



Special issue paper

The mind in psychotherapy: An interpersonal neurobiology framework for understanding and cultivating mental health

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In this brief overview, I offer a conceptual approach to the mind that can support whatever clinical, research, public policy, or other approach you may be involved with. It seeks to help both the understanding and cultivating of mental health and well-being in our world, and may be especially important in encouraging future psychotherapists to be systems-oriented and multidisciplinary in their work. As the ideas of this framework have been published in a number of texts, I will simply have a brief listing of those and other selected publications at the end of this article and outline the main ideas and factual points as we move along.

Practitioner points

- Consilience across wide range of disciplines leads to an integrated framework defining the mind, mental health, and the strategies of intervention to cultivate well-being.

Interpersonal Neurobiology (IPNB) is a framework for exploring the nature of reality that utilizes what E.O. Wilson terms, ‘consilience’ (Wilson, 1998). This refers to the way the findings of distinct disciplines are explored, their overlaps identified, and a larger perspective obtained from the gathering of these seemingly universal discoveries made by independent pursuits of knowledge. A wide range of disciplines, including mathematics and physics, biology (including neuroscience, genetics, and medicine), psychology, linguistics, sociology, and anthropology, as well as other approaches are explored to find consilient principles emerging from these various approaches to understanding reality. Without much shared linguistic terminology or research strategies, finding ‘common ground’ across these varied disciplines can be a challenge (Gilbert & Kirby, 2019).

Interpersonal Neurobiology is a response to this challenge. Individuals from a range of fields within the broad discipline of mental health, in medicine, organizational functioning, parenting, and meditation, have drawn upon IPNB as a way of advancing their respective work and applying it in practical ways. To date, our Norton Professional Series on IPNB has over seventy textbooks published that serve as a background library for anyone interested in pursuing more understanding from this perspective.

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In the next section, I will attempt to articulate how this knowledge can influence our understanding of vulnerabilities to mental health problems and what might be done to help reduce mental suffering and cultivate human flourishing. In the third and final section, I will briefly outline the implications for psychotherapy now, and for the future.

Mental health

What is the mind?

When this interdisciplinary approach began in the early 1990s, there was no consensus on what the term, mind, actually meant. As Hippocrates stated 2,500 years earlier in his text, *On the Sacred Disease*, mind can be simply considered a synonym for ‘brain activity’. This perspective is not an acceptable view to a range of other academics, including many sociologists, linguists, and anthropologists who often view ‘mind’ as happening between us, not just within us – within our heads. For many of neuroscientists and physicians, this relational view of mind may seem ‘absurd’ and be explicitly dismissed as ‘reversing our scientific accomplishments’ that could assert, as William James did in 1890 in his *Principles of Psychology*, that all of our feelings and thoughts – our mind – were an outcome of the brain’s activity. Neurologists, for example, would remind us that a blow to the head lead to a blow to the mind – so what more was there to say?

I knew, as an attachment research trained scientist, that a blow to an attachment relationship would just as readily be a blow to the mind. Studies revealed that a lack of an attachment relationship for a child, for example, could lead to not only significant impediments to the growth of the mind, but also to death. In fact, we now know that these relationships have profound effects on epigenetics (Kumsta, 2019) brain maturation and body functioning (Petrocchi & Cheli, 2019).

So the question that seemed to arise at that moment of trying to formulate what ultimately would become IPNB was this: Could both the mind-as-brain activity and mind-as-relational activity perspectives *each* be correct? Though no one within a multidisciplinary gathering initially found such a bridge, might there be a scientifically sound link that could be offered that might enable these two seemingly incompatible perspectives to find common ground? If so, what are the implications for psychotherapy and prevention? One obvious link is that the brain evolved partly as a social information processing system (Gilbert, 2019).

In my own mind, a kind of ‘triangle of human experience’ was a visual image that suggested a way to find some common ground between the inner, neural perspectives and the inter-relational views (Figure 1).

A scientifically grounded ‘stuff’ of a system of mind, one that might be both within the body, within us, and between us, within our relationships with each other, could be the flow of energy and its subset, information. Our relationships might include one-on-one relationships, like attachment between infant and caregiver, or within a family, or organization, or society, or culture. That singular essence of a common system of mind, the stuff of the system that might be the basis of mind, could be considered as *energy*. When energy flows in a way to be symbolic of something, to carry meaning, it is information.

