "snagging" like this, we might be better served by emphasizing *reflection*, with its tripartite components of receptivity, self-observation, and reflexivity.

With reflection, Sandra was soon examining her autobiographical history and finding a slow emergence of aspects of her father's death, and his life, that she had never known in this open, integrative way. At one point in the work she said that she was ready to "go back to my heart" and we attempted the full body scan again. At this point she could move her awareness to her chest without a panic reaction, though she had an outburst of tears and sadness. Images of her father emerged, and she was able to talk about her grief, and her longings for him. Her broken heart was what she had feared, and now she was able to face it directly in our work with her loss, together.

Our secondary adaptations can lock us in unresolved states of trauma or loss, feelings of anxiety, avoidance, and numbing. With vertical integration we reflect on bodily sensations and stay with them to enable their natural dynamic movement in the mind to take its course. This is the often astonishing aspect of this reflection: When we pause and stay within awareness of bodily sensation, the integration of a reflective mind seems to take care of itself.

Horizontal Integration

A 50-year-old attorney came to me at the request of his wife who thought he must have some form of "disorder of empathy." When Bill and Anne arrived together, she said that she was at the end of her rope. He responded that he didn't "know the ropes" she was talking about. Only Bill laughed. It became clear that Bill revealed insensitivity to Anne's feelings in their couples' sessions. But

even more, Bill seemed to be unaware of even his own emotional life. In many ways, Bill's awareness seemed quite limited to the world of the physical and lacked an awareness of the subjective world of the mind that was the province of the right mode of awareness.

Our two hemispheres cannot speak to one another easily. The "L's" of the left—linear, logical, linguistic, literal thinking—cannot take in or connect directly to the holistic, imagery-based, nonverbal, emotional/social processing of the right. If people are not in a state of hemisphere attunement, it's easy to feel bereft, as Anne had been feeling for years. Humor is wonderful, but only when people can join, not feel excluded. What people don't realize is that our attachment history can create modes of adaptation, discussed in Chapter 9, which can be seen to prevent bilateral integration and leave one hemisphere dominant over the other. In this case, each of them seemed to be leaning to one side, only their lopsided styles did not match.

The work with Anne and Bill required that they each examine their own history and, in particular, try to understand how their adaptations had locked them into impaired horizontal integration within their own minds. Bill's "growth edge," the place for him to focus his work in therapy, was to become more aware of the nonverbal, whole-body, emotional textures of the elements of the right mode on his rim of awareness. Anne's challenge was to find words to help describe and label her own internal world so that she could achieve more equanimity. This was clearly a strategic "snagging" of each of their brains within the context of the promotion of mindful awareness.

Anne and Bill each benefited from being taught basic reflective skills. My hope was that by developing the integrative middle prefrontal fibers, they would both find a way to expand their window of tolerance for feelings and reactions that before were automatically closed off. This was an expansion of the hub's capacity to be receptive to whatever arose on the rim. I spent time focusing with

Anne and Bill such that he became more aware of his imagery and sensory world, and she learned to distance herself enough to gain discernment over her reactions that in the past just swept her up into their compelling intensity.

As Anne and Bill achieved new levels of reflective awareness, they could stay present with each other to be able to say what they really experienced in that moment. The feeling of relief with that interpersonal attunement was palpable in the room. The natural unfolding seemed to involve, at first, an internal attunement with mindful practice and the readiness to attempt to try, again, to connect. Fortunately in this case, they were able to approach each other with kindness because they could see the deep commitment each had to do the inner work and make the interpersonal repair.

The example of Bill and Anne illustrates that there are many windows of opportunity through which to enter a system. With this initial work to help them relate to each other, we needed to dive deeply into the nature of the adaptations that had formed their personal identities. This unraveling of emotion, memory, narrative themes, and restricted ways of being enabled each of them to see that they were survivors seeking connection. Luckily they have found each other, now, in the authentic reception that they had longed for their whole lives.

