

## **Artistic Giftedness**

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It is common to distinguish between giftedness and talent. Children who are advanced in scholastic abilities or have a high IQ are labeled gifted, while those who show exceptional ability in an art form or an athletic area are called talented. In this chapter we argue against such a distinction, and refer to children with talent in an art form as gifted.

While there is no necessary link between a gift in art and a gift in terms of high IQ (Csikszentmihalyi, Rathunde, & Whalen, 1993; Miller, 1999; Winner, 1996), children with high ability in an art form are similar to academically gifted children in three respects (Winner, 1996a). First, they are precocious. They master the first steps in their domain at an earlier than average age and learn more rapidly in that domain. Second, they have a "rage to master" -- that is, they are intensely motivated to make sense of their domain and show an obsessive interest and ability to focus sharply in their area of high ability. In the visual arts, this means that they produce a large volume of work over a sustained period of time (Golomb, 1992; Milbrath, 1998; Pariser, 1997). And third, they "march to their own drummer," meaning that they do not just learn faster than ordinary children, they also learn differently. They learn virtually on their own, requiring minimum adult scaffolding, and often solve problems in their domain in novel, idiosyncratic ways.

Because these children solve problems in unusual ways, they are creative. But we distinguish sharply here between two levels of creativity: little-c and big-C creativity (Winner, 1997). Gifted children are creative in the little-c sense, meaning that they solve problems in novel ways and make discoveries about their domain on their own. Big-C creativity, or domain creativity, involves changing the domain. There is considerable evidence that creators do not make domain-altering changes until they have worked for at least ten years in their area (Gardner, 1993; Simonton, 1994). Thus, children by definition

cannot be domain creative. Take Picasso, for example. Although he drew a great deal as a child, and although his artistic talent was clear at a young age, it was in no way clear that he would go on to become a major painter who would revolutionize painting (Pariser, 1991). His domain-altering contributions came from his adult works, not from his childhood drawings (Gardner, 1993).

#### Characteristics of Children Gifted in Visual Arts

Children who are considered “gifted” in drawing are not just more advanced than typical children in drawing milestones. Rather, they draw in a qualitatively different way. This has been demonstrated by Milbrath (1998)’s longitudinal and cross-sectional study of gifted young artists. Prior to the work of Milbrath, studies of artistically gifted children relied primarily on case studies. Milbrath has made a profound contribution to our understanding of artistic giftedness by carrying out the first systematic, large-scale, and theoretically grounded study of such children. She followed eight artistically gifted children over ten years, and also compared a group of artistically gifted children between ages 4-14 to a normal control group. Using the terminology of Piaget (Piaget & Inhelder, 1969), she argues that artistically gifted children are guided by “figurative” rather than “operational” processes. Piaget distinguished between two kinds of knowledge: the ability to analyze and transform objects (called operative knowledge) and the ability to grasp the static physical properties of objects (called figurative knowledge). Operative knowledge involves interpretation; figurative knowledge involves representation (Feldman, 2000). According to Milbrath, artistically gifted children are more figurative in their approach to the world than are typical children. Artistically gifted children actually *see* the world differently. To begin with, they encode visual information more accurately, and see the world less in terms of concepts and more in terms of shapes and visual surface features. Second, they have superior visual memories (cf. Rosenblatt & Winner [1988] for corroborating evidence). And third, they attend more to the act of drawing itself, they can *see* when something looks wrong, and this leads to discoveries about how

to represent the world on paper. Thus, in Milbrath's terms, these children are better at seeing, remembering, and doing. Typical children are guided more by their understanding of what they are trying to draw, and less by their grasp of its visual properties. In short, while typical children are constrained to draw what they *know* about objects, gifted children are able to override what they know and depict what they *see*. This ability allows gifted artists to draw realistically at a young age, if they choose to do so, and to depict objects with all of the distortions (e.g., foreshortening, perspective, non-canonical views) that realism requires.

Because artistically gifted children use figurative processes to represent (that is, they seem to be able to draw things as they appear, with all the distortions caused by point of view and perspective), their drawings typically appear highly realistic (Milbrath, 1998). This realism is a hallmark of gifted child art. The "core" indicator of giftedness in drawing is the ability to draw recognizable shapes at least one year in advance of the normal time of emergence of this skill. While typical children begin to draw recognizable shapes representing objects in the world at around the age of 3 or 4 (Golomb, 1992; Kellogg, 1969; Matthews, 1984), gifted children have been noted to begin to draw representationally at the age of 2. Figure 1 shows a striking contrast between the way in which a typical and an artistically gifted 2-year-old drew apples. The typical 2-year-old made a slash for each apple because he had not yet acquired the understanding that lines on the page stand for the edges of objects. For him, a line simply stood for "thingness." The gifted 2-year-old had grasped the concept of a line standing for an edge, and produced a fluid line describing the contour of each apple.

Figure 1 about here

Milbrath (1998) also notes that a clear sign of artistic giftedness is the ability to use line to stand for edge, in contrast to typical children who use line to stand for thing. In Willats' (1981) terms, ordinary children use a denotation rule by which a one-dimensional picture primitive (i.e., a line) stands for a two-dimensional region or volume.

