



Attorneys at Law

Consortium Standards Bulletin

A ConsortiumInfo.org publication

SEPTEMBER 2005

Vol IV, No. 9

CONSIDER THIS

‡ ‡ ‡ September 29, 2005

#32 Clay Tablets, iPods and Evo/Devolution

The new Apple iPod Nano™ is truly the perfect marriage of stylish modern design and cutting edge technology. It weighs but 1.5 ounces, and, as one typically rhapsodic reviewer (struggling for a suitably expressive method of comparison) expressed it, is only "five dimes long." He went on to announce that the new Nano had received the PCMag.com "Editor's Choice" award.

And it is rugged, too. Two critics at the *arsTechnica Website* ("Serving the PC enthusiast for over 6×10^{-2} centuries") were also struggling for an angle for their review, and subjected a Nano to a series of increasingly violent "stress tests," failing to still its tiny, pristine voice even by driving a car over it -- twice.

The Nano is certainly, then, the *ne plus ultra* of storage technology: capable of storing massive amounts of data in the blink of an eye, of delighting its owner for up to 14 hours on a single charge, and even content to be physically abused in new and extreme ways for the amusement of jaded consumer electronic critics.

Or is it?

In some ways the Nano is vastly inferior from a technological perspective to one of the earliest means of storing data: the clay tablet.

Consider this: the Nano is a perfect example of what might be called "simultaneous evo/devolution" (as in "two steps forward, two steps back"). For at the same time that it represents the (current) apotheosis of instant storage and reproduction technology, it is also representative of our recent plunge into an information black hole that is swallowing all newly-created data, potentially never to be found again.

The useful storage of information, after all, depends upon how you define "useful." For example, attributes of utility would normally include the following (in no particular order): ease of input, ease of output, cost, fidelity, longevity, portability and transferability (i.e., can the data be easily extracted and stored elsewhere?).

Were we to rate our Nano against a typical cuneiform clay tablet (of which untold thousands remain in existence), it might compare as follows, based on a scale of 1 to 10, with 10 being the highest:

Attribute	Nano	Tablet	Explanatory Notes
ease/input	9	3	Nano: no FireWire synching; Tablet: stylus cramp
ease/output	9	9	Nano: earbuds still in "mug me" white; Tablet: you can read, right?
cost	5	10	Nano: high initial cost; Tablet: endless supply of basic ingredients
fidelity	9	10	Nano: Almost perfect; Tablet: perfect (but still no cure for GI/GO)
longevity - user	9	10	Nano: Ran my car over it one too many times
longevity -	1	10	Nano: see below; Tablet: your car will break before it does

archival			
portability	10	1	<i>Nano: you don't know its there; Tablet: Please be Brief!!</i>
transferability	2	8	<i>Nano: no Apple software? So sorry. Tablet: cramp time again</i>
Score	55	61	

So what do we learn from this small exercise? Superficially, that the tablet beats the iPod by a meaningful margin, at least if you ignore the fact that clay tablets can't store music at all. But if we were using a PDA, the result would be about the same.

A meaningless comparison? Perhaps. So let's now rescore our contestants, this time weighting our attributes according to how we wish to use the medium. Here's how we'll do it: we'll only record the value for an attribute if it's one that we care a lot about. And we'll also use some appropriate use cases in making the determinations: what a typical teenager is looking for, and what someone writing with a thought to archiving cares about. For the former case, we'll favor criteria such as data density and owner access, and for the latter longevity and comprehensibility. Here's how our new scoring might look after taking this approach:

Attribute	TeenyBopper		Hammurabi	
	Nano	Tablet	Nano	Tablet
ease/input	9	1 (<i>where's the keyboard?</i>)	<i>Huh?</i>	3
ease/output	9	1 (<i>Sanskrit?</i>)	<i>Huh?</i>	9
cost	5	1 (<i>make my own???</i>)	<i>1Do you take shekels?</i>	10
fidelity	9	<i>Who cares?</i>	<i>You call that music?</i>	10
longevity - user	9	<i>Who cares?</i>	<i>See answer above</i>	10
longevity - archival	1	<i>Who cares?</i>	<i>See answer above</i>	10
portability	10	<i>Its, like, a bummer</i>	<i>See answer above</i>	1
transferability	2	<i>Why bother?</i>	<i>See answer above</i>	8
Score	55	3	1	61

This time, of course, the answers come out rather different, because instead of determining *relative* value on an absolute comparative basis, we are determining *perceived* value to a specific type of user. Or, stated another way, we're paying the most attention to the attributes that are important to the person using the medium.