In Bill's history, a cold and distant pair of parents created an emotionally isolated childhood. With the adaptations to that familial culture in which the mind was absent, Bill learned to see things through the lens of the left mode of processing. For Bill, the absence of emotional communication in his family deprived his right hemisphere from interactive nutrients and moved his development toward the left: logical and linear thinking bereft of a sense of his own internal world. As Decety and Chaminade (2003) affirm:

Our ability to represent one's own thoughts and represent another's thoughts are intimately tied together and have similar origins within the brain . . . Thus it makes sense that self-awareness, em-

pathy, identification with others, and, more generally, intersubjective processes, are largely dependent upon the right hemisphere resources, which are the first to develop. (p. 591)

The therapeutic goal for Bill was to have him integrate his dominant left mode with his relatively underdeveloped right mode of being. Exercises focusing on the nonverbal world, opening the hub of his mind to the previously inaccessible senses of his body, his mind, and his relationships, opened the door to a new form of freedom to experience his inner world, and to connect to Anne.

Horizontal integration includes the linkages of the two sides of the nervous system and connecting circuits at similar vertical levels of organization within the same hemisphere. In the bilateral dimension of this domain, for example, we link the logical, linguistic, linear, and literal output of the left side with the visuospatial imagery, nonverbal, holistic, emotional/visceral representations of the right. What emerges with this horizontal form of integration is a new way of knowing, a bilateral consciousness. Horizontal integration enables us to broaden our sense of ourselves, as often distinct layers of processing of perception and thought, feeling and action, are brought into alignment.

Within the hub of the mind, focusing on the feeling sense of these different modes of our minds can be quite helpful. As we've seen, labeling with words is not only a part of mindfulness, but it helps balance firing in the brain's response to distressing emotional expressions in others, and in ourselves. When we become aware that the right hemisphere specializes in imagery whereas the left is a wizard at words, we can see that imagery-based reflective thinking may activate a right mode dominance.

The right mode also has an integrated map of the body, and thus in the body scan and breath-focus of mindfulness practice we may be also evoking this right-sided function. The totality of mindfulness appears to involve a bilateral integration, enabling us not to get lost in these images or bodily senses but to open our-

selves to soaking them in while also having a noticing and describing function as well. Some studies suggest that this more distant, witnessing function that notices and narrates our experience may be correlated with left mode functioning. In this way, both left and right play a part in mindful awareness. Integration, not favoring one side over another, appears to be the thrust of mindful awareness as well as of the emergence of well-being in psychotherapy.

Memory Integration

In *memory integration* we see that the early stages of encoding within implicit memory become assembled into the next layers of explicit memory. The feeling of this is one in which the implicit puzzle pieces of memory in the form of perceptions, feelings, bodily sensations, and behavioral impulses are woven together with our mental models to produce new clusters of explicit factual and episodic memory. Before their integration into explicit memory, implicit-only representations can feel as if they are just the “here-and-now” reality of our feelings, perceptions, and behavioral impulses. With memory integration, these explicit forms now have a sense, when recalled, that something is coming from the past.

These issues of memory became important when I began work with a 26-year-old business student, Elaine, who was experiencing severe anxiety near the end of her program at school. She had been offered a job at a new company and felt terrified that she would “fall flat” on her face if she accepted this challenging new position. When we met it felt as if she had no internal space in which to separate herself from the activities of her own mind, to discern that these were just mental events, not the totality of her being.

With these new insights into the nature of development and mindful awareness seen as a form of internal attunement, it seemed to me that her self-regulatory skills were not optimal to enable her to think clearly about this career decision. After an evaluation to rule out medical difficulties, such as endocrine or cardiac issues,

and psychiatric conditions like mood, posttraumatic stress, or obsessive disorders which might be contributing to her panic, I suggested that it might be helpful for her to get to know her own mind a little better.

Using the reflective skill exercise presented in Chapter 13 (p. 284), I taught her about the basic capacity for mindful meditation in order to begin our work into the integration of consciousness. As we've seen, meditation simply means cultivating the mind. In my own view, I felt that helping Elaine develop the hub of her mind would likely begin to promote the growth of her prefrontal fibers. Elaine responded well to this direct application of mindfulness skills. I suggested she try "meditating" each morning for about 10 minutes. Patients sometimes worry about the amount of session time required. Regularity is important, so suggesting a short, daily meditation time for those not able to take on large time commitments is likely to spur more active involvement in the plan, especially for students enrolled in school. Elaine actually found the meditating so helpful that she would find moments after lunch at school to just sit quietly and focus on her breath. Here's an example of a brief instruction: When the attention to the breath wanders and you notice that, just gently bring your attention back to the breath. Focusing on the breath itself sets up an attuned state that stabilizes the mind and enables not only calming, but a sense of self-observation to emerge. The experience of repeatedly returning the focus of attention back to the breath builds awareness of awareness. This, as William James suggested, is the mind's "education par excellence."