While energy is rarely discussed in scientific frameworks about the mind, energy seemed to be what happens within, and what happens between. Could energy be considered the ‘stuff’ of the mind that linked these two seemingly distinct locations of our mental lives?

Energy is what neural firing in the brain is all about. Energy is at the heart of what communication in relationships is all about. Energy, of course, comes in many forms: light, sound, touch, chemical, electric. The brain, for example, is at its core a transformer of

patterns of electrochemical energy flow as action potentials move down the axon and lead to the release of chemical neurotransmitters. And in our connections with one another, we communicate with each other with sound and light, just like you are doing right now as you read these words with your eyes, or hear them read aloud with sound.

Sometimes energy is simply flowing in our mental lives as a conduit, like water through a hose. The sound of a gurgling stream would be one such example. At other times energy is constructed in formation, in forms that symbolize something other than the energy itself. When you read the word, STREAM, for example, the sound or sight of that word is not the flowing water itself, it stands for the water, it is a symbol, it re-presents that flowing entity of water as a linguistic 'representation'. We call energy in symbolic formation, information—its really energy-in-formation.

The mind may enable energy to flow as a conduit or as a constructor (Figure 2):

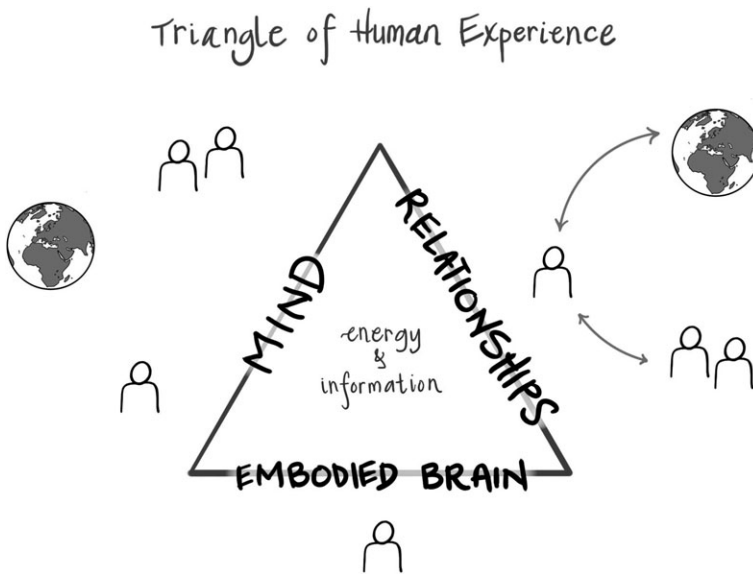


Figure 1. The flow of energy and information.

Conduit & Constructor

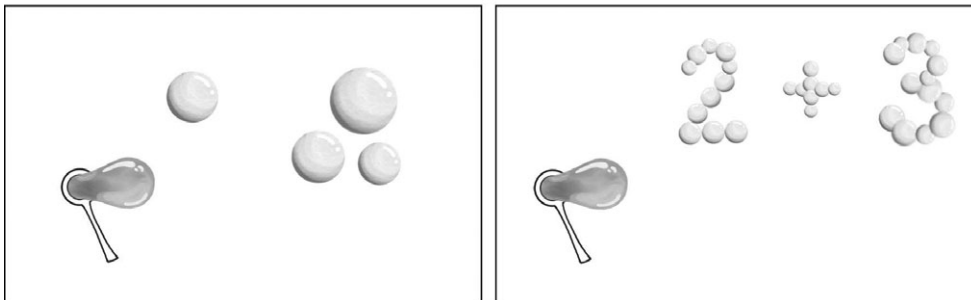


Figure 2. The mind as both conduit and constructor of energy flow.

Some physicists view the universe as comprised of energy and information arises from patterns in the flow of energy. Others view information as primary and energy arises from that. Since there is agreement that both energy and information change, that is, they ‘flow’, we can simply use the unit ‘energy and information flow’ to embrace both energy-as-primary and information-as-primary perspectives in identifying the stuff of the system of mind. For the sake of simplicity in the reading, and because at times energy is just energy without informational representation, here in this overview we will focus primarily on energy.

If our proposal that the system of which the mind is some part is energy flow, and that flow happens inside the body—including the brain in the head—as well as between our body and the world of people and the planet around us, our relational flow, what kind of system is this?

