Speaker notes for Andy Oram at Codework conference

These contain my notes, the basis for both my 10-minute talk at the WVU conference and the paper to emerge from the conference

Literary computing: applying literary concepts to computing and vice versa

Abstract

Thinking of a computer program as a literary document turns up concordances, such as the impossibility of reducing good coding style to formal lessons, and the tendency of great programmers to move forward, leaving others to consolidate their discoveries. The functional aspects of computer programs do not preclude comparisons to literature, because literature also has functional aspects in its impact on the reader. As the other side of the coin, the fluidity of computing has entered the arts and literature. They are becoming malleable and convivial, ultimately showing signs of dissolving into everyday life. Yet digital media also allow authors to place new constraints on them, even while making them open in ways that older media never were.

Justification

These notes spend a good deal of time comparing the expressive and the functional. Fundamentally, I treat the context in which they're being presented--the Codeword conference as functional, and assume that all of us coming from diverse backgrounds want to accomplish the following:

1. To help those trying to generate art or code to do more of it that is novel and beneficial
2. To encourage other people to approach work they had previously done routinely with a zeal for bringing new practices and benefits to it
3. To see the novel in processes where it was not previously seen

Part I: Applying literary concepts to computing

Programmers are pragmatic; they think of programs as functional

Donald Knuth says programs are also expressive (literate programming)

Programs *are* expressive - it's the law!

That's why they're copyrightable

Encryption cases

ITAR has been in place for 50 years, treating encryption treated like munitions

In 1990s, it crippled e-commerce and secure computing generally

1990s challenges by Peter D.Junger and Daniel Bernstein

Federal District Court ruling in 1997: code is expressive, free speech

Programming is also functional

This is why computer processes can be patented

Look-and-feel lawsuits of early 1990s

Companies trying to drive competitors out of business by copyrighting look and feel

Courts ruled that programs are functional: "uncopyrightable method of operation"

The distinction between "functional" and "expressive" is almost impossible to sustain in programming, just as much as in literature.

Web links

The modest web link, that little feature of modern life we all take for granted, actually raises myriad questions of what is functional versus expressive

Google's page rank algorithm

(Actually not as large a component of their ranking methods as many people think.)

Assumes that a link conveys some kind of endorsement

Even if you link to a page you disagree with (to critique the text, for instance), your link indicates that it is important and thus worth increasing its ranking.

(Search engines now respect a "nofollow" attribute so you can create a link without expressing this endorsement.)

In theory, one could create a taxonomy of links reflecting the variety of attitudes toward material, as discussed later in this article regarding references within blogs.

Courts sometimes order web site administrators to remove links

Sandy Baldwin lays out the considerations and free speech implications of this prohibition in the case of the distribution of DeCSS software. It turns out that a ban on links creates deep and serious restraints for free speech.

Similar bans predated the DeCSS case. In 1997, for instance, a German court required German sites to remove links that pointed to information on how to make a bomb

Speech and the arts are also functional

A politician's "espression" on TV; he/she is not just unburdening his or her soul

Wants to have a measurable, functional impact on you

Function in literature

In Shakespeare's Julius Caesar, famous Marc Antony funeral eulogy: a politician sidestepping his enemies to have an impact on the audience

But behind Antony stands the playwright, with the functional goal of making you consider Antony and politicians in general

Expressive works may attempt to persuade through rhetoric and reason, but they cross the line to become functional when the structure of the speech (the meta-message) contributes to the message

Shakespeare's plays are extremely functional by this criterion

Helen Vender shows functional impact also of Shakespeare sonnets

Even poetry is functional

Best proof comes from the classic works of Stanley Fish:

- Self-Consuming Artifacts: The Experience of Seventeenth-Century Literature
- Is There a Text in This Class? The Authority of Interpretive Communities

Expert authors turn text into a form of jiu-jitsu

Setting up prejudices

Letting reader relax into them

Then challenging them: makes reader revisit and even reject prejudice

Fish changes the question regarding literature from "What does the text mean?" to "What does the text do?"

Both literary texts and computer programs can be interpreted in ways not anticipated by their authors

Literary texts

The most famous reinterpretation of literary text is that performed on Hebrew scriptures by Christians.

This was one of the most fertile creative acts in history, beginning a whole series of intellectual traditions that have changed the whole world.

On the other hand, one cannot scientifically support the claims of the Christian scholars that they were restoring the original meaning of the texts.

Computer programs

An important example of unintended interpretation of computer programs is their exploitation of by malicious crackers.

Example: a cracker might be able to reach into memory he or she is not supposed to access by passing a negative value to a program option that is supposed to take only a positive value.