When we moved in the session from simple breath awareness to the openness of receptivity, of being aware of whatever arises, I asked Elaine to tell me what came to her mind about her job. When she started mentioning issues of finance and logistics, things we had covered before without benefit, I suggested she just become aware of her body. She paused and then began to shake. She

grasped her arm and said “Ouch! What is going on?” I suggested she just “go with that” and see where it took her. The pain moved up her arm and into her jaw. Of course, clinically, we need to worry about heart pain, but this was an outer experience, on her skin, not in her chest. She then grasped her jaw and started to cry. Soon Elaine was describing what was going on in her mind: She recalled having fallen off a tricycle when she was young and breaking her front teeth and her arm. As she stayed with the sensations (vertical integration), and articulated the images using words (horizontal integration), she came to examine the memory-sense of what before felt like a here-and-now experience and then, as the session progressed, emerged into a sense of recall of something from the past. This is memory integration.

The implicit bodily sensations of pain and the learned mental model of “if you try something new with excitement you’ll fall flat on your face and break your teeth and arm” had been embedded as implicit-only representations in Elaine’s head. With the excitement of finishing school and being offered a wonderful opportunity, this implicit configuration surfaced and paralyzed her with panic. Moving through the layers of consciousness, vertical, horizontal, and memory integration enabled her to free herself from this top-down prison of the past. Not only could she take on the new job, but her old fear of being excited about romantic relationships seemed to dissipate as well, as she developed discernment for these mental events that could be sensed for what they were: outdated lessons and remnants from the past.

Within mindful awareness, we can observe these elements of implicit memory that before may have swept us up into their sensory richness but now can be discerned to be elements of earlier experience. Such a dis-identification from implicit memory as being the totality of who we are can be the essential first layer in integrating memory toward its explicit form. This may be a fundamental step in the resolution of trauma that enables free-floating

implicit elements that previously were intrusive in a person's life as fragments and flashbacks to be finally resolved as they become integrated into the larger autobiographical memory system.

Narrative Integration

For Anne and Bill, introduced in the section on horizontal integration, moving deeply into their individual life stories was a profoundly healing experience. In couples work, one of the benefits is to enable a collective hub to develop in which the rim elements of one person become received by the hub of the other. This "we wheel" of awareness seems to catalyze a joint mindfulness which is deeply connecting. Within their individual lives, Anne and Bill could sense the pain that the other had struggled with in adapting to the ways in which their basic needs for attunement were not met in their families of origin. Insecure attachment, in its various forms, is a result of how our need for connection is overlaid with adaptations to what we're missing.

When our caregivers don't see our minds, when they do not resonate with our internal worlds and show us in their own faces a reflection of who we actually are, then we shrivel into a chronic state of disconnection from clear awareness of the mind itself. Bill's adaptation to emotionally distant parents remained with him as an adult without his hub's access to much beyond his first five senses: He did not feel his body, know his mind, or sense his connections to others, or himself. This blindness to his own sixth, seventh, and eighth senses was evident in the ways he also was not open to those same dimensions in Anne. He was not receptive to her bodily signals, had no mindsight that would give him empathy for her internal world, and couldn't feel the absence of resonance between them. He had been right: He did indeed not "know the ropes" of this thing called relationships. The ropes that were missing were the integrative circuits of his brain. Bill didn't even understand the notion of attunement when I tried to describe this to him.

We could understand how Anne had thought that Bill had a disorder of empathy. But fortunately, it appeared that Bill's impaired mindsight was not so much rooted in his genetic make-up, but rather was an adaptation to his experiential history of avoidant attachment. This is fortunately a trait of the individual that can be modified by experience—in this case, within therapy.

