I’d like to thank Luanne and Rob for this opportunity to remember Gene through his work on ebooks and annotations.

I thought the annotation on the left would be the right place to start. This is Pushkin’s sketch of his character Eugene Onegin. Not only could Gene quote Pushkin at length, he also shared a name with Pushkin’s most famous character. I’m going to return to Gene’s literary side in one of the projects I’m going to talk about.
It is both very hard and very easy for me to give this talk. Gene and I worked on a bunch of different projects together over the years.

But more than that, Gene did a lot of stuff, and I feel a bit strange looking at Gene through this narrow view.

We’re factoring out the Gene who was a talented photographer; the Gene who loved Paris; the Gene who was crazy about his kid and his wife; the Gene who got intensely interested in genealogy; the Gene who hung out on Twitter; the Gene who was into model railroading.

So I tried to pick two projects to talk about that were not just about his work on ebooks and annotation, but also represented of his broader interests.
You probably all know that Gene worked on a document reader called XLibris. This was around 1998. He and Bill Schilit and Morgan Price were investigating the idea that you had to be able to interact with a document as if it were paper. So you had to be able to write on it with freeform digital ink. But a computer that behaved like paper wasn’t good enough: it was necessary, but not sufficient.

XLibris had to be able to go beyond paper—it had to do things you just couldn’t do with paper.

Gene had lots of ideas about how to better support freeform digital ink, and he also had lots of ideas about how to implement capabilities that would go beyond paper.

I’m going to talk about 2 XLibris-based projects. I picked these two projects because each one shows some essential element of Gene, and I like to think these were two projects that he liked a lot too.
briefing the President with XLibris: our introduction to the PDB

The first project is one we did with In-Q-Tel. In-Q-Tel is a non-profit set up by the US Government in 1999 to fund technologies useful to the intelligence community.

We pitched XLibris to In-Q-Tel, and soon ended up with funding to make a document reader that CIA briefers would use when they briefed high-level policy makers. At the time, “high level policy makers” meant the president, the vice president, and some cabinet officials --about a dozen people -- some daily, some several times per week. The briefers would get up very early in the morning, and would read through fresh incoming intelligence, and would then go meet with whomever their designated policy maker was. These face-to-face meetings were short and intense.

The most emblematic document of this process was something called the PDB—the President’s Daily Brief. The idea was, it was like a legal brief—hence its name. It was a collection of articles about the most important breaking news, the events the policy makers were most interested in. At the time, it was characterized as "the most highly sensitized classified document in the US government."

The PDB pages you see here are part of a mock-up—somewhat presciently, they were about bin Laden and how terrorism was being funded. Also, ironically word got around that the document was published in landscape orientation, a fact which was of some concern for us since the XLibris default was portrait mode.
The idea was that Gene and I would work with these briefers, understand what they did, do some participatory design, and that Gene would customize XLibris to make it fit their work. Using the PDB as the tip of the iceberg, the briefer would have access to all of the supporting intelligence that went into the production of the document, and would be able to read this stuff on the go. This would be the kind of tool that would really make a difference to the quality of intelligence that the briefers were able to deliver.

And I think this idea really appealed to Gene: XLibris would be technology that would make a difference. We couldn’t publish anything about it though. So this is the first time I’ve ever talked about the project.

Every couple of weeks, Gene and I would go out to Rosslyn, where the In-Q-Tel lab was, and to Langley, Virginia to CIA headquarters to interview analysts and the CIA’s IT people.

Gene put a lot of time into thinking about practical stuff about what would make XLibris an effective tool for these high-level analysts.
What would active reading mean for these analysts? XLibris had lots of annotation-based capabilities.

But surely the centerpiece would be search-based and link-based in addition to reading and annotation. Making connections, synthesizing incoming intelligence, and discovering new information was an important part of what these guys did.
As in most user-centered design projects, some of the most interesting questions and problems stemmed from practice and from the infrastructure, not from the original technology.

For example, we were faced with the question of whether a briefer would ever use something like XLibris in front of a policy maker. The answer was a resounding “No!” Face time was face time, and the briefer would want to be talking directly to the policy maker, not consulting a device. The briefer was the expert, and wouldn’t want to be formulating a query, no matter how good the information was. We thought then that the briefers would be using XLibris in the car (since the briefers all had drivers to chauffeur them to the policy makers). But this was at a time before ubiquitous wireless.

We tackled any number of questions about how and when documents would actually get on the tablet, a question that turns out to be important for ebooks in general.

This was a project with a twist at the end. Gene and I were pretty excited about the idea of getting to support XLibris in situ. There was talk about Gene going out to help the IT person who would be in charge of the technology for the briefer to use to get the president-elect up to speed. We tracked the election results closely (without ever talking about politics).
Of course one of the bright spots of this project is that Gene and I had a lot of nice dinners in Georgetown.

I learned that Gene’s cocktail of choice was a Bombay Sapphire martini with 3 olives, and together we learned about the vicissitudes of Virginia wine. Once, in an effort to be cost-conscious, we ordered a bottle of Virginia wine, noting that was considerably cheaper than the California and Australian wines on the menu. It’s the only time I remember having dinner with Gene and leaving ¾ of a bottle of red wine behind.

I don’t think Gene ever fell for that one again!
Gene was interested in modern fiction—I think that’s part of what drew him to the Hypertext community in its early days, and what drew some of us to him.

Elizabeth Churchill and I were reminiscing the other day how Calvino was a particular favorite of Gene’s, and how we were both so pleased to have a colleague who read modern fiction.