Mathematics suggests that when a system has three properties, especially the latter of these, then the system is called a ‘complex system’. These properties include being *open* to influences from outside itself, being *chaos-capable* or essentially randomly unfolding, and most importantly *non-linear*—meaning a small input leads to a large and hard to predict result. In the universe in which we live, math tells us, complex systems have something called ‘emergent phenomena’. Emergence means that the interactions of the elements of the system give rise to something that a single element by itself could not create. Emergence is a real aspect of complex systems, even if many scientists not accustomed to systems thinking find this property difficult to grasp.

And so the system of mind as we are proposing it to be seems to be a complex one. The *location* of this system of your mind would be within your body and between your body and people and the planet. But what exactly *is* the mind even if it is a part of this system of inner and inter, of within and between?

Common descriptions of what is often meant by the term, mind, include the following three facets:

1. Subjective experience: the felt texture of life, sometimes called ‘first-person’ experience.
2. Consciousness: the experience of knowing or being aware, and the knowns that we are aware of.
3. Information processing: a process of shifts in energy patterns that symbolize a cascade of entities representing the world within and between that may involve awareness but does not require consciousness. Information processing can be said to be embodied, enacted, extended, and embedded.

While these descriptions of mental life are important to understand, they do not by themselves lead to an understanding of how we might actually define the mind or what a healthy mind might be—what mental health is cannot be inferred from these descriptive elements of mind. For example, what would unhealthy subjective experience actually be? What might healthy consciousness be like? What is healthy or unhealthy information processing?

In order to attempt to go beyond these important descriptions of the first three facets of mind, we can propose a fourth facet, one that can serve as offering a definition that lends itself to exploring the nature of both mind as relational and internal, and mind as healthy or not healthy.

One of the emergent properties of complex systems is called *self-organization*. This is a non-intuitive process whereby the unfolding of the flow of a complex system regulates its own becoming. It is not intuitive because this process regulates that from which is

comes, meaning it itself is shaping its own emergence. If you consider clouds and the shapes that unfold as they move across the sky, you will get a feeling for what self-organization of a complex system literally looks like. Those water and air molecules have the three features of a complex system – they are open, chaos-capable, and non-linear. The cloud itself is emerging, meaning that you cannot have a cloud by just the singular element of a molecule of water or air. How the cloud's shape unfolds is due to self-organization. The mathematics of complex systems reveals that optimal self-organization leads the system to 'maximize complexity' which is why the clouds' shapes are so intricate.

When a system is not optimizing self-organization, it tends towards either chaos on one side, or rigidity on the other. This finding alerted me to a pattern I had noticed as a trainee in psychiatry and a researcher in attachment. When things were not going well, people suffered with chaos, rigidity, or both. When they went well, there was an enlarging, vital sense of harmony.

It turns out that this is exactly what the mathematics of complex systems predicts. And it actually explains the DSM's various syndromes' listing of symptoms that can be reconsidered as all examples of chaos, rigidity, or both.

These findings suggest that a *fourth facet* of the mind may be defined this way:

FOUR FACETS of MIND

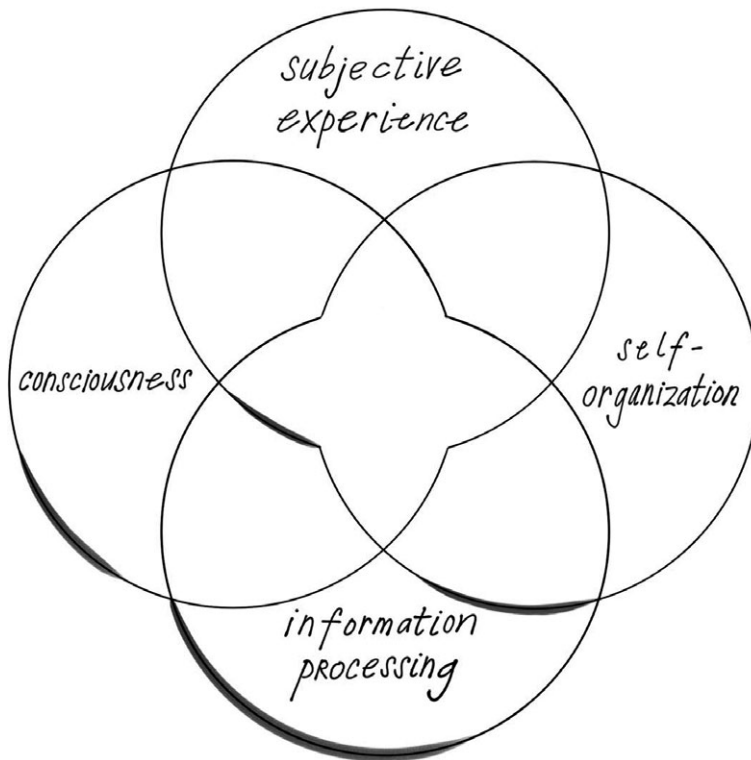


Figure 3. The multifaceted mind.

an embodied and relational, emergent self-organizing process that regulates the flow of energy and information (Figure 3).

