

A Study of Spontaneous Drawings of Young Children; Implications for The Quality of the Learning Environment

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Introduction

Early childhood is a time of great capacity to learn that is motivated by innate processes (Gardner, 1993). There is evidence of universal patterns of development in the art of young children (Kellogg, 1969; 1979; Brittain, 1979; Cox, 1992). This paper describes a study that looks for patterns of development within the body of artworks of individual children. The study focuses on spontaneous artwork in order to profile self-motivated progress and uses a database as a research tool. Within the universal patterns, an orderly development takes place, with each child following a purposeful, cumulative and unique path. The establishment of certain cognitive processes fundamental to creativity is discussed. Means by which this self-motivated process can be supported within the learning environment are recommended.

Background to the Study

Cizek, born in Vienna in 1865, noticed the special nature of the art of young children from his observations of spontaneous artwork, believing that *"Each child is a law unto himself, and should be allowed to develop his own technique."* (Tomlinson, 1944:18) Löwenfeld (1939; 1957) describes early childhood as a period preceding a stage that he describes as pre schematic. Kellogg (1969; 1979) analysed over half a million children's drawings collected over a period of twenty years, demonstrating that certain marks and symbols occur universally in the art of young children, and developed a classification system for these elements. Her findings suggested that children teach themselves to draw by a process which begins when the marks made by their own hands become a focus of interest. Although there is general agreement that a developmental process takes place through drawing, there has been diversity of opinion as to whether this is a process that is self-motivated or one that benefits from instruction. It is a contention of this paper that a child's work is informed by an innate sense of aesthetics that favours balanced forms rather than striving towards pictorial realism. Pictorial representation is culturally defined and is not valid as a single quality by which the line formations of child art can be appraised. Kellogg stated, *"the adult belief that child art has significance only insofar as it is pictorial art is a misconception that hinders the study of child development."* (Kellogg, 1969:100)

Innate Learning Patterns, Universality and the Aesthetic Element

Young children have, in special measure, a quality of plasticity of thinking and fluidity of concepts. They observe and make generalisations and distinctions about the world around

them, and make connections across diverse scenarios. Gardner (1993) describes a tendency, defined as canalisation, to follow certain developmental paths. The striking commonalities in areas like music, the visual arts and mathematics are conveyed by Hofstadter (1979). In relation to mental processes concerned with pattern recognition in number, Hofstadter (1998:40) writes that insight was gained not so much from mathematical formulae, but through *“such universal but famously elusive essences as simplicity, consistency, symmetry, balance and elegance.”*

The work of Kellogg (1979) suggests that a strong factor in the art of young children is the recognition by the child of certain symbols or schemata that constituted a balanced, pleasing whole. In this sense, the art of the young children is informed by aesthetics. The favouring of balanced shapes is also in accordance with Gestalt theories of perception. The word gestalt means ‘form’ (Gardner, 1993:204), refers to a gestalt sensitivity, which is central in spatial intelligence and is a capacity to appreciate the whole, and to discern patterns even when some details may not be present. Both Arnheim (1954) and Kellogg (1979) refer to the work of Schafer-Simmern (1948), who stated that a primary visual order exists apart from rational thinking and that this is expressed in gestalt formations.

Introduction to the Study

This investigation consists of three longitudinal studies of the spontaneous artwork of individual children, the aim of which is to map development. The artworks are a collection composed of three sets of drawings (Referred to as Collections A, B, and C) that constitute the majority of spontaneous drawings produced by three children of the author up to the age of four and a half years. Although the artworks were made by a variety of media including pencil, pen, crayon and paint, the term ‘drawing’ is used, as line is the predominant medium of children’s art. The drawings were made under conditions in which they were not influenced by adult intervention. Drawings were dated, and comments by the child at the time that the work was made were noted.

A database, ArtworksDB, was designed to organise identification and chronological data, to maintain a classification system, to enumerate the occurrence of elements or sets of elements by age, to identify the first occurrences of elements by age, and to identify elements favoured by the child at various age ranges. Images were scanned and stored within the database. The total number of artworks that form the basis of the study is 1,205. The number of descriptors of elements that could be identified is 154.

Design, Implementation and Evaluation

Kellogg’s system for classification of elements within drawings was used, with additional classifications by the researcher. Elements in the drawings were recorded under the categories of Marks, Diagrams, and Schemata defined by Kellogg (1979) in such a way as to avoid pictorial connotations.