Anne's narrative was quite different. Instead of the lack of access to details of autobiographical memory and the insistence that "relationships didn't and don't matter" that characterized Bill's dismissing stance, Anne's story revealed a preoccupation with her leftover "garbage" from an intrusive and entangled relationship with her parents. Her father's alcoholism and her mother's anxieties after their divorce when she was 10 years old left Anne with a feeling of uncertainty about others. Her mother would rely on her, treating her like an adult who was to take care of not only her two younger siblings, but her mother as well. When Anne found the "self-sufficient" Bill, it was a dream come true. As is so often the case, we are attracted to people whose own patterns of adaptation complement ours; but then when we begin to grow toward integration and get more access to a primary self beneath those top-down narrative themes, we find that those surface traits in the other are the exact ones we cannot tolerate. Anne needed reliable connection, not disconnection. Her initial attraction to Bill's lack of intrusiveness was understandable given where she came from, but now it was making her distraught.

As we explored each of their narratives, the patterns of adaptations emerged as themes of their life stories. These are the personal identities we carry around with us that mindful awareness permits us to get beneath. Utilizing their emerging skills of reflection developed directly with mindfulness training as a focus in therapy, Bill and Anne could now access a primary self beneath those layers of secondary adaptation. This is the way in which narrative integration is more than just making up some story—it is a

deep, bodily, and emotional process of sorting through the muck in which we've been stuck.

Narrative integration enables us to weave together the story of our life. This domain utilizes the unique aspect of our species as a storytelling animal. Our brains appear to have a left hemisphere drive to use our basic neural capacity to sort, sequence, and select neural maps to weave a story to explain the logical relationships of events in our lives. A story can be defined as the linear telling of a sequence of events that embeds both the actions and the internal mental life of the actors of the tale. The mindful telling of our tale can be greatly healing of unresolved issues in our life.

The creation of a narrative of our own life involves a "witnessing self" that is also able to observe and comment, paralleling the facets of mindful awareness. Attachment studies reveal that one of the best predictors of a child's attachment to a parent is that parent's life story having what is called "narrative coherence." A coherent narrative is essentially a story that makes sense of our lives in a deep, viscerally full way, beyond merely rationalization and minimization (Siegel & Hartzell, 2003). These restrictive adaptations to ignore what we already implicitly know can create a cohesive narrative frame that is quite different from coherence, restricting us to our self-story themes and blocking true integration that would permit coherence to emerge. Our discussions regarding reflective coherence in Chapter 9 illuminate the nature of this narrative coherence process: With mindfulness we gain access to the full rim of our minds and are able to make sense of whatever elements of memory and ongoing sensation may arise. Interestingly, attachment researchers have also found a "reflective function" (Fonagy & Target, 1997) that correlates with both attuned relationships between child and caregiver and with narrative coherence in the parent. In these ways, narrative integration likely is a fundamental part of the reflective coherence that emerges with mindful awareness.

The experience in therapy of transitioning to a state more receptive to one's own inner nature helps move an individual toward "earned security" of attachment in which the narrative becomes coherent. This process often involves the fluid state of being open to what is, not constrained by what one's adaptation wants the individual to believe occurred. Clearly the parallel between mindful awareness and narrative coherence offers a rich illumination of the potential role of reflection and neural integration at the heart of both. Mindful traits in parents would likely predict both a coherent parental narrative and secure attachment in children. Future research could examine the corresponding hypothesis that secure attachment for children would actually lead to more mindful traits as they grow. Certainly our approach in therapy has this notion at its core: That as we promote interpersonal attunement in secure attachment we are simultaneously encouraging the internal attunement of mindful awareness.