This is a lead-in to the second project I’m going to talk about, which was an XLibris interface that Gene built to some experimental fiction that Judy Malloy and I wrote under the auspices of Xerox PARC’s PAIR project. Gene designed several techniques to create “recombinant text”.

If on a winter’s night a traveler
ITALO CALVINO
Forward Anywhere was an experimental collaborative hypertext Judy Malloy and I created almost 20 years ago. It was essentially a set of short narratives exchanged as emails over the course of 3 years as part of the Xerox PARC PAIR program. The stories were related to one another, but the relationships between the stories weren’t explicit, but rather held in both writers’ minds.
What Gene had to work with was a set of personal narratives, ambiguously related to one another. You can see from this diagram I tried to draw partway through the process that the stories were connected in a number of different ways, and we wanted the readers to make their own connections between them, depending on what was meaningful and interesting to them.

So Gene set out to build an interface.
Freeform ink annotation
as a new mode of interaction:
different types of recombinant text

had resulted in spontaneous combustion.

Actually, my brother, whose chemistry set dominated that area of the basement, had lit the newspapers on fire just to see what would happen.

The idea was, people naturally interacted with what they were reading by becoming writers themselves as they annotated.

So if you were reading Judy’s narrative about her brother who read comic books and set fires in the basement, you might just write something on it. Perhaps it reminded you of your sister.
But the whole intent of Forward Anywhere was that it was supposed to be like the memory process—memory’s vagaries and depths—and learning about another person through their stories: one memory evokes another.

So here’s the interface. The idea was, the reader would make marks on what he or she was particularly interested in, which part of the story was evocative for the reader.

XLibris then computed which words were under the ink. The reader could circle stuff, use margin bars, highlight or underline passages—do any of the things that readers normally do to indicate their interest.

Then XLibris would analyze the text of interest, compare it to the complete indexed text, and choose a close match. This made the annotations similar to the process by which the narratives were created: what does this remind you of?
Unexpected connections through annotation-based navigation

Cathy: primary school teachers
It was not hard to imagine that primary school teachers had sinister private lives in which they dismembered their students, chopped them to bits, pickled their entrails in old jelly jars, and wove their hair into doormats. You could tell by the way they wielded those rulers when you weren’t paying attention, when you were peeling Elmer’s glue off your desk in strange translucent ghost shapes.

In this case, that annotation got you to somewhere we hadn’t anticipated. It was a narrative much later in the piece, but it was similar in both tone and topic. There’s the same sinister imagery of childhood.

In this case, recombination took place on a lexical level, much like Cortezar’s *Hopscotch*. The meaning would change because the order in which the lexia were revealed changed, a very hypertextual idea.
Gene also designed something that was more like Burroughs and Gysin’s cut-up: You could create new narrative by remixing the sentences across lexia. Again it was recombinant narrative.

Because Gene was Gene, he wanted the result to be intelligible, to make sense. So instead of a word scramble, he found sentence boundaries, and recombination took place at a sentence level.

You could filter the annotations based on color, or you could gather anything you marked. You could also manipulate these excerpts.
Gene’s work on ebooks *in situ* and on beyond ink capabilities

Ebooks tailored for different settings* 
- tablet or high-level briefers 
- hypertext fiction 
- ebooks for law students & legal research 
- meetings 

Beyond paper capabilities 
- annotation-based navigation & document retrieval 
- moving markup—keeping ink in place 
- understanding what “back” means 
- collaborating via ink 
- collaborative information-seeking 

* of course Gene collaborated on many of these efforts—Gene was a good collaborator! 

Gene not only did basic research on how readers would interact with eBooks through annotations; he also tailored eBooks for the needs of different audiences: CIA briefers, hypertext fiction readers; law students and legal researchers; researchers in a meeting—I’m sure I’m forgetting some.* He focused on beyond paper capabilities for these different audiences. 

We know that Gene has thought extensively about the relationship between links and queries. He brought that idea to annotations: XLibris knew what text was underneath the annotations, and could use that in the query formulation process. 

Gene also thought about moving markup. At first blush, this seems simple, a highlight that sticks to a word, and perhaps scales as the word scales. But now think about a circled word. Now think about keeping the circle in place when you made the text big enough to read without your glasses. Still okay, right? Now think about what to do with the circle when the word is hyphenated because it broke across lines. How about if it breaks across page boundaries? Moving markup is a small, gem-like problem. 

Have you ever been surprised when you hit the “back” button on your browser? Gene worked on solving this problem in the ebook environment. This is another one of those problems that’s more complicated than it seems. Do you REALLY want to go back to the last page you saw?
It’s funny. What I’ll remember most—and miss most—about Gene is the way his essential character combined many things:

A shining intellect and broad interests.

A quick wit and an unstoppable sense of humor.

A remarkable stubbornness—his spirit animal may have been a Jack Russell terrier.

And kindness. At FXPAL he was well known for making the admins cry, but that gruffness was all a front. He never made a big deal out of his kindness but it was always there. Once I was giving a presentation at CHI—it was after I had changed jobs to work at Microsoft—and my darned laptop blue-screened in front of 200 people. Of course, there’s a temptation to make fun of the person from Microsoft with the show-stopping software error. So everyone was hooting and booing and doing all that kind of stuff. But Gene didn’t say anything. He trotted to the front of the room, and fixed my laptop without saying anything. That’s how I’ll remember Gene.
Gene, his brother Konstantin, my partner, and another friend spent the Y2K New Year’s Eve together. The champagne flowed. We ate coq au vin.

We watched the fireworks from my balcony as the lights in the city below stayed on.