Artistically gifted children bypass this rule. They also bypass another similar denotation rule by Willats (1981). While children ordinarily fill in planes to convey solidity (thereby using a 2-d primitive to stand for a 3-d volume), artistically gifted children emphasize the surface features of a plane by decorating its surface and retaining a line around its edge. In this way a plane is depicted correctly as a two-dimensional form.

Soon after gifted children begin to draw recognizable forms, they also begin to draw in a realistic manner. They are able to capture the precise shapes of objects, they add true-to-life details that most children would never add (e.g., gas tanks on cars), and they begin to represent the illusion of volume and depth. In place of the simple, schematic, flat, charming, child-like forms typically found in child art, one finds remarkable adult-like, differentiated, complex images that suggest an effort to understand and master how objects are structured. Gifted children draw realistic images quickly and with ease. They do not labor and erase. Instead, their lines are sure and confident (Gordon, 1987; Milbrath, 1998; Paine, 1987; Pariser, 1991, 92/93). The young Picasso, for example, could draw anything upon demand, and liked to start a figure from non-canonical places, for instance, by drawing a dog beginning with the ear (Richardson, 1991). A highly realistic pair of faces, copied by Millais at age 8 from an adult work is shown in Figure 2. Peter, the artistically gifted child documented by Winner (1996), also started pictures from strange starting points – the hem of a dress, a shoulder, or a shoe – and nonetheless a seamless picture ultimately emerged.

Figure 2 about here

The ability to draw realistically also means that gifted children's drawings capture the correct proportions of figures. Milbrath (1998) found that gifted children succeed in drawing human figures in proportion between the ages of four and ten. The non-gifted children that she studied still were unable to capture proportion by age 14 (which was the oldest age at which she observed their drawings).

Numerous examples of children with precocious ability to draw realistically have been reported (Gardner, 1980; Golomb, 1992; Hurwitz, 1983; Kerchensteiner, 1905; Milbrath, 1998; Wilson & Wilson, 1976; Winner & Pariser, 1985; Winner, 1996a). One of the most striking examples of early realism is found in the work of Eytan, an Israeli child described by Golomb (1992). Eytan's family did not remember whether he scribbled, but the family does have drawings that he produced at 2, an age when most children are just beginning to scribble. At 2, Eytan drew recognizable shapes: people, tractors, fish, cars, etc. Normal children make their first tadpole-like representation of a human at about age 3, and do not differentiate the head from the trunk until several years later. In contrast, Eytan began to draw humans with a differentiated head and trunk at 2;3.

One way Eytan achieved realism was through the meticulous depiction of details, such as exhaust pipes on his vehicles. Another way that realism was achieved was through the depiction of volume and depth. Typically children in Western culture do not begin to try to depict the third dimension until the middle elementary school years. By the age of 2 1/2, Eytan was not content with drawing vehicles from their canonical side view, and invented ways to depict their volume, showing their sides receding into depth. He first used an orthographic projection system to show more than the front or side of a vehicle. By 3 he had abandoned this system and instead showed multiple sides of a vehicle by attaching the top and side faces to the front of a vehicle. After his third birthday, he used a mixture of three projection systems: horizontal and vertical oblique projection; isometric projection (in which the front view of a vehicle was its true rectangular shape, but the top and sides of his trucks were parallelograms); and divergent perspective, in which lines diverge outwards to show the front, top, and both sides of a vehicle. By 4 he showed an understanding of the perspectival rule that objects receding in the distance are reduced in size, and he was beginning to experiment with foreshortening. Figure 3 shows an attempt at perspective by Eytan at age 3;7.

Figure 3 about here

According to Milbrath (1998), because artistically gifted children see the world in terms of its visible surface features), they are able to overcome the object-centered perspective that dominates typical children. Milbrath notes that artistically gifted children begin to make view-specific drawings long before ordinary children do so. This means that their drawings show figures in non-canonical positions (e.g., three-quarter views of faces by age 7, back views, profiles) as well as figures distorted and foreshortened by perspective. She observes, however, that while artistically gifted children use perspectival techniques at an early age, their drawings show mixed viewpoints (e.g., oblique projection mixed with linear perspective). These children do not appear to be able to make drawings with one single coordinated point of view until adolescence. According to Milbrath, the ability to coordinate a drawing through a single viewpoint must await Piagetian formal operations. However, whatever it is that constrains the development of the ability to coordinate a drawing through a unified viewpoint is not yet known, and research is needed to determine whether children could learn to draw with a single viewpoint at a pre-formal age with appropriate training. Given the fact that artistic savants such as Steven Wiltshire are able to use unified perspective despite being autistic and retarded, there are likely to be alternative routes to perspective besides operational understanding, a point on which Milbrath agrees.

