POLY-UNIVERSE – Knowledge Produce Toy Family

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Abstract

The "POLY-UNIVERSE" family of toys demonstrates the presence of geometry through a range of educational and leisure activities. The senses of vision and touch are developed through an immediate hands-on connection with the geometric shapes, and, through the recognition of correlations and identification of points of linkage, thinking-skills are improved, and the skill of abstraction evolves. "POLY-UNIVERSE" (Figure 1-4), is a good educational toy. It encourages deep thinking and the acquisition of a feeling of freedom and joy at all ages and every level of knowledge. At the same time it stimulates a thirst for knowledge, develops creativity, personality and a complex world view.
[János Szász SAXON (Born 1964 in Tarpa, Hungary) is a freelance Hungarian artist and art organiser and inventor of the Poly-dimensional artistic and philosophical system. He asserts his intellectual rights over the patented toy family 'POLY-UNIVERSE'.]

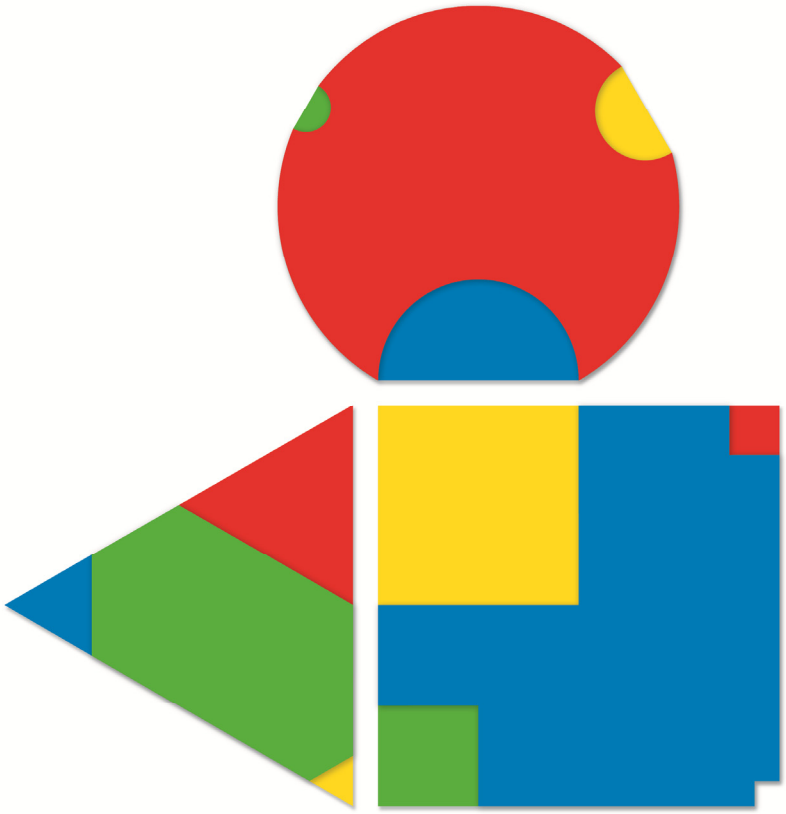

Figure 1: *SAXON, Modules of POLY-UNIVERSE 1979-09, oil on wood, 150 × 150 cm painting*

The Aim of the Toy: Teaching to See

In identifying the purpose of the toy, we asked the following educational and psychological questions:
a) could "POLY-UNIVERSE" have a part in developing the personality of the child as an individual?
b) does the activity play an important part in this development?
c) how and in what ways are the child's basic psychic needs satisfied – repeatedly and in a long-lasting way?

The toy family, in using and developing the basic geometric shapes of poly-dimensional plain painting (see Perneczky [2]), communicates a new artistic perspective to both nursery and primary school children and adults. These colourful and easy-to-handle geometric shapes generate infinite logical complexity and complicated mathematical and morphological puzzles. However, its strength is its simplicity – it provides an equal opportunity for children of different ages, at different levels of mental and emotional maturity to develop their personality.

