
The iPad: Condition Reporting for the XXI Century *or* The use of the iPad as an image-based tool for condition reporting and location marking for scientific analysis

by Yosi Posilev

Introduction

For some years now the Conservation Center at LACMA has considered the idea of using available computers and technology to implement image-based condition reporting and examination mapping for the array of objects that are studied, treated, and couriered by the conservators at the Center. It seems that the gesture-based multi-touch technology, of which the iPad is at the forefront (at the time I write this article) may finally be the answer to a simple, portable, and efficient image-based workflow that would revolutionize this aspect of the conservation field.

Historical background

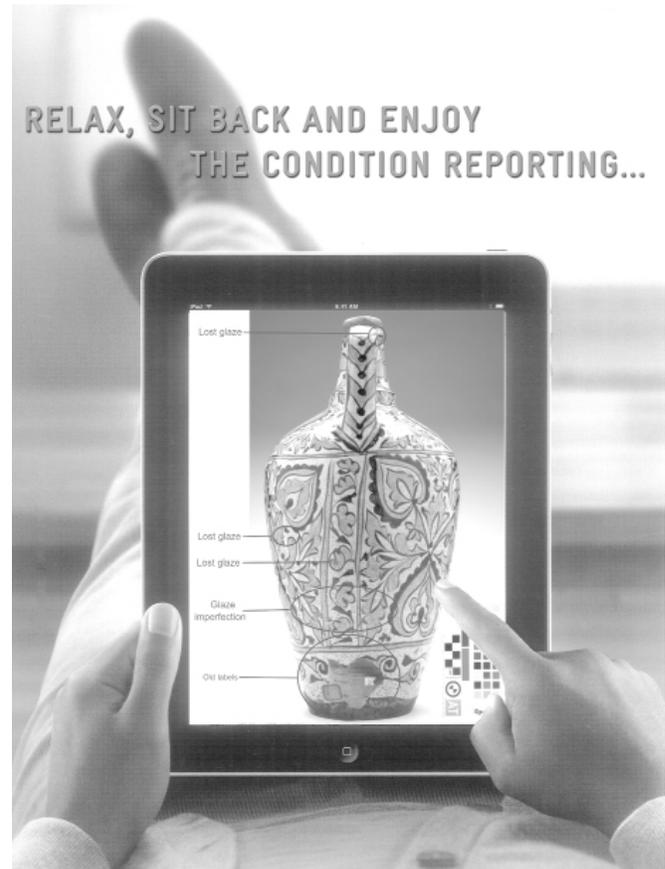
In a very basic way, image based condition reporting has been part of the LACMA Conservation Center since its inception over forty years ago. Black and white prints and negatives, together with 35mm slides and 4x5 color transparencies, have been part of an artwork's file, which contained the treatment and travel history of that specific object.

Traditionally the photo documentation included in the object's file was considered to be unique and of added-value due to the process and resources involved in the elaboration of the images. The photo documentation reflecting the state of being of an artwork at a specific time, has always being complemented with a descriptive narrative in which aspects of the artwork seen or not in the image, were described as precisely as possible using a controlled vocabulary to aid in the continuity of the documentation for the future.

Since the use of words to describe elements observed in an image became redundant and augmented by the desire to save time, conservators have used shortcuts to aid in this process. By laying transparent material over a print, the conservator could mark the elements of interest right on top of the photograph without permanently marking it; in some cases this same approach was done on 4x5 transparencies. But the use of the transparent material was the exception rather than the rule, since the bulk of the photo documentation for most works of art was done using 35mm slide film impeding the use of the above mentioned shortcut. This resulted in the continued use of verbiage for a large percentage of the reports generated.

The implementation of digital capture by the Conservation Photo Studio, together with the in-house production of photographic-quality color prints, triggered a culture change at the Conservation Center; the use of images became less restricted as they were considered to be more commonplace. Previous techniques described, like laying a transparent material for marking the image, as well as the use of photocopies were still in use, but now images were used in ways not imagine before with the aid of computers.

Along with the culture change, the widespread use of photo editing software augmented the conservator's experience in working with a digital image and its manipulation, allowing for a fully digital workflow when it came down to documenting elements in an object after the inspection was conducted. The next step in this workflow shift was to make the whole system portable so that the documentation could be done right in



front of the work of art being examined. By doing so we would eliminate the intermediary step of translating the markings done physically on a print and/or the written description done on paper to the stationary computing system in our office.