For thousands of years, the type of comparison just performed would have been meaningless. Why? Because there were no choices of media that had very different attributes. And also because until the dawn of the information technology age, the state of the information recording art progressed slowly sequentially, rather than rapidly and in branching fashion.

Expressed with another table, this is the point that I am making:

Medium	Data Type	Input Method	Output Method
tablet, papyrus paper, vellum	<i>words, numbers, representational images</i>	<i>stylus, pen</i>	<i>visual</i>
paper - pre-1450	<i>same</i>	<i>pen, add cut block</i>	<i>visual</i>
paper - post-1450	<i>same</i>	<i>add printing press</i>	<i>visual</i>
chemical photography	<i>add actual images</i>	<i>camera</i>	<i>visual</i>
wax cylinder, vinyl	<i>add voice, music</i>	<i>add recording device</i>	<i>add audio; gramophone</i>

magnetic media	<i>voice, music</i>	<i>add wire recorder, tape recorder, etc.</i>	<i>add various playback devices</i>
celluloid	<i>moving images, actual</i>	<i>movie camera</i>	<i>add projector</i>
modern magnetic data storage and computer power	<i>add databases, 3D images, streaming pornography, etc.</i>	<i>add webcam, camera phone, Mars Rovers, etc.</i>	<i>Add video deck, podcast, etc.</i>

Now we can see that for millennia, advances in storage technology led to improvements in attributes such as transferability (tablet to papyrus) or even cost per copy (printing press). But the types of data that could be stored remained constant and the attributes differentiating one medium from another were minor. The last such innovative leap in this sequence was the invention of the printing press.

With the advent of modern technology, however, the number of storage methods and media began to proliferate. Once there were alternative media, input devices and output devices, all with different characteristics, there were real differences among them that favored one type of use over another. The result was choices – but also rapidly obsolete technology using physically unstable media – resulting in a radical decrease in the likelihood that data would survive throughout human (and technical) generations.

In contrast, preservation of data used to be inevitable (at least to some meaningful degree), due to the durability of media, the existence of a sufficient continuum of recorded human knowledge (e.g., the Rosetta Stone), and a limited number of ways that information could be recorded (e.g., letters, symbols) which facilitated deciphering even if that continuum was broken.

But what of our Apple Nano? Absent a proprietary interface and a continuing supply of iTunes format music, our elegant little toy will become only an output device. Absent a battery, it becomes merely an inscrutable, albeit an undeniably stylish, wafer.

And what of modern media itself? Thousands of Hollywood movies and television kinescopes have already deteriorated beyond redemption. Your LPs were left at the Swap Shed at the town transfer station years ago. Cassettes? Not even your car has a cassette deck anymore. The expected life of a CD or DVD? Don't ask. Your personal data? On your hard drive (have you backed up your computer today?) and a variety of servers scattered around the country. Virtually all of the news of the last five years? Servers again. No paper.

On the other hand, what of the works of Shakespeare, Avicenna, Thucydides, Mohammed, and Confucius? No matter how small your town, most or all of them will be found in the local library, each having been easily preserved, transcribed and handed down over the years, both in their original language as well as in myriad translations.

The moral of the story is that with choices come responsibilities. Not necessarily on a personal level, but certainly as a society. It is in this sense that the recent bold decision of the Massachusetts Information and Technology Division (see: Massachusetts and OpenDocument: A Brave New World?) represents a watershed in technologic civic responsibility, whether its implementation proves to be easy or painful.

It's also just in time. For some hundred and fifty years now, we have enjoyed a heady florescence of media choices that have added immeasurably to the richness of our lives and the ability to express ourselves. But now we need to think more carefully about whether this richness will be preserved, and how. As technology continues to evolve, the difficulty of the task increases, rather than the opposite, unless we are willing to sacrifice some of the positives in exchange for more robust attributes such as longevity, transferability and ease of access over the long term. In the world of analog devices, the challenges were already difficult. In a digital world, absent rigorous interoperability standards and a new sense of discipline, it becomes impossible.

In short, we need to begin to balance choices with responsibility, and to create the infrastructure necessary to preserve and pass on to our heirs what has been created during our lifetimes to the same extent (if not necessarily in the same way) as the information of the last generation was preserved for us by our own ancestors.

And if we do not? (How did that song go...something like "Thanks for the Memories?")

Comments? updegrove@consortiuminfo.org

Read more **Consider This...** entries at: <http://www.consortiuminfo.org/blog/>

Copyright 2005 Andrew Updegrove