Though some interpretations of mindful awareness practices as "being only in the moment" often de-emphasize focusing on narratives in our lives as they pull us away from direct sensations in the now, I have found that combining these two ways of knowing to be quite powerful. Our personal identities are often revealed in our narrative themes and seeing these for what they are seems to assist the movement within mindfulness toward dissolving these top-down influences. Likewise, being able to develop discernment is a vital component of gaining the mental space to be able to note thematic elements and not get drawn into their seductive allure. Just remembering, especially traumatic events, can be unhelpful at best, and even retraumatizing. Remembering with the focus of deepening an understanding of past events and embracing a fuller way in which the painful sensations of the memories can be more fully tolerated and then resolved is how narrative integration can help. Healing in therapy involves sensing memory in a way in which we experience the textures of affect and somatic sensations in an integrated process as we move from the raw and intrusive

nature of unresolved states to the open and mindful presence of resolution. Such a “making-sense” process is fully embodied, not just an intellectual exercise in using words to “explain away” things, but rather to create new insights that bring fresh meaning to old elements of memory. “Making sense” combined with discernment enables us to fully integrate memory into our life story so we can move more freely into the present.

Our life story is not the whole story of who we are. As we work through our own attachment histories, we sense the feeling of the story, observe it as our narrative and not the totality of who we are, conceive of the attachment stance that the narrative reflects, and on a deep ipseitous knowing level we have a bare understanding of a primary self beneath all the adaptation and struggle. Beyond the story of our lives is the essence of who we are.

From that mindful place of discernment, all four streams of awareness fill our self-knowing consciousness and we can now coherently link past, present, and future. The liberation of energy, often accompanied by laughter that seems to emerge with integration of all sorts, is contagious. Anne and Bill could finally laugh with each other as Bill indeed “learned the ropes” of relationships and Anne could develop her own widened hub that enabled her to appreciate the qualities in Bill that she had cherished for so long. No longer alone, each of them could finally discover the fuller sense of attunement, with each other and within themselves, that they had longed for since the beginning of their journeys. This is narrative integration and the emergence of a coherent mind, of presence, of fullness, of receptivity to whatever arises in ourselves and in others. The great news for Anne and Bill was that they had the courage to go to those painful places of the past that allowed them to enter the present more fully, more mindfully.

State Integration

Sandy is a 13-year-old girl who came to me with fears of the edges of desks and sharks in her neighbor’s pool. She was doing

well in school, had many friends, and got along well with her parents. But over the last six weeks she had become plagued by these fears. I was concerned that she might be developing the irrational thoughts of obsessive compulsive disorder and ruled out exposure to streptococcus bacteria which can be associated with the onset of that condition. There were no recent events that had changed in her life.

I taught her the basic skills of reflective awareness and she learned quickly to enter a state in which she could sense her breath and become aware (“like I’m watching myself from outside myself”) of her bombardment of thoughts and worries. After a few sessions and practice at home, she could sense these irrational thoughts as activities of her mind, not all that she was. But this discernment by itself did not change the presence of these worries, it only lessened their intensity. She felt terrified even though she knew it was irrational.

Combining a number of different approaches to obsessive compulsive disorder and anxiety treatment, I offered her the view of a “checker,” which is a set of circuits in her brain that scan for danger. This checker system has kept us safe, we discussed, as it scans for danger, alerts us to fear, and motivates us to do something. Scan, alert, motivate: SAM. We discussed how Sandy’s checker system seemed to have too much enthusiasm for its job. This is what I told her: “Much like a friend who might share your interest in, say, bike riding, but who wants to ride for 36 hours, you need to negotiate with her to perhaps ride for just three hours. The checker shares a common interest in keeping you safe.”

We began a program that utilizes mindful awareness to develop discernment and then first involves having the checker’s activities noted, but not changed. This vision of a part of the brain, as we’ve mentioned before, being involved in one’s mind seems, by itself, to help promote a mental distance akin to discernment. This, plus the mindfulness exercises, furthers this capacity to see the checker’s ac-

tivities as not the totality of who the person is. Next, Sandy was to engage the checker in an internal dialogue, similar to labeling the internal events and then carrying out an active interaction with them. “I know you love me and want to keep me safe, but this is over the top.” In a third phase, her ritual behavior of knocking an even number of times was gradually reduced. Her automatic motivation behind this ritual was to “be sure nothing bad happened” that she was convinced would if she didn’t do them. You might imagine that knocking had become a ritual throughout Sandy’s day. Naturally, when nothing happens when she knocks 12 or 14 times dozens of times an hour, her mind becomes convinced that this is what saved her. It’s also pretty hard to concentrate in school or to engage with friends and family when you are feeling terrified and compelled to knock or enact other compulsions.