In order to bridge this gap the Conservation Center obtained laptop computers (although originally PC tablets were requested) in which DragonSpeak software for voice dictation was installed, as well as photo editing software to work with the images. The implementation of this portable solution fell short of being a practical option. The dictation software was unreliable and the image manipulation was cumbersome and could not be done as a freestanding operation. Nevertheless the use of this less-than-perfect portable solution has continued on a regular basis working around the shortcomings.

Mobile multi-touch technology

The time is right to experiment with newer technology and deliver the promise of a truly portable solution that would allow for freestanding image marking and note taking while doing condition reporting in front of an object. Apple Computer's iPad in principle would allow for a very organic use of the device while doing the condition reporting of an artwork. By using one's finger, or a stylus, a conservator could mark the elements of interest on a digital image right on the screen, and add notes to that same image if further description would be required.

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In principle the use of the iPad would allow for a direct transfer of well established methodology in the physical world (analog) into a purely virtual (digital) environment, with a lot less adjustment required than if a non multi-touch device was being used. All this information could then be transferred on the fly via email or sync to a stationary computing system with very little secondary manipulation required.

Questions and preparation

As we embark on this project some questions become evident; some pertaining to the new technology and its capabilities, others regarding the implementation and use of new software and the workflow that that implies. Questions also arise on how our current infrastructure and file managing would allow for an easy integration of this new device. Considerations were made with regard to the global approach of this project and its comparison with other available, and some would argue, more mainstream technologies like Windows-based netbooks.

Several preparatory steps were taken before the iPad was deemed ready for testing and everyday lab use. Initially together with the acquisition of the iPad (\$500), we purchased the camera connection kit (\$29), protective case (\$29), and the Mac OS desktop (\$79) and iPad (\$30) versions of the iWorks software packages (Apple's Office suite.) Additionally research was done to select the best Apps (software applications) available at the iTunes store for Photo-editing and drafting/drawing. This search yielded the selection of two Apps: 1) Artstudio for iPad (\$5) and 2) Photogene for iPad (\$5).

After the selection and installation of the software, the testing period started. We selected the scientific department to test the iPad first by using it to mark images of objects being examined by digital microscopy and XRF. The type of mapping being done by the scientist represented one of the most simple and controlled examples of image based recording that could be done, allowing us to identify shortcomings and perform a direct comparison to the analog paper based method.

With a better sense of the capabilities of the iPad and its software, conservators proceeded to condition report artwork in the objects and paper labs, with very satisfactory results.

Note: A word on the fast-moving development of this platform and its software. Although shortcomings were identified in both Apps initially chosen to work with, continued free updates of the software that included functionality and stability enhancements superseded the initial shortcoming. The improvements in Artstudio were such that it became the only App necessary to perform all the image-based condition reporting needed. Enhancements to the operating system were also promised so that multitasking capabilities on the iPad would be possible.

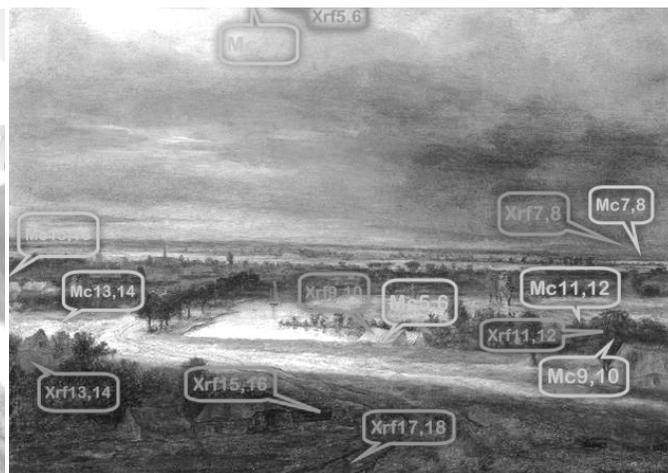
Implementation and workflow

Initially the iPad requires a base-computer, either Mac or PC, with iTunes to register and initialize the device. Loading Apps and the managing of files/images is done most efficiently through the computer. Although, once the iPad has been setup, the connection to the computer is not necessary to update existing Apps or acquire new ones. Most importantly the transfer of images and files, to and from the device, can be done through e-mail or wireless internet servers with the aid of dedicated Apps for this purpose like, GoodReader, DropBox, Evernote, and Zumocast just to mention a few.