Explanation of Categories

Marks: The twenty basic marks are elementary line formations such as dots; straight, roving or looped lines; spirals and circles. The Marks correspond to arm and hand movements, and are the building blocks of children's art.

Diagrams: Diagrams are made by combining or overlaying the basic Marks.

Schemata: The Schemata are gestalts that have their origins in the Diagrams, and include forms such as Mandalas, Suns and Humans. The Mandala is a formation of shapes, usually a cross and a circle, that are organised in concentric formation. The Sun is a circle with lines crossing the perimeter, and does not always depict the solar sun. Many drawings of Humans are based on the Mandala, thus preserving balance.

Expressed Subject Matter: This category recorded and classified subject matter expressed by the child.

Tables corresponding to these four categories were constructed within the database with relevant subcategories of descriptors. There is a hierarchical element implicit in the classification system. Within the universal pattern, marks are likely to be drawn before Diagrams. The Diagrams and Schemata appear first in implied or inherent form, frequently as a result of repeating basic Marks. Elements were classified at the highest rating, for example, if a Schema was made up of a number of Marks, it was classified as a Schema.

Sequences: It became evident that there were identifiable sequences of works within each collection. These Sequences were defined as a set or group of drawings that are distinguished by having certain characteristics in common and are usually, but not always, consecutive.

Personal Motifs: These were defined as graphical motifs that are devised by the child and are used repeatedly within his or her body of work.

Implementation and Evaluation

The elements observed in each drawing were recorded in the database. Though the researcher has extensive experience as an art educator, there was a certain subjective element to these decisions, and procedures were implemented to maintain objectivity. An experienced pre-school teacher reviewed the rating process in order to maintain consistency, and alterations were made to achieve consensus. The use of the database provided quantitative data that underpinned the findings.

Analysis

A Timeline based on the age of the child by month was constructed to map development. Queries of the database enumerated the occurrence of elements by age. Work was examined within seven age ranges.

Summary of Findings

There is clear evidence that each child builds on his or her own work, in line with Kellogg's (1969) findings. Within the universal pattern, each child followed unique paths of exploration. The use of a database as a research tool enabled the revelation of the multi-layered nature of development. Table 1 reflects the trends identified. Beginning with the physical action of making basic marks, the child proceeded to repeat a number of these marks and to discover more marks. The twenty basic Marks were made by the age of twenty-four months in all three cases studied. The combining and overlaying of the basic marks formed Diagrams. Diagrams and Schemata occurred first in implied or inherent forms. More controlled drawing of diagrams increased between twenty-four and thirty-six months. Although a few implied Schemata occurred before the age of twenty-eight months, the main expansion in the number of new Schemata devised occur between the ages of twenty-eight and fifty-five months. There is a relative diminution in the number of basic marks towards the latter age range. Through a long process of self-motivated work, the child has developed her or his own visual repertoire. The devising of schemata is indicative of an ability to form concepts and to attribute meaning to symbols.

Table 1: Records of Elements Present

Collection A					
Months	Marks	Diagrams	Schemata	ESM [†]	Images [*]
1-12	3	0	0	0	1
13-24	103	36	0	0	36
25-30	72	23	13	5	38
31-36	76	73	29	9	85
37-42	47	18	14	1	27
43-48	86	60	39	11	80
49-54	136	82	56	29	116
Collection B					
Months	Marks	Diagrams	Schemata	ESM [†]	Images [*]
1-12	2	1	0	0	3
13-24	261	83	18	1	79
25-30	96	41	4	8	38
31-36	167	157	42	16	95
37-42	247	187	95	29	157
43-48	51	57	38	13	49
49-54	128	133	123	26	117
Collection C					
Months	Marks	Diagrams	Schemata	ESM [†]	Images [*]
1-12	0	0	0	0	0
13-24	152	36	21	2	46
25-30	111	29	11	7	35
31-36	52	15	1	0	19
37-42	61	22	9	11	23
43-48	55	38	1	3	35
49-54	84	152	75	43	125

†Expressed subject matter

*Number of images in collection

The identification of Sequences and Personal Motifs is significant because they provide evidence of the child building on their own work. Figure 1 illustrates the pattern of occurrence of Sequences within Collection C. Such evidence includes periods of repetition, experimentation, consolidation or theme and variation. Some Sequences were continued over several months, with other work intervening.