A related mindfulness-based approach for obsessive compulsive disorder (OCD) was utilized in a study, carried out by Jeffrey Schwartz and colleagues (Baxter et al., 1992; Schwartz, 1998), to demonstrate that a “talking therapy” could be shown to alter the way the brain functioned in parallel to the reduction of symptoms. Once people learn this mindfulness-based skill, relapse is less common compared to those on medications who have a return of symptoms once the pharmacological intervention is stopped.

OCD is an example of impaired state integration in that individuals can have a non-worried everyday state of mind with all its variants and then this checker, fear-driven state. One of my teenage patients actually used the abbreviation to coin a perhaps more useful term: “Overactive Checker Deployment.” To make sense of this conflict among states, it has been helpful to teach people about the brain’s capacity to have excessively active circuits that create states of fear and dread. Knowing about the checker and learning mindfulness techniques of discernment can transform oppression from internal voices and a sense of despair into victory and emancipation from such a prison.

As we come to be more deeply aware of our lives, the need for *state integration* may emerge as we sense that we have very different and often conflictual states of mind. A state of mind involves a cluster of neural firing patterns that have a transient but potent quality to them in the moment. A state organizes our widely distributed processing as an adhesive that interconnects present moment firing onto itself. A state stabilizes the macroassemblies of large-scale neural clusters into a functional unit. We also have self-states in which enduring patterns of firing clusters exist, such as a “me” that plays tennis, reads a book, makes love, or goes for a hike. Each of these repeated patterns of being contains within it an emerging history, often with rules and more readily accessible memory (explicit and implicit) for that state of mind.

Normal adolescence is at first filled with a tension among states that remains out of awareness, but then becomes filled with a sense of these conflicts, and finally a movement toward resolution of the tension across self-states (Harter, 1999). Healthy development is not about becoming homogenous, but involves acknowledging and accepting our various need states and biological drives that are realized within these disparate states of mind. Healthy development from this framework involves coming to accept and integrate one’s various self-states of being. Integration of states in this way seems to parallel the COAL mindset fundamental to mindful awareness. As we come to accept these different states of being, we learn to love ourselves for the many ways that we are, not for some idealized sense of how we should be.

Temporal Integration

Tommy was turning 12 when he became obsessed with death. I had seen him years earlier for issues related to worries about the recent death of his uncle with whom he was close. Now he was convinced that he would die from some natural disaster. But even when not worried about calamity, he said that he was thinking “all the

time” about what it would be like when he might grow old and then just face death. Whatever it was, he said, he couldn’t get death out of his mind. We spoke about his concerns and he asked how he could “be sure that everything would be okay?” That was a great question, one of the basic issues we have to face as a human being.

“Why are we even aware that we die?” he asked, his eyes peeled on mine.

I knew this was the prefrontal existential issue for all of us. Why *do* we have to know that? I felt his anguish, and after a few sessions talking about his uncle and his life without relief from his worries, I thought it was time to introduce him to mindfulness skills. He responded well to the meditation exercise (see Chapter 13). He said that he’d “never felt so peaceful, this is incredible!” We spoke about the ocean and the sense of being beneath the surface. He could just see his worries as brainwaves on the surface, watch them float in, and float out of his awareness.

We practiced mindful meditation during the next few sessions, with him practicing at home for short periods, about 10 minutes each morning. Tommy eventually came to see his worries as the activities at the surface of his mind, not the totality of who he is. He could watch, from the tranquility of the depths of his mind, and notice those worries just come in and out of his conscious awareness. They didn’t have to take him over. He could just notice them and not judge them, just let them float off as he rested in the peacefulness of the depths of his mind.

Soon Tommy came to a discovery: “I realize that if I am known by someone, like my family or my friends, then when I die I won’t be gone. Being known makes me feel relaxed. I don’t worry.”

We sat quietly, reflecting together on that profound insight. His eyes widened and he said, “If I’m known I can disappear. And when I die I just become a part of everything.”

I nodded my head.

“I’ll meditate on that,” Tommy said, and we ended our session.