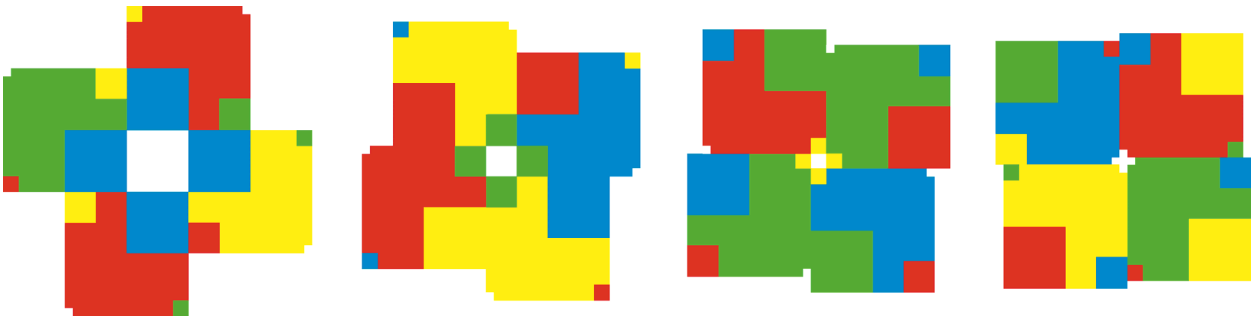

Figure 2: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Squares, toy family)*

Progressive use of colour and shape groups and the high degree of manual activity and reflective thought create a constant challenge for the children and maintain their desire for exploration, at the same time allowing an undisturbed and continuous feeling of success. Direct physical activity, the emotions conveyed by colours, and the possibility of trying out plenty of variations without being checked make the children feel free and relaxed. Such experiences help the children to find more creative and imaginative solutions when dealing with problems from different areas of life or to acquire new knowledge.

All in all, "POLY-UNIVERSE" should not be limited to school-lessons, to after-school problem-solving courses, to any controlled activity (while being suitable for all these), but can act as a catalyst for the new pedagogical practice of learning by playing: *teaching to see.*

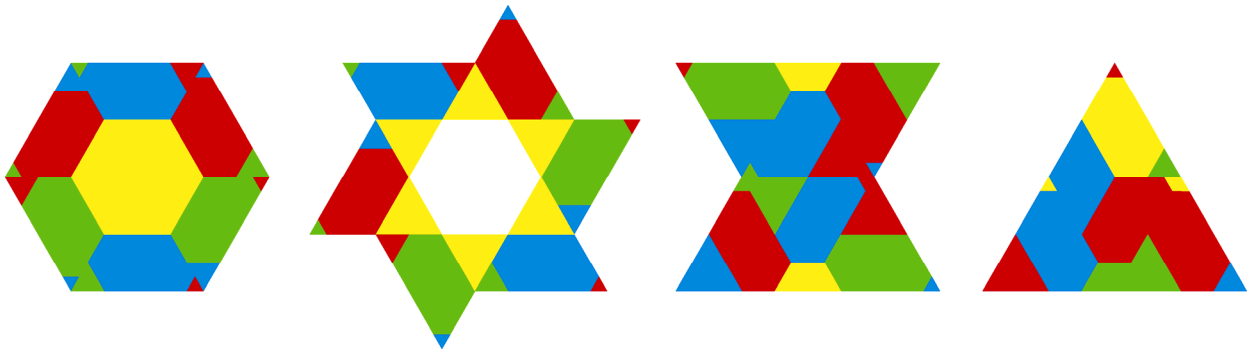

Figure 3: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Triangles, toy family)*

The Aim of the Workshop

I did not set up any rules for the game (see SAXON [1]). During the workshop the children and adults will not solve given mathematical problems, but they will recognize the mathematical and aesthetic correlations hidden in the system individually. These correlations could be summarized as follows:

a) Discovering geometric shapes
b) Searching for proportions
c) Expanding the limits of composition
d) Possibilities of combination, feeling the infinite
e) Finding the linkage points
f) Making colours collide
g) Mixing forms
h) Setting the directions
i) Examining symmetry

So, this toy family does not only aim at problem-solving or recognizing colours or shapes, or solving logical puzzles, but also offers the possibility of playing a game freely, so children or adults can learn indirectly, through a game, an activity.

When dealing with the different-scale basic geometric shapes and primary colours, they gain experience, discover and see correlations, points of linkage and shape connections and the sharp borderlines between colours, not knowing that they are learning. They can explore "POLY-UNIVERSE", the realms of mathematics, art and philosophy, wandering engrossed in them, without being aware where they are.