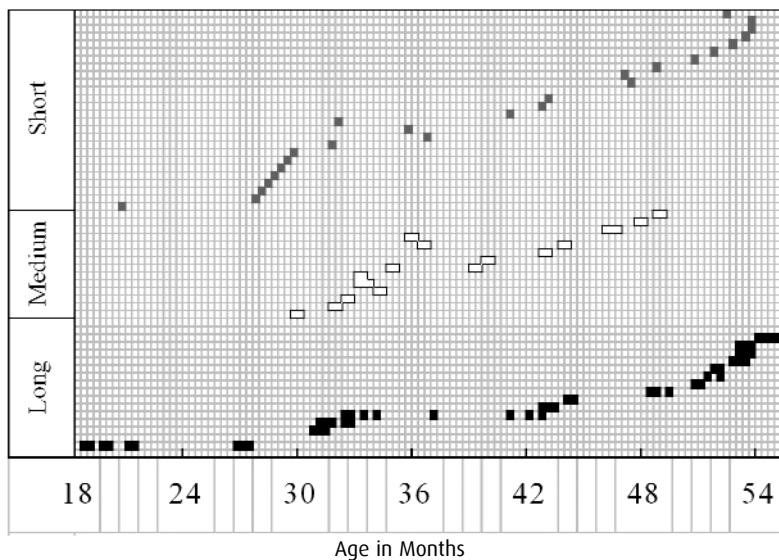
Figure 1: Timeline Showing the Occurrence of Sequences of Drawings

Collection C. Each bar represents a Sequence by age range

Long - six or more drawings

Medium - four to five drawings

Short - two to three drawings



Sequences occurred even at the earliest stages when the marks being made were of an abstract nature, suggesting that the child is visually comprehending his or her own marks and is purposefully repeating these marks. Figure 2 shows elements that were repeated within a Sequence at the age of thirty-four months, an instance of theme and variation. Other Sequences of drawings were in response to experiences that had a particular sensory-motor resonance.

Figure 2: Elements that were repeated with Variations in a Sequence of Drawings
Age 34 Months

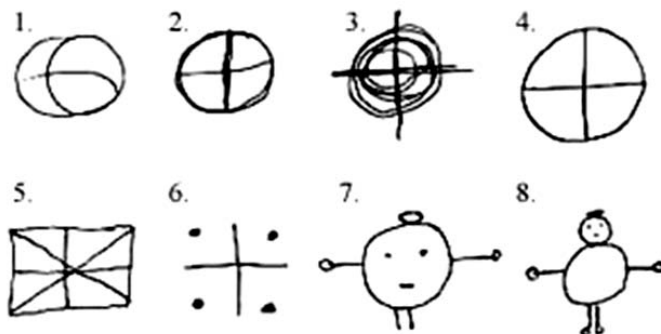


Personal Motifs provide evidence of the involvement of memory, and of the unique nature of each child's evolving visual vocabulary. The occurrence of Expressed Subject Matter was low relative to the number of drawings made by each child, suggesting that talking about artworks is not of great importance from the child's point of view. The expression of subject matter correlates strongly with the first drawings of humans and animals. Subject matter expressed suggests that the child reflects his or her immediate environment and interests in drawing.

Another notable feature of development is the gradual establishment of a horizontal and vertical axis to drawings. This is seen in the development of the border, base or skyline, a Diagram that is drawn as a line close to, and parallel to the edge of the page. The establishment of the base line is indicative of an ability to comprehend a linear series of marks, as in word forms.

The Mandala has many manifestations in the art of children, both as an abstract balanced form and as a form that gives balance in other Schemata such as Humans. Figure 3 is a representation of how the Mandalas can evolve from an inherent or implied form that precedes those drawn later.

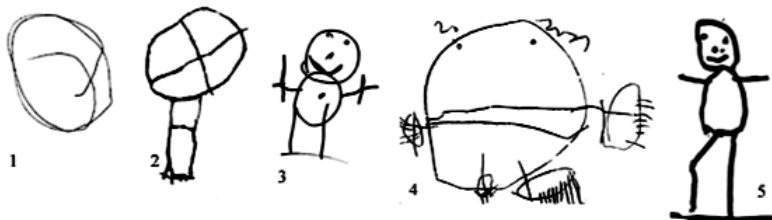
Figure 3: Examples of Mandalas



- 1 Inherent Mandala;
- 2 Multilined Mandala;
- 3 Mandaloid structure;
- 4 Mandala formed from circle and cross;
- 5 Mandala formed from rectangle and crosses;
- 6 Mandala with cross and implied edge;
- 7 Human with Mandaloid balance;
- 8 Human with torso and Mandaloid balance.