I'll meditate on that, too, I thought.

Patients teach us so much. As we join with each other, patient and therapist, student and teacher, we become fellow travelers along this path of life. There is no end to questions, there are just continual moments of being open to whatever may arise, pain and pleasure, confusion and clarity.

As the prefrontal cortex develops in the first five years of life, it gives us the opportunity and the burden to sense the future. Learning to live with our awareness of the transience of time is the focus of *temporal integration*. Three major aspects of time emerge in this integration: uncertainty, impermanence, and death. We can be immersed fully in the moment, yet our prefrontal cortex can remind us that “this is temporary,” as it did during my silent retreat walk in the woods, being sure I did not forget that death would change all. Such a prefrontal preoccupation can put a crimp on enjoying life and make temporal integration come to the foreground in that person's focus, on his or her growth edge. As we realize how things constantly change, we also become acutely aware that nothing can be certain, nothing controlled.

For a left hemisphere, especially, this can feel terrifying in that nothing can be held in sequence or fully predicted. Perhaps the right hemisphere's mode of being is needed as we come to rest in the comfort of acceptance within mindful awareness that helps us deal directly with the uncertainty and impermanence issues of temporal integration. Perhaps this is Tommy's right mode's solution that being known gives us a sense of wholeness in the universe with which we can face death with more equanimity. Even the reality of death becomes a component on the rim of our mind's wheel of awareness that can be noted and welcomed. Temporal integration directly evokes a mindful presence to approach, not withdraw, from these profound existential realities of our prefrontal preoccupations.

Interpersonal Integration

Before we worry about dying, we begin life with just the experience of being. We come to feel our first sense of wholeness, an inseparable part of an undivided world in the womb. This can be called a “ground of being.” All of our bodily needs are met and “just being” is a natural way. But once we’re born, we must “work for a living” and we find life different, and hard. We are now little doings, not just beings. No matter how attentive our caregivers are, we find our body betrays that sense of wholeness: we need, we want, we ache in the belly. When we are frustrated we wait what feels an eternity to have our needs met by those we now depend on to soothe our distress. We need others, we rely on them for comfort, for our very survival. Attunement with others is a glimmer of hope that emerges from the universal conflict between what was our “ground of being” to now “being a human in the world.” We hold on to others for dear life.

Here we see that *interpersonal integration* becomes a vital way in which our brains’ hardwiring to connect enables us to feel grounded in the world. Attunement is not a luxury; it is a requirement of the individual to survive and to thrive. As we align our being with the being of another, as we transfer energy and information between each other to resonate, we create an attuned state at the heart of interpersonal integration. Such secure interpersonal attunements likely create states of integration that promote internal attunement and mindfulness as a trait. The neural correlations of secure attachment, mindfulness, and middle prefrontal function overlap with these relational, mind, and neural dimensions of well-being.

In mindful awareness we enter a more receptive state to engage with others in that life-affirming resonance. Mindfulness, as we’ve seen, also involves an attunement to the self, enabling what was once a total dependence on others for connection to be now bol-

stered, not replaced, by a deep form of intrapersonal resonance. We become our own best friend and, in turn, become available for such full and receptive relationships with others.

In all of our clinical relationships we build on the centrality of attunement. As with Tommy's realization in the previous segment, our minds resonate, a dance of the deepest aspects of our universal concerns. Even Tommy's insight, his shift in perspective, is exactly the essence of mindfulness as a relational form of internal attunement: we become known to ourselves.

Anne and Bill had found that their cohesive states of adaptations had restricted their capacity to be openly attuned to each other. The work for each of them was to enter a reflective process of integration across the many domains of horizontal, vertical, memory, and narrative that could enable each of them to get to the ipseitious self beyond just narrative cohesion. From that receptive space, they could then regain an internal attunement to the longings to belong that had been distorted during their childhood adaptations. Opening the hub of their individual minds permitted a new way for them to join in this ground of being. Their receptive hubs opened their hearts to connect in ways that only their dreams could have imagined.

