

# Alchemy: Experiments in Interactive Drawing, Creativity, & Serendipity

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## ABSTRACT

This paper presents an overview of *Alchemy*, an experimental drawing application aimed at exploring how we can sketch, draw, and create on computers in new ways. *Alchemy* focuses on the absolute initial stage of the creative process, to provide an expanded range of possibilities for serendipitous sketching and shape creation. The main aim of *Alchemy* is to explore how computer based forms of drawing can extend the early stage idea creation process.

## Author Keywords

Alchemy, draw, art, sketch, creativity, serendipity, creative process, creativity support tools, design, concept art.

## ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## INTRODUCTION

People draw. One need only look back some 30,000 years to the decorated Palaeolithic walls of the Chauvet Cave in southern France, to realise that art and expression are long-lived traits of the human condition. Drawing provides us with glimpses into the creative process that go beyond the conclusions we can draw from a finished artwork, invention, or design. The attraction of drawing is that it is tied to the work in progress more than the end product. As such, drawing seems inherently related to the creative process and creativity itself.

The traditional design process places firm emphasis on using pen and paper to draw and work with early ideas, followed by the introduction of the computer as a tool to produce a finished work. The use of the computer as an integrated part of the creative process is recognised as one of the last remaining frontiers of computer use [2].

## ALCHEMY

*Alchemy* is an experimental drawing application aimed at letting users visually explore an expanded range of ideas and possibilities in a serendipitous way.

*Alchemy* is not intended as software for creating finished artwork, but rather a sketching environment that focuses on the absolute initial stage of the creation process. Once initial ideas and sketches have been created with *Alchemy*,

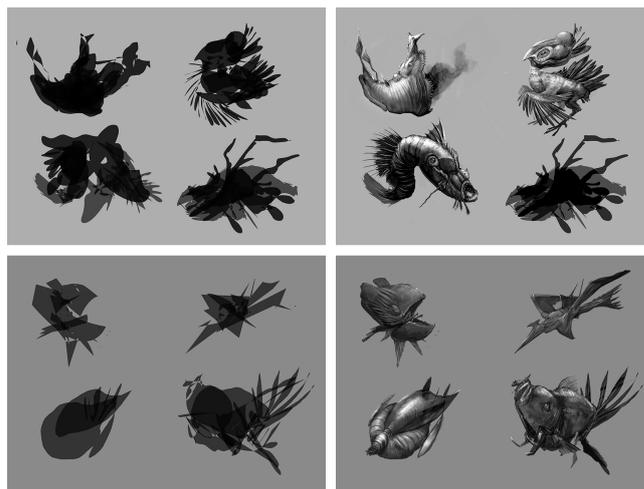


Figure 1. *Critters Series* by Chris Waller. Original sketches created with *Alchemy* (left) and developed artwork (right).

further development and finishing work can be continued on using conventional graphics software. Figure 1 shows an example of the type of shape forms that can be created with *Alchemy* (left), and their transformation by the artist into character designs using conventional paint software (right).

*Alchemy* is currently widely used within the *concept art* community as a tool for creating initial shapes, sketches, and drawings for character design, object design, and environment design. *Alchemy* is an open source application and available free for download [6].

## Process

Lasseau divides the design process into two overlapping funnels, firstly an *elaboration* stage representing the generation of possible opportunities or options, then a *reduction* stage where choices are made among the generated options to gradually converge upon a final design [3]. Our aim was to explore the use of the computer as a tool for idea generation; we envisioned *Alchemy* to be set firmly within the *elaboration* stage, as artists and designers experiment with a wide range of ideas before continuing on towards *reduction*. *Alchemy* is intended as a visual sketchbook and exploration tool that can contribute something to artist *creativity* as opposed to just *productivity*. To do this we needed to break away from the idea of the computer as a passive slave and focus on the capability of software to surprise us. We sought to

implement drawing functionality that was not always immediately understandable, and took some degree of control away from the artist.

### Application

The focus for *Alchemy* is on the *creative process* as opposed to the *created product*. The *Alchemy* interface is stripped down to the essentials to avoid visual distraction and allow artists to become fully engaged with the creative process. In today's multi-tasking computing environment full of email notification chimes and pop-up windows this became even more important.

To promote the visual exploration process certain features were intentionally omitted. According to Boden, the introduction of constraints on the creative process is what makes creativity possible by mapping out a territory of structural possibilities to be explored [1]. The most immediately noticeable constraint within *Alchemy* is the lack of an *undo* function. *Undo* is one of the most ubiquitous features of desktop software, but one we felt lends itself to Lasseau's reduction stage, rather than the elaboration stage that we sought to encourage.

To document the drawing process in a convenient and seamless way, drawing sessions can be recorded and saved as sequences into a multi-page PDF file. Artists have the option of automatically recording and/or clearing the drawing canvas at timed intervals, or manually at each step.

### Modules

*Alchemy* consists of the main application and a series of plug-in drawing modules. Each module performs a specific function and utilises standard inputs such as the mouse, pen, or keyboard, as well as other resources such as microphones, fonts, random numbers, noise, and network based APIs. This enables *Alchemy* to draw upon a rich array of resources and explore an expanded range of possibilities for shape creation.

Many of the *Alchemy* modules focus on or support the generation of ambiguous shapes that can lead to *shape emergence*: the discovery of representational forms from abstract shapes. Shape emergence is familiar to most in the form of 'cloud gazing' or the infamous Rorschach inkblot test. The discovery of unintended forms in the traditional sketch process has been well documented [see 4 for a review], with ambiguity a common trait of sketches that invoke the shape emergence process [5]. *Alchemy* supports the creation of ambiguous shapes with modules that generate forms autonomously or transform how lines are created during the sketch process. The resulting shapes created have an element of unintentionality, allowing the artist's own creative interpretations to come into play. Other modules support the ambiguous shape creation process with functionality such as realtime symmetrical mirroring that aids in the emergence of face-like forms, and a blind drawing feature that freezes the display of the canvas to temporarily stop conscious perception and evaluation playing a role.

### CONCLUSION

Drawing and creativity are closely inter-related, if not inter-dependant. We believe the computer can be used to not only expand drawing's expressive range, but also to augment, extend, and shape the cognitive aspects of the creative process itself.

In developing *Alchemy*, the foremost concern has been finding ways to extend and expand human creativity. The first (and most obvious) step towards this goal was to provide an environment that did not *inhibit* creativity. This meant encouraging a state of creative engagement, by minimising the need to break concentration and deal with the interface. The next step involved restricting functionality and encouraging a process of open exploration that contrasted with the more common use of the computer as a finishing tool. Without functionality such as undo, we hoped to encourage artists to explore an expanded range of ideas and possibilities from the outset. Finally, by focusing on the creation of ambiguous shape forms it allowed us to experiment with a range of unconventional drawing techniques to support shape emergence.

As the name of the software suggests, much interaction with *Alchemy* comes about unwittingly, with the artist's intentions one part of a larger equation. This was a deliberate approach aimed at promoting occurrences of shape emergence, serendipitous experiences, and the changes in creative direction that can result. Our intention was never to simulate or supplant human creativity, but rather to create a software application that could contribute and act as a launching pad for new directions.

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