Perhaps the other three facets are emergent phenomena of the complex system of mind as well. But in the limited space of this review, here let's focus on the fourth facet, this emergent property of self-organization, as it lends itself to the exploration of what mental health might be.

A healthy mind

Optimal self-organization of a complex system arises when the systems' elements differentiate and then link. While mathematics states this, it does not have a formal name for this fundamental process of linking differentiated parts. We will simply call this *integration: the linking of differentiated parts of a system*.

Integration, we can propose, is the basis of mental health. It turns out that integration is a useful process to understand not only the health of the mind, but also the health of the body, the brain, relationships in families and communities, and even in the relationship of humanity to the planet's ecosystems.

In the course of the nearly thirty years since this definition was offered to a group of dozens of academicians focusing on mind and brain in which we were able to find common ground and collaborate constructively for over four and a half years, this definition has served as a useful consilient framework for bringing together a wide array of approaches to how we create well-being in our lives. Mental health, education, parenting, meditation, organizational function, ecological studies and programmes, and various other fields of research have been able to use this view and explore ways to apply this view to creating more understanding and effective interventions to cultivate health.

A healthy mind is a mind that creates integration within the body and its brain, and within relationships with other people and the planet.

In reviewing this proposal in my graduate school textbook, *The Developing Mind: How relationships and the brain interact to shape who we are*, I have worked over the years with dozens of interns to revise that text, now entering its third edition. I suggest to them that they try to find any studies that disprove the basic proposals of IPNB outlined in that book. 'Disprove?' they asked me at first. Yes, to find even one study that goes against what the fundamental principles, ones I will outline for you next here, that serve to identify some grounding ways of viewing the scientific findings supporting – not proving – the proposal of the mind as a self-organizing process.

For efficiency, I will outline these findings here and note some of the relevant implications for our discussion about the field of mental health. Please explore any particular areas further in the various texts identified in the references that serve as a further resource.

If the mind is, in part, the emergent self-organizing process that regulates the flow of energy and information, then integration would be the mechanism of a healthy life. That flow would happen within the body and its brain, and it would happen within our relationships with people and nature. In other words, the mind is both within us and between us: We have an *inner* and an *inter* aspect to our mind.

Integration in health and unhealth

Evidence suggests that when individuals with a range of psychiatric disorders, such as manic-depressive (bipolar) disorder, schizophrenia, or autism, are evaluated in terms of brain structure and function, the neural process that is impaired is neural integration – the linkage or differentiation of regions of the brain (Zhang & Raichle, 2010).

In developmental trauma, too, studies reveal that integration is what is impaired in the neural connections that are found following severe abuse or neglect. As Marty Teicher has demonstrated, the ways this impaired integration can be revealed is in the decreased growth of integrative regions, such as the hippocampus that links widely separated memory systems to one another, the corpus callosum that links the differentiated left and right hemispheres to each other, and the prefrontal regions, linking higher and lower brain systems. In addition, more recent technological advances have allowed scientists to assess the more extensive and more subtly differentiated regions and their intricate interconnections linking them together into what is now termed the ‘connectome’. Teicher *et al.*, 2003, 2004 has demonstrated that the developmental trauma of abuse and neglect leads to a diminishment in the growth of the interconnectivity of the connectome.

In a corresponding manner with the study of well-being, the Human Connectome Project from a range of collaborative research institutes has revealed that the neural profile associated with every measure of well-being they could assess was one feature: How integrated the subject’s brain was as revealed in the interconnectivity of the connectome (Smith *et al.*, 2015).