Not clear that Fish's linear process can work today

Fish's beloved 17th-century lay just past an oral age

This form of reading is lost now, not just for the young, but for executives and any busy person who skims for "the point"

Sometimes you can't get "the point" by skimming

There's still hope for jiu-jitsu in oral deliveries such as this one, as well as audio- and video-dominated world

Fine arts and conceptual art

In the fine arts, the contemporary movement called conceptual art tries to undermine their own statements like great literature does

But works rarely have the temporal quality that makes the trick work

However, many of the works at this conference, and others created by conference participants, alter the temporal experience that the user has with text in dizzying ways that take Fish's observations to new levels through more complex media interactions

Programmers can't write in streaming media

They still need to plunk down text and arrange it mentally

Some hope in visual programming, such as Jonathan Edwards's Subtext

How to make programmers literate

Great literature is more than stylistic elements that can be taught

Easy for a hack writer to manipulate a plot to produce tragic irony; but hard to invoke the true irony that wells up in a real human life

Similarly, easy to teach programming students to avoid global variables or keep nesting down in control pattenrs

Great programmers work intrinsically and instinctively,organically

They don't just rip out a global variable by converting it to an argument in function prototypes, but structure their classes so one cannot imagine a need for a global variable

Like great artists, they know when to ignore rules: thus, a complex function can have a lot of nesting

Like great artists, literate programmers always move ahead

While others try to learn from what they've done, they're applying their deep instincts to finding totally unexpected solutions to new problems

Literate programmers borrow freely from those who have gone before

And therefore disdain the patenting of software coding practices

Size

Unlike the programs we run on our computers, the programs by literate programmers are surprisingly small (often because the programmers are too prudent to try to solve the big problems)

Literate programming, like most art and writing, seems a solitary endeavor

How do literate programmers they work in teams, a modern requirement?

Free software or open source tools and communication patterns create a "collaboration environment for people with Asperger's Syndrome"

Mailing lists, revision control, bug reports: more formal than the tight-knit collaboration found in face-to-face work environments

For more reflective computing

Aided by visual tools, collaboration, sense of play

Other attributes that can be shared by computer programs and literature

- Cultural artifacts (example: filling out a form on a web page reflects paper bureaucracy, FORTRAN and COBOL mimic their environments' forms of expression, the desktop metaphor in 1980's interfaces, online calculators)
- Political statements (PGP, GNU, Linux, Apache, onion routing)

Part II: Applying computing concepts to literature

It's well-known that cues are missing online

Elegant cloth book or tabloid newspaper?

Penguin Books or Grove Press?

Political statement, literary statement, or comic routine?

Distinctions often break down, but all the more in the first ten results that turn up in your search engine

Law professor Gene Koo (currently at Harvard's Berkman Center), in February 2008, criticizes the New York Times for mixing news articles, opinion pieces, and even journalists' blogs without differentiating the types on its Inside NYTimes list and Most Emailed list.

External impressions

Reading Marc Antony's funeral eulogy in high school

However boring, pointless, or foolish we might have considered Shakespeare as teenagers, we knew that four centuries of scholars directed us to him as a towering genius.

Nowadays, similarly, one comes to a statement through a blog that says "this is the greatest insight since Creative Commons" or alternatively "Look at the crap this guy is spouting"

Characteristics of new media in the Internet age

Summary of some points from my article (now an editable wiki) titled Characteristics of new media in the Internet age

The new art possesses seven characteristics to greater or lesser degrees:

Digitized
: put in a standard format that allows for detailed manipulation and alteration, as well as sharing

Malleable
: always evolving

Convivial
: consisting of contributions large and small from many people

Open
: accessible to anyone on the Internet, usually free of charge, and editable

Topical
: reflecting the needs of particular times, places, and readers

Applied
: aesthetic or affective experience becomes just one facet in everything we do

Constrained
: legally (through licenses) and aesthetically (through software parameters)

Challenges to the new arts

The collaborative requirement
: it's better if you invite everybody in

Maintaining narrative and intent
: somebody has to impose a vision

Motivating artists
: as material rewards diminish

Aesthetic constraints
: the viewer can't enter into the artwork except in ways allowed by the artist

Legal constraints
: moral rights, etc.

Art dissolves into life

At the extreme, the new media (convivial, ever malleable) lose the characteristics of stand-alone artifacts and become just expressions of every-day activities.

We see presages of this in the sharing of everyday life through Twitter and cell phone photos, and in the creation of smart mobs.

One could argue whether such activities rise to level where they could be called art, but the argument might be won if they included implicit commentary on the state of life and society, as conceptual art does.

Thus, being applied, art becomes, like programs, an application.

Other art forms will not go away

People still flock to the opera, an art form created almost exactly four hundred years ago, inspired by ancient Greek drama, and intended to combine all the arts to achieve an immersive and overwhelming effect.

People also go to movie theaters for modern-day immersive experiences, thus showing that catharsis is still deepened by sharing it with other people with whom you share some background, because they are neighbors, but to whom you are still somewhat strangers.

People even go to movie theaters to see opera. In fact, the Metropolitan Opera of New York recently started a popular series of high-definition broadcasts to movie houses

All the ancient art forms, from pottery, drumming, and story-telling onward, are still practiced. We add new ones reflective of our age, and sometimes bring the old and the new together. That is why an exploration of both is still valuable.