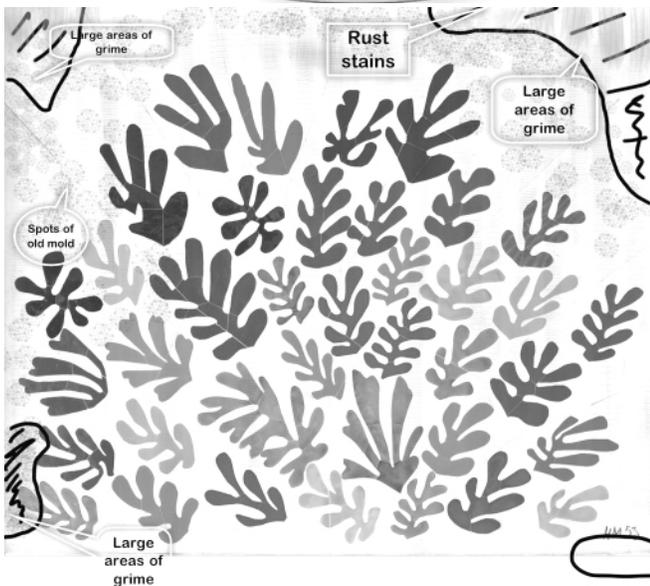
The "Artstudio" App has the ability to work on images by freehand marking on the images using a layering system very similar to the one found in Photoshop. The images can be saved as layers in the iPad and can be exported layered or flattened via email or through file sharing in iTunes. The "Photogene" App can save typed labels (bubbles) on an image, but only five labels in one session, it's strength though is the image editing capabilities similar to the ones found in Photoshop.

In terms of the workflow, it was necessary to assign an e-mail account to the iPad, so consipad@lacma.org was created as if it was a member of the conservation staff. In this way conservators were able to send images from their personal account to the iPad; doing this allowed for any one in the Conservation Center to use the device without having to setup their personal account every time the iPad changed hands.

Once the image was saved in the iPad then the conservator would be able to open it in Artstudio at its maximum working resolution of 1024x1024 pixels, create a new transparent layer on top of that image, and proceed to mark it up freehand and/or with type as needed.



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The idea behind using the layering system is that as many layers can be used as needed. For example, the first layer could be used to mark the initial condition of an object at LACMA, and subsequent layers could be used to mark changes at each different venue (i.e. layer 2: New York, layer 3: Paris, etc.)

Feedback and comments

As I was writing this article, the iPad population at LACMA has grown. We have now four devices deployed throughout the Conservation Center, and they are being used daily.

This fact clearly speaks to the acceptance of the device and reinforces some of the comments that have been made to me during this inception period. In general all agree that the iPad is easy to use, that the applications used are intuitive and simple to understand, and that the satisfaction level with the end-product is high having experienced a small learning-curve with little frustration.

By no means is the iPad perfect, shortcomings exist such as the closed system that Apple imposes on its devices. Although such limitations do not weight in significantly to deter the use of the iPad, they should be acknowledged.

The maximum pixel resolution of 1024 x 768 at 132 ppi may seem on the low side, although it is higher than any of the VGA monitors that we had in the past. More of an issue would be the image degradation that the uncontrolled JPEG compression causes on the image. The lack of a camera has also been mentioned as a downside, although I personally disagree since any camera that could be included in the iPad (and probably will be in the future) would be of very low resolution. I believe that having the optional camera connection kit with a high end point and shoot camera is a much better solution for the type of work that we do in conservation.

A bigger issue is the inability of the iPad to transfer freely information to and from a USB thumb-drive, or have an expansion slot for a SD card. But other than these physical/hardware limitations the iPad is a powerful and simple tool that continues to amaze us. As I write this article, I just installed iOS ver. 4.2 of the iPad operating system which, among other improvements, includes the long anticipated multitasking feature that allows for multiple programs and operations to run concurrently making it easy to jump from one App to another.

Conclusion

There is still more work to be done regarding the managing and flow of the new digital condition reports. Our intention is for these new files to reside in the general repository of images within the existing structure of the archive. Also a better relationship between the iPad and the desktop computers has to be created so that the use of the device is as independent of one person/account as possible. This would be a bigger challenge since restrictions imposed by the IS administrator makes it complicated to work independently in the Windows environment.

Additionally we are trying to forge some type of integration between the iPad's output and our massive and museum-wide collections management software. As this new technology changes and adapts, so will we. We have successfully transitioned into digital photography; having had that experience we will undoubtedly continue to advance, as well as revolutionize, the process of documentation and condition reporting.