The ability to draw realistically at an earlier than average age also marks the childhoods of those who go on to become established artists. Gordon (1987) studied the childhood works of thirty-one Israeli artists and found that all stood out for their ability to draw realistically. The desire and ability to draw realistically at an early age also characterized the childhoods of those who go on to become sculptors: Sloane and Sosniak (1985) interviewed twenty sculptors about their childhoods, most of whom recalled drawing realistically at an early age. Numerous other well known artists' early drawings

have been singled out for their advanced realism: e.g., Millais (Paine, 1987), Landseer (Goldsmith & Feldman, 1989), Seargent (Cox, 1992), and Picasso (Pariser, 1991).

Picasso provides a clear example of the ability to draw highly realistically at an early age. He claimed, perhaps apocryphally, that he bypassed the typical stage of early drawings in which children draw in a fanciful, playful, nonrealistic manner. "I have never done children's drawings. Never" (Richardson, 1991, p. 29). However, since we have no records of his words before the age of 9, it is not clear whether this is true. What is clear is that Picasso wanted to see himself as a prodigy. When he went to see a show of child art, he noted, "As a child I would never have been able to participate in a show of this kind: at age 12, I drew like Raphael" (Richardson, 1991, p. 29). And he recalled specific examples of this adult-like style: "Even when I was very small, I remember one of my first drawings. I was perhaps six...In my father's house there was a statue of Hercules with his club in the corridor, and I drew Hercules. But it wasn't a child's drawing. It was a real drawing, representing Hercules with his club" (Richardson, 1991, p. 29). At 11, Picasso enrolled in his father's academic drawing class, in which students had to make detailed renderings of plaster casts. While most students considered this drudgery, Picasso loved it, and produced technically skilled and precise drawings.

Realism as an early indicator of artistic giftedness may well be culturally determined. In the West, at least from the Renaissance until the twentieth century, artists have striven to capture the illusion of space, volume, and depth (Gombrich, 1960). While gifted children probably begin to draw realistically long before they have much if any exposure to examples of Western realistic art, they have certainly been exposed to realistic images on billboards, magazines, and picture books. The most well-known non-Western artistic prodigy is Wang Yani, a Chinese child who painted in the Chinese brush and ink style at an adult-like level in the preschool years (Zhensun & Low, 1991). As can be seen in Figure 4, Wang Yani does not draw or paint in a realistic style, but rather in the style of classical Chinese painting. As young as four, Wang Yani had developed a

sense of the adult art world, and could make the kind of art valued by the art "field" in her culture -- i.e., the art historians, the museum curators, etc. Wang Yani uses the classical Chinese wash technique and she paints in the loose spontaneous and abbreviated style of Chinese ink paintings. Thus, as Goldsmith and Feldman (1989) point out, the technical sophistication of her work reveals itself along dimensions different from those of Western children.

Figure 4 about here

Alexandra Nechita, a Romanian born artistic prodigy now in the United States, provides a similar example (Winner, 1997). She works in oil, on large canvases, some up to 5 feet by 9 feet, and she paints quickly and compulsively, often completing several large paintings in one week. Her paintings are clearly imbued in the Western modernist tradition -- Cubism, Fauvism, Expressionism. One can see in them the styles not only of Picasso, but also of Gorky, Kandinsky, and Miro (Figure 5).

Figure 5 about here

The differences between Wang Yani and Alexandra Nechita are instructive. The domain -- the body of works that make up the history of painting in one's culture -- is shown here to exert as powerful an influence on child prodigies as on adult artists. It is unlikely that either could have painted as they did without the influence of their respective traditions.

The similarities between the two child artists are just as instructive as their differences. Both have an uncanny sense of the adult art world of their culture, and can paint the kinds of paintings that are prized by this art world. Both have an astonishing mimetic ability that allows them to do this. These two cases tell us not only about the power of the domain, but also about the strong role of the *field* -- the gatekeepers, judges, curators and art critics who determine whether a work is considered creative (Csikszentmihalyi, 1988). If Alexandra Nechita had somehow been able to develop her style in China, her works would almost certainly have been seen as odd, as distorted, as

ugly, as unskillful, and as something to be discouraged. They would have looked nothing like the art that the adult field values. Because she painted in the West and in the 20th century, where modernism and Picasso are revered, her art looks adult-like and has thus been deemed prodigious. Had she produced her paintings two hundred years ago in the West, her works would surely have attracted a negative reaction. A recent study by Pariser and Vandenberg (1997), discussed below, found that views of what is considered aesthetic in child art in general (i.e., not specifically gifted child art) is also culturally determined, with Westerners valuing modernism, and Chinese-Americans valuing skill.

Further evidence that we place too high a value on early realism as a sign of artistic giftedness comes from Karpati (1994, 1997), who found that giftedness in design and construction did not predict a high level of ability to draw realistically. She concluded that different aspects of artistic talent are unrelated, and the ability to draw realistically is only one sign of such talent. There is in fact abundant evidence that artistically gifted children do not always draw realistically. Gifted children often draw in cartoon style, and cartoons are a nonrealistic cultural convention (Wilson & Wilson, 1976). The childhood drawings of Toulouse Lautrec were not realistic but were in the style of grotesque and expressive caricatures (Pariser, 1998). As a child, Picasso also often drew caricatures, as well as other playful nonrealistic images (Pariser, 1998).