Mary's experience with early forms of abuse left her also with a sense of isolation from others that kept her stuck in a state of disconnection, socially and internally. The hub of her mind had become fractured. By finding her way to the basic process of integration of consciousness, by healing the hub of her mind, she could sense the feelings of betrayal and shame that so often fill the hearts of those who have been recipients of familial trauma. Moving toward the belief that the self is defective, a view embedded in the shame that emerges from such profound misattunements and maltreatments, healing is facilitated by seeing that toxic sense of self as an element of the rim, not the totality of one's identity. For Mary, an expanded hub enabled the many layers of integra-

tion to be welcomed in her life as she came to make sense of her experiences and move into the present with more clarity and a sense of freedom and open possibility.

It is from this open space in our minds, this reflective spacious hub, that we can engage fully with others. The beauty of mindful awareness is that it clears the path for direct connection within and with each other. As we move into states of coherence within our own minds, as we loosen the cohesive strangles of restrictive narratives and enter the flow of a FACES river of well-being, we become free to be present. This presence brings us to that ground of being, the ipseity of our earliest existence, where we give and receive in a flow that is as natural as breathing.

Transpirational Integration

As I became more immersed in the experience of being with my patients with this framework of the domains of integration in mind, I came to find that a common new form of integration seemed to emerge. This dimension of integration felt like it breathed life across all the other domains, hence the term *transpirational integration*, to denote this sense of “across-breathing.” Transpiration seemed to involve the feeling that the person was a part of a much larger whole, beyond the bodily-defined self. People feel a sense of connection to not only other people, as within interpersonal integration, but they sense a deep desire to participate in causes that help others. This feeling of being a part of something in time and space beyond this body-self seems akin to dissolving Einstein’s notion, discussed in Chapter 7, of the optical delusion of our separateness.

As we have explored, mindful awareness seems to involve not only a jettisoning of judgments, but an access to ipseity that enables people to feel the bare self beneath adaptation. From this new sense of one’s deeper primary self, a feeling of belonging to a larger whole can emerge. Without reflection, we can remain

stuck in an optical delusion not only of our separateness, but of the particular rules and mental models with which we've come to have a personal identity that shapes our journey in life. With the reflection of mindful awareness, we can gain a glimpse of a deeper reality—not replacing our identity but expanding it.

In a similar way, with transpirational integration our sense of ourselves is transformed. Transpiration opens our minds to another dimension of perception. The sacred suffuses each breath, our essence, each step through this journey of life. As we breathe life across the many domains of integration, we come to see ourselves as extending beyond the temporal-spatial dimensions that limit our view of the horizon. Transpiration gives us the vision to see beyond what is in front of our eyes, that we are a part of what has gone before, and what will come after these bodies are long gone from this dimension of our lives. Transpiration allows us to see that we leave an eternal imprint on the lives of others and on the world we leave behind.

Seeing transpiration as a part of the spectrum of integration can help us to understand the convergence of its appearance within contemplative and religious practice, and its presence in the non-sectarian studies of happiness and mental health.

Mindful awareness promotes neural integration. Today, more than ever, we desperately need a scientifically grounded view that supports our societal encouragement of reflection to promote compassion and care for each other. The integrative role of the mindful brain offered here may be one approach that can help us find common ground for promoting reflection in our lives now, and for generations to come.

Afterword

REFLECTIONS ON REFLECTION

We've come to the last chapter of our present travels together. We've journeyed deeply into ideas, direct experience, science, and some brief reflections on practical implications of the mindful brain. Here we'll touch lightly on some reflections on reflection itself, as we examine the relationship between reflection and morality and the way in which we can cultivate compassion for each other.

REFLECTION AND MORALITY

As the mindful brain develops, discernment is elaborated and we come to realize that the bare, primary self that is revealed with mindful awareness has within it a deep revelation: We share a core humanity beneath all of the chatter of the mind. Underneath our thoughts and feelings, prejudices and beliefs, there rests a grounded self that is a part of a larger whole.

We do not need to evoke a sense of something beyond the mind, but just a reality that we are a part of one species, one set of living beings, a part of nature. This bare awareness—this ipseity—is universal. We share our “ipseitious self” with each other, that grounded core essence beneath our adaptations, beliefs, and memories. From this natural awareness of mindful living, from this discernment, there is a flow of active analysis, perhaps of a non-