

THE CREATION OF THE X-STEM LOGIC ALPHABET

Shea Zellweger was born in Chicago in 1925. In general, he calls on the patterns that have repeated in evolutionary notation for the past 3000 years. Three obvious examples tell the story of how we got to where we are in reference to counting (1 2 3), writing (a b c), and singing (doh ray me). All of this is treated as one long and very large laboratory setting that is loaded with one vast expanse of trial and error. This vast expanse then becomes one gigantic seedbed, out of which to engage in the highly specialized act of engineering new notations (sign design and sign engineering). In other words, this approach as method becomes the operating frame within which to extract the best root structure that, in each case, can then be used as the root forms from which to engage in some applied cognitive ergonomics. In particular, he wants to fast forward and repeat the same game for elementary logic (o p b), which are the first three signs in his X-stem Logic Alphabet (XLA). This is a new notation for the logic of sentences, also called the propositional calculus, also seen as the simplest and the most fundamental layer in symbolic logic.

The creation of the X-stem Logic Alphabet, as it now stands, grew out of a long journey that goes all the way back to the middle of the 20th century. This journey had so many starts and stops that, pulled across many decades, it unfolded in many steps and stages. Certainly suggestive across those decades is what some have called the 10-year cycle that seems to show in the creative process.

In 1953, following his undergraduate degree at the University of Chicago (1952) and while working as a switchboard operator in a small hotel in Chicago, Zellweger looked upon truth tables only as truth tables when he subjected them to *symmetry operations*.

In 1961-62, while continuing as a graduate student in Experimental Psychology at Temple University in Philadelphia and, out of curiosity, after reading just the right combination of books and articles, Zellweger devised the 16 iconic letter shapes that constitute the X-stem Logic Alphabet, devised it so that, coded to contain built-in truth tables, it could be treated as a total system, when it is subjected to *symmetry operations*.

At this point a strong warning is required. Knowing how to use Roman numerals (I II III) offers little help when one is trying to learn how to use Arabic numerals (1 2 3). Likewise, knowing all the right moves for standard (dot vee horseshoe) (and or if) logic offers little help and, unfortunately, it also offers many misleading first-moment thought-habit assumptions that become blinding barriers, when one is learning how to use the X stem Logic Alphabet (o p b). It takes a fresh start, a willingness to become an active witness, a witness who is open to becoming acquainted with the fresh simplicities and the unexpected economies that have been built into this notation, the one that is capable of being subjected to *symmetry operations*.

Especially in 1973-75, while serving as the Chairman of the Psychology Department at Mount Union College in Alliance, Ohio,

Dr. Z, as his students called him, constructed a family of simple and carefully designed symmetry models, symmetry models that are hand-held physical objects that facilitate the early exposure, the later learning, and the full use of the X-stem Logic Alphabet. These symmetry models, even children can manipulate and become familiar with them, are able to participate fully in the tradition of Froebel, Montessori, and Piaget. These models are also devices that led to patents issued in the United States, Canada, and Japan.

In the 1980s and the 1990s, carried in a context that reached across two full-year sabbaticals at the Peirce Edition Project in Indianapolis (IUPUI), including a careful reading of the manuscript called The Simplest Mathematics, itself a part of the Minute Logic (1902), especially the many pages surrounding Peirce's box-X notation (1902), it has become evident that, historically speaking, box-X is the primary precursor of X-stem, so much so that X-stem is now seen as a direct continuation of box-X This background includes McCulloch's dot-X notation (1942), which independently begins with the same path taken by Peirce. These connections suggest that, in contrast to but also in parallel with the Peano-Whitehead-Russell notation (PWR) for (and or if), X-stem could also be called the Peirce-McCulloch-Zellweger notation (PMZ). Added to this background, these years led to some publications, this link going to a page located at WWW: logic alphabet.net. The eager reader is directed to four titles that begin with the words “Sign-Creation” (1982b), “Untapped Potential” (1997a), “On a deep correspondence” (1997b), and “Mathellogical” (2003).

Following his retirement in 1993, Dr. Zellweger continues to remain active, still giving voice, pen, and new findings to his notation, the one that is capable of being subjected to *symmetry operations*. Note that this comes to no more than the crystallography contained in a few flips, rotations, and counter changes. Yes, the letter shapes in X stem are interrelational icons that are treated as crystallographic molecules. His phone number is 1-330-823-1470. His email is zellwes@muc.edu. His mailing address is Mount Union College, Alliance, Ohio 44601. As already mentioned, his Home Page , initiated and maintained by John Puterbaugh, is at WWW: logic alphabet.net.

An excellent place to find out more about the close connection between Peirce's box-X and Dr. Zellweger's X-stem is to start, among others, with the paper written (in Spanish) by Arnold Oostra. The tables and diagrams alone will make the case. Also of interest are the links to Glenn Clark, Steven H. Cullinane, Louis H. Kauffman, and Bernd Schmeikal. Recently two exhibits have featured the X stem symmetry models. In 2005 Sina Najafi organized Philosophical Toys, held at Apexart, New York City, when Christine Wertheim's Crystal Clear was also published in Cabinet Magazine. In 2007 Christine and Margaret Wertheim, cofounders of The Institute For Figuring, Los Angeles, joined with David Wilson at the Museum of Jurassic Technology, Culver City, California, where the symmetry models continue to be retained and organized in an extremely clarifying display.

In passing, mentioned here as an alert for any sleuth who is inclined to root out errors, the reader should bear in mind that Dr. Zellweger is without formal training, not only in mathematics but also in logic --- not even one course in logic. This has prompted some to call on labels such as “rogue mathematician”, “maverick logician”, also “outsider logician.” As Dr. Zellweger puts it, he sees himself as a melon-sized popcorn ball, with sticky molasses in just the right places, one that has been slowly rolling across the decades. In effect, the creation of the X-stem Logic Alphabet (XLA) began as an offhand hobby that all too forcefully became an uncompromising monster. In his own words, his notation gradually took on a life of its own as it grew out of “a long run of unschooled and fragmented intuition.”