What unites all children with artistic gifts is thus not the ability or proclivity to draw realistically (though this is a common manifestation in the West), but rather the ability to master one or more of the culture's norms of artistry at a very early age. At the heart of artistic talent is the ability to master cultural conventions, whether the convention is realism in the case of Eytan or Millais, modernism's distortion in the case of Alexandra Nechita, grotesque caricature in the case of Lautrec, or allusionistic brush painting in the case of Wang Yani. It is a mistake to be blinded by our Western eyes and see realism as the prime sign of artistic talent, when realism is but one of many possible cultural conventions that artistically gifted children master so early and so independently.

Picasso viewed paintings as a logical sequence of explorations. "Paintings," he said, "are but research and experiment. I never do a painting as a work of art. All of them are researches. I search constantly and there is a logical sequence in all this research" (Lieberman, 1960, p.33). Many artistically gifted children seem to exemplify this approach. In their drawings, a single theme is explored over and over again. This repeated practice in drawing one kind of subject means that they are far more skilled in drawing their favored subject than in drawing other subjects. For Eytan, for instance, the theme was vehicles, and these were drawn far in advance of his human figures. Wang Yani painted only monkeys until the age of 7 (Goldsmith & Feldman, 1989; Goldsmith, 1992), and was far better at rendering monkeys than horses or humans, just as Lautrec rendered horses better than birds or humans (Pariser, 1997). Kerchensteiner (1905) described G.J. who drew only horses. Gardner (1980) described Gabriel who focused on portraits, and Stuart who focused on comic book style figures. Winner (1996a) described Peter who focused on women in flowing robes. As Pariser (1997, p.41) notes, the work of artistically gifted children is "thematically specialized."

Particularly in middle childhood and adolescence, artistically gifted children create imaginary settings and fantasy characters in their drawings, and their drawings depict episodes in the lives of these invented characters. This is the age when gifted children begin to create superheroes and science fiction characters modeled after the images they see in comic books. Wilson and Wilson (1976) note that visual narrative need not be in the form of a series of frames, as in a comic strip. Each drawing functions as a shorthand for a complex plot. One episode may begin in one sketch book and then continue on disconnected pages. These fantasy worlds allow children an escape into a private world. According to one gifted child, "most people...just look at them and say "that's a pretty picture" without understanding what the people are really like and the story behind them" (Wilson & Wilson, 1976, p. 46). Gifted children are often much more interested in inventing imaginary worlds in their drawings than in experimenting with

form and design. In the process, they produce countless drawings, and thus gain fluency and technical skill (Wilson & Wilson, 1976).

There is conflicting evidence about whether the compositional strategies of artistically gifted children are advanced in comparison to those of typical children. According to the analyses of Pariser (1998), neither Picasso, Lautrec, nor Klee were advanced in the area of spatial rendering (Pariser, 1998). An analysis of Klee's 6-year-old drawings showed them to be at an adult level in realism (using the Goodenough Harris scale) but only at the 6-year-old level in terms of organization of pictorial space (Porath, 1992).

However, Golomb (1992) found that artistically gifted children are more likely to organize their drawings according to the principle of asymmetrical balance while typical children are more likely to use the more obvious strategy of symmetrical balance. She found that younger typical children tended to align the parts of the drawing along either the horizontal or vertical axes, and gradually became able to organize their drawings symmetrically. But only children with artistic gifts used asymmetrical balance. Milbrath (1998) also found that artistically gifted children can use asymmetrical balance. She found that the drawings by even her youngest gifted children were constructed according to symmetry as well as complex symmetry and asymmetrical balance. Both complex symmetry and asymmetrical balance use different dimensions as counterbalances. Thus, large size may be counterbalanced by a heavy color. In Figure 6, the large cat is balanced by the smaller ball of yarn which achieves weight because it is colored an intense yellow. Milbrath hypothesizes that the advanced compositional strategies of artistically gifted children are made possible by the fact that these children attend closely to the act of drawing itself, and thus can judge the visual weights of shapes, colors, empty spaces, and directional lines. She writes, "It is not proposed that young talented children are able to plan sophisticated compositions, but rather than they continually monitor what they are doing during the drawing process and react to what they see by placing elements in

locations that counterbalance elements already drawn to achieve a stable organization.” (Milbrath, 1998, p. 350).

It has been claimed that the normal course of artistic development follows a U-shaped curve, with artistic abilities high in the preschool years, then declining in the elementary school years, and rising again in the adolescent years but only for those with gifts in the visual arts (Davis, 1997; Gardner & Winner, 1982). Systematic evidence for this position was provided by Davis, who elicited drawings from 140 participants: 5-, 8-, and 11-year-olds as well as adolescents and adults with and without artistic gifts. Davis asked her participants to make drawings of “happy,” “sad,” and “angry.”

