Brains Have Things In Common: A Computer Metaphor

Sandra L. Bloom, M.D.

It has occasionally been difficult to explain to the people we train that the Sanctuary Model is not a specific treatment intervention, that it is structurally "deeper" than a specific intervention, although many interventions are compatible with it. We realized we needed a new metaphor, since metaphors are especially useful in bridging knowledge gaps. We know that anyone who we train and presumably everyone who is reading this book has at least a rudimentary understanding of computers and we've found it is a useful way to explain how the Sanctuary Model works and how it integrates with other approaches using a computer metaphor[i].

A leap in computer technology occurred when programs that write programs were created – not all that unlike our genes are instructions for instructions. So although your desktop computer is still a machine, in the world of artificial intelligence machines and living systems are becoming ever more difficult to tell apart. So we want to use a computer metaphor to explain a bit more about what this concept we call Sanctuary actually is.

Minds have some things in common: hardware, foundation software, and application software. In a computer brain the hardware – at least as far as we know with *our* limited knowledge of computer innards – is comprised of a motherboard (!), microchips, hard drives, monitors, and input devices like keyboards and mice. The human mind has hardware too – the DNA, proteins, neurons (and other types of cells), veins, and arteries that comprise the brain.

A computer has foundation software that we have come to know as an operating system (Windows, MacOS, Linux, etc). An operating system is a master program that controls a computer's basic functions and allows other programs to run on a computer if they are compatible with that operating system. The operating system is the *foundation software* for the computer. The programs that allow you to do all the things you want to do on your computer – word processing, spreadsheets, Powerpoint, photography programs - are called *application software.*

And then there are the viruses, worms and other infectious agents. Ever had a virus in your computer? Awful wasn't it? A virus is a small piece of software that piggybacks on real programs. Once infected with a virus it can be difficult to diagnose in part because it

masquerades as many other things. It will probably require an expensive specialist's attention to treat it and even then, it is difficult to effectively treat. It is highly contagious, unpredictable, and virulent. It can easily shut down your entire system and render the system useless. Each time the program runs, the virus has a chance to spread and to wreak havoc on the entire computer. And there is one sole intentional purpose for the virus: to do harm. Creating a computer virus is an act of violence.

Human Brains and Operating Systems

We believe that human brains must have something analogous to an operating system because we certainly have millions of applications that allow us to do all the things we do: movement, language, memory and all the rest. We think the operating system for the human brain is attachment because without attachment, human brains as well as human minds cannot develop properly. In order for us to function as a whole, integrated system that is cognitively, emotionally, socially and morally intelligent, we must have had a good-enough attachment relationship to enable our bodies, brains, and psyches to develop normally.

And this is where the issue of trauma and particularly exposure to toxic stress comes in. Traumatic experience is to the human mind what computer viruses are to computers – trauma disrupts attachment and disrupted attachment wrecks havoc with everything else. Healing often requires changes in the basic assumptions that the person makes about themselves, other people, and the world around them – changes in their "operating system".

Likewise, in order to adequately address the needs of the traumatized clients who fill the ranks of our human service delivery system, we need a new operating system for organizations. The Sanctuary Model is an operating system for a trauma-informed organization. It is designed to get a number of people, from diverse backgrounds, with a wide variety of experience, on the same page, speaking the same language, living the same values, sharing a consistent, coherent and practical theoretical framework. It functions underneath all the other things that go on in a treatment program – all the approaches, kinds of therapy, techniques – as long as those are compatible with the Sanctuary operating system.

Attachment and Trauma: The Human Operating System and the Virus that Disrupts It

Over the last few decades, research on the nature of attachment relationships has made clear that for human beings, healthy attachment is a fundamental requirement for physical, emotional, social and moral development. We understand attachment as the basic "operating system" for individuals. Without an attachment relationship in early development human beings cannot become fully human. As the grandfather of attachment studies, John Bowlby observed, we remain attached to other people from cradle to grave.

During this same period there has also been the emergence of a different way of viewing the impact of traumatic experience and prolonged exposure to adversity, particularly in childhood. Trauma Theory brings context back to human services without denying the important of the biological discoveries of the last several decades, but instead integrating those discoveries into a more comprehensive understanding of human beings.

Likewise, a useful way of understanding trauma and its impact on human beings is by recognizing that trauma can fundamentally disrupt this human attachment system in a wide variety of ways and that disruption can wreck havoc with a wide variety of the "applications" we use to adapt to the world such as learning, emotional management, memory, and many others. Trauma and sustained adversity do to the human operating system what a computer virus does to a computer. The problems that result are complex and interrelated, which is why people with a history of exposure to trauma and adversity often are carrying around three or four or five different diagnoses and are taking at least that many medications.

If people are to heal from sustained exposure to adversity and traumatic experience, then we need to shift the usual level of focus on treatment approaches or the "applications", to a deeper level. We need to figure out how to change their "operating system", what we commonly call their "personality". This is why research that has extended over the last few decades pertaining on the one hand to the impact of trauma, and on the other to the impact of disrupted attachment, offers a different paradigm for defining what we mean by "treatment". Particularly in the more complex cases that populate our mental health, substance abuse, child welfare, and criminal justice systems, trauma-specific treatment approaches are necessary but not sufficient. In complex exposure to trauma and adversity, deeper, structural personality shifts have occurred – trauma-organized shifts in the individual's "operating system" – and shifting their personality on to a new trajectory of experience means changing that operating system.

---

[i] Thanks to our colleague, Dr. Joe Benamati, for the metaphor.