

Directing Pictures with Art Pals

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ABSTRACT

Creating art can be seen as the creative exploration of a design space defined by the artist and his or her tools. Existing artistic tools such as paint brushes, chisels and erasers are of a *passive* nature stressing a direct manipulation interaction scheme which leaves the exploration process strictly to the artist. If these tools had the ability to be more *autonomous*, they could assist in the exploration process, possibly discovering things that the artist was unaware of. This poster describes Art Pals, a drawing application which combines passive drawing tools with active, behavior-based tools in order to create an artistic environment more conducive to creative exploration.

KEYWORDS: Artistic Exploration, Direct Manipulation, Delegation.

NAVIGATING SUBJECTIVE DESIGN SPACES

Engineering and art can be viewed as points along the spectrum of design space exploration. Typically, engineering design calls for the satisfaction of several constraints involving cost, system requirements, building materials and many other concerns [3]. Form is heavily influenced by function, and these constraints can severely limit the design space to be explored. Art, on the other hand, is more concerned with form and aesthetic appeal. The only constraints that need to be satisfied are those imposed by the selected medium and the subjective constraints imposed by the artist. Thus, artistic design spaces can be wide open with lots of space for creative exploration.

Art Pals is a drawing application developed in Agentsheets, a programming substrate for creating visual design environments [1]. Art Pals takes advantage of Agentsheets participatory theater interaction scheme [2] by providing a combination of active and passive tools (the "pals" Figure 1). These tools can be used in concert to effectively explore

subjective design spaces. The user can establish constraints by drawing with the passive pals, and can then delegate exploration tasks to the active pals. In Art Pals, pictures are not so much drawn as they are "acted out" by a troupe of pals. The user assumes the role of "actor/director" and can choose how much acting and how much directing he or she will participate in.

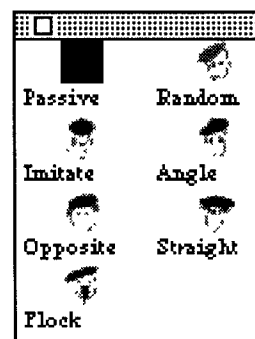


Figure 1. The Art Pals

THE PALS

To draw in Art Pals, the user must enlist the support of the seven different pals. Each pal possesses a unique behavior which can belong to one of two categories: passive or active. Passive behavior is embodied in the *Passive* pal which acts like a traditional direct manipulation drawing tool. *Passive* can be assigned a color and then will draw on a worksheet only when the user explicitly drags it. *Passive* is the pal which gives the user the highest degree of control and requires the highest amount of user effort. The other six pals are active because they can draw under their own initiative. Active pals are placed in a worksheet by the user, and then can draw without having to be manipulated. Active pals can be broken down further into two categories: autonomous and reactive.

Autonomous Pals

The autonomous pals are *Random*, *Straight* and *Angle*. They will not draw on a worksheet space that has already been colored, and if they get to a point where there are no viable spaces to move to, they will stop drawing. *Random* draws on the worksheet in a random fashion, while *Straight* draws in a straight horizontal line until it reaches an impediment. An impediment can be the edge of the worksheet or another pal. Once this happens, *Straight* will drop down to the next line

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(provided there is an empty space), change directions, and continue drawing lines. *Angle* will move in straight lines until it reaches an impediment. Then, it will rotate counter-clockwise by a user specified angle, and continue drawing in its new direction. Both *Angle* and *Straight* are assigned initial directions by the user.

Reactive Pals

Reactive pals draw by reacting to the drawing activity of the user. *Imitate*, *Opposite* and *Flock* operate by waiting until the user has drawn something and then reacting accordingly. *Imitate* will imitate exactly what the user did, while *Opposite* does the opposite. *Flock* pals draw by moving from where they are on the worksheet to where the user activity is taking place. In other words, they flock to the *Passive* pal that the user is manipulating. Unlike autonomous pals, the reactive pals will draw over previously colored worksheet spaces.

ART PALS EVALUATION

Art Pals has been informally evaluated with several different users including a professional artist. A portfolio of drawings exists, and Art Pals has proven an interesting medium with which to study the way people explore artistic design spaces.

Balancing Exploration and Constraints

Upon first drawing in Art Pals, users tend to rely less on establishing constraints, and more on exploration. This is borne out by the random nature of the early drawings that people make. As the users become more familiar with the system and the different pals, they tend to spend more time developing and adhering to constraints. Eventually, most pictures start out with some engineered components and then incorporate exploration as the drawings evolve.

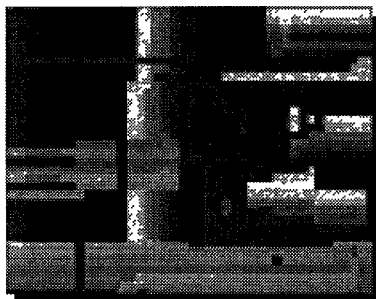


Figure 2. Art Pals Drawing

An example of this can be seen in Figure 2. This drawing was the third created by the professional artist I worked with, and at this point he had become comfortable with the application and knew how each of the pals behaved. He started this picture by creating a horizontal string of *Imitate* pals in the upper left corner of the worksheet. He assigned the *Imitate* pals colors along different spectra in order to create a shaded, three dimensional quality. Then, by drawing a vertical line

with a *Passive* pal, the *Imitate* pals followed, creating the column-like structures on the left side of the picture. These columns had been carefully engineered by the artist, but at this point he began experimenting by rearranging the *Imitate* pals vertically, and by using *Flock* pals to create the random lines in the middle of the drawing. At this point he said, "I don't know where this is going, but we'll see!"

Levels of Exploration

Different people prefer to use different levels of exploration. Some users tend to take a more exploratory approach while others like their drawings to be more carefully constrained. This usually manifests itself in the way users view their roles. For instance, some users organize their drawings around discrete steps. One part of the picture is carefully arranged and then executed. Another aspect of the picture is then arranged, and the action takes place again. This approach highlights the user's role as director and minimizes the role as actor. In this style, each "scene" is carefully arranged and executed, and then the next scene takes place. Other users prefer to be more of an actor, in the midst of the activity. The actor approach tends to produce more exploratory results.

CONCLUSION

Although different users interact with Art Pals differently, all of the users tested appreciated the ability to delegate certain drawing tasks to the active pals. Frequently, the results of this delegation were not fully anticipated by the user but were often incorporated into drawings. By providing an environment that allows the combination of passive and active tools, Art Pals assists in the creative exploration of an artistic design space by having tools that can generate options the user may not have been aware of.

ACKNOWLEDGMENTS

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