The 420 drawings produced were then judged in terms of their aesthetic properties. On a four point scale, judges scored the drawings in terms of overall expression, overall composition, appropriate use of line to express the emotion, and appropriate use of composition to express the emotion. For example, a judge would have to consider whether an asymmetrically balanced drawing conveyed sadness more forcefully than did a symmetrically balanced one. The hypothesis tested was that drawings by 5-year-olds would be more like those of adult artists on these dimensions than drawing by 8- and 11-year-olds.

Findings supported this provocative hypothesis. Scores given to the drawings by adult artists were significantly higher than those given to all other drawings except for the drawings by the 5-year-olds and by the adolescents with artistic gifts. The dimension on which the preschoolers performed most like the adult artists was that of overall expression. These findings demonstrate a decline in aesthetic properties of drawings from after age five, a decline which flattens out and does not rise again among adolescents and adults with no artistic gifts, yielding an L-shaped curve. However, among adolescents and adults with artistic gifts, a strikingly different trajectory was found: scores rose again in adolescents and artists to create a U-shaped curve. This study

provides the first systematic evidence in support of the claim that the art of preschool children -- but not older children -- shares an aesthetic basis with the art of artists.

Note that the drawings that Davis (1997) collected were not scored in terms of technical drawing facility, but rather in terms of aesthetic properties. Surely if they had been scored in terms of technical skill a more linear trend would have been uncovered. Pariser and van den Berg (1997) presented evidence that this conclusion is a cultural artifact of the kind of child art that is valued in the west, where expressionist art is valued. They repeated Davis' study with Chinese-Canadian participants and two groups of judges. Two of the judges were from the U.S. and two were Chinese-Canadian. Judges were asked to score the drawings just as Davis had, and also to classify each drawing as Excellent, OK, or Poor. The basis for this latter classification was not spelled out, allowing judges to classify according to their own aesthetic. The U.S. judges replicated the results of Davis's study both when they used the Davis scoring method, and when they used the open-ended scoring method. However, the Chinese-Canadian judges revealed no u-shaped curve, neither when they used Davis's scoring method nor the open-ended method. Unlike the U.S. judges, the Chinese ones consistently scored the drawings of the preschoolers as less good than those of all other groups. What this study suggests is that the u-curve is a cultural artifact of the Western modernist aesthetic. For a similar argument, see Duncum (1986) and Korzenick (1995).

Figure 6 about here

### Origins of Artistic Gifts

The origin of giftedness is a subject of much debate. The lay person's view is that gifts of any kind are innate (Winner, 1996a). However, recently, some cognitive psychologists have developed an anti-innatist position, arguing that high achievement in any area is due to motivation, hard work, perseverance, and what is termed "deliberate practice -- "goal-directed work on what is difficult (Ericsson & Faivre, 1988; Ericsson, Krampe, & Tesch-Romer, 1993; Howe, 1990; Howe, Davidson, & Sloboda, 1988).

The major problem with this motivational explanation is that we cannot conclude that motivation *causes* high ability to emerge. It is equally possible (and perhaps more plausible) that the primary and innate factor is high ability, and that high ability brings with it, or leads to, high motivation (Miller, 1998; Torff & Winner, 1994; Winner, 1996 a,b, 1998). Is it not likely that the intense motivation of prodigies (and savants) to work for hours at a time stems from, rather than leads to, their high ability? Children are motivated to work hard at a domain in which they have special ability. No typical child can be made to have a "rage to master," and no typical child can be forced to work in the intense way that prodigies work.

It is our position that hard work is necessary for the development of any gift. But there is no evidence that hard work is sufficient, and thus no evidence to allow us to rule out an innate component to artistic giftedness. Indeed, the strikingly early age of emergence of gifts in art, and the fact that high levels of skill make themselves known prior to formal training, are both strong pieces of indirect evidence for an innate component (Winner, 1996a). Milbrath's (1998) careful comparison of the developmental trajectory of drawing in typical vs. gifted children demonstrates that gifted children are not just faster, they are different. She documents how gifted drawers are more attuned than are typical children to the visual properties of what they draw. She also demonstrates that at any given point in drawing development, gifted children show much more variability in their drawing than do typical children because gifted children are able to produce some (but not all) drawings at higher levels of development. She argued that this variability occurs because of the fact that gifted drawers continually pose challenges for themselves. If the developmental trajectory of drawing differs in gifted vs. typical children, it is likely that the difference is not simply due to the fact that gifted children make more drawings and thus undergo more practice. The more plausible explanation in our view is that the gift that enables children to attend more to the figurative properties of the world is an inborn gift, and it is this gift that then propels these children to want to

draw, and to want to solve difficult drawing challenges (see also Feldman, 2000, for an elaboration of this argument).