Whether this interconnectivity in the brain is structural or functional, the finding essentially reveals how differentiated or specialized regions are then linked to one another. Such neural integration enables the coordination and balance of neural functioning; impairment in such integration makes the individual prone to the chaos and rigidity that are the predictive outcome of integration within a complex system. (Figure 4)

When the DSM-III, DSM-IV, or DSM-V is examined, as controversial as the usefulness of that document is, one finds a fascinating pattern: Every symptom of each syndrome can be reframed as an example of chaos, rigidity, or both. One example would be in bipolar disorder in which chaos is present in manic states, rigidity in depressive states. Likewise, post-traumatic stress disorder can be seen as having both chaotic and rigid symptom patterns, with the former including intrusive memories and emotions, flashbacks, and the startle response, and the latter including withdrawal behaviours, hyper-vigilance, and somatic numbing.

Integration can be seen as the fundamental process underlying well-being. And states of unwell-being would manifest as chaos and rigidity resulting from an impediment to differentiation, linkage, or both. Integration can be functional and structural, and it can take place within the brain, within the whole body, and within our relationships. One possibility is that relational integration in which patterns of communication reveal attunement with respect to the differentiated internal state of another and then the linking with compassionate responses cultivates neural integration in each individual. In other words, relational integration stimulates the growth of integration in the brain. And integration in the brain appears to be at the core of the many forms of regulation – of attention, emotion and mood, thought, action, relationships, and morality – what are sometimes clustered under the general term, ‘executive functions’ (see Siegel, 2012, for a review).

Neural integration enables differentiated areas to communicate effectively with one another, supporting the coordination and balance of disparate areas to become part of a

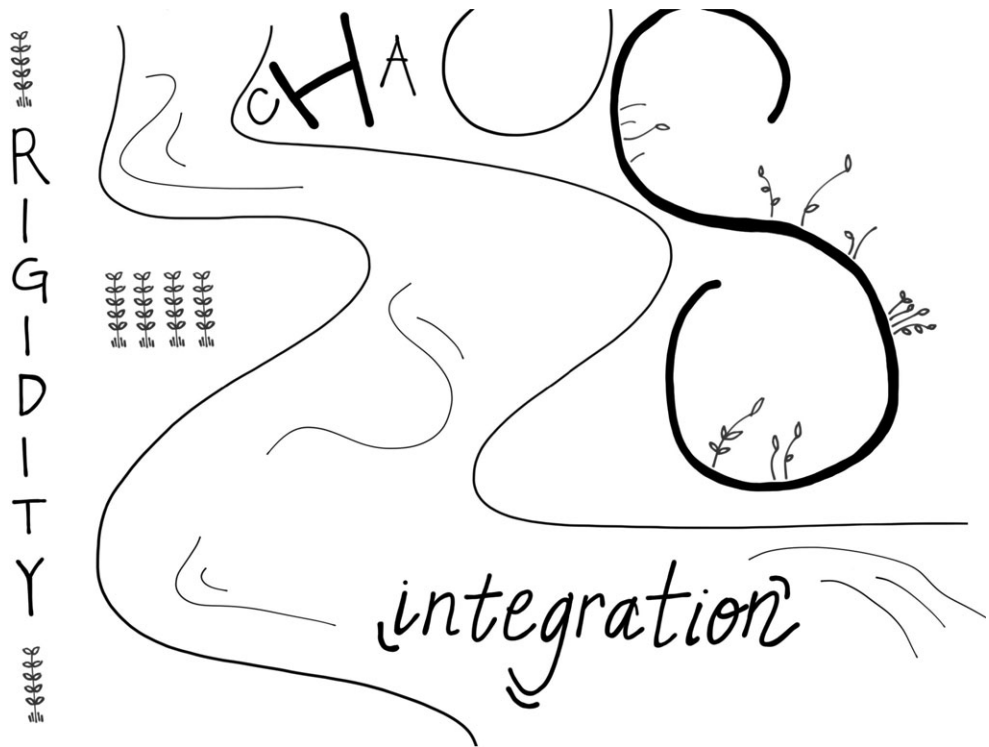


Figure 4. The river of integration.

functional whole. That is likely the reason neural integration underlies regulation. Disorders of regulation, which may be the common ground among psychiatric dysfunction, may then be seen as arising from challenges to neural integration. Sometimes this is a condition acquired by random events or genetic vulnerabilities; sometimes it is acquired through impediments to relational integration, as in abuse and neglect.