Figure 4 shows examples of Mandalas that are details from some of the artworks included in the study. It is common for early drawings of people to have Mandaloid balance, that is, that the figures fit into an implied circle and cross formation. Mandalas can also be formed from crosses and squares or rectangles, and can have an additional diagonal cross, making an eight-fold division.

Figure 4: Examples Of Mandalas From Drawings Included in The Study



- 1 Inherent Mandala;
- 2 Diagram including Mandala;
- 3 Human with torso and Mandaloid balance;
- 4 Human with Mandaloid balance;
- 5 Human with torso and Mandaloid balance.

Discussion

Cognitive processes associated with the development of children through art include perception, re-perception, representation and concept formation. These processes are fundamental to creativity. There is a progression from the sensory stimulation of making and perceiving marks to the higher-level abilities to make abstractions and attribute meaning to symbols, from percept to concept.

Perception is the ability to build order from the amount of information constantly conveyed to us by our senses. Re-perception is an ability to look at something that is of interest and to perceive it in a new way. Hofstadter (1998:308) suggests, *“the ability to re-perceive, in short, is at the crux of creativity.”* Re-perception plays a significant role in pattern recognition.

Concept formation is concerned with the abstracting of the essential form of an object or idea. This ability is closely related to the ability to make analogies, that is, the ability to see likenesses across differing scenarios. The ability to make analogies is important in learning. In relation to children’s drawings, Kellogg writes:

“That one can see the common denominators in form combinations for Humans and Animals is due to the mind’s flexibility in interpreting the visual data of communication through art.” (Kellogg, 1979:106)

Hofstadter is of the opinion that autonomy is a necessary condition for the exercise of creativity, which he defines as follows:

“Full-scale creativity consists in having a keen sense for what is interesting, following it recursively, applying it at the meta-level, and modifying it accordingly.” (Hofstadter, 1998:313)

With the exception of the element of self-consciousness or awareness of the meta-level, the above definition comes very close to describing the processes in operation as the young child follows his or her own developmental path through art. The child will continue to follow pathways of interest, leading to more points of choice. The art of the young child is suffused with elements of simplicity, elegance and harmony that are common to many creative ideas. In the course of this development, certain cognitive processes that have a commonality with other fields of endeavour such as number, language acquisition, music, movement and pretend play are developed. It is suggested that these processes include:

- An ability to notice similarities;
- An ability to notice differences;
- Recognition of abstract relations;
- An appreciation of balance and symmetry;
- The ability to attribute meaning to symbols;
- The concept of theme and variation;
- The concept of horizontal and vertical axes;
- The capacity to wonder 'What if....?'

Implications for the Quality of the Learning Environment

The individual child's development through art is a gradual, purposeful, cumulative and self-motivated process that is one aspect of the child's physical, cognitive, emotional and social development. In relation to age-appropriate support, Walsh states:

"It is imperative that attempts are not made to rush or accelerate development in these years as this can impact negatively on development. The child needs appropriate stimulation in line with his/her stage of development to ensure innate developmental needs are met." (Walsh, 2003:20)

It is a contention of this paper that the provision of an environment that allows the child autonomy over his or her artwork facilitates this development. This includes providing simple art materials, allowing the child to proceed at his or her own pace, being aware that there will be periods of repetition and experimentation, and allowing imaginative space. The quality of the interaction between adult and child is important. The demeanour of the young child when drawing is usually one of quiet engagement. The adult could do well to mirror this demeanour. Young children may not demonstrate interest in the finished artwork that they have produced. However, the careful handling and conservation of each piece of work by the adult signifies respect for the work that is more beneficial than effusive verbal praise. A distinction can be made between art activities in which the child has freedom over his or her creations, and craft activities where the final product is planned or made to a prearranged pattern. The latter should not substitute for the former.

Piaget (1929) recognised that the young child's way of knowing may not be correct by adult criteria, but is perfectly feasible in accordance with the child's perceptions of the world. It is hoped that the study described will help adults to gain an understanding of the wonderful process that is unfolding in the child's development through art, and support the idea of the equivalence of children's art among all art.

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