Milbrath's (1998) study provides clear support for the claim that along with artistic giftedness comes the desire to pose challenges for oneself to meet. She found that her sample of typical adolescents drew human figures in three-quarters view only fifteen percent of the time, whereas her sample of artistically gifted children used this orientation in half of their figure drawings by the age of six. These three-quarter views appeared abruptly between six and seven years of age. Peter, the child studied by Winner (1996) drew a self-portrait in three-quarters view at age six years, one month (see Figure 7). He also posed difficult drawing problems for himself, such as depicting people in motion (Figure 8), in non-canonical positions (Figure 9), from their non-canonical back view (Figure 10 {4.15 ew book) or from an extremely foreshortened perspective (Figure 11).

Figures 7, 8, 9, 10, and 11 about here

Of course, if giftedness and the desire to challenge oneself and work hard at one's domain of giftedness co-occur, as they surely do, it is hard to disprove the claim that the levels of achievement reached by gifted children are caused only by their hard work. However, this co-occurrence may not just be a confound that makes our research efforts difficult. Perhaps this co-occurrence tells us something important – that is, that the rage to master a domain is part and parcel of having a gift in that domain.

Occasionally one finds examples of intensive work (deliberate practice) without a high degree of innate giftedness. We have come across two examples that illustrate both the power and the limitations of hard work without innate giftedness. One is the case of Charles, described by Gertrude Hildreth in 1941. This child produced over 2000 drawings of trains between the age of two to eleven. As the images in Figure 12 show, Charles had some ability, but his drawings never reached the level of gifted artists such as Eytan or

Peter. Even at age 11, his drawings remained fairly schematic, static, and lacking in perspective.<sup>1</sup>

Figure 12 about here

The second example of where one can get with hard work in the absence of atypical giftedness can be seen in urban preschools and elementary schools in China (Winner, 1989). Chinese children learn to draw through explicit, step-by-step instructions from the age of three. They are instructed in precisely how to draw a wide variety of images found in traditional Chinese painting, images such as bamboo, shrimp, goldfish, roosters, grapes, etc. They are taught what lines to make and in what order, and they learn by copying the teacher and from a book. This is also the method by which they are taught calligraphy. Because of the intensive training these children receive, their paintings appear very advanced, as shown, for example, in Figure 13. Entering a Chinese preschool, one might easily think one has entered a preschool for the artistically gifted! However, this impression will be readily corrected by the realization that none of these children were selected for artistic talent, and all of the children trained in this matter manage to produce highly skilled images. The paintings of Chinese children, while much more advanced in technical skill than those of Western children (who are typically given no explicit instruction in how to draw), nevertheless would never be confused with those of a true Chinese painting prodigy such as Yani. Thus once again we can see that intensive practice (and in this case explicit training) in drawing leads to high levels of skill, but that it cannot make ordinary children into artistic prodigies.

Figure 13 about here

Families of both artistically gifted children tend to be supportive and encouraging, but families play a far more interventionist and active role in the case of the musically than the artistically gifted (Csikszentmihalyi, Rathunde, & Whalen, 1992). While

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<sup>1</sup> I thank Rudolf Arnheim and Claire Golomb for bringing Hildreth's study to my attention as an example of the level of drawing achieved with deliberate practice but no outstanding artistic giftedness.

musically gifted children typically enter a regimen of formal training at a young age, and stress the necessity of hard work and practice for the development of their talent (Bastian, 1994), artistically gifted children often get little formal training in art. At least in the West, artistically gifted children are often suspicious of formal art education, believing such tutelage to be unnecessary and potentially destructive of their talent (Gardner, 1980). The typical art class in elementary and high school does not serve to stimulate these children's art. It is a sad commentary on the way that art is typically taught in school that none of the sculptors studied by Sloane and Sosniak had anything good to say about their elementary or high school art classes. Winner and Pariser (1985) also noted this: the artists they interviewed reported that what crystallized their identity as young artists was some professional artist who noted their ability. Contemporary Chinese artists show the same negative attitude towards their elementary school arts instructors (Winner, 1989). Thus, family and community appear more important than schools in the development of artistic ability. Not surprisingly, then, gifted children often make their best, most inventive work out of school (Hurwitz, 1983; Wilson & Wilson, 1976).

#### Relationship between Childhood Giftedness and Adult Eminence

Highly gifted children often face a crisis at adolescence. Bamberger (1982) points out that prodigies in music experience a midlife crisis at adolescence, when they become increasingly critical of their playing, and this crisis often results in dropping out of music. The same situation may well be true of artistically gifted children. Adolescence is the time when prodigies must make the transition from technical perfection to innovation and big-C, domain creativity. Only those who can reinvent themselves will make the leap between childhood giftedness and adult creativity (Gardner, 1993). It is extremely difficult to predict those gifted children and prodigies who will make this transition, and those who will not (Simonton, 1994, 1999). We might predict that a six-year-old who can draw as realistically as a skilled adult will grow up to be the next Picasso. But again, if at twenty she is still just drawing with technical precision, and not doing anything

innovative, she will begin to fade from public view. Take the case of Alexandra Nechita. She is famous now as a child for painting in the style of late Picasso. But will anyone take notice of her as an adult if she continues only to paint in the style of Picasso? Rostan et al. (1998) found that the childhood drawings of great artists (Picasso, Klee, Lautrec) were not distinguishable from drawings of contemporary gifted child artists. Yet surely few if any of this contemporary group will become great artists. Clearly, while high ability is necessary, it is not sufficient. Degree of skill in childhood cannot by itself predict later creative eminence.

