

DESIGN AS WILLFUL SCHIZOPHRENIA

Notes from conversations between Arnold Wasserman and Manfred Spitzer

My friend Professor Manfred Spitzer is a neuroscientist and Chairman of the Department of Psychiatry at the University of Ulm. He is interested in the neuroscience of creativity. I ask him this question: Is there anything in neuroscience that helps us to understand how designers think – and how that differs from how most people think?

Whereas most people view a drawing as a document of a thought already formed, we designers draw things or make something in order to discover what we are thinking. Designers make scribbles, sketches, drawings or rough mockups before we know quite what we're trying to do. We do that to help us formulate an idea, and then we make more drawings and mockups and that has a kind of ratchet effect to shape up the next version of the idea, and so on. So we go back and forth rapidly between conscious idea formation and the kind of automatic flow process that's stimulated by making visual images or cutting stuff out of paper or messing around with clay or putting together bits of wood, just doing stuff.

Designers come to rely on this process. Increasingly we are being asked to teach it to non-designers. From a neuroscientific point of view, what is going on here?

Manfred replies: This is very simple; we understand this. There are two main things we know that help explain what is going on. The first has to do with so-called abnormal thinking, especially schizophrenia. The second has to do with what kind of behavior stimulates heightened brain activity.

He explains that most neuroscience research, before they had advanced imaging like functional MRI, was done on specialized populations, like people with brain damage or mental disabilities. What they knew was that in people with abnormal thinking patterns, various neuronal centers are crossconnected in strange ways.

Take, for example, a standard word relation exercise. Tell me the first word that comes to mind when I say "milk." Most people instantly say "cow." The reason you come up with cow is because the neuronal

sites for milk and cow reside in the brain right next to each other. So when your brain is searching for things to connect to “milk”, it takes the shortest path, the fewest milliseconds, from milk to cow. I wouldn’t leap from “milk” to, say, “car,” because those two neuronal sites are several milliseconds farther apart.

Now, ask a normal person for a word to associate with “bull.” They will most often say “cow.” But ask a schizophrenic person what first comes to mind when I say “bull” and he might instantly say “milk.” Milk has no direct connection to bull. But in the brain, the neuronal location of “bull” does happen also to be next to “cow.” So a schizophrenic brain might leap from “bull” right over “cow” and go right on to “milk.” The schizophrenic brain doesn’t care if that connection makes no logical sense. Schizophrenic people are wired differently. It’s all about wiring and speed of connection. That’s one thing we know about how normal vs abnormal brains work.

A schizophrenic sees things that “aren’t there;” i.e.: they aren’t there in the objective world of the senses. Creative generative thinkers also see things that aren’t there. They say the “see” or “have” an idea, a phenomenon, an experience that is not “here and now” but potential in some imagined space-time. If they say what they see exists only in their imagination and in potential, we say they are original and creative thinkers. If they believe that what they see exists in present reality, but only they can see it, then we call them schizophrenic.

Here's another thing we know. If I say the word "cow" and I observe your brain with a functional MRI, I see the cow center of your brain light up – nothing big, but an indication of blood-oxygen brain activity in that zone. But if I show you a picture of a cow, a lot more of your brain lights up. That is because a very large portion of your cerebral cortex is involved in vision. Finally, if I give you some clay and some paint and you make a model of a cow, your whole brain lights up like Times Square! Everything starts working – all the different senses: vision, smell, haptic plus physical-motor, kinesthetic, patterning, mental modeling, 3D spatiality – plus cognitive domain factors like recollection, synthesis, evaluation and analysis – plus affective factors like motivations, feelings and attitudes.

So when you craft something, whether it's a doodle or a sketch, it's not for random distraction, it's for stimulation. The more brain signal

activity you induce, the more synaptic cross connections to more neuronal centers you're going to engage. The reason a designer experiences that “ratchet” effect when she draws or makes something is because that's exactly what's happening. You're stimulating your conscious mind by inducing more blood-oxygen and electrical-magnetic activity in more neuronal zones, thereby increasing the opportunity for non-ordinary synaptic cross-connections, otherwise known as “creative thinking.”

So, I say to Manfred: If you put all this together, it means that when I am designing I am trying to connect neural centers that normally don't signal to each other. When I am then able to elaborate and express that activity consciously and verbally, using the higher level logical functions of the frontal lobes of my cerebral cortex – that is when I can say “I have a new idea,” one that I might never have come to if I hadn't been “messing around.”

In practice, then, creative thinking is a kind of “willful schizophrenia” – a routine to trick our brains to make non-normal leaps across neuronal zones!

Not a very scientific way to put it, says Manfred, but conceptually a promising hypothesis.

Manfred and I then move on to a subject that concerns us both, which is how these ideas play out in K-12 education. The reality is that, with rare exception, advances in the neuroscience of creativity play hardly any role in education. The advanced industrialized nations, the U.S. in particular, have institutionalized the instrumentalist view of education; i.e.: that education is a commodity to be delivered and measured as vocational training for a role in the competitive corporate marketplace. Notwithstanding lip-service to “project-based learning”, we have killed off the liberal-humanistic philosophy of John Dewey that education is a social good to be socially constructed, active, collaborative, contextual and experiential – producing whole-minded, critically reflective, participative democratic citizens. The demise of Dewey is visible in every aspect of American life.

If you ask kids under the age of 6 what they want to do, they want to draw, make images, play around with stuff, do things with other kids. They happily draw things that don't correspond to the observed world. Their sky may be orange and the grass pink. At the age of 6 or so we

start to shut down that creative openness. If they are lucky enough to still get art classes at all, they have to start making sky blue and grass green. For the most part we stop them from making images and building stuff altogether. And we start valorizing competition as opposed to collaboration.

We tell them that earlier stuff was all play. Now they have to get serious. This means cultivating rational, linear, verbal-analytical, textual, information-driven capacities and shutting down context-based, connective, visual-spatial, sensory-affective, experience-driven capacities. Both schooling (and later, employment) reward the former and penalize the latter. Schooling amounts to society-wide lobotomy, unplugs huge amounts of generative brain capacity and rots creative circuitry. Artists and designers spend the rest of their lives working to regenerate those capacities. Most people never realize what was taken away from them.