

Bridges, June Bugs, and Creativity

Daniel F. Daniel
Integrative Studies Program
Southwestern College
Winfield, KS 67156
ddaniel@sckans.edu

Gar Bethel
212 Iowa
Winfield, KS 67156

Curiosity under Control?

As we contemplate a third gathering for the Bridges Conference, I am delighted to provide a brief commentary on Gar Bethel's poem about a four year old friend who is an occasional charge of his.

If we could begin to ground the conference in something that even approaches the wonder and awe of the world we experience through children, we would have an exciting first step onto the bridge that is before us. This is of course what those who continue to work in these fields, at once so various and wonderful yet for some slouching toward unsuspected convergences – have not lost.

Mathematics, sciences, and arts of all kinds continue to be awe-full and enchanted. Last year I recall a session in which a young artist proposed the building of a bridge as an icon for the conference. Within minutes, a half dozen of the participants began to graphically and verbally play with the idea. One of the members of that group went well beyond the initial play and his paper on a bridge for the Bridges Conference may be found in *Bridges' 2000*. (See “–To Build a Twisted Bridge –” by Carlo Séquin)

The poet (the maker or craftsman) comments on the child as he confronts wonders like the coffee maker, the coffee grinder, a microwave oven, and a flashlight. Educator and neurologist Howard Gardner reminds us that young children have always posed fascinating questions about the world. “Children in the first five to ten years have ample opportunity to let their imaginations roam, to raise questions about phenomena that inspire doubt or awe; and then, at least sometimes, to pursue these questions for a while as they walk in the fields, or fall asleep at night. (*Creating Minds*, 1993, p.88)

This observation, at once so mundane and so difficult to honor as we educators work with children, provides the introduction to Gardner's chapter on the physicist, titled *Albert Einstein: The Perennial Child*. Here Einstein muses,

How did it come to pass that I was the one to develop the theory of relativity? The reason, I think, is that a normal adult never stops to think about problems of space and time. These are things which he has thought of as a child. But my intellectual development was

retarded, as a result of which I began to wonder about space and time only when I had already grown up. Naturally I could go deeper into the problem than a child with normal abilities. (*Creating Minds*, 89)

For those who might be regretting your lack of a parallel retardation as a child, I.I. Rabi, a contemporary of Einstein's arrives in Gardner's text to insist: "I think that physicists are the Peter Pans of the human race. They never grow up and they keep their curiosity. Once you are so sophisticated, you know too much – far too much." (*Creating Minds*)

The poet is content to offer space and to let the child give up on Dr. Seuss in favor of the wonders of a flashlight on the ceiling and in an ear at bedtime. He endures and appears to enjoy the anatomy investigation via the blunt instrument of the flashlight as the child moves from ceiling to wall to the tympanum of an inner ear, "where skin and bone make a tiny drum." In an effort to instruct and to lead the child to sleep, the poet sings a song. The song, from roughly the same era as inventor Nikola Tesla, is "The Band Played On." I introduce Tesla, inventor of fluorescent lighting, the bladeless turbine and much more, only to remind us that these experiments don't always bring wisdom or joy.

Once Tesla perched on the roof of the barn, clutching the family umbrella and hyperventilating on the fresh mountain breeze until his body felt light and the dizziness in his head convinced him he could fly. Plunging to earth, he lay unconscious and was carried off to bed by his mother. His sixteen-bug-power motor, was, likewise, not an unqualified success. This was a light contrivance made of splinters forming a windmill, with a spindle and pulley attached to live June bugs. When the glued insects beat their wings, as they did desperately, the bug-power engine prepared to take off. This line of research was forever abandoned, however, when a young friend dropped by who fancied the taste of June bugs. Noticing a jarful standing near, he began cramming them into his mouth. The youthful inventor threw up. (Cheney, *Tesla: Man Out Of Time*, 1981, p.7)

Physicist Sheldon Glashow echoes this curiosity when he recalls the moment that he "suddenly realized you *could* turn an inner tube inside out through a hole in its side. Things like that were so much more interesting to me than American history or English literature." (*Interactions*, 1988, p.35). In this review of contemporary physics, he says, "Science has been my life because it is the systemization of curiosity. When I was a child growing up in Manhattan, I wanted to know how a car or a clock worked, what a rainbow was, and why an uncooked egg could not be made to spin. My greatest discovery was that science can be more than a mere hobby. It could be my profession. People would actually pay me to do what I most wanted to do: to satisfy my own curiosity." (*Interactions*, p.xi) How would one measure the distance between the inner tube and the quark; the umbrella jump and the turbine; the passage of light through skin and the "schizoid nature" of light itself? (Or of light themselves?)