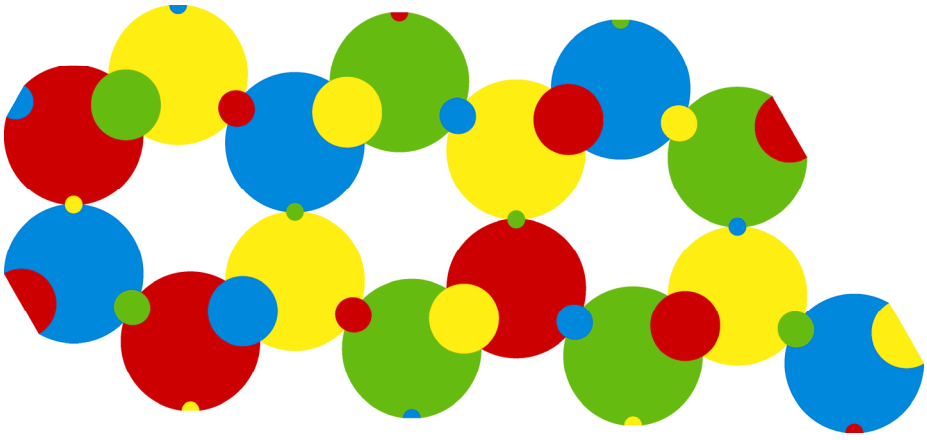

Figure 4: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Circles, toy family)*

This novel toy family does not only develop skills or offer a visual-aesthetic experience, but it also expands the scientific world view, since it is based on an extraordinary mathematical set of proportions – scale-shifting symmetry.

Children and adults of different age groups, culture and social background can take part in the workshop. Both disabled and healthy children and adults can enjoy it during the workshop.