Integration in the brain can be structural and functional, influencing the sweeping neural activity the influenced the harmonics or music of the brain. Morten Kringelbach and colleagues have assessed what are called, 'connectome harmonics' with magnetoencephalogram or MEG studies, revealing how the brain functions by waves of electrical activity that recruit a range of differentiated regions into a functional, harmonizing whole (see Atasoy, Deco, Kringelbach, & Pearson, 2017; Atasoy, Donnelly, & Pearson, 2016; Cabral, Kringelbach, & Deco, 2017; Deco & Kringelbach, 2014, 2017). Examining the overall electrical patterns of energy flow in its oscillating patterns of connectome harmonics may be enable us to more clearly sense how brain activity is dependent on 'energy flow' rather than simply isolating a select set of neural regions and stating that they *do* this or that function. In other words, energy flow patterns may be the core of how mental experience emerges, in part, from neural firing patterns. When these harmonic oscillations reach a 'metastable state', that have what Kringelbach and colleagues suggest is a temporarily stable configuration akin to a ball rolling down to an 'attractor basin' in the classic parallel distributed processing view of information flow. Waldrop has suggested the notion of 'criticality' as that state between chaos and rigidity – what we can view, now,

as the state created by the linkage of differentiated elements of a complex system. Criticality is how a complex system enters an optimally self-organizing flow.

Within the brain's harmonic oscillations, we may discover the 'neural correlates of consciousness' in which the linking of differentiated areas of the brain is the neural mechanism of how neural firing and the subjective experience of being aware of something is thought to arise. This state of being aware of something may emerge as a temporary, metastable condition, one that might overlap with criticality as the system self-organizes. As Tononi and Koch (2008) have proposed in an 'integrated information theory' highlights the centrality of this integration in the emergence of consciousness. And we may propose, then, that consciousness – being aware and also the capacity to be aware of something – may play an important role in self-organization itself. It may be for this reason that consciousness has a fundamental function in the change processes of psychotherapy as well as in education and parenting. In other words, we may need consciousness for change and growth.

Indeed, evolution has given rise to 'knowing awareness' (Gilbert, 2019). For example, no lion can wake up in the morning and purposely decide to train to be fit to be a better predator. Animals cannot deliberately choose to train in anything to be better at it, or because they want to self-regulate their emotions or motives. Once minds become capable of reflecting on inner states of mind and externally directed actions with a particular type of awareness, the organization of emotional and motivational processes change. This is what allows open awareness, a receptive form of being conscious, to have such profound effects, along with motivation training where we can choose to cultivate certain motives such as compassion. This introduces a completely different process of self-organization which becomes top-down, but also guided by cultural context and opportunity. What we choose to train or cultivate in ourselves can change the brain even at the epigenetic level (see Kumsta, 2019). This is the first time as far as we know that top-down self-organization is possible (see Gilbert, 2017). This profoundly important evolutionary adaptation to the organization of mind is sometimes implicit in psychological therapies but very rarely made explicit or the implications explored. Rather, therapists talk about conscious and unconscious processes not the implications of 'knowing awareness to self-organization.'

Likewise, studies of compassion as discussed by Goleman and Davidson (2017) reveal how states of positive regard, kindness, and compassion are also correlated with high degrees of neural integration as revealed in the gamma wave findings of electroencephalogram (EEG) studies of those meditations cultivating a state of care and of love. This is a fascinating overlapping pattern in which neural integration is found in both states of compassion as well as in pure awareness. When ancient traditions have espoused the centrality of love, they may not have known that one day a scientific search for neural correlates of being aware and of compassion might reveal a central finding shared by both of these core experiences of being humans.

Consciousness and growth

Relationships and awareness

In my own work with colleagues Peter Senge and Otto Scharmer (see Senge, Scharmer, Jaworski, & Flowers, 2004) and others, we are studying something we call 'generative social fields' to attempt to understand and measure how certain social environments of supportive, inspiring relationships – such as in classrooms or homes or organizations –

might enable individuals within those setting to experience a sense of belonging and trust that nurtures a willingness to take risks, try new avenues of creative thought and action, and be mutually supportive of others within the generative social field. While we are just at the beginning of imagining how this social field might arise and how it might be assessed, the notion of such a set of interactive relational communications helps us to see how ‘mind’ is not only embodied in our brains and whole bodies, it is also fully extended and embedded in our relationships with one another and the world outside these bodies we inhabit.