And finally the mathematician who seemed to many to remain a child well into his eighties, Paul Erdős. Famous for his eternal quest on behalf of mathematics and for the company of mathematicians, Erdős could not be bothered by the world's products. "Some French socialist said that private property was theft. . . . I say that private property is a nuisance." To the man for whom a child was an *epsilon* and those who had stopped producing mathematics were said to have died (those who had died were said to "have left"), Erdős was obsessed by the reality which mathematics revealed to him. He constantly sought out new and younger collaborators.

With 485 co-authors, Erdős collaborated with more people than any other mathematician in history. Those lucky 485 are said to have an Erdős number of 1, a coveted code phrase in the mathematics world for having written a paper with the master himself. If your Erdős number is 2, it means you have published with someone who has published with Erdős. If your Erdős number is 3, you have published with someone who has published with someone who has published with Erdős. Einstein had an Erdős number of 2, and the highest known number is 7. (Hoffman, *The Man Who Loved Only Numbers*, 1998, p.13)

It is this sense of play which continues to honor one of the most child-like of mathematicians we have seen.

While these are in many ways aberrant illustrations of something difficult to capture, we continue to believe that curiosity can also be democratized in adulthood as it is in childhood. We have a two-semester course in theoretical and applied creativity in our integrative studies program at Southwestern College. We continue to hope to find the button – which once pushed, or the metaphor – which once spoken, or the theorem – which once solved will unlock the wonder which seems often to have fled from the childless land of undergraduate life and work. Recalling the often repeated story of mathematician David Hilbert who, when told of a student who had left mathematics to become a poet, replied: “Good. He didn’t have the imagination to be a mathematician.” Someday the walls dividing all the academic fields represented at this conference will be understood as the human fictions they surely are. And we will all understand that we were each a scientist at age four. And more. So much more.

Science at Four

Before we go to bed, he helps
me make my morning coffee –
a paper filter in a plastic basket,

three spoons of beans ground up
in the dangerous *noise* machine,
and he helps me pour the water in –

but we can't turn it on till morning.
What happens inside, we can't see.
It's like a human brain thinking-

in goes a simple element
and out comes a dark stimulant –
no food value, just a mildly

addictive drug to get you started.
What happens inside is a mystery.
But that's just my way of thinking.

He's interested in the simple
mechanics, like those of the *micro wave*.
He doesn't drink. It's just pure science.

In bed the fantasies of Dr. Seuss
are given short shrift to the rechargeable
flashlight in the dark. He's in a hurry

to perform his experiments –
examining the tiny bulb and large
reflector, shining the light

on the ceiling with its concentric
Saturn circles and counting each one,
waving the light in squiggly lines

so, as he says, he can write his name,
though he can't yet write any name.
With closed fingers and positioned thumb

I make the shadowed head of a goose,
complete with the proper sound effects.
He moves the shadows of his fingers

on the wall – the size of a giant's,
and he makes a tent of the covers
and basks in the light's reflected glow.

Then he examines my ear hole
and hears of the dangers of poking there
where skin and bone make a tiny drum.

He shines in my nose and sees hairs.
He shines in my mouth and sees my tongue
and teeth and what seems like two holes.

I close my eyes, and he sees eyebrows
and tender lids and lashes that appear
to form a tear at one of the corners.

Then the struggle for control begins.
It's time to shut off his light and sleep.
But at four he's learning to assert

his will, and I am unwilling
to give up my benevolent force.
Of course, we both live under illusion.

No one in the long run has control,
and very little in the short haul.
The light off, we listen to the rain.

I tell him it's becoming so cold
in the morning the grass will be white.
He asks for his current favorite song,

one that was popular at the turn
of this century, just as this
century is about to turn-

and I give him its anapestic rhythm
in two separate tempos –
slow and deliberate, fast and lively –

*Casey would waltz with the strawberry
blond, and the band played on.
He'd glide o'er the floor with the girl*

*he adored, and the band played on.
His brain was so loaded it nearly
exploded. The poor girl would shake*

*with alarm. He married the girl
with the strawberry curls,
and the band played on – without knowing*

he was learning the tiers of metaphor –
from *strawberry* for a blond, and curls,
its variation, to exaggerated metaphors

like *loaded* and *exploded* for dramatic
effect, to a tiny philosophy for all our
lives – *and the band played on –*

all in a plot of courtship and marriage –
and life goes on and on and on.
And the universe had expanded

when we woke. Typical of his thinking,
even before he checked the cartoons
on TV, he wanted to know

if the grass was white, so he opened
the blinds, and I was both right
and wrong. It wasn't frost. It was snow.

He immediately wanted to go out
and feel, feel all that white,
which meant the production of helping him on

with his socks, so he could pull them up,
and tying his shoes with a knot,
and as he instructed – though he could not

do it himself – adding another knot,
a bow, and then helping him start
the zipper on his hooded jacket

which is, if you think, a series of tiny knots,
as we are one knot together,
in his life, in my life – in life,

though that's only a theory.