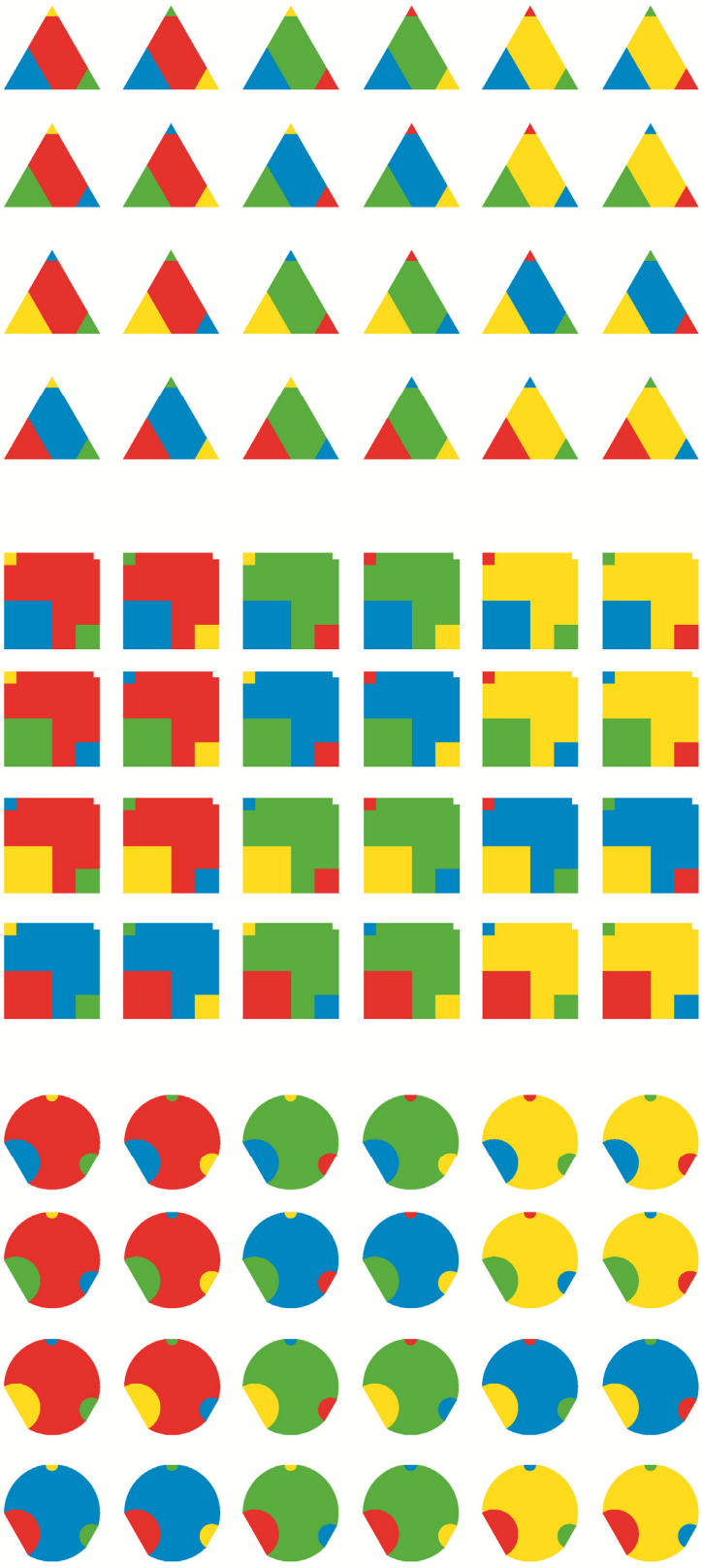

Figure 5: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Triangles, Squares, Circles, toy family)*

The Possibilities of Combination of the Toy

The colourful and playful visual structures and strings of pictures lining along the linkage-points between the basic elements have an endless variety. If a child starts working with the toy and decides to use another variation in each second of the day, he will have a task even at the age of 8955!

To illustrate let us take two of the 24 triangles and match them with a whole side. (Figure 6)

Figure 6: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Triangles, toy family)*

We can see that we have to match 3 sides with 3 sides, so we will have $3^2 = 9$ variations (Figure 7). As a consequence, if we build 3 shapes together, it is $3^3 = 27$. If we build all the 24 shapes together (Figure 5), it is $3^{24} = 282,429,536,481$ and we have not considered the possibility of sliding the shapes to four linkage points on each side.

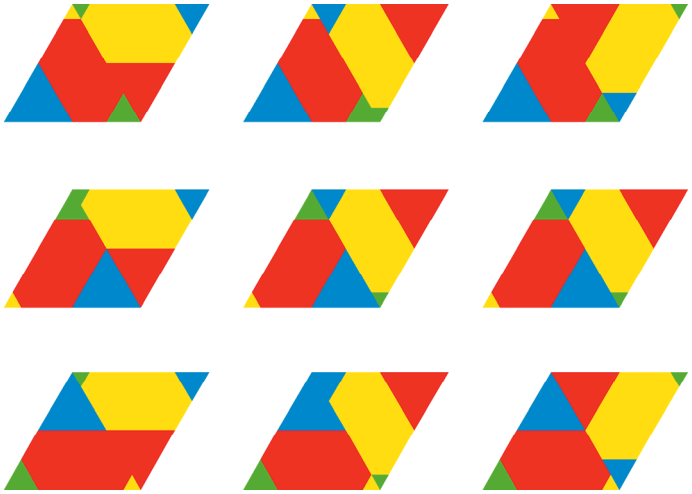

Figure 7: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Triangles, toy family)*

To represent the above mentioned statement, let us take two of the 24 squares and match them with a whole side. (Figure 8)

Figure 8: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Squares, toy family)*

It can be seen that we have to match 4 sides with 4 sides, so we will have $4^2 = 16$ variations (Figure 9). Consequently, if we build 4 shapes together, it is $4^4 = 256$. If we build all the 24 shapes together (Figure 5), it is $4^{24} = 2,814,774,976,710,656$ and we have not taken into consideration the possibility of sliding the shapes at four linkage points on each side.

Figure 9: *SAXON, Modules of POLY-UNIVERSE 1979-09 (Squares, toy family)*

During creation, we follow the laws of geometric shapes, relying on individual intuition. Thus we get polygonal, free shaped poly-dimensional flat constructions pulsing between geometric structures, microcosm and macrocosm. Actually, during this operation we can model the Poly-universe, which will remain open in every aspect, since we can physically join in with a new shape anywhere and build it on, while intellectually getting anywhere wandering between microcosm and macrocosm. As a result, a new world view is unfolding in front of us.

References

[1] SAXON, *Dimension Crayon,* Espace de l'Art Concrete, Mouans-Sartoux, France. 2000.
[2] Géza Perneczky, *The Polydimensional Fields of Saxon-Szász,* Mobile MADI Museum, Budapest. 2002.