My own take on such social fields is that they likely overlap with the process of being aware. As discussed in-depth in my book focusing on these subjects, *Aware*, when we open consciousness to receive whatever arises from within the body, including the brain, and from the world around us, including the social relationships and their inherent patterns of signals from others – patterns of sharing energy and information flow – we enter an energy field state in that open, receptive moment we can simply call, ‘presence’.

You may imagine that for a biochemistry-trained physician like myself to be using a phrase like ‘energy field state’ means that something is either amiss, or missing in the understanding of the journey. Let me simply state at this point the simple and perhaps self-evident truth that not everything that is real is visible to the naked eye. As Michael Faraday proposed in the 19th century, we are surrounded by electromagnetic waves, these non-visible fields of energy. These may be invisible to the visual system, but that does not make these ‘invisible’ entities unreal or unfounded. Indeed, our modern electronic gadgetry that you may have in your hand or be using right now to read these words likely involves such fields.

But a generative social field may not even be based on electromagnetic waves; it may instead be composed of patterns of energy and information as they are shared in communication among the members of a group – of the ‘social field’. And we may even be able to see these examples of energy exchange, if we become open to such patterns. If we stay focused even at this level of the commonly detectable interactions of energy patterns – such as light and sound – sensing how we hear and see one another, as we do in my own field of attachment research, it is possible to study fundamental processes of *attunement and resonance* among members of a group such as a family. And we could extend this to ways in which a classroom, board room, community, or culture functions in a generative or destructive way. We could even apply this to how the media shapes society on a global scale – information patterns in newspapers, television, radio, and the various and rapidly changing formats now distributed on the Internet worldwide. With a generative field, we would see resonance and trust, established, as members of the group were present and attuned to the internal state of one another. This PART we play in a generative field might then be envisioned having these components, perhaps in this sequence:

1. Presence – being open to what is arising as it arises
2. Attunement – focusing with respect on the differentiated inner experience of members of a relationship
3. Resonance – the alteration of the internal state of members of a relationship such that they influence one another – yet retain their differentiated nature as they become linked

4. Trust – the state within a person or within a relationship of being open to others without defensiveness

Generative social fields may arise in various settings when key influencers in a relational network engage in their PART to help bring an integrated experiential world for those immersed in such a field.

What is consciousness and how can it be integrated?

If consciousness is key to the experience of a generative social field and to catalysing change in education, development, and therapy, what is it and why would it play such an important role? What is this awareness, and how can we cultivate a kind of ‘awareness-based leadership’ such that cultivating an open awareness, a state of presence, may lead to important integrative changes in our world?

A simple practice called the ‘wheel of awareness’ offers therapists the opportunity, for themselves and those with whom they work, to integrate consciousness itself by differentiating the knowns of consciousness in a metaphoric rim of the wheel from the knowing experience of being aware represented in the wheel’s hub. With the systematic movement of a singular spoke of attention, these knowns are attended to one by one, differentiating them from one another and from the knowing of the hub itself. Examples of knowns include the first five senses, the internal sensations of the body with interoception, mental activities such as emotions, thoughts, and memories, and our sense of connection with other people and the larger world of nature – our ‘relational sense’.

After offering this integration of consciousness practice to thousands of individuals in workshop settings and gathering reports of the experience of doing the wheel, it became possible to attempt to link subjective reports of the knowns and knowing of being aware with scientific views of the brain and energy itself. The hypothesis emerged that the experience of the hub may correlate with a specific energy state in which openness and a wide range of possibilities exist. What might that state be? Physicists describe energy as the ‘movement from possibility to actuality’ and view this space of open possibility in mathematical terms as a ‘sea of potential’ or ‘quantum vacuum’. Arising from this source of potential energy comes various states of probability and then certainty, as possible transforms with the flow of energy into actual. In the various texts, I describe the clinical use of this probability framework for understanding consciousness and the mind. Here, we can simply state that helping clients become comfortable with the freedom and possibility of uncertainty may overlap with their capacity to integrate consciousness as they open awareness, the hub of the wheel in this practice, and access this ‘open plane of possibility’.

Presence may be the portal from this spacious awareness from which integration may naturally arise. In this manner, our role as therapists may be to facilitate others learning how to let integration arise by helping them ‘get things out of the way’ that may block the spaciousness, compassion, and awareness that arise with presence. There may be a range of mental processes and habitual behaviours that have been blocking integration in a person’s life, giving them a proclivity to a life of extended states of chaos and rigidity. Learning to identify these impediments to specific aspects of integration may be an effective and efficient means of promoting presence and helping a person move towards the harmonious flow of an integrated life.