When discussing artistically gifted children, the art historian Hartlaub commented that the promise of these "over-potential years of childhood is almost never fulfilled in adulthood" (Lark Horowitz et al., 1973, p. 190). Even among those who weather this crisis and do not drop out, most do not become known as creative geniuses. This is not surprising, as there is no direct route from precocity to inventiveness. But of course a few prodigies do go on to change their respective domains. These are the ones who earn the epithet "creative" or "creative genius." These are the individuals who, at adolescence or early adulthood, take a new stance. They begin to take risks: they challenge the establishment (Gardner, 1992, 1993).

One reason why only a few artistically gifted children and prodigies make the transition to become domain creators as adults is that the funnel is small: there is simply not enough room at the top for all artistic prodigies to become domain-changing creative artists. And so there is an inevitable weeding out. Any domain would be in chaos if there were as many creative adult innovators as there are child prodigies.

A second inevitable reason is that the skill of being a prodigy is not the same as the skill of being a big-C creator. A prodigy is someone who can easily and rapidly master a domain with expertise. A creator is someone who changes a domain. It is likely that personality factors play a major role in becoming a domain creator. Creators are

restless, rebellious, and dissatisfied with the status quo (Simonton, 1994; Sulloway, 1996). And they have something new to "say."

In a study of seven creative geniuses, Gardner (1993) suggests that a certain degree of tension, or "asynchrony" is required for a prodigy to grow into an adult artist or musician who would be classified as creative, or even as a genius. Gardner (1992) argues that creative geniuses differ from prodigies in how well the individual synchronizes with his or her domain as it currently operates within the society. The prodigy typically exhibits talents that fit well with a domain that is recognized by the society as important, and the skills of the prodigy are thus instantly recognized. In contrast, the creative genius often initially exhibits talents that do not fully fit within the domain in which the individual works, and which do not fit with the established tastes of the field (e.g., critics, gallery owners, conductors).

Of course, some individuals, such as Picasso, start out as prodigies and go on to become adults who transform their domains. Picasso painted realistically at an early age. But it is only because he began to paint in a revolutionary way and broke with established convention that we now consider him to be a creative genius. The creative artist/musician takes risks, and breaks with conventions. The gifted child, or child prodigy, does not. As Hurwitz (1983) points out, gifted children have invested a great deal of energy in mastering a set of skills, and are often unwilling, or even unable, to experiment in the way that one must do in order to be creative.

Gardner's (1992) notion of asynchrony is compatible with Getzels and Csikszentmihalyi's (1976) notion of problem finding. In a study of art students, Getzels and Csikszentmihalyi found that the art students who went on to become recognized as creative artists did not differ from their art student peers in technical skill. Where they stood out was in their tendency and ability to find challenging problems. However, we do not know how early in their careers these art students began to pose problems for themselves, and thus we don't know whether problem finding in early child art is a

predictor of adult artistic creativity. Such a problem finding mentality was demonstrated by Picasso, who delighted in posing difficulties for himself which he could then go on to solve (Richardson, 1991). Even as a child, he fought against what came naturally, insisting on setting up difficult drawing challenges for himself such as drawing a profile facing right when the opposite orientation is more natural for a right-hander, or beginning a drawing from an odd starting point (Richardson, 1991).

Sheer hard work also plays a role in determining whether a prodigy becomes a creative adult artist. The personality characteristics associated with success in any field are drive, tenacity, and the willingness to overcome obstacles (Gardner, 1980; 1993; Simonton, 1994; Roe, 1953). "I believe in nothing but work," said Picasso, who had tremendous energy and drive (Richardson, 1991, p. 48).

Finally, historical and socio-cultural factors determine who becomes classified as an adult creator or genius. No individual or artistic work is inherently creative or not. Instead, creativity is an emergent property formed by an interaction among the individual's gift, the state of the domain at the time when the individual begins to exhibit talent, and the tastes and judgments of the field (e.g., critics, curators, publishers) (Csikszentmihalyi, 1988; Gardner, 1992, 1993; Gardner & Wolf, 1988; Pariser, 1992/93). There is a fair amount of serendipity involved in determining whether giftedness grows into creative genius. One needs to be born at the right time, at a time when the field is ready to recognize one's talents.

#### SUMMARY

This chapter discusses (1) characteristics of children gifted in the visual arts, (2) the origin of such giftedness, and (3) the relationship between childhood gifts in the visual arts and adult creativity in the visual arts.

An examination of the characteristics of artistically gifted children shows that such children are not just more advanced than typical children in drawing milestones. Rather, they draw in a qualitatively different way. One way in which artistically gifted

children are qualitatively different from typical children is that they are able to draw things as they appear, with all the distortions caused by point of view and perspective, and thus their drawings typically appear highly realistic. However, not all artistically gifted children draw in a precociously realistic manner. The case of Wang Yani, a Chinese painting prodigy, and Alexandra Nechita, a Western child prodigy who paints in the style of Picasso, show that what unites all children with artistic gifts is not the ability or proclivity to draw realistically (though this is a common manifestation in the West), but rather the ability to master one or more of the culture's norms of artistry at a very early age. Another way in which artistically gifted children differ from typical children is that they set themselves visual challenges to master in drawing. Thus, at any one point in time their drawings are more variable in skill level than are the drawings of typical children. Evidence is presented that drawings by gifted adolescents and adults are closer aesthetically to the drawings of preschoolers than they are to those by older children, supporting the hypothesis that art by gifted adolescents and adults draws upon some of the aesthetic properties found in the work of typical (non-gifted) preschoolers.

With respect to the origins of artistic giftedness, evidence is mounted against the claim that high achievement in drawing is due simply to effort and motivation. The primary argument against this claim is that the developmental course of drawing differs qualitatively for gifted vs. typical children. In addition, evidence against this claim comes from work by children who manifest a great deal of effort but do not achieve the levels achieved by drawing prodigies.

Finally, with respect to the relationship between child prodigies and adult creators in the visual arts, it is noted that adolescence is the time when prodigies must make the transition from technical perfection to innovation and big-C, domain creativity. Only those who can reinvent themselves will make the leap between childhood giftedness and adult creativity. It is extremely difficult to predict those gifted children and prodigies who will make this transition, and those who will not.

Note:

This chapter is a slightly expanded and updated version of the visual arts section of Ellen Winner and Gail Martino's chapter, "Giftedness in Non-Academic Domains: The Case of the Visual Arts and Music" which appeared in K. A. Heller, F. J. Monks, R.J. Sternberg, & R. F. Subotnik (Eds.), *International Handbook for Research on Giftedness and Talent* (2nd edition), Elsevier Science, 2000.

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### Figure Legends

1. (a) Two apples drawn by 2-year-old on request; (b) Two apples drawn by artistically gifted 2-year-old on request. Reprinted with permission of Ryan Sullivan.
  
2. Pencil copy of an adult work drawn by John Everett Millais at age 8.
  
3. Drawing of a truck by Eytan at age 3;7. From Claire Golomb, The child's creation of a pictorial world. Reprinted with permission of The Regents of the University of California, Copyright & Copy: 1992.
  
4. "Pull Harder," painting by Wang Yani at age five. Reprinted by permission of Wang Shiqiang.
  
5. "Forgotten Values," Painting by 10-year-old Alexandra Nechita in a style reminiscent of Picasso. Reprinted by permission of International Art Publishers, Costa Mesa, CA.
  
6. Drawing by 8-year-old gifted child showing asymmetrical balance. The large cat is balanced by the small ball of yarn because the cat is uncolored and the yarn is bright yellow. The color gives the smaller shape more weight. Reprinted by permission of Constance Milbrath and Cambridge University Press.
  
7. Self-portrait in three-quarters view, by Peter at age six. Reprinted with the permission of Lois Borelli.

8. Figure dancing over a waterfall by Peter at age seven years four months. (4.14c)

Reprinted with the permission of Lois Borelli.

9. Figure with hand on hips throwing a book by Peter age six and a half. (4.14b)

Reprinted with the permission of Lois Borelli.

10. Figure drawn from the back by Peter at age five. (4.15) Reprinted with the permission of Lois Borelli.

11. Foreshortened figure by Peter at age six years nine months. (4.17) Reprinted with the permission of Lois Borelli.

12. Drawings by Charles, a child whose drawings reflect the effects of practice but only moderate talent. (a) Age 2; (b) Age 3; (c) Age 4; (d) Age 5; (e) Age 6; (f) Age 7; (g) Age 8; (h) Age 9; (i) Age 10; (j) Age 11. From Hildreth (1941). Copyright 1941 by Kings Crown Press. Reprinted with permission of Columbia University Press.

13. Painting by typical 5 yr. old Chinese child showing the high levels achievable through training alone. Note however that this painting, while skilled, pales in comparison to the painting shown in Figure 4 by Yani, an artistically gifted Chinese child who never received the typical Chinese step-by-step drawing training. From the collection of the author.

Artistic giftedness, as well as general giftedness, is a systemic mental quality, the basis of which is not special abilities, but the intensity of integration processes "inside" the person, which shapes his personal sphere (Bogoyavlenskaya & Bogoyavlenskaya, 2013). That is why the study of individual psychological characteristics of art specialists with different levels of productivity of the creative imagination is of interest. Gifts for artist and art lovers include our Kandinsky art shirt with Yellow, Red, Blue artwork. Many more styles available. Breeke - Wassily by Kandinsky, Sleeve, Scoop Neck, Hand Silk Screened Top. Acquire wonderful suggestions on "buy art online". They are actually offered for you on our internet site. Kandinsky Art Shirt Yellow Red Blue in Soft Poly Cotton. See more.