In exploring the role of integration in psychotherapy, nine domains became evident in my own work with patients, whatever their initial presenting concerns may have been. In other works (see Siegel, 2010a,b, 2012), I have explored these domains in depth, and so here I will simply name them realizing we have focused in this paper only on one particularly central one, the experience of the integration of consciousness.

The nine domains of integration include:

1. Consciousness – the experience of differentiating the knowing from the knowns of what we are aware of and then linking to one another
2. Bilateral – the honouring of the differentiated functions of the left and right hemispheres and then linking them together, especially as the left has a narrow deep-dive focus of attention and the right a broader, context embracing focus
3. Vertical – linking the body's signals and the lower neural regions of the brainstem and limbic area to the higher cortical regions' involvement in the experience of consciousness
4. Memory – linking the differentiated elements of implicit memory to the autobiographical and factual experience of explicit memory processing
5. Narrative – making sense of memory and experience such that one finds meaning in events that have occurred and how they have made an impact on one's life across time
6. State – respecting the differentiated states of mind that make up the wide array of clusters of memory, thought, behaviour, and action that are the nature of our multi-layered selves and then finding a way to honour and link them without losing their essence
7. Interpersonal – honouring one another's inner experience while linking in respectful, compassionate communication
8. Temporal – the capacity to represent 'time' or change in life and reflect on this 'passage of time' leading to many differentiated ways of experiencing crucial existential themes in life: finite versus timeless, transient versus permanent, predictable versus unpredictable, life versus death.
9. Identity – the sense of agency and coherence that may be associated with a feeling of belonging, one that can be encased by the skin or broadened across space and time.

In each of these domains of integration, the key is that something in that domain can be differentiated and then those distinguished elements linked into a functional whole. Such integration creates a synergy in which something larger than merely the singular accumulation of building blocks is created – this synergy is the source of the experience that the 'whole is greater than the sum of its parts'.

When integration in any of these domains is impeded, when differentiation, linkage, or both is blocked in some way, there can be challenges to optimal self-organization. The chaos, rigidity, or both that arise, then, are the profile a clinician can use to identify that: a) integration is impaired, initiating b) a search for which domain or domains such impairment may be occurring, and then designing specific c) strategies to promote integration within that domain.

As this clinical assessment and treatment planning unfold, treatment implementation can be initiated and progress followed. As the experience of students of interpersonal neurobiology working within this framework has revealed, many individuals across a wide range of DSM-type diagnostic groupings can be assessed for impediments to integration and then effective treatments considered and implemented.

These domains are an important starting place in many treatment plans in this IPNB approach, relating to the enhancement of well-being for not only those with presenting symptoms of chaos and rigidity, but also for those who are simply human beings on this planet facing the challenges of being alive in contemporary culture. In this manner, IPNB is *not* a form of therapy, it informs therapy and other ways we try to promote growth and development in our human lives – within the broad fields of clinical work, education, parenting, and organizational functioning. Interpersonal Neurobiology is a multidisciplinary framework for understanding the nature of life, the mind, and well-being.

Conclusion

The rapid expansion of knowledge in multiple disciplines for understanding the nature of mind and its operations in different contexts is a challenge for psychologists and psychotherapists. This paper has offered new pathways of thinking and exploring these challenges and developing a consilient integrative approach to mind, its sources of suffering and paths of alleviation. Crucial for our profession is to have some conceptualization of the nature of mind itself (Siegel, 2017). If self-organization naturally brings forward integration to optimize its emergence, we may release the natural drive towards integration, towards healing and wholeness, when we access a state of presence, an open, receptive awareness (Siegel, 2018). Love is ultimately integration made visible, emerging as kindness and compassion. Compassion and kindness arise when we free the mind from impediments to these innate states of integration in our lives. This is how love and care would naturally arise with presence, from this integrative source of being open and connected to our inner lives, and our interconnections with one another, and with the planet we all share. This is the freedom therapeutic healing can encourage, moving beyond the chaos and rigidity of suffering to the integrative synergy of thriving in a life filled with potential, freedom, and connection. It is from the presence that arises with open awareness that meaning in life is discovered. It may be that creating access to our common ground, to our presence, is what generative social fields emerge from. And it may just be that starting with the integration of the mind within and between, and empowering people to flourish as they learn to live from a place of presence is what psychotherapy is ultimately about.

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